SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, D.C. 20549

FORM 10-Q

[x] Quarterly report pursuant to Section 13 or 15(d) of the Securities and Exchange Act of 1934 For the quarterly period ended March 31, 2000

OR

[ ] Transition report pursuant to Section 13 or 15(d) of the Securities and Exchange Act of 1934 For the transition period from to

Commission File Number 000-19319

VERTEX PHARMACEUTICALS INCORPORATED
(Exact name of registrant as specified in its charter)

Massachusetts	04-3039129
(State or other jurisdiction of incorporation or organization)	(I.R.S. Employer Identification No.)

130 WAVERLY STREET, CAMBRIDGE, MASSACHUSETTS 02139-4242
(Address of principal executive offices, including zip code)

(617) 577-6000
(Registrant's telephone number, including area code)

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days.

YES X NO

Indicate the number of shares outstanding of each of the issuer's classes of common stock, as of the latest practicable date.

Class	Outstanding at May 11, 2000
Common Stock, par value $.01 per share	26,216,297

VERTEX PHARMACEUTICALS INCORPORATED

INDEX

REPORT OF INDEPENDENT ACCOUNTANTS

To the Board of Directors and Shareholders of Vertex Pharmaceuticals Incorporated:

We have reviewed the accompanying condensed consolidated balance sheets of Vertex Pharmaceuticals Incorporated and its subsidiaries as of March 31, 2000, and the related condensed consolidated statements of operations for each of the three-month periods ended March 31, 2000 and 1999, and the condensed consolidated statements of cash flows for the three-month periods ended March 31, 2000 and 1999. These financial statements are the responsibility of the Company's management.

We conducted our review in accordance with standards established by the American Institute of Certified Public Accountants. A review of interim financial information consists principally of applying analytical procedures to financial data and making inquiries of persons responsible for financial and accounting matters. It is substantially less in scope than an audit conducted in accordance with generally accepted auditing standards, the objective of which is the expression of an opinion regarding the financial statements taken as a whole. Accordingly, we do not express such an opinion.

Based on our review, we are not aware of any material modifications that should be made to the accompanying condensed consolidated interim financial statements for them to be in conformity with generally accepted accounting principles.

We have previously audited in accordance with generally accepted auditing standards, the consolidated balance sheet as of December 31, 1999, and the related consolidated statement of operations, stockholders' equity, and cash flows for the year then ended (not presented herein); and in our report dated February 16, 2000, except as to the information in Note R for which the date is February 28, 2000, we expressed an unqualified opinion on those consolidated financial statements. In our opinion, the information set forth in the accompanying condensed consolidated balance sheet as of December 31, 1999, is fairly stated, in all material respects in relation to the consolidated balance sheet from which it has been derived.

PricewaterhouseCoopers LLP

Boston, Massachusetts
April 28, 2000

VERTEX PHARMACEUTICALS INCORPORATED
CONDENSED CONSOLIDATED BALANCE SHEETS
(In thousands)
(Unaudited)

	MARCH 31, 2000	DECEMBER 31, 1999
ASSETS		
Current assets:		
Cash and cash equivalents	$ 191,750	$ 31,548
Short-term investments	155,498	156,254
Accounts receivable	4,506	5,956
Prepaid expenses	1,997	1,439
Total current assets	353,751	195,197
Restricted cash	9,788	9,788
Property and equipment, net	25,210	24,480
Investment in equity affiliate	2,295	2,276
Other assets	5,887	704
Total assets	$ 396,931	$ 232,445
LIABILITIES AND STOCKHOLDERS' EQUITY		
Current liabilities:		
Accounts payable and accrued expenses	$ 13,767	$ 14,152
Deferred revenue	--	2,000
Obligations under capital lease and debt	2,272	2,366
Total current liabilities	16,039	18,518
Obligations under capital leases and debt, excluding current portion	179,155	4,693
Total liabilities	195,194	23,211
Stockholders' equity:		
Preferred stock, $.01 par value;1,000,000 authorized none issued		
Commonstock, $.01 par value; 100,000,000 authorized; issued and outstanding - 26,171,877 shares in 2000 and 25,685,364 shares in 1999	262	257
Additional paid-in capital	409,934	400,888
Deferred compensation	(101)	(114)
Accumulated other comprehensive income (loss)	(1,372)	(970)
Accumulated deficit	(206,986)	(190,827)
Total stockholders' equity	201,737	209,234
Total liabilities and stockholders' equity	$ 396,931	$ 232,445

The accompanying notes are an integral part of these condensed consolidated financial statements.

VERTEX PHARMACEUTICALS INCORPORATED
CONDENSED CONSOLIDATED STATEMENTS OF OPERATIONS

(In thousands, except per share amounts)
(Unaudited)

	THREE MONTHS ENDED MARCH 31,	
	2000	1999
Revenues:		
Royalties and product sales	$ 2,619	--
Collaborative and other research and development	4,904	$ 3,963
Total revenues	7,523	3,963
Costs and expenses:		
Royalties and product costs	872	--
Research and development	18,604	18,605
Sales, general and administrative	6,608	5,772
Total costs and expenses	26,084	24,377
Net loss from operations	(18,561)	(20,414)
Interest income, net	2,383	2,982
Gain/(loss) in equity affiliate	19	(122)
Net Loss	$(16,159)	$(17,554)
Basic and diluted loss per common share	$ (0.62)	$ (0.69)
Basic and diluted weighted average number of common shares outstanding	25,964	25,389

The accompanying notes are an integral part of these condensed consolidated financial statements.

VERTEX PHARMACEUTICALS INCORPORATED
CONDENSED CONSOLIDATED STATEMENTS OF CASH FLOWS

(In thousands)
(Unaudited)

	THREE MONTHS ENDED MARCH 31,	
	2000	1999
Cash flows from operating activities:		
Net loss	$ (16,159)	$ (17,554)
Adjustment to reconcile net loss to net cash used by operating activities:		
Depreciation and amortization	1,924	1,244
Amortization of deferred compensation	51	15
Equity compensation for services rendered	13	13
Realized (gains)/losses on short-term investments	134	(70)
Loss(gain) in equity affiliate	(19)	122
Changes in assets and liabilities:		
Accounts Receivable	1,450	43
Prepaid expenses	(558)	584
Accounts payable and accrued expenses	(385)	762
Deferred revenue	(2,000)	--
Net cash used by operating activities	(15,549)	(14,841)
Cash flows from investing activities:		
Purchases of short-term investments	(63,570)	(150,309)
Sales and maturities of short-term investments	63,938	166,943
Expenditures for property and equipment	(2,654)	(2,460)
Restricted cash	--	(1,460)
Investment in equity affiliate	--	(3,000)
Other assets	126	219
Net cash provided (used) by investing activities	(2,160)	9,933
Cash flows from financing activities:		
Repayment of capital lease obligations and debt	(632)	(705)
Proceeds from the sale of convertible notes	175,000	--
Costs associated with sale of convertible subordinated notes	(5,309)	--
Proceeds from other issuances of common stock	9,000	1,268
Net cash provided by financing activities	178,059	563
Effect of exchange rate changes on cash	(148)	(14)
Increase/decrease in cash and cash equivalents	160,202	(4,359)
Cash and cash equivalents at beginning of period	31,548	24,169
Cash and cash equivalents at end of period	$ 191,750	$ 19,810

The accompanying notes are an integral part of these condensed consolidated financial statements.

VERTEX PHARMACEUTICALS INCORPORATED
NOTES TO CONDENSED CONSOLIDATED FINANCIAL STATEMENTS

1. BASIS OF PRESENTATION

The accompanying condensed consolidated financial statements are unaudited and have been prepared by Vertex Pharmaceuticals Incorporated (the "Company") in accordance with generally accepted accounting principles.

Certain information and footnote disclosures normally included in the Company's annual financial statements have been condensed or omitted. Certain prior year amounts have been reclassified to conform with current year presentation. The interim financial statements, in the opinion of management, reflect all adjustments (including normal recurring accruals) necessary for a fair statement of the results for the interim periods ended March 31, 2000 and 1999.

The results of operations for the interim periods are not necessarily indicative of the results of operations to be expected for the fiscal year, although the Company expects to incur a substantial loss for the year ended December 31, 2000. These interim financial statements should be read in conjunction with the audited financial statements for the year ended December 31, 1999, which are contained in the Company's 1999 Annual Report to its shareholders and in its Form 10-K filed with the Securities and Exchange Commission.

2. ACCOUNTING POLICIES

DEBT ISSUANCE COSTS

Debt issuance costs are deferred and amortized on a straight line basis over the term of the related debt issuance.

BASIC AND DILUTED LOSS PER COMMON SHARE

Basic loss per share is based upon the weighted average number of common shares outstanding during the period. Diluted loss per share is based upon the weighted average number of common shares outstanding during the period plus additional weighted average common equivalent shares outstanding during the period when the effect is not anti-dilutive. Common equivalent shares result from the assumed exercise of outstanding stock options, the proceeds of which are then assumed to have been used to repurchase outstanding stock using the treasury stock method, and the assumed conversion of convertible notes. Common equivalent shares have not been included in the per share calculations as the effect would be anti-dilutive. Total potential common equivalent shares, at March 31, 2000, consist of 6,285,637 stock options outstanding with a weighted average exercise price of $24.11 and notes convertible into 2,170,140 shares of common stock at a conversion price of $80.64 per share (See Note 4). Total potential common equivalent shares at March 31, 1999 consist of 5,182,014 stock options outstanding with a weighted average price of $22.76.

3. COMPREHENSIVE INCOME

For the quarters ended March 31, 2000 and 1999 total comprehensive loss was as follows (in thousands):

	MARCH 31, 2000	MARCH 31, 1999
Net loss	$(16,159)	$(17,554)
Other comprehensive income (loss):		
Unrealized holding gains (losses) on investments	(254)	222
Foreign currency translation adjustment	(148)	(11)
Total other comprehensive income (loss)	(402)	211
Total comprehensive loss	$(16,561)	$(17,343)

4. LONG-TERM DEBT

On March 14, 2000 the Company issued $175,000,000 of Convertible Subordinated Notes, due 2007. The notes are convertible, at the option of the holder, into common stock at a price equal to $80.64 per share, subject to adjustment under certain circumstances. The notes bear an interest rate of 5% per annum and the company is required to make semi-annual interest payments on the outstanding principal balance of the notes on March 15 and September 15 of each year. The notes are redeemable by the Company at any time after March 17, 2003 at specific redemption prices. Total amortization expense associated with the debt issuance costs was $31,000 for the three-month period ended March 31, 2000.

5. LEGAL PROCEEDINGS

Chiron Corporation ("Chiron") filed suit on July 30, 1998 against Vertex and Eli Lilly and Company in the United States District Court for the Northern District of California, alleging infringement by the defendants of three U.S. patents issued to Chiron. The infringement action relates to research activities by the defendants in the hepatitis C viral protease field and the alleged use of inventions claimed by Chiron in connection with that research. Chiron has requested damages in an unspecified amount, as well as an order permanently enjoining the defendants from unlicensed use of the claimed Chiron inventions. During 1999, Chiron requested and was granted a reexamination by the U.S. Patent and Trademark Office of all three of the patents involved in the suit. Chiron also requested and, over the opposition of Vertex and Lilly, was granted a stay in the infringement lawsuit, pending the outcome of the patent reexamination. While the length of the stay, the outcome of the reexamination, the effect of that outcome on the lawsuit and the final outcome of the lawsuit cannot be determined, Vertex maintains that the plaintiff's claims are without merit and intends to defend the lawsuit, if and when it resumes, vigorously.

6. RECENT ACCOUNTING PRONOUNCEMENTS

In December 1999, the Securities and Exchange Commission issued Staff Accounting Bulletin No. 101, "Revenue Recognition in Financial Statements," ("SAB 101") which clarifies the Securities and Exchange Commission's views related to revenue recognition and disclosure. The effective date of this bulletin was deferred to no later than the quarter ending June 30, 2000. The Company will adopt SAB 101 in the second quarter of 2000 and is presently determining the effect it will have on the financial statements, although the amount could be material to net financial results.

In March 2000, the FASB issued Interpretation No. 44 "Accounting for Certain Transactions involving Stock Compensation", which provides guidance for issues that have arisen in applying AFB No. 25, "Accounting for Stock Issued to Employees". This Interpretation, which is effective July 1, 2000, applies prospectively to new awards, exchanges of awards in a business combination, modifications to outstanding awards, and changes in grantee status that occur on or after July 1, 2000, except for the provisions related to repricings and the definition of an employee which apply to awards issued after December 31, 1998. The Company is evaluating the impact of adoption of this Interpretation; however, it is not expected to have a material impact on net financial results.

7. SUBSEQUENT EVENT

On May 8, 2000 the Company and Novartis Pharma AG (Novartis) entered into an agreement to collaborate on the discovery, development and commercialization of small molecule drugs directed towards targets in the kinase protein family. Under the agreement, Novartis agreed to pay the Company approximately $800,000,000 in pre-commercial payments, comprised of $15,000,000 paid upon signing of the agreement, up to $200,000,000 in product research funding over six years and up to approximately $600,000,000 in further license fees, milestone payments and cost reimbursements. These amounts are based on development of eight drug candidates. Vertex will have the responsibility for drug discovery and clinical proof-of-concept testing of drug candidates. Novartis will have exclusive worldwide development, manufacturing and marketing rights to clinically and commercially relevant drug candidates that it accepts for development from the Company. Vertex will receive royalties on any products that are marketed as part of the collaboration. Subject to certain conditions, the Company will have co-promotion rights in the United States and Europe. Novartis may terminate this agreement without cause after four years upon one year's written notice. The agreement is subject to approval under the Hart Scott Rodino Antitrust Improvements Act of 1976.

MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS

THIS DISCUSSION CONTAINS FORWARD-LOOKING STATEMENTS WHICH ARE SUBJECT TO CERTAIN RISKS AND UNCERTAINTIES THAT CAN CAUSE ACTUAL RESULTS TO DIFFER MATERIALLY FROM THOSE DESCRIBED. FACTORS THAT MAY CAUSE SUCH DIFFERENCES INCLUDE BUT ARE NOT LIMITED TO THOSE DESCRIBED IN THE SECTION OF OUR ANNUAL REPORT ON FORM 10-K ENTITLED "RISK FACTORS." READERS ARE CAUTIONED NOT TO PLACE UNDUE RELIANCE ON THESE FORWARD-LOOKING STATEMENTS WHICH SPEAK ONLY AS OF THE DATE HEREOF. WE UNDERTAKE NO OBLIGATION TO PUBLICLY UPDATE OR REVISE THESE FORWARD-LOOKING STATEMENTS TO REFLECT EVENTS OR CIRCUMSTANCES AFTER THE DATE HEREOF.

We discover, develop and market small molecule drugs that address major unmet medical needs. We have eight drug candidates in clinical development to treat viral diseases, inflammation, cancer, autoimmune diseases and neurological disorders. We have created our pipeline using a proprietary approach, information-driven drug design, that integrates multiple technologies in biology, chemistry and biophysics aimed at increasing the speed and success rate of drug discovery.

Our first approved product is Agenerase-TM- (amprenavir), an HIV protease inhibitor, which we co-promote with Glaxo Wellcome plc ("Glaxo Wellcome"). We are earning a royalty from Glaxo Wellcome from sales of Agenerase. Agenerase has received approval in other countries, including Japan where the drug is sold under the trade name Prozei-TM-. Approval of Agenerase is pending in other countries, including the European Union, where the drug is being made available through early access programs.

We have incurred operating losses since our inception and expect to incur a loss for the fiscal year ending December 31, 2000. We expect that operating losses will continue beyond fiscal year 2000 even if significant royalties are realized on Agenerase sales because we are planning to make significant investments in research and development for our other potential products. We expect that losses will fluctuate from quarter to quarter and that such fluctuations may be substantial.

RESULTS OF OPERATIONS

THREE MONTHS ENDED MARCH 31, 2000 COMPARED WITH THREE MONTHS ENDED MARCH 31, 1999.

The net loss for the three months ended March 31, 2000 was $16,159,000 or $0.62 per share compared to $17,554,000 or $0.69 per share for the same period in 1999.

Total revenues increased to $7,523,000 in the first quarter of 2000 from $3,963,000 in the first quarter of 1999. In the first quarter of 2000, royalty and product sales revenue was $2,619,000 and collaborative and other research and development revenue was $4,904,000. In the first quarter of 1999, prior to the launch of Agenerase, we earned $3,963,000 in revenue from collaborative agreements.

Royalty and product sales revenue consists of Agenerase royalty revenue from Glaxo Wellcome. Agenerase royalty revenue is based upon worldwide net sales of Agenerase as provided by Glaxo Wellcome.

The increase in collaborative and other research and development revenue in the first quarter of 2000 as compared with the first quarter of 1999 is principally due to the recognition of approximately $900,000 in product research funding from Taisho Pharmaceutical Co. Ltd. of Japan in connection with an agreement signed in the fourth quarter of 1999. The balance of collaborative and other research and development revenue represents research support payments from Eli Lilly, Schering AG and Kissei Pharmaceutical Company for both 2000 and 1999.

Total costs and expenses increased to $26,084,000 in the first quarter of 2000 from $24,377,000 in the first quarter of 1999. Royalties and product costs of $872,000 in the first quarter of 2000 consist of royalty payments to G.D. Searle on the sales of Agenerase.

Research and development expenses remained relatively unchanged in the first quarter of 2000 as compared with the first quarter of 1999. We continue to expand our research and development operations both in the US and the UK although, in the first quarter of 2000, the expenses associated with the expansion are partially offset by a decrease in external development activities associated with certain drug candidates. We anticipate that research and development expenses will increase as personnel are added and additional research and development activities are expanded to accommodate existing collaborations and additional commitments we may undertake in the future.

Sales, general and administrative expenses increased to $6,608,000 in the first quarter of 2000 from $5,772,000 in the first quarter of 1999. The increase in sales, general and administrative expenses reflects the impact of personnel additions and increased legal and patent expenses. Legal and patent expenses increased due to continued protection of our intellectual property and general business activities. We expect that sales, general and administrative expenses will continue to increase as we continue to grow.

Net interest income decreased to $2,383,000 for the first quarter of 2000 from $2,982,000 in the first quarter of 1999. The decrease was primarily due to lower levels of cash and investments for the majority of the first quarter of 2000 as compared with the same period of 1999.

Using the equity method of accounting, we recorded $19,000 as our share of the income in Altus Biologics Inc.("Altus") for the three month period ending March 31, 2000, compared with $122,000 as our share of Altus' loss for the same period in 1999.

LIQUIDITY AND CAPITAL RESOURCES

Our operations have been funded principally through strategic collaborative agreements, public offerings and private placements of our equity and debt securities, equipment lease financing, and

investment income. With the approval and launch of Agenerase, in April 1999, we began receiving product royalty revenues. In March 2000, we issued $175,000,000 of Convertible Subordinated Notes. We have continued to increase and advance products in our research and development pipeline. Consequently, we expect to incur losses on a quarterly and annual basis as we continue to develop existing and future compounds and to conduct clinical trials of potential drugs. We also expect to incur substantial administrative and commercialization expenditures in the future and additional expenses related to filing, prosecution, defense and enforcement of patent and other intellectual property rights.

We expect to finance these substantial cash needs with royalties from the sale of Agenerase, existing cash and investments of $347,248,000 at March 31, 2000, together with investment income earned thereon, future payments under our existing and future collaborative agreements, and facilities and equipment financing. To the extent that funds from these sources are not sufficient to fund our activities, it will be necessary to raise additional funds through public offerings or private placements of securities or other methods of financing. There can be no assurance that such financing will be available on acceptable terms, if at all.

Our aggregate cash and investments increased by $159,446,000 during the three months ended March 31, 2000 to $347,248,000. Cash used by operations, principally to fund research and development activities, was $15,549,000 during the same period. Deferred revenue decreased in the first quarter of 2000 due to the timing of research support payments from certain collaborators. We continue to invest in equipment and leasehold improvements for facilities to meet the operating needs associated with the growth in our headcount. Property and equipment expenditures were $2,654,000 for the first three months of 2000. Cash provided by financing activities for the first quarter of 2000 was $178,059,000. We received $169,691,000 in net proceeds from the issuance of the $175,000,000 Convertible Subordinated Notes in March of 2000. Deferred Debt Issuance Costs are included in other assets on the balance sheet. Additionally, exercises of employee stock options in the first quarter of 2000 resulted in a $9,000,000 increase to common stock and additional paid in capital.

LEGAL PROCEEDINGS

Chiron Corporation ("Chiron") filed suit on July 30, 1998 against Vertex and Eli Lilly and Company ("Lilly") in the United States District Court for the Northern District of California, alleging infringement of three U.S. patents issued to Chiron. During 1999, Chiron requested and was granted a reexamination by the U.S. Patent and Trademark Office of all three of the patents involved in the suit. Chiron also requested and, over the opposition of Vertex and Lilly, was granted a stay in the infringement lawsuit, pending the outcome of the patent reexamination. While the length of the stay, the outcome of the reexamination, the effect of that outcome on the lawsuit and the final outcome of the lawsuit cannot be determined, we believe, based on information currently available, that the ultimate outcome of the action will not have a material impact on our consolidated financial position.

SUBSEQUENT EVENT

On May 8, 2000 we entered into an agreement with Novartis Pharma AG (Novartis) to collaborate on the discovery, development and commercialization of small molecule drugs directed towards targets in the kinase protein family. Under the agreement, Novartis agreed to pay us approximately $800,000,000 in pre-commercial payments, comprised of $15,000,000 paid upon signing of the agreement, up to $200,000,000 in product research funding over six years and up to approximately $600,000,000 in further license fees, milestone payments and cost reimbursements. These amounts are based on development of eight drug candidates. We will have the responsibility for drug discovery and clinical proof-of-concept testing of drug candidates. Novartis will have exclusive worldwide development, manufacturing and marketing rights to clinically and commercially relevant drug candidates that it accepts for development from us. We will receive royalties on any products that are marketed as part of the collaboration. Subject to certain conditions, we will have co-promotion rights in the United States and Europe. Novartis may terminate this agreement without cause after four years upon one year's written notice. The agreement is subject to approval under the Hart Scott Rodino Antitrust Improvements Act of 1976.

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Certain Transactions involving Stock Compensation", which provides guidance for issues that have arisen in applying AFB No. 25, "Accounting for Stock Issued to Employees". This Interpretation, which is effective July 1, 2000, applies prospectively to new awards, exchanges of awards in a business combination, modifications to outstanding awards, and changes in grantee status that occur on or after July 1, 2000, except for the provisions related to repricings and the definition of an employee which apply to awards issued after December 31, 1998. We are evaluating the impact of adoption of this Interpretation; however, it is not expected to have a material impact on our net financial results.

QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

There are no material changes to our assessment of market risk as disclosed in our Annual Report on Form 10-K for the year ended December 31, 1999.

PART II.

OTHER INFORMATION

Item 6. EXHIBITS:

4.1	Indenture between Vertex Pharmaceuticals Incorporated, as Issuer, and State Street Bank and Trust Company, as Trustee, dated as of March 14, 2000 (filed herewith).
4.2	Resale Registration Rights Agreement among Vertex Pharmaceuticals Incorporated, and Merrill Lynch & Co., Merrill Lynch, Pierce, Fenner & Smith incorporated, Bear Stearns & Co. Inc., Credit Suisse First Boston Corporation, FleetBoston Robertson Stephens Inc., SG Cowen Securities Corporation, as Representatives of the several Initial Purchasers, dated March 14, 2000 (filed herewith).
10.1	Research and Early Development Agreement between Vertex Pharmaceuticals Incorporated and Novartis Pharma AG dated May 8, 2000 (with certain confidential information deleted) (filed herewith).
27	Financial Data Schedule (Submitted as an exhibit only in the electronic format of this Quarterly Report on Form 10-Q submitted to the Securities and Exchange Commission).
99	Letter of Independent Accountants.

REPORTS ON FORM 8-K:

On March 27, 2000, we filed a Report on Form 8-K dated March 3, 2000, reporting the offer and sale of our Convertible Subordinated Notes.

SIGNATURES

Pursuant to the requirements of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned thereunto duly authorized.

VERTEX PHARMACEUTICALS INCORPORATED

Date: May 15, 2000

Thomas G. Auchincloss, Jr.
Vice President of Finance and Treasurer
(Principal Financial Officer)

Date: May 15, 2000

Johanna Messina Power
Assistant Controller

EXHIBIT 4.1

INDENTURE

BETWEEN

VERTEX PHARMACEUTICALS INCORPORATED,

AS ISSUER

AND

STATE STREET BANK AND TRUST COMPANY,

AS TRUSTEE

5% CONVERTIBLE SUBORDINATED NOTES DUE 2007

DATED AS OF MARCH 14, 2000

CROSS-REFERENCE TABLE*

Trust Indenture ACT SECTION	Indenture SECTION
310(a)(1)	5.11
(a)(2)	5.11
(a)(3)	n/a
(a)(4)	n/a
(a)(5)	5.11
(b)	5.3; 5.11
(c)	n/a
311(a)	5.12
(b)	5.12
(c)	n/a
312(a)	2.10
(b)	14.3
(c)	14.3
313(a)	5.7
(b)(1)	n/a
(b)(2)	5.7
(c)	5.7; 14.2
(d)	5.7
314(a)(1), (2), (3)	9.6; 14.6
(a)(4)	; 9.7; 14.6
(b)	n/a
(c)(1)	14.5
(c)(2)	14.5
(c)(3)	n/a
(d)	n/a
(e)	14.6
(f)	n/a
315(a)	5.1(a)
(b)	5.6; 14.2
(c)	5.1(b)
(d)	5.1(c)
(e)	4.14
316(a)(last sentence)	2.13
(a)(1)(A)	4.5
(a)(1)(B)	4.4
(a)(2)	n/a
(b)	4.7

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"n/a" means not applicable.

* This Cross-Reference Table shall not, for any purpose, be deemed to be a part of the Indenture.

INDENTURE, dated as of March 14, 2000, between VERTEX PHARMACEUTICALS INCORPORATED, a corporation duly organized and existing under the laws of the Commonwealth of Massachusetts, having its principal office at 130 Waverly Street, Cambridge, Massachusetts 02139 (the "Company"), and STATE STREET BANK AND TRUST COMPANY, as trustee (the "Trustee"), having its principal corporate trust office at 2 Avenue de Lafayette, Boston, Massachusetts 02111.

RECITALS OF THE COMPANY

The Company has duly authorized the creation of an issue of its 5% Convertible Subordinated Notes due 2007 (herein called the "Securities") of substantially the tenor and amount hereinafter set forth, and to provide therefor the Company has duly authorized the execution and delivery of this Indenture.

All things necessary to make the Securities, when the Securities are executed by the Company and authenticated and delivered hereunder and duly issued by the Company, the valid obligations of the Company, and to make this Indenture a valid agreement of the Company, in accordance with their and its terms, have been done.

NOW, THEREFORE, THIS INDENTURE WITNESSETH:

For and in consideration of the premises and the purchase of the Securities by the Holders thereof, it is mutually covenanted and agreed, for the equal and proportionate benefit of all Holders of the Securities, as follows:

ARTICLE 1

DEFINITIONS AND INCORPORATION
BY REFERENCE

SECTION 1.1 DEFINITIONS.

For all purposes of this Indenture and the Securities, the following terms are defined as follows:

"Act," when used with respect to any Holder of a Security, has the meaning specified in Section 14.4(a) hereof.

"Adjusted Interest Rate" means, with respect to any Reset Transaction, the rate per annum that is the arithmetic average of the rates quoted by two Reference Dealers selected by the Company or its successor as the rate at which interest on the Securities should accrue so that the fair market value, expressed in dollars, of a Security immediately after the later of:

(1) the public announcement of such Reset Transaction; or

(2) the public announcement of a change in dividend policy in connection with such Reset Transaction,

will equal the average Trading Price of a Security for the 20 Trading Days preceding the date of public announcement of such Reset Transaction; provided that the Adjusted Interest Rate shall not be less than 5% per annum.

"Affiliate" of any specified Person means any other Person directly or indirectly controlling or controlled by or under direct or indirect common control with such specified Person. For the purposes of this definition, "control", when used with respect to any specified Person, means the power to direct the management and policies of such Person, directly or indirectly, whether through the ownership of voting securities, by contract or otherwise; and the terms "controlling" and "controlled" have meanings correlative to the foregoing.

"Bankruptcy Law" means Title 11 of the U.S. Code or any similar federal or state law for the relief of debtors.

"Board of Directors" means either the board of directors of the Company or any committee of that board empowered to act for it with respect to this Indenture.

"Board Resolution" means a resolution duly adopted by the Board of Directors, a copy of which, certified by the Secretary or an Assistant Secretary of the Company to be in full force and effect on the date of such certification, shall have been delivered to the Trustee.

"Business Day," when used with respect to any Place of Payment or Place of Conversion, means each Monday, Tuesday, Wednesday, Thursday and Friday which is not a day on which banking institutions in that Place of Payment or Place of Conversion, as the case may be, are authorized or obligated by law to close.

"Change of Control" means the occurrence of any of the following after the original issuance of the Securities:

(1) the acquisition by any person, including any syndicate or group deemed to be a "person" under Section 13(d)(3) of the Exchange Act, of beneficial ownership, directly or indirectly, through a purchase, merger or other acquisition transaction or series of transactions, of shares of capital stock of the Company entitling such person to exercise 50% or more of the total voting power of all shares of capital stock of the Company entitled to vote generally in elections of directors, other than any such acquisition by the Company, any subsidiary of the Company or any employee benefit plan of the Company;

(2) any consolidation or merger of the Company with or into any other person, any merger of another person into the Company, or any conveyance, transfer, sale, lease or other disposition of all or substantially all of the properties and assets of the Company to another person, other than (a) any such transaction (x) that does not result in any reclassification, conversion, exchange or cancellation of outstanding shares of capital stock of the Company and (y) pursuant to which holders of capital stock of the Company immediately prior to such transaction have the entitlement to exercise, directly or indirectly, 50% or more of the total voting power of all shares of capital stock of the Company entitled to vote generally in the election of directors of the continuing or surviving person immediately after such transaction or (b) any merger which is effected solely to change the jurisdiction of incorporation of the Company and results in a reclassification, conversion or exchange of outstanding shares of Common Stock solely into shares of common stock of the surviving entity;

(3) during any consecutive two-year period, individuals who at the beginning of that two-year period constituted the Board of Directors (together with any new directors whose election to the Board of Directors, or whose nomination for election by the stockholders of the Company, was approved by a vote of a majority of the directors then still in office who were either directors at the beginning of such period or whose elections or nominations for election were previously so approved) cease for any reason to constitute a majority of the Board of Directors then in office; or

(4) the Company is liquidated or dissolved or a resolution is passed by the Company's stockholders approving a plan of liquidation or dissolution of the Company other than in a transaction which complies with the provisions described in Article 6 of the Indenture.

Beneficial ownership shall be determined in accordance with Rule 13d-3 promulgated by the SEC under the Exchange Act. The term "person" shall include any syndicate or

group which would be deemed to be a "person" under Section 13(d)(3) of the Exchange Act.

"Chief Executive Officer" means any chief executive officer of the Company.

"Closing Date" means March 14, 2000 or such later date on which the Securities may be delivered pursuant to the Purchase Agreement.

"Closing Price" of any security on any date of determination means:

(1) the closing sale price (or, if no closing sale price is reported, the last reported sale price) of such security (regular way) on the New York Stock Exchange on such date;

(2) if such security is not listed for trading on the New York Stock Exchange on any such date, the closing sale price as reported in the composite transactions for the principal U.S. securities exchange on which such security is so listed;

(3) if such security is not so listed on a U.S. national or regional securities exchange, the closing sale price as reported by the Nasdaq National Market;

(4) if such security is not so reported, the last quoted bid price for such security in the over-the-counter market as reported by the National Quotation Bureau or similar organization; or

(5) if such bid price is not available, the average of the mid-point of the last bid and ask prices of such security on such date from at least three nationally recognized independent investment banking firms retained for this purpose by the Company.

"Common Stock" means any stock of any class of the Company which has no preference in respect of dividends or of amounts payable in the event of any voluntary or involuntary liquidation, dissolution or winding up of the Company and which is not subject to redemption by the Company. However, subject to the provisions of Section 12.11 hereof, shares issuable on conversion of Securities shall include only shares of the class designated as Common Stock, par value $0.01 per share, of the Company at the date of this Indenture or shares of any class or classes resulting from any reclassification or reclassifications thereof and which have no preference in respect of dividends or of amounts payable in the event of any voluntary or involuntary liquidation, dissolution or winding up of the Company and which are not subject to redemption by the Company, provided that if at any time there shall be more than one such resulting class, the shares of each such class then so issuable shall be substantially in the proportion which the total number of shares of such class resulting from all such reclassifications bears to the total number of shares of all such classes resulting from all such reclassifications.

"Company" means the corporation named as the "Company" in the first paragraph of this instrument until a successor corporation shall have become such pursuant to the

applicable provisions of this Indenture, and thereafter "Company" shall mean such successor corporation.

"Company Notice" has the meaning specified in Section 11.3 hereof.

"Company Order" means a written order signed in the name of the Company by both (1) the Chief Executive Officer, the President or a Vice President and (2) so long as not the same as the officer signing pursuant to clause (1), the Chief Financial Officer, the Treasurer or the Secretary of the Company, and delivered to the Trustee.

"Conversion Agent" means any Person authorized by the Company to convert Securities in accordance with Article 12 hereof.

"Conversion Price" has the meaning specified in Section 12.1 hereof.

"Corporate Trust Office" means for purposes of presentation or surrender of Securities for payment, registration, transfer, exchange or conversion or for service of notices or demands upon the Company, the office of the Trustee located in the City of New York (which at the date of this Indenture is located at 61 Broadway, 15th Floor, New York, New York 10006), and for all other purposes, the office of the Trustee located in Boston, Massachusetts (which at the date of this Indenture is located at 2 Avenue de Lafayette, 6th Floor, Corporate Trust Department, Boston, Massachusetts 02111-1724).

"Corporation" means corporations, associations, limited liability companies, companies and business trusts.

"Current Market Price" has the meaning set forth in Section 12.4(g).

"Custodian" means any receiver, trustee, assignee, liquidator, sequestrator or similar official under any Bankruptcy Law.

"Default" means an event which is, or after notice or lapse of time or both would be, an Event of Default.

"Defaulted Interest" has the meaning specified in Section 2.17 hereof.

"Depositary" means The Depository Trust Company, its nominees and their respective successors.

"Designated Senior Debt" means Senior Debt of the Company which, at the date of determination, has an aggregate amount outstanding of, or under which, at the date of determination, the holders thereof are committed to lend up to, at least $20 million and is specifically designated in the instrument evidencing or governing that Senior Debt as "Designated Senior Debt" for purposes of this Indenture, provided that such instrument may place limitations and conditions on the right of such Senior Debt to exercise the rights of Designated Senior Debt.

"Dividend Yield" on any security for any period means the dividends paid or proposed to be paid pursuant to an announced dividend policy on such security for such period divided by, if with respect to dividends paid on such security, the average Closing Price of such security during such period and, if with respect to dividends proposed to be paid on such security, the Closing Price of such security on the effective date of the related Reset Transaction.

"Dollar," "U.S. Dollar" or "U.S. $" means a dollar or other equivalent unit in such coin or currency of the United States as at the time shall be legal tender for the payment of public and private debts.

"DTC Participants" has the meaning specified in Section 2.8 hereof.

"Event of Default" has the meaning specified in Section 4.1 hereof.

"Exchange Act" means the Securities Exchange Act of 1934, as amended.

"Expiration Time" has the meaning specified in Section 12.4(f) hereof.

"Fair market value" has the meaning set forth in Section 12.4(g) hereof.

"Global Security" has the meaning specified in Section 2.2 hereof.

"Guarantee" means any obligation, contingent or otherwise, of any Person, directly or indirectly guaranteeing any Indebtedness of any other Person and any obligation, direct or indirect, contingent or otherwise, of such Person:

(1) to purchase or pay (or advance or supply funds for the purchase or payment of) such Indebtedness of such other Person (whether arising by virtue of partnership arrangements, or by agreement to keep-well, to purchase assets, goods, securities or services, to take-or-pay, or maintain financial statement conditions or otherwise); or

(2) entered into for purposes of assuring in any other manner the obligee of such Indebtedness of the payment thereof or to protect such obligee against loss in respect thereof (in whole or in part);

provided, however, that the term "guarantee" will not include endorsements for collection or deposit in the ordinary course of business. The term "guarantee" used as a verb has a corresponding meaning.

"Holder," when used with respect to any Security, means the Person in whose name the Security is registered in the Register.

"Indebtedness," when used with respect to any Person, and without duplication means:

(1) all indebtedness, obligations and other liabilities (contingent or otherwise) of such Person for borrowed money (including obligations of the Company in respect of overdrafts, foreign exchange contracts, currency exchange agreements, Interest Rate Protection Agreements, and any loans or advances from banks, whether or not evidenced by notes or similar instruments) or evidenced by bonds, debentures, notes or other instruments for the payment of money, or incurred in connection with the acquisition of any property, services or assets (whether or not the recourse of the lender is to the whole of the assets of such Person or to only a portion thereof), other than any account payable or other accrued current liability or obligation to trade creditors incurred in the ordinary course of business in connection with the obtaining of materials or services;

(2) all reimbursement obligations and other liabilities (contingent or otherwise) of such Person with respect to letters of credit, bank guarantees, bankers' acceptances, surety bonds, performance bonds or other guaranty of contractual performance;

(3) all obligations and liabilities (contingent or otherwise) in respect of (a) leases of such Person required, in conformity with generally accepted accounting principles, to be accounted for as capitalized lease obligations on the balance sheet of such Person and (b) any lease or related documents (including a purchase agreement) in connection with the lease of real property which provides that such Person is contractually obligated to purchase or cause a third party to purchase the leased property and thereby guarantee a minimum residual value of the leased property to the landlord and the obligations of such Person under such lease or related document to purchase or to cause a third party to purchase the leased property;

(4) all obligations of such Person (contingent or otherwise) with respect to an interest rate or other swap, cap or collar agreement or other similar instrument or agreement or foreign currency hedge, exchange, purchase or similar instrument or agreement;

(5) all direct or indirect guaranties or similar agreements by such Person in respect of, and obligations or liabilities (contingent or otherwise) of such Person to purchase or otherwise acquire or otherwise assure a creditor against loss in respect of, indebtedness, obligations or liabilities of another Person of the kind described in clauses (1) through (4);

(6) any indebtedness or other obligations described in clauses (1) through (4) secured by any mortgage, pledge, lien or other encumbrance existing on property which is owned or held by such Person, regardless of whether the indebtedness or other obligation secured thereby shall have been assumed by such Person; and

(7) any and all deferrals, renewals, extensions, refinancings, replacements, restatements and refundings of, or amendments, modifications or supplements to, any indebtedness, obligation or liability of the kind described in clauses (1) through (6).

"Indenture" means this instrument as originally executed or as it may from time to time be supplemented or amended by one or more indentures supplemental hereto entered into pursuant to the applicable provisions hereof.

"Initial Purchasers" means Merrill Lynch & Co., Merrill Lynch, Pierce, Fenner & Smith Incorporated, Bear, Stearns & Co. Inc., Credit Suisse First Boston Corporation, FleetBoston Robertson Stephens Inc. and SG Cowen Securities Corporation.

"Interest Payment Date" means each March 14 and September 14.

"Interest Rate" means, (a) if a Reset Transaction has not occurred, 5% per annum, or (b) following the occurrence of a Reset Transaction, the Adjusted Interest Rate related to such Reset Transaction to, but not including the effective date of any succeeding Reset Transaction.

"Interest Rate Protection Agreement" means, with respect to any Person, any interest rate swap agreement, interest rate cap or collar agreement or other financial agreement or arrangement designed to protect such person against fluctuations in interest rates, as in effect from time to time.

"Internal Revenue Code" means the Internal Revenue Code of 1986, as amended.

"Liquidated Damages" means all liquidated damages, if any, payable pursuant to Section 3 of the Registration Rights Agreement.

"Maturity" means the date on which the principal of such Security becomes due and payable as therein or herein provided, whether at the Stated Maturity or by acceleration, conversion, call for redemption, exercise of a Repurchase Right or otherwise.

"Nasdaq National Market" means the National Association of Securities Dealers Automated Quotation National Market or any successor national securities exchange or automated over-the-counter trading market in the United States.

"Non-Electing Share" has the meaning specified in Section 12.11 hereof.

"Officer" of the Company means the Chief Executive Officer, the President, the Chief Business Officer, the Treasurer, any Vice President or the Clerk of the Company.

"Officers' Certificate" means a certificate signed by both (1) the Chief Executive Officer, the President or a Vice President and (2) so long as not the same as the officer signing pursuant to clause (1), the Chief Business Officer, the Treasurer or the Clerk of the Company, and delivered to the Trustee.

"Opinion of Counsel" means a written opinion of counsel, who may be counsel to the Company (and may include directors or employees of the Company) and which opinion is acceptable to the Trustee which acceptance shall not be unreasonably withheld.

"Outstanding," when used with respect to Securities, means, as of the date of determination, all Securities theretofore authenticated and delivered under this Indenture, except Securities:

(1) previously canceled by the Trustee or delivered to the Trustee for cancellation;

(2) for the payment or redemption of which money in the necessary amount has been previously deposited with the Trustee or any Paying Agent (other than the Company) in trust or set aside and segregated in trust by the Company (if the Company shall act as its own Paying Agent) for the Holders of such Securities, provided that if such Securities are to be redeemed, notice of such redemption has been duly given pursuant to this Indenture; and

(3) which have been paid, in exchange for or in lieu of which other Securities have been authenticated and delivered pursuant to this Indenture, other than any such Securities in respect of which there shall have been presented to the Trustee proof satisfactory to it that such Securities are held by a bona fide purchaser in whose hands such Securities are valid obligations of the Company.

"Paying Agent" has the meaning specified in Section 2.5 hereof.

"Payment Blockage Notice" has the meaning specified in Section 13.1(d) hereof.

"Person" means any individual, corporation, limited liability company, partnership, joint venture, association, joint-stock company, trust, estate, unincorporated organization or government or any agency or political subdivision thereof.

"Physical Securities" has the meaning specified in Section 2.2 hereof.

"Place of Conversion" means any city in which any Conversion Agent is located.

"Place of Payment" means any city in which any Paying Agent is located.

"Predecessor Security" of any particular Security means every previous Security evidencing all or a portion of the same debt as that evidenced by such particular Security; and, for the purposes of this definition, any Security authenticated and delivered under Section 2.12 hereof in exchange for or in lieu of a mutilated, destroyed, lost or stolen Security shall be deemed to evidence the same debt as the mutilated, destroyed, lost or stolen Security.

"Purchase Agreement" means the Purchase Agreement, dated March 8, 2000, between the Company and the Initial Purchasers.

"QIB" means a "qualified institutional buyer" as defined in Rule 144A.

"Quoted Price" of the Common Stock means the last reported sale price of the Common Stock on the Nasdaq National Market, or, if the Common Stock is listed on a

national securities exchange, then on such exchange, or if the Common Stock is not quoted on Nasdaq National Market or listed on an exchange, the average of the last bid and asked price on the National Association of Securities Dealers Automated Quotation System.

"Record Date" means either a Regular Record Date or a Special Record Date, as the case may be, provided that, for purposes of Section 12.4 hereof, Record Date has the meaning specified in Section 12.4(g) hereof.

"Redemption Date," when used with respect to any Security to be redeemed, means the Optional Redemption Date in the event of an Optional Redemption or the Provisional Redemption Date, in the event of a Provisional Redemption, as the case may be.

"Redemption Price," when used with respect to any Security to be redeemed, means the Optional Redemption Price, in the event of an Optional Redemption, or the Provisional Redemption Price, in the event of a Provisional Redemption, as the case may be.

"Reference Dealer" means a dealer engaged in the trading of convertible securities.

"Reference Period" has the meaning set forth in Section 12.4(d) hereof.

"Register" has the meaning specified in Section 2.5 hereof.

"Registrar" has the meaning specified in Section 2.5 hereof.

"Registration Rights Agreement" means the Resale Registration Rights Agreement dated March 14, 2000, between the Company and the Initial Purchasers.

"Regular Record Date" for the interest on the Securities (including Liquidated Damages, if any) payable means the March 1 (whether or not a Business Day) next preceding a March 14 Interest Payment Date and the September 1 (whether or not a Business Day) next preceding a September 14 Interest Payment Date.

"Repurchase Date" has the meaning specified in Section 11.1 hereof.

"Repurchase Price" has the meaning specified in Section 11.1 hereof.

"Repurchase Right" has the meaning specified in Section 11.1 hereof.

"Reset Transaction" means a merger, consolidation or statutory share exchange to which the entity that is the issuer of the shares of common stock into which the Securities are then convertible into is a party; a sale of all or substantially all the assets of that entity; a recapitalization of those shares of common stock; or a distribution described in Section 12.4(d) hereof; after the effective date of which transaction or distribution the Securities would be convertible into:

(1) shares of an entity the common stock of which had a Dividend Yield for the four fiscal quarters of such entity immediately preceding the public announcement of such transaction or distribution that was more than 2.5% higher than the Dividend Yield on the Common Stock (or other common stock then issuable upon conversion of the Securities) for the four fiscal quarters preceding the public announcement of such transaction or distribution; or

(2) shares of an entity that announces a dividend policy prior to the effective date of such transaction or distribution which policy, if implemented, would result in a Dividend Yield on such entity's common stock for the next four fiscal quarters that would result in such a 2.5% basis point increase.

"Responsible Officer," when used with respect to the Trustee, means any officer of the Trustee, including any vice president, assistant vice president, secretary, assistant secretary, the treasurer, any assistant treasurer, the managing director or any other officer of the Trustee customarily performing functions similar to those performed by any of the above designated officers and also means, with respect to a particular corporate trust matter, any other officer to whom such matter is referred because of such officer's knowledge of and familiarity with the particular subject.

"Restricted Securities" means the Securities defined as such in Section 2.3 hereof.

"Restricted Securities Legend" has the meaning set forth in Section 2.3(a) hereof.

"Rule 144" means Rule 144 as promulgated under the Securities Act (including any successor rule thereof), as the same may be amended from time to time.

"Rule 144A" means Rule 144A as promulgated under the Securities Act (including any successor rule thereof), as the same may be amended from time to time.

"SEC" means the Securities and Exchange Commission.

"Securities" has the meaning ascribed to it in the first paragraph under the caption "Recitals of the Company."

"Securities Act" means the Securities Act of 1933, as amended.

"Senior Debt" means the principal of, premium, if any, interest (including all interest accruing subsequent to the commencement of any bankruptcy or similar proceeding, whether or not a claim for post-petition interest is allowable as a claim in any such proceeding) and rent payable on or termination payment with respect to or in connection with, and all fees, costs, expenses and other amounts accrued or due on or in connection with, Indebtedness of the Company, whether outstanding on the date of this Indenture or subsequently created, incurred, assumed, guaranteed or in effect guaranteed by the Company (including all deferrals, renewals, extensions or refundings of, or amendments, modifications or supplements to, the foregoing), except for (a) any Indebtedness that by its terms expressly provides that such Indebtedness shall not be senior in right of payment to the Securities or expressly provides that such Indebtedness

is equal with or junior to the Securities and (b) any Indebtedness between or among the Company and/or any of its subsidiaries, a majority of the voting stock of which we directly or indirectly own, or any of the Company's Affiliates. The term "Senior Debt" shall include, without limitation, all Designated Senior Debt.

"Significant Subsidiary" means any Subsidiary which is a "significant subsidiary" within the meaning of Rule 405 under the Securities Act.

"Special Record Date" for the payment of any Defaulted Interest means a date fixed by the Trustee pursuant to Section 2.17 hereof.

"Stated Maturity" means the date specified in any Security as the fixed date for the payment of principal on such Security or on which an installment of interest (including Liquidated Damages, if any) on such Security is due and payable.

"Subsidiary" means a corporation more than 50% of the outstanding voting stock of which is owned, directly or indirectly, by the Company or by one or more other Subsidiaries, or by the Company and one or more other Subsidiaries. For the purposes of this definition only, "voting stock" means stock which ordinarily has voting power for the election of directors, whether at all times or only so long as no senior class of stock has such voting power by reason of any contingency.

"TIA" means the Trust Indenture Act of 1939 (15 U.S. Code Section 77aaa-77bbbb), as in effect on the date of this Indenture; provided, however, that in the event the TIA is amended after such date, "TIA" means, to the extent required by such amendment, the Trust Indenture Act of 1939, as so amended, or any successor statute.

"Trading Day" means:

(1) if the applicable security is listed or admitted for trading on the New York Stock Exchange or another national security exchange, a day on which the New York Stock Exchange or such other national security exchange is open for business;

(2) if the applicable security is quoted on the Nasdaq National Market, a day on which trades may be made thereon; or

(3) if the applicable security is not so listed, admitted for trading or quoted, any day other than a Saturday or Sunday or a day on which banking institutions in the State of New York are authorized or obligated by law or executive order to close.

"Trading Price" of a security on any date of determination means:

(1) the closing sale price (or, if no closing sale price is reported, the last reported sale price) of such security (regular way) on the New York Stock Exchange on such date;

(2) if such security is not listed for trading on the New York Stock Exchange on any such date, the closing sale price as reported in the composite transactions for the principal U.S. securities exchange on which such security is so listed;

(3) if such security is not so listed on a U.S. national or regional securities exchange, the closing sale price as reported by the Nasdaq National Market;

(4) if such security is not so reported, the last price quoted by Interactive Data Corporation for such security or, if Interactive Data Corporation is not quoting such price, a similar quotation service selected by the Company;

(5) if such security is not so quoted, the average of the mid-point of the last bid and ask prices for such security from at least two dealers recognized as market-makers for such security; or

(6) if such security is not so quoted, the average of the last bid and ask prices for such security from a Reference Dealer.

"Transfer Agent" means any Person, which may be the Company, authorized by the Company to exchange or register the transfer of Securities.

"Trigger Event" has the meaning specified in Section 12.4(d) hereof.

"Trustee" means the Person named as the "Trustee" in the first paragraph of this instrument until a successor Trustee shall have become such pursuant to the applicable provisions of this Indenture, and thereafter "Trustee" shall mean such successor Trustee.

"U.S. Government Obligations" means: (1) direct obligations of the United States of America for the payment of which the full faith and credit of the United States of America is pledged or (2) obligations of a person controlled or supervised by and acting as an agency or instrumentality of the United States of America, the payment of which is unconditionally guaranteed as a full faith and credit obligation by the United States of America and which in either case, are non-callable at the option of the issuer thereof.

"Vice President," when used with respect to the Company, means any vice president, whether or not designated by a number or a word or words added before or after the title "vice president."

SECTION 1.2 INCORPORATION BY REFERENCE OF TRUST INDENTURE ACT.

Whenever this Indenture refers to a provision of the TIA, the provision is incorporated by reference in and made a part of this Indenture.

The following TIA terms used in this Indenture have the following meanings:

"indenture securities" means the Securities;

"indenture security holder" means a Holder;

"indenture to be qualified" means this Indenture;

"indenture trustee" or "institutional trustee" means the Trustee; and

"obligor" on the Securities means the Company and any other obligor on the indenture securities.

All other TIA terms used in this Indenture that are defined by the TIA, defined by TIA reference to another statute or defined by SEC rule have the meanings assigned to them by such definitions.

SECTION 1.3 RULES OF CONSTRUCTION.

For all purposes of this Indenture, except as otherwise expressly provided or unless the context otherwise requires:

(1) the terms defined in this Article have the meanings assigned to them in this Article and include the plural as well as the singular;

(2) all accounting terms not otherwise defined herein have the meanings assigned to them in accordance with accounting principles generally accepted in the United States prevailing at the time of any relevant computation hereunder; and

(3) the words "herein," "hereof" and "hereunder" and other words of similar import refer to this Indenture as a whole and not to any particular Article, Section or other subdivision.

ARTICLE 2

THE SECURITIES

SECTION 2.1 TITLE AND TERMS.

The Securities shall be known and designated as the "5% Convertible Subordinated Notes due 2007" of the Company. The aggregate principal amount of Securities which may be authenticated and delivered under this Indenture is limited to $175,000,000 (or $201,250,000 if the over-allotment option set forth in Section 2 of the Purchase Agreement is exercised in full), except for securities authenticated and delivered upon registration of, transfer of, or in exchange for, or in lieu of other Securities pursuant to Section 2.7, 2.8, 2.9, 2.12, 7.5, 10.8, 11.1 or 12.2 hereof. The Securities shall be issuable in denominations of $1,000 or integral multiples thereof.

The Securities shall mature on March 14, 2007.

Interest shall accrue from March 14, 2000 at the Interest Rate until the principal thereof is paid or made available for payment. Interest shall be payable semiannually in arrears on March 14 and September 14 in each year, commencing September 14, 2000.

Interest on the Securities shall be computed (i) for any full semiannual period for which a particular Interest Rate is applicable on the basis of a 360-day year of twelve 30-day months and (ii) for any period for which a particular Interest Rate is applicable shorter than a full semiannual period for which interest is calculated, on the basis of a 30-day month and, for such periods of less than a month, the actual number of days elapsed over a 30-day month. For purposes of determining the Interest Rate, the Trustee may assume that a Reset Transaction has not occurred unless the Trustee has received an Officers' Certificate stating that a Reset Transaction has occurred and specifying the Adjusted Interest Rate then in effect.

A Holder of any Security at the close of business on a Regular Record Date shall be entitled to receive interest (including Liquidated Damages, if any) on such Security on the corresponding Interest Payment Date.

A Holder of any Security which is converted after the close of business on a Regular Record Date and prior to the corresponding Interest Payment Date (other than any Security whose Maturity is prior to such Interest Payment Date) shall be entitled to receive interest (including Liquidated Damages, if any) on the principal amount of such Security on such Interest Payment Date, notwithstanding the conversion of such Security prior to such Interest Payment Date. However, any such Holder which surrenders any such Security for conversion during the period between the close of business on such Regular Record Date and ending with the opening of business on the corresponding Interest Payment Date shall be required to pay the Company an amount equal to the interest (including Liquidated Damages, if any) on the principal amount of such Security so converted, which is payable by the Company to such Holder on such Interest Payment Date, at the time such Holder surrenders such Security for conversion. Notwithstanding the foregoing, any such Holder which surrenders for conversion any Security which has been called for redemption by the Company in a notice of redemption given by the Company pursuant to Section 10.5 hereof (whether the Redemption Date for such Security is on

such Interest Payment Date or otherwise) shall be entitled to receive (and retain) such interest (including Liquidated Damages, if any) and need not pay the Company an amount equal to the interest (including Liquidated Damages, if any) on the principal amount of such Security so converted at the time such Holder surrenders such Security for conversion.

Principal of, and premium, if any, and interest on, Global Securities shall be payable to the Depositary in immediately available funds.

Principal and premium, if any, on Physical Securities shall be payable at the office or agency of the Company maintained for such purpose, initially the Corporate Trust Office of the Trustee. Interest on Physical Securities will be payable by (i) U.S. Dollar check drawn on a bank located in the city where the Corporate Trust Office of the Trustee is located mailed to the address of the Person entitled thereto as such address shall appear in the Register, or (ii) upon application to the Registrar not later than the relevant Record Date by a Holder of an aggregate principal amount in excess of $5,000,000, wire transfer in immediately available funds.

The Securities shall be redeemable at the option of the Company as provided in Article 10 hereof.

The Securities shall have a Repurchase Right exercisable at the option of Holders as provided in Article 11 hereof.

The Securities shall be convertible as provided in Article 12 hereof.

The Securities shall be subordinated in right of payment to Senior Debt of the Company as provided in Article 13 hereof.

SECTION 2.2 FORM OF SECURITIES.

The Securities and the Trustee's certificate of authentication to be borne by such Securities shall be substantially in the form annexed hereto as Exhibit A, which is incorporated in and made a part of this Indenture. The terms and provisions contained in the form of Security shall constitute, and are hereby expressly made, a part of this Indenture and to the extent applicable, the Company and the Trustee, by their execution and delivery of this Indenture, expressly agree to such terms and provisions and to be bound thereby.

Any of the Securities may have such letters, numbers or other marks of identification and such notations, legends and endorsements as the officers executing the same may approve (execution thereof to be conclusive evidence of such approval) and as are not inconsistent with the provisions of this Indenture, or as may be required to comply with any law or with any rule or regulation made pursuant thereto or with any rule or regulation of any securities exchange or automated quotation system on which the Securities may be listed or designated for issuance, or to conform to usage.

The Securities will be offered and sold only to QIBs in reliance on Rule 144A and shall be issued initially only in the form of one or more permanent Global Securities (each, a "Global Security") in registered form without interest coupons. The Global Securities shall be:

(1) duly executed by the Company and authenticated by the Trustee as hereinafter provided;

(2) registered in the name of the Depositary (or its nominee) for credit to the respective accounts of the Holders at the Depositary; and

(3) deposited with the Trustee, as custodian for the Depositary.

The Global Securities shall be substantially in the form of Security set forth in Exhibit A annexed hereto (including the text and schedule called for by footnotes 1 and 2 thereto). The aggregate principal amount of the Global Securities may from time to time be increased or decreased by adjustments made on the records of the Trustee, as custodian for the Depositary (or its nominee), in accordance with the instructions given by the Holder thereof, as hereinafter provided.

Securities issued in exchange for interests in the Global Securities pursuant to Section 2.8(d) hereof shall be issued in the form of permanent definitive Securities (the "Physical Securities") in registered form without interest coupons. The Physical Securities shall be substantially in the form set forth in Exhibit A annexed hereto.

The Securities shall be typed, printed, lithographed or engraved or produced by any combination of these methods or may be produced in any other manner permitted by the rules of any securities exchange on which the Securities may be listed, all as determined by the Officers executing such Securities, as evidenced by their execution of such Securities.

SECTION 2.3 LEGENDS.

(a) RESTRICTED SECURITIES LEGENDS.

Each Security issued hereunder shall, upon issuance, bear the legend set forth in Section 2.3(a)(i) or Section 2.3(a)(ii) (each, a "Restricted Securities Legend"), as the case may be, and such legend shall not be removed except as provided in Section 2.3(a)(iii). Each Security that bears or is required to bear the Restricted Securities Legend set forth in Section 2.3(a)(i) (together with any Common Stock issued upon conversion of the Securities and required to bear the Restricted Securities Legend set forth in Section 2.3(a)(ii), collectively, the "Restricted Securities") shall be subject to the restrictions on transfer set forth in this Section 2.3(a) (including the Restricted Securities Legend set forth below), and the Holder of each such Restricted Security, by such Holder's acceptance thereof, shall be deemed to have agreed to be bound by all such restrictions on transfer.

As used in Section 2.3(a), the term "transfer" encompasses any sale, pledge, transfer or other disposition whatsoever of any Restricted Security.

(i) Restricted Securities Legend for Securities.

Except as provided in Section 2.3(a)(iii), until two years after the original issuance date of any Security, any certificate evidencing such Security (and all securities issued in exchange therefor or substitution thereof, other than Common Stock, if any, issued upon conversion

thereof which shall bear the legend set forth in Section 2.3(a)(ii), if applicable) shall bear a Restricted Securities Legend in substantially the following form:

THE NOTES EVIDENCED HEREBY HAVE NOT BEEN REGISTERED UNDER THE U.S. SECURITIES ACT OF 1933, AS AMENDED (THE "SECURITIES ACT"), OR ANY STATE SECURITIES LAWS, AND MAY NOT BE OFFERED OR SOLD EXCEPT AS SET FORTH IN THE FOLLOWING SENTENCE. BY ITS ACQUISITION HEREOF, THE HOLDER (1) REPRESENTS THAT IT IS A "QUALIFIED INSTITUTIONAL BUYER" (AS DEFINED IN RULE 144A UNDER THE SECURITIES ACT); (2) AGREES THAT IT WILL NOT WITHIN TWO YEARS AFTER THE ORIGINAL ISSUANCE OF THE NOTE EVIDENCED HEREBY RESELL OR OTHERWISE TRANSFER THE NOTE EVIDENCED HEREBY OR THE COMMON STOCK ISSUABLE UPON CONVERSION OF SUCH NOTE EXCEPT (A) TO THE COMPANY OR ANY SUBSIDIARY THEREOF, (B) TO A QUALIFIED INSTITUTIONAL BUYER IN COMPLIANCE WITH RULE 144A UNDER THE SECURITIES ACT, (C) PURSUANT TO THE EXEMPTION FROM REGISTRATION PROVIDED BY RULE 144 UNDER THE SECURITIES ACT (IF AVAILABLE) OR (D) PURSUANT TO A REGISTRATION STATEMENT WHICH HAS BEEN DECLARED EFFECTIVE UNDER THE SECURITIES ACT (AND WHICH CONTINUES TO BE EFFECTIVE AT THE TIME OF SUCH TRANSFER); AND (3) AGREES THAT IT WILL DELIVER TO EACH PERSON TO WHOM THE NOTE EVIDENCED HEREBY IS TRANSFERRED (OTHER THAN A TRANSFER PURSUANT TO CLAUSE 2(D) ABOVE) A NOTICE SUBSTANTIALLY TO THE EFFECT OF THIS LEGEND. IN CONNECTION WITH ANY TRANSFER OF THE NOTE EVIDENCED HEREBY WITHIN TWO YEARS AFTER THE ORIGINAL ISSUANCE OF SUCH NOTE (OTHER THAN A TRANSFER PURSUANT TO CLAUSE 2(D) ABOVE), THE HOLDER MUST CHECK THE APPROPRIATE BOX SET FORTH ON THE REVERSE HEREOF RELATING TO THE MANNER OF SUCH TRANSFER AND SUBMIT THIS CERTIFICATE TO STATE STREET BANK AND TRUST COMPANY, AS TRUSTEE (OR ANY SUCCESSOR TRUSTEE, AS APPLICABLE). IF THE PROPOSED TRANSFER IS PURSUANT TO CLAUSE 2(C) ABOVE, THE HOLDER MUST, PRIOR TO SUCH TRANSFER, FURNISH TO STATE STREET BANK AND TRUST COMPANY, AS TRUSTEE (OR ANY SUCCESSOR TRUSTEE, AS APPLICABLE), SUCH CERTIFICATIONS, LEGAL OPINIONS AND OTHER INFORMATION AS THE COMPANY MAY REASONABLY REQUIRE TO CONFIRM THAT SUCH TRANSFER IS BEING MADE PURSUANT TO AN EXEMPTION FROM, OR IN A TRANSACTION NOT SUBJECT TO, THE REGISTRATION REQUIREMENTS OF THE SECURITIES ACT, THIS LEGEND WILL BE REMOVED UPON THE EARLIER OF THE TRANSFER OF THIS NOTE EVIDENCED HEREBY PURSUANT TO CLAUSE 2(C) OR 2(D) ABOVE OR THE EXPIRATION OF TWO YEARS FROM THE ORIGINAL ISSUANCE OF THE NOTE EVIDENCED HEREBY.

(ii) Restricted Securities Legend for Common Stock Issued Upon Conversion of the Securities.

Until two years after the original issuance date of any Security, any stock certificate representing Common Stock issued upon conversion of such Security shall bear a Restricted Securities Legend in substantially the following form:

THE COMMON STOCK EVIDENCED HEREBY HAS NOT BEEN REGISTERED UNDER THE U.S. SECURITIES ACT OF 1933, AS AMENDED (THE "SECURITIES ACT"), OR ANY STATE SECURITIES LAWS, AND MAY NOT BE OFFERED OR SOLD EXCEPT AS SET FORTH IN THE FOLLOWING SENTENCE. THE HOLDER HEREOF AGREES THAT UNTIL THE EXPIRATION OF TWO YEARS AFTER THE ORIGINAL ISSUANCE OF THE NOTE UPON THE CONVERSION OF WHICH THE COMMON STOCK EVIDENCED HEREBY WAS ISSUED, (1) IT WILL NOT RESELL OR OTHERWISE TRANSFER THE COMMON STOCK EVIDENCED HEREBY EXCEPT (A) TO THE COMPANY OR ANY SUBSIDIARY THEREOF, (B) TO A "QUALIFIED INSTITUTIONAL BUYER" (AS DEFINED IN RULE 144A UNDER THE SECURITIES ACT) IN COMPLIANCE WITH RULE 144A, (C) IN ACCORDANCE WITH THE EXEMPTION FROM REGISTRATION PROVIDED BY RULE 144 UNDER THE SECURITIES ACT OR (D) IN ACCORDANCE WITH A REGISTRATION STATEMENT THAT HAS BEEN DECLARED EFFECTIVE UNDER THE SECURITIES ACT AND THAT CONTINUES TO BE EFFECTIVE AT THE TIME OF SUCH TRANSFER; (2) PRIOR TO ANY SUCH TRANSFER (OTHER THAN A TRANSFER PURSUANT TO CLAUSE 1(D) ABOVE), IT WILL FURNISH TO EQUISERVE LIMITED PARTNERSHIP, AS TRANSFER AGENT (OR ANY SUCCESSOR, AS APPLICABLE), SUCH CERTIFICATIONS, LEGAL OPINIONS AND OTHER INFORMATION AS THE COMPANY MAY REASONABLY REQUIRE TO CONFIRM THAT SUCH TRANSFER IS BEING MADE PURSUANT TO AN EXEMPTION FROM, OR IN A TRANSACTION NOT SUBJECT TO, THE REGISTRATION REQUIREMENTS OF THE SECURITIES ACT; AND (3) IT WILL DELIVER TO EACH PERSON TO WHOM THE COMMON STOCK EVIDENCED HEREBY IS TRANSFERRED (OTHER THAN A TRANSFER PURSUANT TO CLAUSE (D) ABOVE) A NOTICE SUBSTANTIALLY TO THE EFFECT OF THIS LEGEND. THIS LEGEND WILL BE REMOVED UPON THE EARLIER OF THE TRANSFER OF THE COMMON STOCK EVIDENCED HEREBY PURSUANT TO CLAUSE (C) OR (D) ABOVE OR THE EXPIRATION OF TWO YEARS FROM THE ORIGINAL ISSUANCE OF THE NOTE UPON THE CONVERSION OF WHICH THE COMMON STOCK EVIDENCED HEREBY WAS ISSUED.

(iii) Removal of the Restricted Securities Legends.

Each Security or share of Common Stock issued upon conversion of such Security shall bear the Restricted Securities Legend set forth in Section 2.3(a)(i) or 2.3(a)(ii), as the case may be, until the earlier of:

(A) two years after the original issuance date of such Security;

(B) such Security or Common Stock has been sold pursuant to a registration statement that has been declared effective under the Securities Act (and which continues to be effective at the time of such sale); or

(C) such Common Stock has been issued upon conversion of Securities that have been sold pursuant to a registration statement that has been declared effective under the Securities Act (and which continues to be effective at the time of such sale).

The Holder must give notice thereof to the Trustee and any transfer agent for the Common Stock, as applicable.

Notwithstanding the foregoing, the Restricted Securities Legend may be removed if there is delivered to the Company such satisfactory evidence, which may include an opinion of independent counsel, as may be reasonably required by the Company that neither such legend nor the restrictions on transfer set forth therein are required to ensure that transfers of such Security will not violate the registration requirements of the Securities Act. Upon provision of such satisfactory evidence, the Trustee, at the written direction of the Company, shall authenticate and deliver in exchange for such Securities another Security or Securities having an equal aggregate principal amount that does not bear such legend. If the Restricted Securities Legend has been removed from a Security as provided above, no other Security issued in exchange for all or any part of such Security shall bear such legend, unless the Company has reasonable cause to believe that such other Security is a "restricted security" within the meaning of Rule 144 and instructs the Trustee in writing to cause a Restricted Securities Legend to appear thereon.

Any Security (or security issued in exchange or substitution thereof) as to which such restrictions on transfer shall have expired in accordance with their terms or as to which the conditions for removal of the Restricted Securities Legend set forth in Section 2.3(a)(i) as set forth therein have been satisfied may, upon surrender of such Security for exchange to the Registrar in accordance with the provisions of Section 2.7 hereof, be exchanged for a new Security or Securities, of like tenor and aggregate principal amount, which shall not bear the Restricted Securities Legend required by Section 2.3(a)(i).

Any such Common Stock as to which such restrictions on transfer shall have expired in accordance with their terms or as to which the conditions for removal of the Restricted Securities Legend set forth in Section 2.3(a)(ii) as set forth therein have been satisfied may, upon surrender of the certificates representing such shares of Common Stock for exchange in accordance with the procedures of the transfer agent for the Common Stock, be exchanged for a new certificate or certificates for a like aggregate number of shares of Common Stock, which shall not bear the Restricted Securities Legend required by Section 2.3(a)(ii).

(b) GLOBAL SECURITY LEGEND.

Each Global Security shall also bear the following legend on the face thereof:

UNLESS THIS CERTIFICATE IS PRESENTED BY AN AUTHORIZED REPRESENTATIVE OF THE DEPOSITORY TRUST COMPANY ("DTC") TO VERTEX PHARMACEUTICALS INCORPORATED (OR ITS SUCCESSOR) OR ITS AGENT FOR REGISTRATION OF TRANSFER, EXCHANGE, CONVERSION OR PAYMENT, AND ANY CERTIFICATE ISSUED IS REGISTERED IN THE NAME OF CEDE & CO. OR IN SUCH OTHER ENTITY

AS IS REQUESTED BY AN AUTHORIZED REPRESENTATIVE OF DTC (AND ANY PAYMENT HEREON IS MADE TO CEDE & CO. OR TO SUCH OTHER ENTITY AS IS REQUESTED BY AN AUTHORIZED REPRESENTATIVE OF DTC), ANY TRANSFER, PLEDGE OR OTHER USE HEREOF FOR VALUE OR OTHERWISE BY OR TO ANY PERSON IS WRONGFUL SINCE THE REGISTERED OWNER HEREOF, CEDE & CO., HAS AN INTEREST HEREIN.

SECTION 2.4 EXECUTION, AUTHENTICATION, DELIVERY AND DATING.

Two Officers shall execute the Securities on behalf of the Company by manual or facsimile signature. If an Officer whose signature is on a Security no longer holds that office at the time the Security is authenticated, the Security shall be valid nevertheless.

At any time and from time to time after the execution and delivery of this Indenture, the Company may deliver Securities executed by the Company to the Trustee for authentication, together with a Company Order for the authentication and delivery of such Securities, and the Trustee in accordance with such Company Order shall authenticate and deliver such Securities as in this Indenture provided and not otherwise.

Each Security shall be dated the date of its authentication.

No Security shall be entitled to any benefit under this Indenture, or be valid or obligatory for any purpose, unless there appears on such Security a certificate of authentication substantially in the form provided for herein executed by or on behalf of the Trustee by manual signature, and such certificate upon any Security shall be conclusive evidence, and the only evidence, that such Security has been duly authenticated and delivered hereunder.

The Trustee may appoint an authenticating agent or agents reasonably acceptable to the Company with respect to the Securities. Unless limited by the terms of such appointment, an authenticating agent may authenticate Securities whenever the Trustee may do so. Each reference in this Indenture to authentication by the Trustee includes authentication by such agent.

SECTION 2.5 REGISTRAR AND PAYING AGENT.

The Company shall maintain an office or agency where Securities may be presented for registration of transfer or for exchange (the "Registrar") and an office or agency where Securities may be presented for payment (the "Paying Agent"). The Registrar shall keep a register of the Securities (the "Register") and of their transfer and exchange. The Company may appoint one or more co-Registrars and one or more additional Paying Agents for the Securities. The term "Paying Agent" includes any additional paying agent and the term "Registrar" includes any additional registrar. The Company may change any Paying Agent or Registrar without prior notice to any Holder.

The Company will cause each Paying Agent (other than the Trustee) to execute and deliver to the Trustee an instrument in which such Paying Agent shall agree with the Trustee, subject to the provisions of this Section, that such Paying Agent will:

(1) hold all sums held by it for the payment of the principal of and premium, if any, or interest (including Liquidated Damages, if any) on Securities in trust for the benefit of the Persons entitled thereto until such sums shall be paid to such Persons or otherwise disposed of as provided in this Indenture;

(2) give the Trustee notice of any Default by the Company in the making of any payment of principal and premium, if any, or interest (including Liquidated Damages, if any); and

(3) at any time during the continuance of any such Default, upon the written request of the Trustee, forthwith pay to the Trustee all sums so held in trust by such Paying Agent.

The Company shall give prompt written notice to the Trustee of the name and address of any Agent who is not a party to this Indenture. If the Company fails to appoint or maintain another entity as Registrar or Paying Agent, the Trustee shall act as such. The Company or any Affiliate of the Company may act as Paying Agent or Registrar; provided, however, that none of the Company, its subsidiaries or the Affiliates of the foregoing shall act:

(i) as Paying Agent in connection with redemptions, offers to purchase and discharges, as otherwise specified in this Indenture, and

(ii) as Paying Agent or Registrar if a Default or Event of Default has occurred and is continuing.

The Company hereby initially appoints the Trustee as Registrar and Paying Agent for the Securities.

SECTION 2.6 PAYING AGENT TO HOLD ASSETS IN TRUST.

Not later than 11:00 a.m. (New York City time) on each due date of the principal, premium, if any, and interest (including Liquidated Damages, if any) on any Securities, the Company shall deposit with one or more Paying Agents money in immediately available funds sufficient to pay such principal, premium, if any, and interest (including Liquidated Damages, if any) so becoming due. The Company at any time may require a Paying Agent to pay all money held by it to the Trustee. Upon payment over to the Trustee, the Paying Agent (if other than the Company) shall have no further liability for the money so paid over to the Trustee.

If the Company shall act as a Paying Agent, it shall, prior to or on each due date of the principal of and premium, if any, or interest (including Liquidated Damages, if any) on any of the Securities, segregate and hold in trust for the benefit of the Holders a sum sufficient with monies held by all other Paying Agents, to pay the principal and premium, if any, or interest (including Liquidated Damages, if any) so becoming due until such sums shall be paid to such Persons or otherwise disposed of as provided in this Indenture, and shall promptly notify the Trustee of its action or failure to act.

SECTION 2.7 GENERAL PROVISIONS RELATING TO TRANSFER AND EXCHANGE.

The Securities are issuable only in registered form. A Holder may transfer a Security only by written application to the Registrar stating the name of the proposed transferee and otherwise complying with the terms of this Indenture. No such transfer shall be effected until, and such transferee shall succeed to the rights of a Holder only upon, final acceptance and registration of the transfer by the Registrar in the Register. Furthermore, any Holder of a Global Security shall, by acceptance of such Global Security, agree that transfers of beneficial interests in such Global Security may be effected only through a book-entry system maintained by the Holder of such Global Security (or its agent) and that ownership of a beneficial interest in the Security shall be required to be reflected in a book-entry. Notwithstanding the foregoing, in the case of a Restricted Security, a beneficial interest in a Global Security being transferred in reliance on an exemption from the registration requirements of the Securities Act other than in accordance with Rule 144 and Rule 144A may only be transferred for a Physical Security.

When Securities are presented to the Registrar with a request to register the transfer or to exchange them for an equal aggregate principal amount of Securities of other authorized denominations, the Registrar shall register the transfer or make the exchange as requested if its requirements for such transactions are met (including that such Securities are duly endorsed or accompanied by a written instrument of transfer duly executed by the Holder thereof or by an attorney who is authorized in writing to act on behalf of the Holder). Subject to Section 2.4 hereof, to permit registrations of transfers and exchanges, the Company shall execute and the Trustee shall authenticate Securities at the Registrar's request. No service charge shall be made for any registration of transfer or exchange or redemption of the Securities, but the Company may require payment of a sum sufficient to cover any transfer tax or similar governmental charge payable in connection therewith (other than any such transfer taxes or other similar governmental charge payable upon exchanges pursuant to Section 2.14, 7.5 or 10.8 hereof).

Neither the Company nor the Registrar shall be required to exchange or register a transfer of any Securities:

(1) for a period of 15 Business Days prior to the day of any selection of Securities for redemption under Article 10 hereof;

(2) so selected for redemption or, if a portion of any Security is selected for redemption, such portion thereof selected for redemption; or

(3) surrendered for conversion or, if a portion of any Security is surrendered for conversion, such portion thereof surrendered for conversion.

SECTION 2.8 BOOK-ENTRY PROVISIONS FOR THE GLOBAL SECURITIES.

(a) The Global Securities initially shall:

(i) be registered in the name of the Depositary (or a nominee thereof);

(ii) be delivered to the Trustee as custodian for such Depositary; and

(iii) bear the Restricted Securities Legend as set forth in Section 2.3(a)(i) hereof.

Members of, or participants in, the Depositary ("DTC Participants") shall have no rights under this Indenture with respect to any Global Security held on their behalf by the Depositary, or the Trustee as its custodian, or under such Global Security, and the Depositary may be treated by the Company, the Trustee and any agent of the Company or the Trustee as the absolute owner of such Global Security for all purposes whatsoever. Notwithstanding the foregoing, nothing contained herein shall prevent the Company, the Trustee or any agent of the Company or Trustee from giving effect to any written certification, proxy or other authorization furnished by the Depositary or impair, as between the Depositary and the DTC Participants, the operation of customary practices governing the exercise of the rights of a Holder of any Security.

(b) The registered Holder of a Global Security may grant proxies and otherwise authorize any Person, including DTC Participants and Persons that may hold interests through DTC Participants, to take any action which a Holder is entitled to take under this Indenture or the Securities.

(c) A Global Security may not be transferred, in whole or in part, to any Person other than the Depositary (or a nominee thereof), and no such transfer to any such other Person may be registered. Beneficial interests in a Global Security may be transferred in accordance with the rules and procedures of the Depositary and the provisions of Section 2.9 hereof.

(d) If at any time:

(i) the Depositary notifies the Company in writing that it is no longer willing or able to continue to act as Depositary for the Global Securities, or the Depositary ceases to be a "clearing agency" registered under the Exchange Act, and a successor depositary for the Global Securities is not appointed by the Company within 90 days of such notice or cessation;

(ii) the Company, at its option, notifies the Trustee in writing that it elects to cause the issuance of the Securities in definitive form under this Indenture in exchange for all or any part of the Securities represented by a Global Security or Global Securities; or

(iii) an Event of Default has occurred and is continuing and the Registrar has received a request from the Depositary for the issuance of Physical Securities in exchange for such Global Security or Global Securities,

the Depositary shall surrender such Global Security or Global Securities to the Trustee for cancellation and the Company shall execute, and the Trustee, upon receipt of an Officers' Certificate and Company Order for the authentication and delivery of Securities, shall authenticate and deliver in exchange for such Global Security or Global Securities, Physical Securities of like tenor as that of the Global Securities in an aggregate principal amount equal to the aggregate principal amount of such Global Security or Global Securities. Such Physical Securities shall be registered in such names as the Depositary shall identify in writing as the beneficial owners of the Securities represented by such Global Security or Global Securities (or any nominees thereof).

Notwithstanding the foregoing, in connection with any transfer of beneficial interests in a Global Security to beneficial owners pursuant to Section 2.8(d) hereof, the Registrar shall reflect on its books and records the date and a decrease in the principal amount of such Global Security in an amount equal to the principal amount of the beneficial interest in such Global Security to be transferred.

SECTION 2.9 SPECIAL TRANSFER PROVISIONS.

Unless a Security is transferred after the time period referred to in Rule 144(k) under the Securities Act or otherwise sold pursuant to a registration statement that has been declared effective under the Securities Act (and which continues to be effective at the time of such sale), the following provisions shall apply.

With respect to the registration of any proposed transfer of Securities to a QIB:

If the Securities to be transferred consist of an interest in the Global Securities, the transfer of such interest may be effected only through the book-entry system maintained by the Depositary.

If the Securities to be transferred consist of Physical Securities, the Registrar shall register the transfer if such transfer is being made by a proposed transferor who has checked the box provided for on the form of Security stating, or has otherwise advised the Company and the Registrar in writing, that the sale has been made in compliance with the provisions of Rule 144A to a transferee who has signed the certification provided for on the form of Security stating or has otherwise advised the Company and the Registrar in writing that:

(A) it is purchasing the Securities for its own account or an account with respect to which it exercises sole investment discretion, in each case for investment and not with a view to distribution;

(B) it and any such account is a QIB within the meaning of Rule 144A;

(C) it is aware that the sale to it is being made in reliance on Rule 144A;

(D) it acknowledges that it has received such information regarding the Company as it has requested pursuant to Rule 144A or has determined not to request such information; and

(E) it is aware that the transferor is relying upon its foregoing representations in order to claim the exemption from registration provided by Rule 144A.

In addition, the Registrar shall reflect on its books and records the date and an increase in the principal amount of the Global Securities in an amount equal to the principal amount of the

Physical Securities to be transferred, and the Trustee shall cancel the Physical Securities so transferred.

By its acceptance of any Security bearing the Restricted Securities Legend, each Holder of such a Security acknowledges the restrictions on transfer of such Security set forth in this Indenture and agrees that it will transfer such Security only as provided in this Indenture. The Registrar shall not register a transfer of any Security unless such transfer complies with the restrictions on transfer of such Security set forth in this Indenture. The Registrar shall be entitled to receive and rely on written instructions from the Company verifying that such transfer complies with such restrictions on transfer. In connection with any transfer of Securities, each Holder agrees by its acceptance of the Securities to furnish the Registrar or the Company such certifications, legal opinions or other information as either of them may reasonably require to confirm that such transfer is being made pursuant to an exemption from, or a transaction not subject to, the registration requirements of the Securities Act; provided that the Registrar shall not be required to determine (but may rely on a determination made by the Company with respect to) the sufficiency of any such certifications, legal opinions or other information.

The Registrar shall retain copies of all letters, notices and other written communications received pursuant to Section 2.8 hereof or this Section 2.9. The Company shall have the right to inspect and make copies of all such letters, notices or other written communications at any reasonable time upon the giving of reasonable written notice to the Registrar.

SECTION 2.10 HOLDER LISTS.

The Trustee shall preserve in as current a form as is reasonably practicable the most recent list available to it of the names and addresses of Holders and shall otherwise comply with Section 312(a) of the TIA. If the Trustee is not the Registrar, the Company shall furnish to the Trustee prior to or on each Interest Payment Date and at such other times as the Trustee may request in writing a list in such form and as of such date as the Trustee may reasonably require of the names and addresses of Holders relating to such Interest Payment Date or request, as the case may be.

SECTION 2.11 PERSONS DEEMED OWNERS.

The Company, the Trustee and any agent of the Company or the Trustee may treat the registered Holder of a Global Security as the absolute owner of such Global Security for the purpose of receiving payment thereof or on account thereof and for all other purposes whatsoever, whether or not such Security be overdue, and notwithstanding any notice of ownership or writing thereon, or any notice of previous loss or theft or other interest therein. The Company, the Trustee and any agent of the Company or the Trustee may treat the Person in whose name any Security is registered as the owner of such Security for the purpose of receiving payment of principal of and premium, if any, and interest (including Liquidated Damages, if any) on such Security and for all other purposes whatsoever, whether or not such Security be overdue, and notwithstanding any notice of ownership or writing thereon, or any notice of previous loss or theft or other interest therein.

SECTION 2.12 MUTILATED, DESTROYED, LOST OR STOLEN SECURITIES.

If any mutilated Security is surrendered to the Trustee, the Company shall execute and the Trustee shall authenticate and deliver in exchange therefor a new Security of like tenor and principal amount and bearing a number not contemporaneously outstanding.

If there is delivered to the Company and the Trustee

(1) evidence to their satisfaction of the destruction, loss or theft of any Security, and

(2) such security or indemnity as may be required by them to save each of them and any agent of either of them harmless, then, in the absence of notice to the Company or the Trustee that such Security has been acquired by a bona fide purchaser, the Company shall execute and, upon request, the Trustee shall authenticate and deliver, in lieu of any such destroyed, lost or stolen Security, a new Security of like tenor and principal amount and bearing a number not contemporaneously outstanding.

In case any such mutilated, destroyed, lost or stolen Security has become or is about to become due and payable, the Company in its discretion, but subject to any conversion rights, may, instead of issuing a new Security, pay such Security, upon satisfaction of the condition set forth in the preceding paragraph.

Upon the issuance of any new Security under this Section, the Company may require the payment of a sum sufficient to cover any tax or other governmental charge that may be imposed in relation thereto and any other expenses (including the fees and expenses of the Trustee) connected therewith.

Every new Security issued pursuant to this Section in lieu of any destroyed, lost or stolen Security shall constitute an original additional contractual obligation of the Company, whether or not the destroyed, lost or stolen Security shall be at any time enforceable by anyone, and such new Security shall be entitled to all the benefits of this Indenture equally and proportionately with any and all other Securities duly issued hereunder.

The provisions of this Section are exclusive and shall preclude (to the extent lawful) all other rights and remedies with respect to the replacement or payment of mutilated, destroyed, lost or stolen Securities.

SECTION 2.13 TREASURY SECURITIES.

In determining whether the Holders of the requisite principal amount of Outstanding Securities are present at a meeting of Holders for quorum purposes or have given any request, demand, authorization, direction, notice, consent or waiver hereunder, Securities owned by the Company or any Affiliate of the Company shall be disregarded and deemed not to be Outstanding, except that, in determining whether the Trustee shall be protected in relying upon any such determination as to the presence of a quorum or upon any such request, demand, authorization, direction, notice, consent or waiver, only such Securities of which the Trustee has received written notice and are so owned shall be so disregarded.

SECTION 2.14 TEMPORARY SECURITIES.

Pending the preparation of Securities in definitive form, the Company may execute and the Trustee shall, upon written request of the Company, authenticate and deliver temporary Securities (printed or lithographed). Temporary Securities shall be issuable in any authorized denomination, and substantially in the form of the Securities in definitive form but with such omissions, insertions and variations as may be appropriate for temporary Securities, all as may be determined by the Company. Every such temporary Security shall be executed by the Company and authenticated by the Trustee upon the same conditions and in substantially the same manner, and with the same effect, as the Securities in definitive form. Without unreasonable delay, the Company will execute and deliver to the Trustee Securities in definitive form (other than in the case of Securities in global form) and thereupon any or all temporary Securities (other than any such Securities in global form) may be surrendered in exchange therefor, at each office or agency maintained by the Company pursuant to Section 9.2 and the Trustee shall authenticate and deliver in exchange for such temporary Securities an equal aggregate principal amount of Securities in definitive form. Such exchange shall be made by the Company at its own expense and without any charge therefor. Until so exchanged, the temporary Securities shall in all respects be entitled to the same benefits and subject to the same limitations under this Indenture as Securities in definitive form authenticated and delivered hereunder.

SECTION 2.15 CANCELLATION.

All securities surrendered for payment, redemption, repurchase, conversion, registration of transfer or exchange shall, if surrendered to any Person other than the Trustee, be delivered to the Trustee. All Securities so delivered shall be canceled promptly by the Trustee, and no Securities shall be issued in lieu thereof except as expressly permitted by any of the provisions of this Indenture. Upon written instructions of the Company, the Trustee shall destroy canceled Securities and, after such destruction, shall deliver a certificate of such destruction to the Company. If the Company shall acquire any of the Securities, such acquisition shall not operate as a redemption or satisfaction of the indebtedness represented by such Securities unless the same are delivered to the Trustee for cancellation.

SECTION 2.16 CUSIP NUMBERS.

The Company in issuing the Securities may use "CUSIP" numbers (if then generally in use), and the Trustee shall use CUSIP numbers in notices of redemption or exchange as a convenience to Holders; provided that any such notice shall state that no representation is made as to the correctness of such numbers either as printed on the Securities or as contained in any such notice and that reliance may be placed only on the other identification numbers printed on the Securities, and any such redemption shall not be affected by any defect in or omission of such numbers. The Company shall promptly notify the Trustee of any change in the CUSIP numbers.

SECTION 2.17 DEFAULTED INTEREST.

If the Company fails to make a payment of interest (including Liquidated Damages, if any) on any Security when due and payable ("Defaulted Interest"), it shall pay such Defaulted Interest plus (to the extent lawful) any interest payable on the Defaulted Interest, in any lawful manner. It may elect to pay such Defaulted Interest, plus any such interest payable on it, to the Persons who are Holders of such Securities on which the interest is due on a subsequent Special Record Date. The Company shall notify the Trustee in writing of the amount of Defaulted Interest proposed to be paid on each such Security. The Company shall fix any such Special Record Date and payment date for such payment. At least 15 days before any such Special Record Date, the Company shall mail to Holders affected thereby a notice that states the Special Record Date, the Interest Payment Date, and amount of such interest (and such Liquidated Damages, if any) to be paid.

ARTICLE 3

SATISFACTION AND DISCHARGE

SECTION 3.1 SATISFACTION AND DISCHARGE OF INDENTURE.

When:

(1) The Company shall deliver to the Trustee for cancellation all securities previously authenticated (other than any securities which have been destroyed, lost or stolen and in lieu of, or in substitution for which, other securities shall have been authenticated and delivered) and not previously canceled, or

(2) (A) all the securities not previously canceled or delivered to the Trustee for cancellation shall have become due and payable, or are by their terms to become due and payable within one year or are to be called for redemption within one year under arrangements satisfactory to the Trustee for the giving of notice of redemption,

(B) the Company shall deposit with the Trustee, in trust, cash in U.S. dollars and/or U.S. Government Obligations which through the payment of interest and principal in respect thereof, in accordance with their terms, will provide (and without reinvestment and assuming no tax liability will be imposed on such Trustee), not later than one day before the due date of any payment of money, an amount in cash, sufficient, in the opinion of a nationally recognized firm of independent public accountants expressed in a written certification thereof delivered to the Trustee, to pay principal of, premium, if any, or interest (including Liquidated Damages, if any) on all of the Securities (other than any Securities which shall have been mutilated, destroyed, lost or stolen and in lieu of or in substitution for which other Securities shall have been authenticated and delivered) not previously canceled or delivered to the Trustee for cancellation, on the dates such payments of principal, premium, if any, or interest (including Liquidated Damages, if any) are due to such date of maturity or redemption, as the case may be, and

(C) the Company shall have delivered to the Trustee an Officers' Certificate and an Opinion of Counsel to the effect that (x) the Company has received from, or there has been published by, the Internal Revenue Service a ruling or (y) since the date of execution of this Indenture, there has been a change in the applicable federal income tax law, in the case of either clause (x) or (y) to the effect that, and based thereon such Opinion of Counsel shall confirm that, the Holders will not recognize income, gain or loss for federal income tax purposes as a result of such deposit and discharge and will be subject to federal income tax on the same amount and in the same manner and at the same times as would have been the case if such deposit and discharge had not occurred, and

if, in the case of either clause (1) or (2), the Company shall also pay or cause to be paid all other sums payable hereunder by the Company, then this Indenture shall cease to be of further effect (except as to:

(II) remaining rights of registration of transfer, substitution and exchange and conversion of Securities,

(III) rights hereunder of Holders to receive payments of principal of and premium, if any, and interest (including Liquidated Damages, if any) on, the Securities and the other rights, duties and obligations of Holders, as beneficiaries hereof with respect to the amounts, if any, so deposited with the Trustee, and

(IV) the rights, obligations and immunities of the Trustee hereunder),

and the Trustee, on demand of the Company accompanied by an Officers' Certificate and an Opinion of Counsel and at the cost and expense of the Company, shall execute proper instruments acknowledging satisfaction of and discharging this Indenture; provided, however, the Company shall reimburse the Trustee for all amounts due the Trustee under Section 5.8 hereof and for any costs or expenses thereafter reasonably and properly incurred by the Trustee and to compensate the Trustee for any services thereafter reasonably and properly rendered by the Trustee in connection with this Indenture or the Securities.

SECTION 3.2 DEPOSITED MONIES TO BE HELD IN TRUST.

Subject to Section 3.3 hereof, all monies deposited with the Trustee pursuant to Section 3.1 hereof shall be held in trust and applied by it to the payment, notwithstanding the provisions of Article 13 hereof, either directly or through any Paying Agent (including the Company if acting as its own Paying Agent), to the Holders of the particular Securities for the payment or redemption of which such monies have been deposited with the Trustee, of all sums due and to become due thereon for principal, premium, if any, and interest (including Liquidated Damages, if any). All monies deposited with the Trustee pursuant to Section 3.1 hereof (and held by it or any Paying Agent) for the payment of Securities subsequently converted shall be returned to the Company upon request of the Company.

SECTION 3.3 RETURN OF UNCLAIMED MONIES.

The Trustee and the Paying Agent shall pay to the Company any money held by them for the payment of principal or premium, if any, or interest (including Liquidated Damages, if any) that remains unclaimed for two years after the date upon which such payment shall have become due. After payment to the Company, Holders entitled to the money must look to the Company for payment as general creditors unless an applicable abandoned property law designates another Person, and all liability of the Trustee and such Paying Agent with respect to such money shall cease.

ARTICLE 4

DEFAULTS AND REMEDIES

SECTION 4.1 EVENTS OF DEFAULT.

An "Event of Default" with respect to the Securities occurs when any of the following occurs (whatever the reason for such Event of Default and whether it shall be occasioned by the provisions of Article 13 hereof or be voluntary or involuntary or be effected by operation of law or pursuant to any judgment, decree or order of any court or any order, rule or regulation of any administrative or governmental body):

(A) the Company defaults in the payment of the principal of or premium, if any, on any of the Securities when it becomes due and payable at Maturity, upon redemption or exercise of a Repurchase Right or otherwise, whether or not such payment is prohibited by Article 13 hereof; or

(B) the Company defaults in the payment of interest (including Liquidated Damages, if any) on any of the Securities when it becomes due and payable and such default continues for a period of 30 days, whether or not such payment is prohibited by Article 13 hereof; or

(C) the Company fails to deliver shares of Common Stock, together with cash instead of fractional shares, when those shares of Common Stock or cash instead of fractional shares are required to be delivered following conversion of a Security in accordance with Article 12, and that failure continues for 10 days; or

(D) the Company fails to perform or observe any other term, covenant or agreement contained in the Securities or this Indenture and the failure continues for a period of 60 days after written notice of such failure, requiring the Company to remedy the same, shall have been given to the Company by the Trustee or to the Company and the Trustee by the Holders of at least 25% in aggregate principal amount of the Outstanding Securities; or

(E) (i) the Company fails to make any payment by the end of the applicable grace period, if any, after the maturity of any Indebtedness for borrowed money in an amount in excess of $5,000,000 or (ii) there is an acceleration of any Indebtedness for borrowed money in an amount in excess of $5,000,000 because of a default with respect to such Indebtedness without such Indebtedness having been discharged or such acceleration having been cured, waived, rescinded or annulled, in the case of either (i) or (ii) above, for a period of 30 days after written notice to the Company by the Trustee or to the Company and the Trustee by Holders of at least 25% in aggregate principal amount of the Outstanding Securities; or

(F) the entry by a court having jurisdiction in the premises of (i) a decree or order for relief in respect of the Company in an involuntary case or proceeding under any applicable U.S. federal or state bankruptcy, insolvency, reorganization or other similar law or (ii) a decree or order adjudging the Company a bankrupt or insolvent, or approving as properly filed a petition seeking reorganization, arrangement, adjustment or composition of or in respect of the Company under any applicable U.S. federal or state law, or appointing a custodian, receiver, liquidator, assignee, trustee, sequestrator or other similar official of the Company or of any substantial part

of its property, or ordering the winding up or liquidation of its affairs, and the continuance of any such decree or order for relief or any such other decree or order unstayed and in effect for a period of 60 consecutive days; or

(G) the commencement by the Company of a voluntary case or proceeding under any applicable U.S. federal or state bankruptcy, insolvency, reorganization or other similar law or of any other case or proceeding to be adjudicated a bankrupt or insolvent, or the consent by the Company to the entry of a decree or order for relief in respect of the Company in an involuntary case or proceeding under any applicable U.S. federal or state bankruptcy, insolvency, reorganization or other similar law or to the commencement of any bankruptcy or insolvency case or proceeding against the Company, or the filing by the Company of a petition or answer or consent seeking reorganization or relief under any applicable U.S. federal or state law, or the consent by the Company to the filing of such petition or to the appointment of or the taking possession by a custodian, receiver, liquidator, assignee, trustee, sequestrator or other similar official of the Company or of any substantial part of its property, or the making by the Company of an assignment for the benefit of creditors, or the admission by the Company in writing of its inability to pay its debts generally as they become due, or the taking of corporate action by the Company expressly in furtherance of any such action.

SECTION 4.2 ACCELERATION OF MATURITY; RESCISSION AND ANNULMENT.

If an Event of Default with respect to Outstanding Securities (other than an Event of Default specified in Section 4.1(f) or 4.1(g) hereof) occurs and is continuing, the Trustee or the Holders of at least 25% in aggregate principal amount of the Outstanding Securities, by written notice to the Company, may declare due and payable 100% of the principal amount of all Outstanding Securities plus any accrued and unpaid interest to the date of payment. Upon a declaration of acceleration, such principal and accrued and unpaid interest to the date of payment shall be immediately due and payable.

If an Event of Default specified in Section 4.1(f) or 4.1(g) hereof occurs, all unpaid principal and accrued and unpaid interest (including Liquidated Damages, if any) on the Outstanding Securities shall become and be immediately due and payable, without any declaration or other act on the part of the Trustee or any Holder.

The Holders of a majority in aggregate principal amount of the Outstanding Securities by written notice to the Trustee may rescind and annul an acceleration and its consequences if:

(1) all existing Events of Default, other than the nonpayment of principal of or interest on the Securities which have become due solely because of the acceleration, have been remedied, cured or waived, and

(2) the rescission would not conflict with any judgment or decree of a court of competent jurisdiction;

provided, however, that in the event such declaration of acceleration has been made based on the existence of an Event of Default under Section 4.1(e) hereof and such Event of Default has been remedied, cured or waived in accordance with Section 4.1(e) hereof, then, without any further action by the Holders, such declaration of acceleration shall be rescinded automatically and the

consequences of such declaration shall be annulled. No such rescission or annulment shall affect any subsequent Default or impair any right consequent thereon.

SECTION 4.3 OTHER REMEDIES.

If an Event of Default with respect to Outstanding Securities occurs and is continuing, the Trustee may pursue any available remedy by proceeding at law or in equity to collect the payment of principal of or interest on the Securities or to enforce the performance of any provision of the Securities.

The Trustee may maintain a proceeding in which it may prosecute and enforce all rights of action and claims under this Indenture or the Securities, even if it does not possess any of the Securities or does not produce any of them in the proceeding.

SECTION 4.4 WAIVER OF PAST DEFAULTS.

The Holders, either (a) through the written consent of not less than a majority in aggregate principal amount of the Outstanding Securities or (b) by the adoption of a resolution, at a meeting of Holders of the Outstanding Securities at which a quorum is present, by the Holders of at least a majority in aggregate principal amount of the Outstanding Securities represented at such meeting, may, on behalf of the Holders of all of the Securities, waive an existing Default or Event of Default, except a Default or Event of Default:

(1) in the payment of the principal of or premium, if any, or interest (including Liquidated Damages, if any) on any Security (provided, however, that subject to Section 4.7 hereof, the Holders of a majority in aggregate principal amount of the Outstanding Securities may rescind an acceleration and its consequences, including any related payment default that resulted from such acceleration);

(2) in respect of the right to convert any Security in accordance with Article 12; or

(3) in respect of a covenant or provision hereof which, under Section 7.2 hereof, cannot be modified or amended without the consent of the Holders of each Outstanding Security affected.

Upon any such waiver, such Default shall cease to exist, and any Event of Default arising therefrom shall be deemed to have been cured, for every purpose of this Indenture; provided, however, that no such waiver shall extend to any subsequent or other Default or impair any right consequent thereon.

SECTION 4.5 CONTROL BY MAJORITY.

The Holders, either (a) through the written consent of not less than a majority in aggregate principal amount of the Outstanding Securities, or (b) by the adoption of a resolution, at a meeting of Holders of the Outstanding Securities at which a quorum is present, by the Holders of at least a majority in aggregate principal amount of the Outstanding Securities represented at such meeting, shall have the right to direct the time, method and place of

conducting any proceeding for any remedy available to the Trustee or exercising any trust or power conferred on the Trustee. However, the Trustee may refuse to follow any direction that:

(1) conflicts with any law or with this Indenture;

(2) the Trustee determines may be unduly prejudicial to the rights of the Holders not joining therein; or

(3) may expose the Trustee to personal liability.

The Trustee may take any other action deemed proper by the Trustee which is not inconsistent with such direction.

SECTION 4.6 LIMITATION ON SUIT.

No Holder of any Security shall have any right to pursue any remedy with respect to this indenture or the Securities (including, instituting any proceeding, judicial or otherwise, with respect to this Indenture or for the appointment of a receiver or trustee) unless:

(1) such Holder has previously given written notice to the Trustee of an Event of Default that is continuing;

(2) the Holders of at least 25% in aggregate principal amount of the Outstanding Securities shall have made written request to the Trustee to pursue the remedy;

(3) such Holder or Holders have offered to the Trustee indemnity satisfactory to it against any costs, expenses and liabilities incurred in complying with such request;

(4) the Trustee has failed to comply with the request for 60 days after its receipt of such notice, request and offer of indemnity; and

(5) during such 60-day period, no direction inconsistent with such written request has been given to the Trustee by the Holders of a majority in aggregate principal amount of the Outstanding Securities (or such amount as shall have acted at a meeting pursuant to the provisions of this Indenture);

provided, however, that no one or more of such Holders may use this Indenture to prejudice the rights of another Holder or to obtain preference or priority over another Holder.

SECTION 4.7 UNCONDITIONAL RIGHTS OF HOLDERS TO RECEIVE PAYMENT AND TO CONVERT.

Notwithstanding any other provision in this Indenture, the Holder of any Security shall have the right, which is absolute and unconditional, to receive payment of the principal of and premium, if any, and interest (including Liquidated Damages, if any) on such Security on the Stated Maturity expressed in such Security (or, in the case of redemption, on the Redemption Date, or in the case of the exercise of a Repurchase Right, on the Repurchase Date) and to

convert such Security in accordance with Article 12, and to bring suit for the enforcement of any such payment on or after such respective dates and right to convert, and such rights shall not be impaired or affected without the consent of such Holder.

SECTION 4.8 COLLECTION OF INDEBTEDNESS AND SUITS FOR ENFORCEMENT BY THE TRUSTEE.

The Company covenants that if:

(1) a Default or Event of Default is made in the payment of any interest (including Liquidated Damages, if any) on any Security when such interest (including Liquidated Damages, if any) becomes due and payable and such Default or Event of Default continues for a period of 30 days, or

(2) a Default or Event of Default is made in the payment of the principal of or premium, if any, on any Security at the Maturity thereof,

the Company shall, upon demand of the Trustee, pay to it, for the benefit of the Holders of such Securities, the whole amount then due and payable (as expressed therein or as a result of any acceleration effected pursuant to Section 4.2 hereof) on such Securities for principal and premium, if any, and interest (including Liquidated Damages, if any) and, to the extent that payment of such interest shall be legally enforceable, interest on any overdue principal and premium, if any, and on any overdue interest (including Liquidated Damages, if any), calculated using the Interest Rate, and, in addition thereto, such further amount as shall be sufficient to cover the costs and expenses of collection, including the reasonable compensation, expenses, disbursements and advances of the Trustee, its agents and counsel.

If the Company fails to pay such amounts forthwith upon such demand, the Trustee, in its own name and as trustee of an express trust, may institute a judicial proceeding for the collection of the sums so due and unpaid, may prosecute such proceeding to judgment or final decree and may enforce the same against the Company and collect the moneys adjudged or decreed to be payable in the manner provided by law out of the property of the Company, wherever situated.

If an Event of Default occurs and is continuing, the Trustee may in its discretion proceed to protect and enforce its rights and the rights of the Holders of Securities by such appropriate judicial proceedings as the Trustee shall deem most effectual to protect and enforce any such rights, whether for the specific enforcement of any covenant or agreement in this Indenture or in aid of the exercise of any power granted herein, or to enforce any other proper remedy.

SECTION 4.9 TRUSTEE MAY FILE PROOFS OF CLAIM.

In case of the pendency of any receivership, insolvency, liquidation, bankruptcy, reorganization, arrangement, adjustment, composition or other judicial proceeding relative to the Company or the property of the Company or its creditors, the Trustee (irrespective of whether the principal of the Securities shall then be due and payable as therein expressed or by declaration or otherwise and irrespective of whether the Trustee shall have made any demand on the Company for the payment of overdue principal or interest (including Liquidated Damages, if any)) shall be entitled and empowered, by intervention in such proceeding or otherwise,

(1) to file and prove a claim for the whole amount of principal and premium, if any, and interest (including Liquidated Damages, if any) owing and unpaid in respect of the Securities and to file such other papers or documents as may be necessary or advisable in order to have the claims of the Trustee (including any claim for the reasonable compensation, expenses, disbursements and advances of the Trustee, its agents and counsel) and of the Holders of Securities allowed in such judicial proceeding, and

(2) to collect and receive any moneys or other property payable or deliverable on any such claim and to distribute the same;

and any custodian, receiver, assignee, trustee, liquidator, sequestrator or other similar official in any such judicial proceedings is hereby authorized by each Holder of Securities to make such payments to the Trustee and, in the event that the Trustee shall consent to the making of such payments directly to the Holders of Securities, to pay to the Trustee any amount due to it for the reasonable compensation, expenses, disbursements and advances of the Trustee, its agents and counsel and any other amounts due the Trustee under Section 5.8.

Nothing contained herein shall be deemed to authorize the Trustee to authorize or consent to or accept, or adopt on behalf of any Holder of a Security, any plan of reorganization, arrangement, adjustment or composition affecting the Securities or the rights of any Holder thereof or to authorize the Trustee to vote in respect of the claim of any Holder of a Security in any such proceeding.

SECTION 4.10 RESTORATION OF RIGHTS AND REMEDIES.

If the Trustee or any Holder of a Security has instituted any proceeding to enforce any right or remedy under this Indenture and such proceeding has been discontinued or abandoned for any reason, or has been determined adversely to the Trustee or to such Holder, then and in every such case, subject to any determination in such proceeding, the Company, the Trustee and the Holders of Securities shall be restored severally and respectively to their former positions hereunder and thereafter all rights and remedies of the Trustee and the Holders shall continue as though no such proceeding had been instituted.

SECTION 4.11 RIGHTS AND REMEDIES CUMULATIVE.

Except as otherwise provided with respect to the replacement or payment of mutilated, destroyed, lost or stolen Securities in the last paragraph of Section 2.12, no right or remedy conferred in this Indenture upon or reserved to the Trustee or to the Holders of Securities is intended to be exclusive of any other right or remedy, and every right and remedy shall, to the extent permitted by law, be cumulative and in addition to every other right and remedy given hereunder or hereafter existing at law or in equity or otherwise. The assertion or employment of any right or remedy hereunder, or otherwise, shall not prevent the concurrent assertion or employment of any other appropriate right or remedy.

SECTION 4.12 DELAY OR OMISSION NOT WAIVER.

No delay or omission of the Trustee or of any Holder of any Security to exercise any right or remedy accruing upon any Event of Default shall impair any such right or remedy or constitute a waiver of any such Event of Default or any acquiescence therein. Every right and remedy given by this Article or by law to the Trustee or to the Holders of Securities may be exercised from time to time, and as often as may be deemed expedient, by the Trustee or by the Holders of Securities, as the case may be.

SECTION 4.13 APPLICATION OF MONEY COLLECTED.

Subject to Article 13, any money and property collected by the Trustee pursuant to this Article shall be applied in the following order, at the date or dates fixed by the Trustee and, in case of the distribution of such money and property on account of principal or premium, if any, or interest (including Liquidated Damages, if any), upon presentation of the Securities and the notation thereon of the payment if only partially paid and upon surrender thereof if fully paid:

FIRST: To the payment of all amounts due the Trustee;

SECOND: To the payment of the amounts then due and unpaid for principal of and premium, if any, and interest (including Liquidated Damages, if any) on the Securities and coupons in respect of which or for the benefit of which such money has been collected, ratably, without preference or priority of any kind, according to the amounts due and payable on such Securities for principal and premium, if any, and interest (including Liquidated Damages, if any), respectively; and

THIRD: Any remaining amounts shall be repaid to the Company.

SECTION 4.14 UNDERTAKING FOR COSTS.

All parties to this Indenture agree, and each Holder of any Security by such Holder's acceptance thereof shall be deemed to have agreed, that any court may in its discretion require, in any suit for the enforcement of any right or remedy under this Indenture, or in any suit against the Trustee for any action taken, suffered or omitted by it as Trustee, the filing by any party litigant in such suit of an undertaking to pay the costs of such suit, and that such court may in its discretion assess reasonable costs, including reasonable attorneys' fees, against any party litigant in such suit, having due regard to the merits and good faith of the claims or defenses made by such party litigant; but the provisions of this Section shall not apply to any suit instituted by the Company, to any suit instituted by the Trustee, to any suit instituted by any Holder, or group of Holders, holding in the aggregate more than 10% in aggregate principal amount of the Outstanding Securities, or to any suit instituted by any Holder of any Security for the enforcement of the payment of the principal of or premium, if any, or interest (including Liquidated Damages, if any) on any Security on or after the Stated Maturity expressed in such Security (or, in the case of redemption or exercise of a Repurchase Right, on or after the Redemption Date) or for the enforcement of the right to convert any Security in accordance with Article 12.

SECTION 4.15 WAIVER OF STAY OR EXTENSION LAWS.

The Company covenants (to the extent that it may lawfully do so) that it will not at any time insist upon, or plead, or in any manner whatsoever claim to take the benefit or advantage of, any stay or extension law wherever enacted, now or at any time hereafter in force, which may affect the covenants or the performance of this Indenture; and the Company (to the extent that it may lawfully do so) hereby expressly waives all benefit or advantage of any such law and covenants that it will not hinder, delay or impede the execution of any power herein granted to the Trustee, but will suffer and permit the execution of every such power as though no such law had been enacted.

ARTICLE 5

THE TRUSTEE

SECTION 5.1 CERTAIN DUTIES AND RESPONSIBILITIES.

(A) Except during the continuance of an Event of Default,

(1) The Trustee undertakes to perform such duties and only such duties as are specifically set forth in this Indenture or the TIA, and no implied covenants or obligations shall be read into this Indenture against the Trustee; and

(2) In the absence of bad faith on its part, the Trustee may conclusively rely, as to the truth of the statements and the correctness of the opinions expressed therein, upon certificates or opinions furnished to the Trustee and conforming to the requirements of this Indenture; provided, however, that in the case of any such certificates or opinions which by any provision hereof are specifically required to be furnished to the Trustee, the Trustee shall examine the certificates or opinions to determine whether or not, on their face, they conform to the requirements to this Indenture (but need not investigate or confirm the accuracy of any facts stated therein).

(B) In case an Event of Default actually known to a Responsible Officer of the Trustee has occurred and is continuing, the Trustee shall exercise such of the rights and powers vested in it by this Indenture, and use the same degree of care and skill in their exercise, as a prudent person would exercise or use under the circumstances in the conduct of such person's own affairs.

(C) No provision of this Indenture shall be construed to relieve the Trustee from liability for its own negligent action, its own negligent failure to act, or its own willful misconduct, except that:

(1) This paragraph (c) shall not be construed to limit the effect of paragraph (a) of this Section 5.1;

(2) The Trustee shall not be liable for any error of judgment made in good faith by a Responsible Officer, unless it shall be proved that the Trustee was negligent in ascertaining the pertinent facts; and

(3) The Trustee shall not be liable with respect to any action taken or omitted to be taken by it in good faith in accordance with a direction received by it of the Holders of a majority in principal amount of the Outstanding Securities (or such lesser amount as shall have acted at a meeting pursuant to the provisions of this Indenture) relating to the time, method and place of conducting any proceeding for any remedy available to the Trustee, or exercising any trust or power conferred upon the Trustee, under this Indenture.

(D) Whether or not herein expressly so provided, every provision of this Indenture relating to the conduct or affecting the liability of or affording protection to the Trustee shall be subject to the provisions of this Section 5.1.

(E) No provision of this Indenture shall require the Trustee to expend or risk its own funds or otherwise incur any liability in the performance of any of its duties hereunder, or in the exercise of any of its rights or powers. The Trustee may refuse to perform any duty or exercise any right or power unless it receives indemnity satisfactory to it against any loss, liability, cost or expense (including, without limitation, reasonable fees of counsel).

(F) The Trustee shall not be obligated to pay interest on any money or other assets received by it unless otherwise agreed in writing with the Company. Assets held in trust by the Trustee need not be segregated from other funds except to the extent required by law.

(G) The Trustee shall not be bound to make any investigation into the facts or matters stated in any resolution, certificate, statement, instrument, opinion, report, notice, request, direction, consent, order, bond, debenture, note, coupon, other evidence of indebtedness or other paper or document, but the Trustee, in its discretion, may make such further inquiry or investigation into such facts or matters as it may see fit, and, if the Trustee shall determine to make such further inquiry or investigation, it shall be entitled to examine the books, records and premises of the Company, personally or by agent or attorney at the sole cost of the Company and shall incur no liability or additional liability of any kind by reason of such inquiry or investigation.

(H) The Trustee shall not be deemed to have notice or actual knowledge of any Event of Default or a Registration Default (as such term is defined in the Registration Rights Agreement) or the obligation of the Company to pay Liquidated Damages unless a Responsible Officer of the Trustee has actual knowledge thereof or unless written notice of any event which is in fact a Default is received by the Trustee pursuant to Section 14.2 hereof, and such notice references the Securities and this Indenture.

(I) The rights, privileges, protections, immunities and benefits given to the Trustee hereunder, including, without limitation, its right to be indemnified, are extended to, and shall be enforceable by, the Trustee in each of its capacities hereunder, and each Paying Agent, authenticating agent, Conversion Agent or Registrar acting hereunder.

SECTION 5.2 CERTAIN RIGHTS OF TRUSTEE.

Subject to the provisions of Section 5.1 hereof and subject to Sections 315(a) through (d) of the TIA:

(1) The Trustee may rely on any document believed by it to be genuine and to have been signed or presented by the proper person. The Trustee need not investigate any fact or matter stated in the document.

(2) Before the Trustee acts or refrains from acting, it may require an Officers' Certificate or an Opinion of Counsel, or both. The Trustee shall not be liable

for any action it takes or omits to take in good faith in reliance on the Officers' Certificate or Opinion of Counsel

(3) The Trustee may act through attorneys and agents and shall not be responsible for the misconduct or negligence of any attorney or agent appointed with due care.

(4) The Trustee shall not be liable for any action taken or omitted to be taken by it in good faith which it believed to be authorized or within the discretion or rights or powers conferred upon it by this Indenture, unless the Trustee's conduct constitutes negligence.

(5) The Trustee may consult with counsel of its selection and the advice of such counsel as to matters of law shall be full and complete authorization and protection in respect of any action taken, omitted or suffered by it hereunder in good faith and in accordance with the advice or opinion of such counsel.

(6) Unless otherwise specifically provided in this Indenture, any demand, request, direction or notice from the Company shall be sufficient if signed by an Officer of the Company.

(7) The permissive rights of the Trustee to do things enumerated in this Indenture shall not be construed as a duty unless so specified herein.

SECTION 5.3 INDIVIDUAL RIGHTS OF TRUSTEE.

The Trustee in its individual or any other capacity may become the owner or pledgee of Securities and may otherwise deal with the Company or any Affiliate of the Company with the same rights it would have if it were not Trustee. However, in the event that the Trustee acquires any conflicting interest (as such term is defined in Section 310(b) of the TIA), it must eliminate such conflict within 90 days, apply to the SEC for permission to continue as trustee (to the extent permitted under Section 310(b) of the TIA) or resign. Any agent may do the same with like rights and duties. The Trustee is also subject to Sections 5.11 and 5.12 hereof.

SECTION 5.4 MONEY HELD IN TRUST.

Money held by the Trustee in trust hereunder need not be segregated from other funds except to the extent required by law. The Trustee shall be under no liability for interest on any money received by it hereunder except as otherwise expressly agreed with the Company.

SECTION 5.5 TRUSTEE'S DISCLAIMER.

The recitals contained herein and in the Securities (except for those in the certificate of authentication) shall be taken as the statements of the Company, and the Trustee assumes no responsibility for their correctness. The Trustee makes no representations as to the validity, sufficiency or priority of this Indenture or of the Securities. The Trustee shall not be accountable for the use or application by the Company of Securities or the proceeds thereof.

SECTION 5.6 NOTICE OF DEFAULTS.

Within 90 days after the occurrence of any Default or Event of Default hereunder of which the Trustee has received written notice, the Trustee shall give notice to Holders pursuant to Section 14.2 hereof, unless such Default or Event of Default shall have been cured or waived; provided, however, that, except in the case of a Default or Event of Default in the payment of the principal of or premium, if any, or interest (including Liquidated Damages, if any), or in the payment of any redemption or repurchase obligation on any Security, the Trustee shall be protected in withholding such notice if and so long as Responsible Officers of the Trustee in good faith determine that the withholding of such notice is in the interest of the Holders.

SECTION 5.7 REPORTS BY TRUSTEE TO HOLDERS.

The Trustee shall transmit to Holders such reports concerning the Trustee and its actions under this Indenture as may be required by Section 313 of the TIA at the times and in the manner provided by the TIA.

A copy of each report at the time of its mailing to Holders shall be filed with the SEC, if required, and each stock exchange, if any, on which the Securities are listed. The Company shall promptly notify the Trustee when the Securities become listed on any stock exchange.

SECTION 5.8 COMPENSATION AND INDEMNIFICATION.

The Company covenants and agrees to pay to the Trustee from time to time, and the Trustee shall be entitled to, reasonable compensation (which shall not be limited by any provision of law in regard to the compensation of a trustee of an express trust) and the Company covenants and agrees to pay or reimburse the Trustee upon its request for all reasonable expenses, disbursements and advances incurred or made by or on behalf of it in accordance with any of the provisions of this Indenture (including the reasonable compensation and the expenses and disbursements of its counsel and of all agents and other persons not regularly in its employ), except to the extent that any such expense, disbursement or advance is due to its negligence or bad faith. When the Trustee incurs expenses or renders services in connection with an Event of Default specified in Section 4.1 hereof, the expenses (including the reasonable charges and expenses of its counsel) and the compensation for the services are intended to constitute expenses of administration under any Bankruptcy Law. The Company also covenants to indemnify the Trustee and its officers, directors, employees and agents for, and to hold such Persons harmless against, any loss, liability or expense incurred by them, arising out of or in connection with the acceptance or administration of this Indenture or the trusts hereunder or the performance of their duties hereunder, including the costs and expenses of defending themselves against or investigating any claim of liability in the premises, except to the extent that any such loss, liability or expense was due to the negligence or willful misconduct of such Persons. The obligations of the Company under this Section 5.8 to compensate and indemnify the Trustee and its officers, directors, employees and agents and to pay or reimburse such Persons for expenses, disbursements and advances shall constitute additional indebtedness hereunder and shall survive the satisfaction and discharge of this Indenture or the earlier resignation or removal of the Trustee. Such additional indebtedness shall be a senior claim to that of the Securities upon all property and funds held or collected by the Trustee as such, except funds held in trust for the

benefit of the Holders of particular Securities, and the Securities are hereby subordinated to such senior claim. "Trustee" for purposes of this Section 5.8 shall include any predecessor Trustee, but the negligence or willful misconduct of any Trustee shall not affect the indemnification of any other Trustee.

SECTION 5.9 REPLACEMENT OF TRUSTEE.

A resignation or removal of the Trustee and appointment of a successor Trustee shall become effective only upon the successor Trustee's acceptance of appointment as provided in this Section 5.9.

The Trustee may resign and be discharged from the trust hereby created by so notifying the Company in writing. The Holders of at least a majority in aggregate principal amount of Outstanding Securities may remove the Trustee by so notifying the Trustee and the Company in writing. The Company must remove the Trustee if:

(I) the Trustee fails to comply with Section 5.11 hereof or Section 310 of the TIA;

(II) the Trustee becomes incapable of acting.

(III) the Trustee is adjudged a bankrupt or an insolvent or an order for relief is entered with respect to the Trustee under any Bankruptcy Law; or

(IV) a Custodian or public officer takes charge of the Trustee or its property.

If the Trustee resigns or is removed or if a vacancy exists in the office of the Trustee for any reason, the Company shall promptly appoint a successor Trustee. The Trustee shall be entitled to payment of its fees and reimbursement of its expenses while acting as Trustee. Within one year after the successor Trustee takes office, the Holders of at least a majority in aggregate principal amount of Outstanding Securities may appoint a successor Trustee to replace the successor Trustee appointed by the Company.

Any Holder may petition any court of competent jurisdiction for the removal of the Trustee and the appointment of a successor Trustee if the Trustee fails to comply with Section 5.11 hereof.

If an instrument of acceptance by a successor Trustee shall not have been delivered to the Trustee within 30 days after the giving of such notice of resignation or removal, the resigning or removed Trustee, as the case may be, may petition, at the expense of the Company, any court of competent jurisdiction for the appointment of a successor Trustee.

A successor Trustee shall deliver a written acceptance of its appointment to the retiring Trustee and to the Company. Thereupon the resignation or removal of the retiring Trustee shall become effective, and the successor Trustee shall have all the rights, powers and duties of the Trustee under this Indenture. The Company shall mail a notice of the successor Trustee's succession to the Holders. The retiring Trustee shall promptly transfer all property held by it as

Trustee to the successor Trustee. Notwithstanding replacement of the Trustee pursuant to this Section 5.9, the Company's obligations under Section 5.8 hereof shall continue for the benefit of the retiring Trustee with respect to expenses, losses and liabilities incurred by it prior to such replacement.

SECTION 5.10 SUCCESSOR TRUSTEE BY MERGER, ETC.

Subject to Section 5.11 hereof, if the Trustee consolidates with, merges or converts into, or transfers or sells all or substantially all of its corporate trust business to, another corporation or national banking association, the successor entity without any further act shall be the successor Trustee as to the Securities.

SECTION 5.11 CORPORATE TRUSTEE REQUIRED; ELIGIBILITY.

The Trustee shall at all times satisfy the requirements of Sections 310(a)(1), (2) and (5) of the TIA. The Trustee shall at all times have (or, in the case of a corporation included in a bank holding company system, the related bank holding company shall at all times have), a combined capital and surplus of at least $100 million as set forth in its (or its related bank holding company's) most recent published annual report of condition. The Trustee is subject to Section 310(b) of the TIA.

SECTION 5.12 COLLECTION OF CLAIMS AGAINST THE COMPANY.

The Trustee is subject to Section 311(a) of the TIA, excluding any creditor relationship listed in Section 311(b) of the TIA. A Trustee who has resigned or been removed shall be subject to Section 311(a) of the TIA to the extent indicated therein.

ARTICLE 6

CONSOLIDATION, MERGER, CONVEYANCE, TRANSFER OR LEASE

SECTION 6.1 COMPANY MAY CONSOLIDATE, ETC., ONLY ON CERTAIN TERMS.

The Company shall not consolidate with or merge into any other Person or convey, transfer or lease its properties and assets substantially as an entirety to any Person, and the Company shall not permit any Person to consolidate with or merge into the Company or convey, transfer or lease its properties and assets substantially as an entirety to the Company, unless:

(1) in the event that the Company shall consolidate with or merge into another Person or convey, transfer or lease its properties and assets substantially as an entirety to any Person, the Person formed by such consolidation or into which the Company is merged or the Person which acquires by conveyance or transfer, or which leases, the properties and assets of the Company substantially as an entirety shall be a corporation, limited liability company, partnership or trust organized and validly existing under the laws of the United States of America, any State thereof or the District of Columbia and, if the entity surviving such transaction or transferee entity is not the Company, then such surviving or transferee entity shall expressly assume, by an indenture supplemental hereto, executed and delivered to the Trustee, in form satisfactory to the Trustee, the due and punctual payment of the principal of and premium, if any and interest (including Liquidated Damages, if any), on all the Securities and the performance of every covenant of this Indenture on the party of the Company to be performed or observed and shall have provided for conversion rights in accordance with Section 12.11 hereof;

(2) at the time of consummation of such transaction, no Event of Default, and no event which, after notice or lapse of time or both, would become an Event of Default, shall have happened and be continuing; and

(3) the Company shall have delivered to the Trustee an Officers' Certificate and an Opinion of Counsel, each stating that such consolidation, merger, conveyance, transfer or lease and, if a supplemental indenture is required in connection with such transaction, such supplemental indenture comply with this Article and that all conditions precedent herein provided for relating to such transaction have been complied with.

SECTION 6.2 SUCCESSOR SUBSTITUTED.

Upon any consolidation or merger by the Company with or into any other Person or any conveyance, transfer or lease of the properties and assets of the Company substantially as an entirety to any Person, in accordance with Section 6.1 hereof, the successor Person formed by such consolidation or into which the Company is merged or to which such conveyance, transfer or lease is made shall succeed to, and be substituted for, and may exercise every right and power of, the Company under this Indenture with the same effect as if such successor Person had been named as the Company herein, and thereafter, except in the case of a lease to another Person, the

predecessor Person shall be relieved of all obligations and covenants under this Indenture and the Securities.

ARTICLE 7

AMENDMENTS, SUPPLEMENTS AND WAIVERS

SECTION 7.1 WITHOUT CONSENT OF HOLDERS OF SECURITIES.

Without the consent of any Holders of Securities, the Company, when authorized by a Board Resolution, and the Trustee, at any time and from time to time, may amend this Indenture and the Securities to:

(a) add to the covenants of the Company for the benefit of the Holders of Securities;

(b) surrender any right or power herein conferred upon the Company;

(c) make provision with respect to the conversion rights of Holders of Securities pursuant to Section 12.11 hereof;

(d) provide for the assumption of the Company's obligations to the Holders of Securities in the case of a merger, consolidation, conveyance, transfer or lease pursuant to Article 6 hereof;

(e) reduce the Conversion Price; provided, that such reduction in the Conversion Price shall not adversely affect the interest of the Holders of Securities (after taking into account tax and other consequences of such reduction) in any material respect;

(f) comply with the requirements of the SEC in order to effect or maintain the qualification of this Indenture under the TIA;

(g) make any changes or modifications to this Indenture necessary in connection with the registration of any Securities under the Securities Act as contemplated in the Registration Rights Agreement, provided that such action pursuant to this clause (g) does not adversely affect the interests of the Holders of Securities in any material respect;

(h) cure any ambiguity, correct or supplement any provision herein which may be inconsistent with any other provision herein or which is otherwise defective, or make any other provisions with respect to matters or questions arising under this Indenture which the Company and the Trustee may deem necessary or desirable and which shall not be inconsistent with the provisions of this Indenture, provided that such action pursuant to this clause (h) does not, in the good faith opinion of the Board of Directors and the Trustee, adversely affect the interests of the Holders of Securities in any material respect;

(i) add or modify any other provisions with respect to matters or questions arising under this Indenture which the Company and the Trustee may deem necessary or desirable and which shall not be inconsistent with the provisions of this Indenture, provided that such action pursuant to this clause (i) does not adversely affect the interests of the Holders of Securities in any material respect; or

(j) make provision for the establishment of a book-entry system, in which Holders would have the option to participate, for the clearance and settlement of transactions in Securities originally issued in definitive form.

SECTION 7.2 WITH CONSENT OF HOLDERS OF SECURITIES.

Except as provided below in this Section 7.2, this Indenture or the Securities may be amended or supplemented, and noncompliance by the Company in any particular instance with any provision of this Indenture or the Securities may be waived, in each case (i) with the written consent of the Holders of at least a majority in aggregate principal amount of the Outstanding Securities or (ii) by the adoption of a resolution, at a meeting of Holders of the Outstanding Securities at which a quorum is present, by the Holders of a majority in aggregate principal amount of the Outstanding Securities represented at such meeting.

Without the written consent or the affirmative vote of each Holder of Securities affected, an amendment or waiver under this Section 7.2 may not:

(a) change the Stated Maturity of the principal of, or any installment of interest (including Liquidated Damages, if any) on, any Security;

(b) reduce the principal amount of, or premium, if any, on any Security;

(c) reduce the Interest Rate or interest (including Liquidated Damages, if any) on any Security;

(d) change the currency of payment of principal of, premium, if any, or interest (including Liquidated Damages, if any) on any Security;

(e) impair the right of any Holder to institute suit for the enforcement of any payment on or with respect to, or the conversion of, any Security;

(f) modify the obligation of the Company to maintain an office or agency in The City of New York pursuant to Section 9.2 hereof;

(g) except as permitted by Section 12.11 hereof, adversely affect the right to convert any Security as provided in Article 12 hereof;

(h) adversely affect the Repurchase Right;

(i) modify the subordination provisions of the Securities in a manner adverse to the Holders of Securities,

(j) modify any of the provisions of this Section, Section 4.4 or Section 14.11, except to increase any percentage contained herein or therein or to provide that certain other provisions of this Indenture cannot be modified or waived without the consent of the Holder of each Outstanding Security affected thereby; or

(k) reduce the requirements of Section 8.4 hereof for quorum or voting, or reduce the percentage in aggregate principal amount of the Outstanding Securities the consent of whose Holders is required for any such supplemental indenture or the consent of whose Holders is required for any waiver provided for in this Indenture.

It shall not be necessary for any Act of Holders of Securities under this Section to approve the particular form of any proposal supplemental indenture, but it shall be sufficient if such Act shall approve the substance thereof.

SECTION 7.3 COMPLIANCE WITH TRUST INDENTURE ACT.

Every amendment to this Indenture or the Securities shall be set forth in a supplemental indenture that complies with the TIA as then in effect.

SECTION 7.4 REVOCATION OF CONSENTS AND EFFECT OF CONSENTS OR VOTES.

Until an amendment, supplement or waiver becomes effective, a written consent to it by a Holder is a continuing consent by the Holder and every subsequent Holder of a Security or portion of a Security that evidences the same debt as the consenting Holder's Security, even if notation of the consent is not made on any Security; provided, however, that unless a record date shall have been established, any such Holder or subsequent Holder may revoke the consent as to its Security or portion of a Security if the Trustee receives written notice of revocation before the date the amendment, supplement or waiver becomes effective.

An amendment, supplement or waiver becomes effective on receipt by the Trustee of written consents from or affirmative votes by, as the case may be, the Holders of the requisite percentage of aggregate principal amount of the Outstanding Securities, and thereafter shall bind every Holder of Securities; provided, however, if the amendment, supplement or waiver makes a change described in any of the clauses (a) through (k) of Section 7.2 hereof, the amendment, supplement or waiver shall bind only each Holder of a Security which has consented to it or voted for it, as the case may be, and every subsequent Holder of a Security or portion of a Security that evidences the same indebtedness as the Security of the consenting or affirmatively voting, as the case may be, Holder.

SECTION 7.5 NOTATION ON OR EXCHANGE OF SECURITIES.

If an amendment, supplement or waiver changes the terms of a Security:

(a) the Trustee may require the Holder of a Security to deliver such Securities to the Trustee, the Trustee may place an appropriate notation on the Security about the changed terms and return it to the Holder and the Trustee may place an appropriate notation on any Security thereafter authenticated; or

(b) if the Company or the Trustee so determines, the Company in exchange for the Security shall issue and the Trustee shall authenticate a new Security that reflects the changed terms.

Failure to make the appropriate notation or issue a new Security shall not affect the validity and effect of such amendment, supplement or waiver.

SECTION 7.6 TRUSTEE TO SIGN AMENDMENT, ETC.

The Trustee shall sign any amendment authorized pursuant to this Article 7 if the amendment does not adversely affect the rights, duties, liabilities or immunities of the Trustee. If the amendment does adversely affect the rights, duties, liabilities or immunities of the Trustee, the Trustee may but need not sign it. In signing or refusing to sign such amendment, the Trustee shall be entitled to receive and shall be fully protected in relying upon an Officers' Certificate and an Opinion of Counsel as conclusive evidence that such amendment is authorized or permitted by this Indenture.

ARTICLE 8

MEETING OF HOLDERS OF SECURITIES

SECTION 8.1 PURPOSES FOR WHICH MEETINGS MAY BE CALLED.

A meeting of Holders of Securities may be called at any time and from time to time pursuant to this Article to make, give or take any request, demand, authorization, direction, notice, consent, waiver or other action provided by this Indenture to be made, given or taken by Holders of Securities.

Notwithstanding anything contained in this Article 8, the Trustee may, during the pendency of a Default or an Event of Default, call a meeting of Holders of Securities in accordance with its standard practices.

SECTION 8.2 CALL NOTICE AND PLACE OF MEETINGS.

(a) The Trustee may at any time call a meeting of Holders of Securities for any purpose specified in Section 8.1 hereof, to be held at such time and at such place in The City of New York or Boston, Massachusetts. Notice of every meeting of Holders of Securities, setting forth the time and the place of such meeting, in general terms the action proposed to be taken at such meeting and the percentage of the principal amount of the Outstanding Securities which shall constitute a quorum at such meeting, shall be given, in the manner provided in Section 14.2 hereof, not less than 21 nor more than 180 days prior to the date fixed for the meeting.

(b) In case at any time the Company, pursuant to a Board Resolution, or the Holders of at least 10% in principal amount of the Outstanding Securities shall have requested the Trustee to call a meeting of the Holders of Securities for any purpose specified in Section 8.1 hereof, by written request setting forth in reasonable detail the action proposed to be taken at the meeting, and the Trustee shall not have made the first publication of the notice of such meeting within 21 days after receipt of such request or shall not thereafter proceed to cause the meeting to be held as provided herein, then the Company or the Holders of Securities in the amount specified, as the case may be, may determine the time and the place in The City of New York for such meeting and may call such meeting for such purposes by giving notice thereof as provided in paragraph (a) of this Section.

SECTION 8.3 PERSONS ENTITLED TO VOTE AT MEETINGS.

To be entitled to vote at any meeting of Holders of Securities, a Person shall be (a) a Holder of one or more Outstanding Securities or (b) a Person appointed by an instrument in writing as proxy for a Holder or Holders of one or more Outstanding Securities by such Holder or Holders. The only Persons who shall be entitled to be present or to speak at any meeting of Holders shall be the Persons entitled to vote at such meeting and their counsel, any representatives of the Trustee and its counsel and any representatives of the Company and its counsel.

SECTION 8.4 QUORUM; ACTION.

The Persons entitled to vote a majority in principal amount of the Outstanding Securities shall constitute a quorum. In the absence of a quorum within 30 minutes of the time appointed for any such meeting, the meeting shall, if convened at the request of Holders of Securities, be dissolved. In any other case, the meeting may be adjourned for a period of not less than 10 days as determined by the chairman of the meeting prior to the adjournment of such meeting. In the absence of a quorum at any such adjourned meeting, such adjourned meeting may be further adjourned for a period of not less than 10 days as determined by the chairman of the meeting prior to the adjournment of such adjourned meeting. Notice of the reconvening of any adjourned meeting shall be given as provided in Section 8.2(a) hereof, except that such notice need be given only once and not less than five days prior to the date on which the meeting is scheduled to be reconvened.

At a meeting or an adjourned meeting duly reconvened and at which a quorum is present as aforesaid, any resolution and all matters (except as limited by the second paragraph of Section 7.2 hereof) shall be effectively passed and decided if passed or decided by the Persons entitled to vote not less than a majority in principal amount of Outstanding Securities represented and voting at such meeting.

Any resolution passed or decisions taken at any meeting of Holders of Securities duly held in accordance with this Section shall be binding on all the Holders of Securities, whether or not present or represented at the meeting.

SECTION 8.5 DETERMINATION OF VOTING RIGHTS; CONDUCT AND ADJOURNMENT OF MEETINGS.

(a) Notwithstanding any other provisions of this Indenture, the Trustee may make such reasonable regulations as it may deem advisable for any meeting of Holders of Securities in regard to proof of the holding of Securities and of the appointment of proxies and in regard to the appointment and duties of inspectors of votes, the submission and examination of proxies, certificates and other evidence of the right to vote, and such other matters concerning the conduct of the meeting as it shall deem appropriate.

(b) The Trustee shall, by an instrument in writing, appoint a temporary chairman (which may be the Trustee) of the meeting, unless the meeting shall have been called by the Company or by Holders of Securities as provided in Section 8.2(b) hereof, in which case the Company or the Holders of Securities calling the meeting, as the case may be, shall in like manner appoint a temporary chairman. A permanent chairman and a permanent secretary of the meeting shall be elected by vote of the Persons entitled to vote a majority in principal amount of the Outstanding Securities represented at the meeting.

(c) At any meeting, each Holder of a Security or proxy shall be entitled to one vote for each $1,000 principal amount of Securities held or represented by him; provided, however, that no vote shall be cast or counted at any meeting in respect of any Security challenged as not Outstanding and ruled by the chairman of the meeting to be not Outstanding. The chairman of the meeting shall have no right to vote, except as a Holder of a Security or proxy.

(d) Any meeting of Holders of Securities duly called pursuant to Section 8.2 hereof at which a quorum is present may be adjourned from time to time by Persons entitled to vote a majority in principal amount of the Outstanding Securities represented at the meeting, and the meeting may be held as so adjourned without further notice.

SECTION 8.6 COUNTING VOTES AND RECORDING ACTION OF MEETINGS.

The vote upon any resolution submitted to any meeting of Holders of Securities shall be by written ballots on which shall be subscribed the signatures of the Holders of Securities or of their representatives by proxy and the principal amounts and serial numbers of the Outstanding Securities held or represented by them. The permanent chairman of the meeting shall appoint two inspectors of votes who shall count all votes cast at the meeting for or against any resolution and who shall make and file with the secretary of the meeting their verified written reports in duplicate of all votes cast at the meeting. A record, at least in duplicate, of the proceedings of each meeting of Holders of Securities shall be prepared by the secretary of the meeting and there shall be attached to said record the original reports of the inspectors of votes on any vote by ballot taken thereat and affidavits by one or more Persons having knowledge of the facts setting forth a copy of the notice of the meeting and showing that said notice was given as provided in Section 8.2 hereof and, if applicable, Section 8.4 hereof. Each copy shall be signed and verified by the affidavits of the permanent chairman and secretary of the meeting and one such copy shall be delivered to the Company and another to the Trustee to be preserved by the Trustee, the latter to have attached thereto the ballots voted at the meeting. Any record so signed and verified shall be conclusive evidence of the matters therein stated.

ARTICLE 9

COVENANTS

SECTION 9.1 PAYMENT OF PRINCIPAL, PREMIUM AND INTEREST.

The Company will duly and punctually pay the principal of and premium, if any, and interest (including Liquidated Damages, if any) in respect of the Securities in accordance with the terms of the Securities and this Indenture. The Company will deposit or cause to be deposited with the Trustee as directed by the Trustee, no later than the day of the Stated Maturity of any Security or installment of interest (including Liquidated Damages, if any), all payments so due.

SECTION 9.2 MAINTENANCE OF OFFICES OR AGENCIES.

The Company hereby appoints the Trustee's Corporate Trust Office as its office in The City of New York, where Securities may be:

(i) presented or surrendered for payment;

(ii) surrendered for registration of transfer or exchange;

(iii)surrendered for conversion;

and where notices and demands to or upon the Company in respect of the Securities and this Indenture maybe served.

The Company may at any time and from time to time vary or terminate the appointment of any such office or appoint any additional offices for any or all of such purposes; provided, however, that until all of the Securities have been delivered to the Trustee for cancellation, or moneys sufficient to pay the principal of and premium, if any, and interest (including Liquidated Damages, if any) on the Securities have been made available for payment and either paid or returned to the Company pursuant to the provisions of Section 9.3 hereof, the Company will maintain in The City of New York, an office or agency where Securities may be presented or surrendered for payment, where Securities may be surrendered for registration of transfer or exchange, where Securities may be surrendered for conversion and where notices and demands to or upon the Company in respect of the Securities and this Indenture may be served. The Company will give prompt written notice to the Trustee, and notice to the Holders in accordance with Section 14.2 hereof, of the appointment or termination of any such agents and of the location and any change in the location of any such office or agency.

If at any time the Company shall fail to maintain any such required office or agency in The City of New York, or shall fail to furnish the Trustee with the address thereof, presentations and surrenders may be made at, and notices and demands may be served on, the Corporate Trust Office of the Trustee.

SECTION 9.3 CORPORATE EXISTENCE.

Subject to Article 6 hereof, the Company will do or cause to be done all things necessary to preserve and keep in full force and effect its corporate existence, rights (charter and statutory) and franchises; provided, however, that the Company shall not be required to preserve any such right or franchise if the Company determines that the preservation thereof is no longer desirable in the conduct of the business of the Company and that the loss thereof is not disadvantageous in any material respect to the Holders.

SECTION 9.4 MAINTENANCE OF PROPERTIES.

The Company will maintain and keep its properties and every part thereof in such repair, working order and condition, and make or cause to be made all such needful and proper repairs, renewals and replacements thereto, as in the judgment of the Company are necessary in the interests of the Company; provided, however, that nothing contained in this Section shall prevent the Company from selling, abandoning or otherwise disposing of any of its properties or discontinuing a part of its business from time to time if, in the judgment of the Company, such sale, abandonment, disposition or discontinuance is advisable and does not materially adversely affect the interests or business of the Company.

SECTION 9.5 PAYMENT OF TAXES AND OTHER CLAIMS.

The Company will, and will cause any Significant Subsidiary to, promptly pay and discharge or cause to be paid and discharged all material taxes, assessments and governmental charges or levies lawfully imposed upon it or upon its income or profits or upon any of its property, real or personal, or upon any part thereof, as well as all material claims for labor, materials and supplies which, if unpaid, might by law become a lien or charge upon its property; provided, however, that neither the Company nor any Significant Subsidiary shall be required to pay or discharge or cause to be paid or discharged any such tax, assessment, charge, levy, or claim if the amount, applicability or validity thereof shall currently be contested in good faith by appropriate proceedings and if the Company or such Significant Subsidiary, as the case may be, shall have set aside on its books reserves deemed by it adequate with respect thereto.

SECTION 9.6 REPORTS.

(a) The Company shall deliver to the Trustee within 15 days after it files them with the SEC copies of the annual reports and of the information, documents, and other reports (or copies of such portions of any of the foregoing as the SEC may by rules and regulations prescribe) which the Company is required to file with the SEC pursuant to Section 13 or 15(d) of the Exchange Act; provided, however, the Company shall not be required to deliver to the Trustee any materials for which the Company has sought and received confidential treatment by the SEC. The Company also shall comply with the other provisions of Section 314(a) of the TIA.

(b) If at any time the Company is not subject to Section 13 or 15(d) of the Exchange Act, upon the request of a Holder of a Security, the Company will promptly furnish or cause to be furnished to such Holder or to a prospective purchaser of such Security designated by such Holder, as the case may be, the information, if any, required to be delivered by it pursuant to Rule 144A(d)(4) under the Securities Act to permit compliance with Rule 144A in connection

with the resale of such Security; provided, however, that the Company shall not be required to furnish such information in connection with any request made on or after the date which is two years from the later of the date such security was last acquired from the Company or an Affiliate of the Company.

SECTION 9.7 COMPLIANCE CERTIFICATE.

The Company shall deliver to the Trustee, within 90 days after the end of each fiscal year of the Company, an Officers' Certificate stating that in the course of the performance by the signers of their duties as Officers of the Company, they would normally have knowledge of any failure by the Company to comply with all conditions, or Default by the Company with respect to any covenants, under this Indenture, and further stating whether or not they have knowledge of any such failure or default and, if so, specifying each such failure or Default and the nature thereof. Within five Business Days of an Officer of the Company coming to have actual knowledge of a Default, regardless of the date, the Company shall deliver an Officers' Certificate to the Trustee specifying such Default and the nature and status thereof.

SECTION 9.8 RESALE OF CERTAIN SECURITIES.

During the period of two years after the last date of original issuance of any Securities, the Company shall not, and shall not permit any of its Affiliates to, resell any Securities, or shares of Common Stock issuable upon conversion of the Securities, which constitute "restricted securities" under Rule 144, that are acquired by any of them within the United States or to "U.S. persons" (as defined in Regulation S) except pursuant to an effective registration statement under the Securities Act or an applicable exemption therefrom. The Trustee shall have no responsibility or liability in respect of the Company's performance of its agreement in the preceding sentence.

ARTICLE 10

REDEMPTION OF SECURITIES

SECTION 10.1 PROVISIONAL REDEMPTION.

Any time prior to March 17, 2003, the Company may, at its option, redeem the Securities in whole or in part on any date from time to time, upon notice as set forth in Section 10.5, at a redemption price equal to $1,000 per $1,000 principal amount of the Securities redeemed plus accrued and unpaid interest, if any (such amount, together with the Make-Whole Payment described below, the "Provisional Redemption Price"), to but excluding the date of redemption (the "Provisional Redemption Date") if (i) the Closing Price of the Common Stock has exceeded 150% of the Conversion Price (as defined in Article 12 and as such may be adjusted from time to time) then in effect for at least 20 Trading Days in any consecutive 30-Trading Day period ending on the Trading Day prior to the date of mailing of the provisional notice of redemption pursuant to Section 10.5 (the "Notice Date") and (ii) a registration statement covering resales of the Securities and the Common Stock issuable upon conversion thereof is effective and available for use and is expected to remain effective for the 30 days following the Provisional Redemption Date.

Upon any such Provisional Redemption, the Company shall make an additional payment in cash (the "Make-Whole Payment") with respect to the Securities called for redemption to Holders on the Notice Date in an amount equal to $107.14 per $1,000 principal amount of the Securities, less the amount of any interest actually paid on such Securities prior to the Notice Date. The Company shall make the Make-Whole Payment on all Securities called for Provisional Redemption, including those Securities converted into Common Stock between the Notice Date and the Provisional Redemption Date.

SECTION 10.2 OPTIONAL REDEMPTION.

Except as set forth under Section 10.1, the Securities are not redeemable prior to March 17, 2003. On and after March 17, 2003, the Company may, at its option, redeem the Securities in whole at any time or in part from time to time, on any date prior to maturity, upon notice as set forth in Section 10.5, at the redemption price (expressed as percentages of the principal amount) set forth below if redeemed during the 12-month period beginning March 14 or 17, as the case may be, of the years indicated and ending March 13 of the following year:

During the Twelve Months Commencing	Redemption Prices
March 17, 2003 through March 13, 2004.....	102.857%
March 14, 2004 through March 13, 2005.....	102.143%
March 14, 2005 through March 13, 2006.....	101.429%
March 14, 2006 and thereafter.....	100.714%

(the "Optional Redemption Price"), plus any interest accrued but not paid prior to the Optional Redemption Date.

SECTION 10.3 NOTICE TO TRUSTEE.

If the Company elects to redeem Securities pursuant to the redemption provisions of Section 10.1 or Section 10.2 hereof, it shall notify the Trustee at least 30 days prior to the Redemption Date of such intended Redemption Date, the principal amount of Securities to be redeemed and the CUSIP numbers of the Securities to be redeemed.

SECTION 10.4 SELECTION OF SECURITIES TO BE REDEEMED.

If fewer than all the Securities are to be redeemed, the Trustee shall select the particular Securities to be redeemed from the Outstanding Securities by a method that complies with the requirements of any exchange on which the Securities are listed, or, if the Securities are not listed on an exchange, on a pro rata basis or by lot or in accordance with any other method the Trustee considers fair and appropriate. Securities and portions thereof that the Trustee selects shall be in amounts equal to the minimum authorized denominations for Securities to be redeemed or any integral multiple thereof.

If any Security selected for partial redemption is converted in part before termination of the conversion right with respect to the portion of the Security so selected, the converted portion of such Security shall be deemed to be the portion selected for redemption (provided, however, that the Holder of such Security so converted and deemed redeemed shall not be entitled to any additional interest payment as a result of such deemed redemption than such Holder would have otherwise been entitled to receive upon conversion of such Security). Securities which have been converted during a selection of Securities to be redeemed may be treated by the Trustee as Outstanding for the purpose of such selection.

The Trustee shall promptly notify the Company and the Registrar in writing of the Securities selected for redemption and, in the case of any Securities selected for partial redemption, the principal amount thereof to be redeemed.

For all purposes of this Indenture, unless the context otherwise requires, all provisions relating to the redemption of Securities shall relate, in the case of any Securities redeemed or to be redeemed only in part, to the portion of the principal amount of such Securities which has been or is to be redeemed.

SECTION 10.5 NOTICE OF REDEMPTION.

Notice of redemption shall be given in the manner provided in Section 14.2 hereof to the Holders of Securities to be redeemed. Such notice shall be given not less than 20 nor more than 60 days prior to the Redemption Date.

All notices of redemption shall state:

(1) the Redemption Date;

(2) the Redemption Price and interest accrued and unpaid to the Redemption Date, if any;

(3) if fewer than all the Outstanding Securities are to be redeemed, the aggregate principal amount of Securities to be redeemed and the aggregate principal amount of Securities which will be outstanding after such partial redemption;

(4) that on the Redemption Date the Redemption Price and interest accrued and unpaid to the Redemption Date, if any, will become due and payable upon each such Security to be redeemed, and that interest thereon shall cease to accrue on and after such date;

(5) the Conversion Price, the date on which the right to convert the principal of the Securities to be redeemed will terminate and the places where such Securities may be surrendered for conversion;

(6) the place or places where such Securities are to be surrendered for payment of the Redemption Price and accrued and unpaid interest, if any; and

(7) the CUSIP number of the Securities.

The notice given shall specify the last date on which exchanges or transfers of Securities may be made pursuant to Section 2.7 hereof, and shall specify the serial numbers of Securities and the portions thereof called for redemption.

Notice of redemption of Securities to be redeemed at the election of the Company shall be given by the Company or, at the Company's request, by the Trustee in the name of and at the expense of the Company.

SECTION 10.6 EFFECT OF NOTICE OF REDEMPTION.

Notice of redemption having been given as provided in Section 10.5 hereof, the Securities so to be redeemed shall, on the Redemption Date, become due and payable at the Redemption Price therein specified and from and after such date (unless the Company shall default in the payment of the Redemption Price and accrued and unpaid interest) such Securities shall cease to bear interest. Upon surrender of any such Security for redemption in accordance with such notice, such Security shall be paid by the Company at the Redemption Price plus accrued and unpaid interest, if any; provided, however, that the installments of interest on Securities whose Stated Maturity is prior to or on the Redemption Date shall be payable to the Holders of such Securities, or one or more Predecessor Securities, registered as such on the relevant Record Date according to their terms and the provisions of Section 2.1 hereof.

If any Security called for redemption shall not be so paid upon surrender thereof for redemption, the principal and premium, if any, shall, until paid, bear interest from the Redemption Date at the Interest Rate.

SECTION 10.7 DEPOSIT OF REDEMPTION PRICE.

Prior to or on any Redemption Date, the Company shall deposit with the Trustee or with a Paying Agent an amount of money sufficient to pay the Redemption Price of all the Securities to be redeemed on that Redemption Date, other than any Securities called for redemption on that date which have been converted prior to the date of such deposit, and accrued and unpaid interest, if any, on such Securities.

If any Security called for redemption is converted, any money deposited with the Trustee or with a Paying Agent or so segregated and held in trust for the redemption of such Security shall (subject to any right of the Holder of such Security or any Predecessor Security to receive interest as provided in the fourth to last paragraph of Section 2.1 hereof) be paid to the Company on Company Request or, if then held by the Company, shall be discharged from such trust.

SECTION 10.8 SECURITIES REDEEMED IN PART.

Any Security which is to be redeemed only in part shall be surrendered at an office or agency of the Company designated for that purpose pursuant to Section 9.2 hereof (with, if the Company or the Trustee so requires, due endorsement by, or a written instrument of transfer in form satisfactory to the Company and the Trustee duly executed by, the Holder thereof or the Holder's attorney duly authorized in writing), and the Company shall execute, and the Trustee shall authenticate and deliver to the Holder of such Security without service charge, a new Security or Securities of any authorized denomination as requested by such Holder in aggregate principal amount equal to and in exchange for the unredeemed portion of the principal of the Security so surrendered.

ARTICLE 11

REPURCHASE AT THE OPTION OF A HOLDER UPON A CHANGE OF CONTROL

SECTION 11.1 REPURCHASE RIGHT.

In the event that a Change of Control shall occur, each Holder shall have the right (the "Repurchase Right"), at the Holder's option, but subject to the provisions of Section 11.2 hereof, to require the Company to repurchase, and upon the exercise of such right the Company shall repurchase, all of such Holder's Securities not theretofore called for redemption, or any portion of the principal amount thereof that is equal to $1,000 or any integral multiple thereof (provided that no single Security may be repurchased in part unless the portion of the principal amount of such Security to be Outstanding after such repurchase is equal to $1,000 or integral multiples thereof), on the date (the "Repurchase Date") that is 45 days after the date of the Company Notice at a purchase price equal to 100% of the principal amount of the Securities to be repurchased (the "Repurchase Price"), plus interest accrued and unpaid to, but excluding, the Repurchase Date; provided, however, that installments of interest on Securities whose Stated Maturity is prior to or on the Repurchase Date shall be payable to the Holders of such Securities, or one or more Predecessor Securities, registered as such on the relevant Record Date according to their terms and the provisions of Section 2.1 hereof.

Subject to the fulfillment by the Company of the conditions set forth in Section 11.2 hereof, the Company may elect to pay the Repurchase Price by delivering the number of shares of Common Stock equal to (i) the Repurchase Price divided by (ii) 95% of the average of the Closing Prices per share of Common Stock for the five consecutive Trading Days immediately preceding and including the third Trading Day prior to the Repurchase Date.

Whenever in this Indenture (including Sections 2.2, 4.1(a) and 4.7 hereof) or Exhibit A annexed hereto there is a reference, in any context, to the principal of any Security as of any time, such reference shall be deemed to include reference to the Repurchase Price payable in respect to such Security to the extent that such Repurchase Price is, was or would be so payable at such time, and express mention of the Repurchase Price in any provision of this Indenture shall not be construed as excluding the Repurchase Price in those provisions of this Indenture when such express mention is not made; provided, however, that, for the purposes of Article 13 hereof, such reference shall be deemed to include reference to the Repurchase Price only to the extent the Repurchase Price is payable in cash.

SECTION 11.2 CONDITIONS TO THE COMPANY'S ELECTION TO PAY THE REPURCHASE PRICE IN COMMON STOCK.

(a) The shares of Common Stock to be issued upon repurchase of Securities hereunder:

(i) shall not require registration under any federal securities law before such shares may be freely transferable without being subject to any transfer restrictions under the Securities Act upon repurchase or, if such registration is required, such registration shall be completed and shall become effective prior to the Repurchase Date; and

(ii) shall not require registration with, or approval of, any governmental authority under any state law or any other federal law before shares may be validly issued or delivered upon repurchase or if such registration is required or such approval must be obtained, such registration shall be completed or such approval shall be obtained prior to the Repurchase Date.

(b) The shares of Common Stock to be listed upon repurchase of Securities hereunder are, or shall have been, approved for listing on the Nasdaq National Market or the New York Stock Exchange or listed on another national securities exchange, in any case, prior to the Repurchase Date.

(c) All shares of Common Stock which may be issued upon repurchase of Securities will be issued out of the Company's authorized but unissued Common Stock and will, upon issue, be duly and validly issued and fully paid and nonassessable and free of any preemptive or similar rights.

(d) If any of the conditions set forth in clauses (a) through (d) of this Section 11.2 are not satisfied in accordance with the terms thereof, the Repurchase Price shall be paid by the Company only in cash.

SECTION 11.3 NOTICES; METHOD OF EXERCISING REPURCHASE RIGHT, ETC.

(a) Unless the Company shall have theretofore called for redemption all of the Outstanding Securities, prior to or on the 30th day after the occurrence of a Change of Control, the Company, or, at the written request and expense of the Company prior to or on the 30th day after such occurrence, the Trustee shall give to all Holders of Securities notice, in the manner provided in Section 14.2 hereof, of the occurrence of the Change of Control and of the Repurchase Right set forth herein arising as a result thereof (the "Company Notice"). The Company shall also deliver a copy of such notice of a Repurchase Right to the Trustee. Each notice of a Repurchase Right shall state:

(1) the Repurchase Date;

(2) the date by which the Repurchase Right must exercised;

(3) the Repurchase Price and accrued and unpaid interest, if any, and whether the Repurchase Price shall be paid by the Company in cash or by delivery of shares of Common Stock;

(4) a description of the procedure which a Holder must follow to exercise a Repurchase Right, and the place or places where such Securities, are to be surrendered for payment of the Repurchase Price and accrued and unpaid interest, if any;

(5) that on the Repurchase Date the Repurchase Price and accrued and unpaid interest, if any, will become due and payable upon each such Security designated by the Holder to be repurchased, and that interest thereon shall cease to accrue on and after said date;

(6) the Conversion Rate then in effect, the date on which the right to convert the principal amount of the Securities to be repurchased will terminate and the place where such Securities may be surrendered for conversion, and

(7) the place or places where such Securities, together with the Option to Elect Repayment Upon a Change of Control certificate included in Exhibit A annexed hereto are to be delivered for payment of the Repurchase Price and accrued and unpaid interest, if any.

No failure of the Company to give the foregoing notices or defect therein shall limit any Holder's right to exercise a Repurchase Right or affect the validity of the proceedings for the repurchase of Securities.

If any of the foregoing provisions or other provisions of this Article 11 are inconsistent with applicable law, such law shall govern.

(b) To exercise a Repurchase Right, a Holder shall deliver to the Trustee prior to or on the 30th day after the date of the Company Notice:

(1) written notice of the Holder's exercise of such right, which notice shall set forth the name of the Holder, the principal amount of the Securities to be repurchased (and, if any Security is to be repurchased in part, the serial number thereof, the portion of the principal amount thereof to be repurchased) and a statement that an election to exercise the Repurchase Right is being made thereby, and, in the event that the Repurchase Price shall be paid in shares of Common Stock, the name or names (with addresses) in which the certificate or certificates for shares of Common Stock shall be issued, and

(2) the Securities with respect to which the Repurchase Right is being exercised.

Such written notice shall be irrevocable, except that the right of the Holder to convert the Securities with respect to which the Repurchase Right is being exercised shall continue until the close of business on the Business Day immediately preceding the Repurchase Date.

(c) In the event a Repurchase Right shall be exercised in accordance with the terms hereof, the Company shall pay or cause to be paid to the Trustee the Repurchase Price in cash for payment to the Holder on the Repurchase Date or, if shares of Common Stock are to be paid, shares of Common Stock, as provided above, as promptly after the Repurchase Date as practicable, together with accrued and unpaid interest to the Repurchase Date payable in cash with respect to the Securities as to which the Repurchase Right has been exercised; provided, however, that installments of interest that mature prior to or on the Repurchase Date shall be payable in cash to the Holders of such Securities, or one or more Predecessor Securities, registered as such at the close of business on the relevant Regular Record Date.

(d) If any Security (or portion thereof) surrendered for repurchase shall not be so paid on the Repurchase Date, the principal amount of such Security (or portion thereof, as the case may be) shall, until paid, bear interest to the extent permitted by applicable law from the Repurchase

Date at the Interest Rate, and each Security shall remain convertible into Common Stock until the principal of such Security (or portion thereof, as the case may be) shall have been paid or duly provided for.

(e) Any Security which is to be repurchased only in part shall be surrendered to the Trustee (with, if the Company or the Trustee so requires, due endorsement by, or a written instrument of transfer in form satisfactory to the Company and the Trustee duly executed by the Holder thereof or his attorney duly authorized in writing), and the Company shall execute, and the Trustee shall authenticate and make available for delivery to the Holder of such Security without service charge, a new Security or Securities, containing identical terms and conditions, each in an authorized denomination in aggregate principal amount equal to and in exchange for the unrepurchased portion of the principal of the Security so surrendered.

(f) Any issuance of shares of Common Stock in respect of the Repurchase Price shall be deemed to have been effected immediately prior to the close of business on the Repurchase Date and the Person or Persons in whose name or names any certificate or certificates for shares of Common Stock shall be issuable upon such repurchase shall be deemed to have become on the Repurchase Date the holder or holders of record of the shares represented thereby; provided, however, that any surrender for repurchase on a date when the stock transfer books of the Company shall be closed shall constitute the Person or Persons in whose name or names the certificate or certificates for such shares are to be issued as the record holder or holders thereof for all purposes at the opening of business on the next succeeding day on which such stock transfer books are open. No payment or adjustment shall be made for dividends or distributions on any Common Stock issued upon repurchase of any Security declared prior to the Repurchase Date.

(g) No fractions of shares of Common Stock shall be issued upon repurchase of any Security or Securities. If more than one Security shall be repurchased from the same Holder and the Repurchase Price shall be payable in shares of Common Stock, the number of full shares which shall be issued upon such repurchase shall be computed on the basis of the aggregate principal amount of the Securities (or specified portions thereof) to be so repurchased. Instead of any fractional share of Common Stock which would otherwise be issued on the repurchase of any Security or Securities (or specified portions thereof), the Company shall pay a cash adjustment in respect of such fraction (calculated to the nearest one-100th of a share) in an amount equal to the same fraction of the Quoted Price of the Common Stock as of the Trading Day preceding the Repurchase Date.

(h) Any issuance and delivery of certificates for shares of Common Stock on repurchase of Securities shall be made without charge to the Holder of Securities being repurchased for such certificates or for any tax or duty in respect of the issuance or delivery of such certificates or the Securities represented thereby; provided, however, that the Company shall not be required to pay any tax or duty which may be payable in respect of (i) income of the Holder or (ii) any transfer involved in the issuance or delivery of certificates for shares of Common Stock in a name other than that of the Holder of the Securities being repurchased, and no such issuance or delivery shall be made unless the Persons requesting such issuance or delivery has paid to the Company the amount of any such tax or duty or has established, to the satisfaction of the Company, that such tax or duty has been paid.

(i) All Securities delivered for repurchase shall be delivered to the Trustee to be canceled at the direction of the Trustee, which shall dispose of the same as provided in Section 2.15 hereof.

ARTICLE 12

CONVERSION OF SECURITIES

SECTION 12.1 CONVERSION RIGHT AND CONVERSION PRICE.

Subject to and upon compliance with the provisions of this Article, at the option of the Holder thereof, any Security or any portion of the principal amount thereof which is $1,000 or an integral multiple of $1,000 may be converted at the principal amount thereof, or of such portion thereof, into the number of duly authorized, fully paid and nonassessable shares of Common Stock obtained by dividing the aggregate principal amount of such Security (or portion thereof) surrendered for conversion by the Conversion Price, determined as hereinafter provided, in effect at the time of conversion. Such conversion right shall expire at the close of business on March 14, 2007.

In case a Security or portion thereof is called for redemption, such conversion right in respect of the Security or the portion so called, shall expire at the close of business on the Business Day immediately preceding the Redemption Date, unless the Company defaults in making the payment due upon redemption. In the case of a Change of Control for which the Holder exercises its Repurchase Right in respect of a Security or portion thereof, such conversion right in respect of the Security or portion thereof shall expire at the close of business on the Business Day immediately preceding the Repurchase Date.

The price at which shares of Common Stock shall be delivered upon conversion (the "Conversion Price") shall be initially equal to $80.64 per share of Common Stock. The Conversion Price shall be adjusted in certain instances as provided in paragraphs (a), (b), (c), (d), (e), (f), (h) and (l) of Section 12.4 hereof.

SECTION 12.2 EXERCISE OF CONVERSION RIGHT.

To exercise the conversion right, the Holder of any Security to be converted shall surrender such Security duly endorsed or assigned to the Company or in blank, at the office of any Conversion Agent, accompanied by a duly signed conversion notice substantially in the form attached to the Security to the Company stating that the Holder elects to convert such Security or, if less than the entire principal amount thereof is to be converted, the portion thereof to be converted.

Any Holder which surrenders any Security for conversion during the period between the close of business on any Regular Record Date and ending with the opening of business on the corresponding Interest Payment Date (except in the case of any Security whose Maturity is prior to such Interest Payment Date) shall be accompanied by payment in New York Clearing House funds or other funds acceptable to the Company of an amount equal to the interest (including Liquidated Damages, if any) to be received on such Interest Payment Date on the principal amount of the Security being surrendered for conversion. Notwithstanding the foregoing, any such Holder which surrenders for conversion any Security which has been called for redemption by the Company in a notice of redemption given by the Company pursuant to Section 10.5 hereof (whether the Redemption Date for such Security is on such Interest Payment Date or

otherwise), need not pay the Company an amount equal to the interest (including Liquidated Damages, if any) on the principal amount of such Security so converted at the time such Holder surrenders such Security for conversion.

Securities shall be deemed to have been converted immediately prior to the close of business on the day of surrender of such Securities for conversion in accordance with the foregoing provisions, and at such time the rights of the Holders of such Securities as Holders shall cease, and the Person or Persons entitled to receive the Common Stock issuable upon conversion shall be treated for all purposes as the record holder or holders of such Common Stock at such time. As promptly as practicable on or after the conversion date, the Company shall cause to be issued and delivered to such Conversion Agent a certificate or certificates for the number of full shares of Common Stock issuable upon conversion, together with payment in lieu of any fraction of a share as provided in Section 12.3 hereof.

In the case of any Security which is converted in part only, upon such conversion the Company shall execute and the Trustee shall authenticate and deliver to the Holder thereof, at the expense of the Company, a new Security or Securities of authorized denominations in aggregate principal amount equal to the unconverted portion of the principal amount of such Securities.

If shares of Common Stock to be issued upon conversion of a Restricted Security, or Securities to be issued upon conversion of a Restricted Security in part only, are to be registered in a name other than that of the Holder of such Restricted Security, such Holder must deliver to the Conversion Agent a certificate in substantially the form set forth in the form of Security set forth in Exhibit A annexed hereto, dated the date of surrender of such Restricted Security and signed by such Holder, as to compliance with the restrictions on transfer applicable to such Restricted Security. Neither the Trustee nor any Conversion Agent, Registrar or Transfer Agent shall be required to register in a name other than that of the Holder shares of Common Stock or Securities issued upon conversion of any such Restricted Security not so accompanied by a properly completed certificate.

The Company hereby initially appoints the Trustee as the Conversion Agent.

SECTION 12.3 FRACTIONS OF SHARES.

No fractional shares of Common Stock shall be issued upon conversion of any Security or Securities. If more than one Security shall be surrendered for conversion at one time by the same Holder, the number of full shares which shall be issued upon conversion thereof shall be computed on the basis of the aggregate principal amount of the Securities (or specified portions thereof) so surrendered. Instead of any fractional share of Common Stock which would otherwise be issued upon conversion of any Security or Securities (or specified portions thereof), the Company shall pay a cash adjustment in respect of such fraction (calculated to the nearest one-100th of a share) in an amount equal to the same fraction of the Quoted Price of the Common Stock as of the Trading Day preceding the date of conversion.

SECTION 12.4 ADJUSTMENT OF CONVERSION PRICE.

The Conversion Price shall be subject to adjustments, calculated by the Company, from time to time as follows:

(A) In case the Company shall hereafter pay a dividend or make a distribution to all holders of the outstanding Common Stock in shares of Common Stock, the Conversion Price in effect at the opening of business on the date following the date fixed for the determination of stockholders entitled to receive such dividend or other distribution shall be reduced by multiplying such Conversion Price by a fraction:

(I) the numerator of which shall be the number of shares of Common Stock outstanding at the close of business on the Record Date (as defined in Section 12.4(g)) fixed for such determination, and

(II) the denominator of which shall be the sum of such number of shares and the total number of shares constituting such dividend or other distribution.

Such reduction shall become effective immediately after the opening of business on the day following the Record Date. If any dividend or distribution of the type described in this Section 12.4(a) is declared but not so paid or made, the Conversion Price shall again be adjusted to the Conversion Price which would then be in effect if such dividend or distribution had not been declared.

(B) In case the outstanding shares of Common Stock shall be subdivided into a greater number of shares of Common Stock, the Conversion Price in effect at the opening of business on the day following the day upon which such subdivision becomes effective shall be proportionately reduced, and conversely, in case outstanding shares of Common Stock shall be combined into a smaller number of shares of Common Stock, the Conversion Price in effect at the opening of business on the day following the day upon which such combination becomes effective shall be proportionately increased, such reduction or increase, as the case may be, to become effective immediately after the opening of business on the day following the day upon which such subdivision or combination becomes effective.

(C) In case the Company shall issue rights or warrants (other than any rights or warrants referred to in Section 12.4(d)) to all holders of its outstanding shares of Common Stock entitling them to subscribe for or purchase shares of Common Stock (or securities convertible into Common Stock) at a price per share (or having a conversion price per share) less than the Current Market Price (as defined in Section 12.4(g)) on the Record Date fixed for the determination of stockholders entitled to receive such rights or warrants, the Conversion Price shall be reduced so that the same shall equal the price determined by multiplying the Conversion Price in effect at the opening of business on the date after such Record Date by a fraction:

(I) the numerator of which shall be the number of shares of Common Stock outstanding at the close of business on the Record Date plus the number of shares which the aggregate offering price of the total number of shares so offered

for subscription or purchase (or the aggregate conversion price of the convertible securities so offered) would purchase at such Current Market Price, and

(II) the denominator of which shall be the number of shares of Common Stock outstanding on the close of business on the Record Date plus the total number of additional shares of Common Stock so offered for subscription or purchase (or into which the convertible securities so offered are convertible).

Such adjustment shall become effective immediately after the opening of business on the day following the Record Date fixed for determination of stockholders entitled to receive such rights or warrants. To the extent that shares of Common Stock (or securities convertible into Common Stock) are not delivered pursuant to such rights or warrants, upon the expiration or termination of such rights or warrants the Conversion Price shall be readjusted to the Conversion Price which would then be in effect had the adjustments made upon the issuance of such rights or warrants been made on the basis of the delivery of only the number of shares of Common Stock (or securities convertible into Common Stock) actually delivered. In the event that such rights or warrants are not so issued, the Conversion Price shall again be adjusted to be the Conversion Price which would then be in effect if such date fixed for the determination of stockholders entitled to receive such rights or warrants had not been fixed. In determining whether any rights or warrants entitle the holders to subscribe for or purchase shares of Common Stock at less than such Current Market Price, and in determining the aggregate offering price of such shares of Common Stock, there shall be taken into account any consideration received for such rights or warrants, the value of such consideration if other than cash, to be determined by the Board of Directors.

(D) In case the Company shall, by dividend or otherwise, distribute to all holders of its Common Stock shares of any class of capital stock of the Company (other than any dividends or distributions to which Section 12.4(a) applies) or evidences of its indebtedness, cash or other assets, including securities, but excluding (1) any rights or warrants referred to in Section 12.4(c), (2) any stock, securities or other property or assets (including cash) distributed in connection with a reclassification, change, merger, consolidation, statutory share exchange, combination, sale or conveyance to which Section 12.11 hereof applies and (3) dividends and distributions paid exclusively in cash (the securities described in foregoing clauses (1), (2) and (3) hereinafter in this Section 12.4(d) called the "securities"), then, in each such case, subject to the second succeeding paragraph of this Section 12.4(d), the Conversion Price shall be reduced so that the same shall be equal to the price determined by multiplying the Conversion Price in effect immediately prior to the close of business on the Record Date (as defined in Section 12.4(g)) with respect to such distribution by a fraction:

(I) the numerator of which shall be the Current Market Price (determined as provided in Section 12.4(g)) on such date less the fair market value (as determined by the Board of Directors, whose determination shall be conclusive and set forth in a Board Resolution) on such date of the portion of the shares of capital stock, evidences of indebtedness, cash or other assets, including securities, so distributed applicable to one share of Common Stock (determined on the basis of the number of shares of the Common Stock outstanding on the Record Date), and

(II) the denominator of which shall be such Current Market Price on such date.

Such reduction shall become effective immediately prior to the opening of business on the day following the Record Date. However, in the event that the then fair market value (as so determined) of the portion of the securities so distributed applicable to one share of Common Stock is equal to or greater than the Current Market Price on the Record Date, in lieu of the foregoing adjustment, adequate provision shall be made so that each Holder shall have the right to receive upon conversion of a Security (or any portion thereof) the amount of shares of capital stock, evidences of indebtedness, cash or other assets, including securities, such Holder would have received had such Holder converted such Security (or portion thereof) immediately prior to such Record Date. In the event that such dividend or distribution is not so paid or made, the Conversion Price shall again be adjusted to be the Conversion Price which would then be in effect if such dividend or distribution had not been declared.

If the Board of Directors determines the fair market value of any distribution for purposes of this Section 12.4(d) by reference to the actual or when issued trading market for any securities comprising all or part of such distribution, it must in doing so consider the prices in such market over the same period (the "Reference Period") used in computing the Current Market Price pursuant to Section 12.4(g) to the extent possible, unless the Board of Directors in a Board Resolution determines in good faith that determining the fair market value during the Reference Period would not be in the best interest of the Holder.

Rights or warrants distributed by the Company to all holders of Common Stock entitling the holders thereof to subscribe for or purchase shares of the Company's capital stock (either initially or under certain circumstances), which rights or warrants, until the occurrence of a specified event or events ("Trigger Event"):

(III) are deemed to be transferred with such shares of Common Stock;

(IV) are not exercisable; and

(V) are also issued in respect of future issuances of Common Stock,

shall be deemed not to have been distributed for purposes of this Section 12.4(d) (and no adjustment to the Conversion Price under this Section 12.4(d) will be required) until the occurrence of the earliest Trigger Event. If such right or warrant is subject to subsequent events, upon the occurrence of which such right or warrant shall become exercisable to purchase different securities, evidences of indebtedness or other assets or entitle the holder to purchase a different number or amount of the foregoing or to purchase any of the foregoing at a different purchase price, then the occurrence of each such event shall be deemed to be the date of issuance and record date with respect to a new right or warrant (and a termination or expiration of the existing right or warrant without exercise by the holder thereof). In addition, in the event of any distribution (or deemed distribution) of rights or warrants, or any Trigger Event or other event (of the type described in the preceding sentence) with respect thereto, that resulted in an adjustment to the Conversion Price under this Section 12.4(d):

(1) in the case of any such rights or warrants which shall all have been redeemed or repurchased without exercise by any holders thereof, the Conversion Price shall be readjusted upon such final redemption or repurchase to give effect to such distribution or Trigger Event, as the case may be, as though it were a cash distribution, equal to the per share redemption or repurchase price received by a holder of Common Stock with respect to such rights or warrant (assuming such holder had retained such rights or warrants), made to all holders of Common Stock as of the date of such redemption or repurchase, and

(2) in the case of such rights or warrants all of which shall have expired or been terminated without exercise, the Conversion Price shall be readjusted as if such rights and warrants had never been issued.

For purposes of this Section 12.4(d) and Sections 12.4(a), 12.4(b) and 12.4(c), any dividend or distribution to which this Section 12.4(d) is applicable that also includes shares of Common Stock, a subdivision or combination of Common Stock to which Section 12.4(b) applies, or rights or warrants to subscribe for or purchase shares of Common Stock to which Section 12.4(c) applies (or any combination thereof), shall be deemed instead to be:

(3) a dividend or distribution of the evidences of indebtedness, assets, shares of capital stock, rights or warrants other than such shares of Common Stock, such subdivision or combination or such rights or warrants to which Sections 12.4(a), 12.4(b) and 12.4(c) apply, respectively (and any Conversion Price reduction required by this Section 12.4(d) with respect to such dividend or distribution shall then be made), immediately followed by

(4) a dividend or distribution of such shares of Common Stock, such subdivision or combination or such rights or warrants (and any further Conversion Price reduction required by Sections 12.4(a), 12.4(b) and 12.4(c) with respect to such dividend or distribution shall then be made), except:

(A) the Record Date of such dividend or distribution shall be substituted as (x) "the date fixed for the determination of stockholders entitled to receive such dividend or other distribution," "Record Date fixed for such determination" and "Record Date" within the meaning of Section 12.4(a), (y) "the day upon which such subdivision becomes effective" and "the day upon which such combination becomes effective" within the meaning of Section 12.4(b), and (z) as "the Record Date fixed for the determination of stockholders entitled to receive such rights or warrants," such "Record Date," "the Record Date fixed for the determination of stockholders entitled to receive such rights or warrants" and "such dated fixed for the determination of stockholders entitled to receive such rights or warrants" within the meaning of Section 12.4(c), and

(B) any shares of Common Stock included in such dividend or distribution shall not be deemed "outstanding at the close of business on the Record Date fixed for such determination" within the meaning of Section 12.4(a) and any reduction or increase in the number of shares of Common Stock resulting

from such subdivision or combination shall be disregarded in connection with such dividend or distribution..

(E) In case the Company shall, by dividend or otherwise, distribute to all holders of its Common Stock cash (excluding any cash that is distributed upon a reclassification, change, merger, consolidation, statutory share exchange, combination, sale or conveyance to which Section 12.11 hereof applies or as part of a distribution referred to in Section 12.4(d) hereof), in an aggregate amount that, combined together with:

(1) the aggregate amount of any other such distributions to all holders of Common Stock made exclusively in cash within the 12 months preceding the date of payment of such distribution, and in respect of which no adjustment pursuant to this Section 12.4(e) has been made, and

(2) the aggregate of any cash plus the fair market value (as determined by the Board of Directors, whose determination shall be conclusive and set forth in a Board Resolution), as of the expiration of the tender or exchange offer referred to below, of consideration payable in respect of any tender or exchange offer by the Company or any of its subsidiaries for all or any portion of the Common Stock concluded within the 12 months preceding the date of such distribution, and in respect of which no adjustment pursuant to Section 12.4(f) hereof has been made,

exceeds 10% of the product of the Current Market Price (determined as provided in Section 12.4(g)) on the Record Date with respect to such distribution times the number of shares of Common Stock outstanding on such date, then and in each such case, immediately after the close of business on such date, the Conversion Price shall be reduced so that the same shall equal the price determined by multiplying the Conversion Price in effect immediately prior to the close of business on such Record Date by a fraction:

(II) the numerator of which shall be equal to the Current Market Price on the Record Date less an amount equal to the quotient of (x) the excess of such combined amount over such 10% and (y) the number of shares of Common Stock outstanding on the Record Date, and

(III) the denominator of which shall be equal to the Current Market Price on such date.

In the event that such dividend or distribution is not so paid or made, the Conversion Price shall again be adjusted to be the Conversion Price which would then be in effect if such dividend or distribution had not been declared.

(F) In case a tender or exchange offer made by the Company or any of its subsidiaries for all or any portion of the Common Stock shall expire and such tender or exchange offer (as amended upon the expiration thereof) shall require the payment to stockholders (based on the acceptance (up to any maximum specified in the terms of the tender or exchange offer) of Purchased Shares (as defined below)) of an aggregate consideration having a fair market value (as determined by the Board of Directors, whose determination shall be conclusive and set forth in a Board Resolution) that combined together with:

(1) the aggregate of the cash plus the fair market value (as determined by the Board of Directors, whose determination shall be conclusive and set forth in a Board Resolution), as of the expiration of the other tender or exchange offer referred to below, of consideration payable in respect of any other tender or exchange offers by the Company or any of its subsidiaries for all or any portion of the Common Stock expiring within the preceding 12 months and in respect of which no adjustment pursuant to this Section 12.4(f) has been made, and

(2) the aggregate amount of any distributions to all holders of the Company's Common Stock made exclusively in cash within the preceding 12 months and in respect of which no adjustment pursuant to Section 12.4(e) has been made, exceeds 10% of the product of the Current Market Price (determined as provided in Section 12.4(g)) as of the last time (the "Expiration Time") tenders could have been made pursuant to such tender or exchange offer (as it may be amended) times the number of shares of Common Stock outstanding (including any tendered or exchanged shares) on the Expiration Time, then, and in each such case, immediately prior to the opening of business on the day after the date of the Expiration Time, the Conversion Price shall be adjusted so that the same shall equal the price determined by multiplying the Conversion Price in effect immediately prior to close of business on the date of the Expiration Time by a fraction:

(II) the numerator of which shall be (x) the number of shares of Common Stock outstanding (including any tendered or exchanged shares) at the Expiration Time multiplied by the Current Market Price of the Common Stock on the Trading Day next succeeding the Expiration Time minus (y) the fair market value (determined as aforesaid) of the aggregate consideration payable to stockholders based on the acceptance (up to any maximum specified in the terms of the tender or exchange offer) of all shares validly tendered or exchanged and not withdrawn as of the Expiration Time (the shares deemed so accepted, up to any such maximum, being referred to as the "Purchased Shares"), and

(III) the denominator shall be the product of the number of shares of Common Stock outstanding (less any Purchased Shares) on the Expiration Time and the Current Market Price of the Common Stock on the Trading Day next succeeding the Expiration Time.

Such reduction (if any) shall become effective immediately prior to the opening of business on the day following the Expiration Time. In the event that the Company is obligated to purchase shares pursuant to any such tender offer, but the Company is permanently prevented by applicable law from effecting any such purchases or all such purchases are rescinded, the Conversion Price shall again be adjusted to be the Conversion Price which would then be in effect if such tender or exchange offer had not been made. If the application of this Section 12.4(f) to any tender or exchange offer would result in an increase in the Conversion Price, no adjustment shall be made for such tender or exchange offer under this Section 12.4(f).

(G) For purposes of this Section 12.4, the following terms shall have the meanings indicated:

(1) "Current Market Price" shall mean the average of the daily Closing Prices per share of Common Stock for the ten consecutive Trading Days immediately prior to the date in question; provided, however, that if:

(II) the "ex" date (as hereinafter defined) for any event (other than the issuance or distribution requiring such computation) that requires an adjustment to the Conversion Price pursuant to Section 12.4(a), (b), (c), (d), (e) or (f) occurs during such ten consecutive Trading Days, the Closing Price for each Trading Day prior to the "ex" date for such other event shall be adjusted by multiplying such Closing Price by the same fraction by which the Conversion Price is so required to be adjusted as a result of such other event;

(III) the "ex" date for any event (other than the issuance or distribution requiring such computation) that requires an adjustment to the Conversion Price pursuant to Section 12.4(a), (b), (c), (d), (e) or (f) occurs on or after the "ex" date for the issuance or distribution requiring such computation and prior to the day in question, the Closing Price for each Trading Day on and after the "ex" date for such other event shall be adjusted by multiplying such Closing Price by the reciprocal of the fraction by which the Conversion Price is so required to be adjusted as a result of such other event; and

(IV) the "ex" date for the issuance or distribution requiring such computation is prior to the day in question, after taking into account any adjustment required pursuant to clause (i) or (ii) of this proviso, the Closing Price for each Trading Day on or after such "ex" date shall be adjusted by adding thereto the amount of any cash and the fair market value (as determined by the Board of Directors in a manner consistent with any determination of such value for purposes of Section 12.4(d) or (f), whose determination shall be conclusive and set forth in a Board Resolution) of the evidences of indebtedness, shares of capital stock or assets being distributed applicable to one share of Common Stock as of the close of business on the day before such "ex" date.

For purposes of any computation under Section 12.4(f), the Current Market Price of the Common Stock on any date shall be deemed to be the average of the daily Closing Prices per share of Common Stock for such day and the next two succeeding Trading Days; provided, however, that if the "ex" date for any event (other than the tender offer requiring such computation) that requires an adjustment to the Conversion Price pursuant to Section 12.4(a), (b), (c), (d), (e) or (f) occurs on or after the Expiration Time for the tender or exchange offer requiring such computation and prior to the day in question, the Closing Price for each Trading Day on and after the "ex" date for such other event shall be adjusted by multiplying such Closing Price by the

reciprocal of the fraction by which the Conversion Price is so required to be adjusted as a result of such other event. For purposes of this paragraph, the term "ex" date, when used:

(A) with respect to any issuance or distribution, means the first date on which the Common Stock trades regular way on the relevant exchange or in the relevant market from which the Closing Price was obtained without the right to receive such issuance or distribution;

(B) with respect to any subdivision or combination of shares of Common Stock, means the first date on which the Common Stock trades regular way on such exchange or in such market after the time at which such subdivision or combination becomes effective, and

(C) with respect to any tender or exchange offer, means the first date on which the Common Stock trades regular way on such exchange or in such market after the Expiration Time of such offer.

Notwithstanding the foregoing, whenever successive adjustments to the Conversion Price are called for pursuant to this Section 12.4, such adjustments shall be made to the Current Market Price as may be necessary or appropriate to effectuate the intent of this Section 12.4 and to avoid unjust or inequitable results as determined in good faith by the Board of Directors.

(2) "fair market value" shall mean the amount which a willing buyer would pay a willing seller in an arm's length transaction.

(3) "Record Date" shall mean, with respect to any dividend, distribution or other transaction or event in which the holders of Common Stock have the right to receive any cash, securities or other property or in which the Common Stock (or other applicable security) is exchanged for or converted into any combination of cash, securities or other property, the date fixed for determination of stockholders entitled to receive such cash, securities or other property (whether such date is fixed by the Board of Directors or by statute, contract or otherwise).

(H) The Company may make such reductions in the Conversion Price, in addition to those required by Section 12.4(a), (b), (c), (d), (e) or (f), as the Board of Directors considers to be advisable to avoid or diminish any income tax to holders of Common Stock or rights to purchase Common Stock resulting from any dividend or distribution of stock (or rights to acquire stock) or from any event treated as such for income tax purposes.

To the extent permitted by applicable law, the Company from time to time may reduce the Conversion Price by any amount for any period of time if the period is at least 20 days and the reduction is irrevocable during the period and the Board of Directors determines in good faith that such reduction would be in the best interests of the Company, which determination shall be conclusive and set forth in a Board Resolution. Whenever the Conversion Price is reduced pursuant to the preceding sentence, the Company shall mail to the Trustee and each Holder at the address of such Holder as it appears in the Register a notice of the reduction at least 15 days

prior to the date the reduced Conversion Price takes effect, and such notice shall state the reduced Conversion Price and the period during which it will be in effect.

(I) No adjustment in the Conversion Price shall be required unless such adjustment would require an increase or decrease of at least 1% in such price; provided, however, that any adjustments which by reason of this Section 12.4(i) are not required to be made shall be carried forward and taken into account in any subsequent adjustment. All calculations under this Article 12 shall be made by the Company and shall be made to the nearest cent or to the nearest one hundredth of a share, as the case may be. No adjustment need be made for a change in the par value or no par value of the Common Stock.

(J) In any case in which this Section 12.4 provides that an adjustment shall become effective immediately after a Record Date for an event, the Company may defer until the occurrence of such event (i) issuing to the Holder of any Security converted after such Record Date and before the occurrence of such event the additional shares of Common Stock issuable upon such conversion by reason of the adjustment required by such event over and above the Common Stock issuable upon such conversion before giving effect to such adjustment and (ii) paying to such holder any amount in cash in lieu of any fraction pursuant to Section 12.3 hereof.

(K) For purposes of this Section 12.4, the number of shares of Common Stock at any time outstanding shall not include shares held in the treasury of the Company but shall include shares issuable in respect of scrip certificates issued in lieu of fractions of shares of Common Stock. The Company will not pay any dividend or make any distribution on shares of Common Stock held in the treasury of the Company.

(L) If the distribution date for the rights provided in the Company's rights agreement, if any, occurs prior to the date a Security is converted, the Holder of the Security who converts such Security after the distribution date is not entitled to receive the rights that would otherwise be attached (but for the date of conversion) to the shares of Common Stock received upon such conversion; provided, however, that an adjustment shall be made to the Conversion Price pursuant to clause 12.4(b) as if the rights were being distributed to the common stockholders of the Company immediately prior to such conversion. If such an adjustment is made and the rights are later redeemed, invalidated or terminated, then a corresponding reversing adjustment shall be made to the Conversion Price, on an equitable basis, to take account of such event.

SECTION 12.5 NOTICE OF ADJUSTMENTS OF CONVERSION PRICE.

Whenever the Conversion Price is adjusted as herein provided (other than in the case of an adjustment pursuant to the second paragraph of Section 12.4(h) for which the notice required by such paragraph has been provided), the Company shall promptly file with the Trustee and any Conversion Agent other than the Trustee an Officers' Certificate setting forth the adjusted Conversion Price and showing in reasonable detail the facts upon which such adjustment is based. Promptly after delivery of such Officers' Certificate, the Company shall prepare a notice stating that the Conversion Price has been adjusted and setting forth the adjusted Conversion Price and the date on which each adjustment becomes effective, and shall mail such notice to each Holder at the address of such Holder as it appears in the Register within 20 days of the

effective date of such adjustment. Failure to deliver such notice shall not effect the legality or validity of any such adjustment.

SECTION 12.6 NOTICE PRIOR TO CERTAIN ACTIONS.

In case at any time after the date hereof:

(1) the Company shall declare a dividend (or any other distribution) on its Common Stock payable otherwise than in cash out of its capital surplus or its consolidated retained earnings;

(2) the Company shall authorize the granting to the holders of its Common Stock of rights or warrants to subscribe for or purchase any shares of capital stock of any class (or of securities convertible into shares of capital stock of any class) or of any other rights;

(3) there shall occur any reclassification of the Common Stock of the Company (other than a subdivision or combination of its outstanding Common Stock, a change in par value, a change from par value to no par value or a change from no par value to par value), or any merger, consolidation, statutory share exchange or combination to which the Company is a party and for which approval of any shareholders of the Company is required, or the sale, transfer or conveyance of all or substantially all of the assets of the Company; or

(4) there shall occur the voluntary or involuntary dissolution, liquidation or winding up of the Company;

the Company shall cause to be filed at each office or agency maintained for the purpose of conversion of securities pursuant to Section 9.2 hereof, and shall cause to be provided to the Trustee and all Holders in accordance with Section 14.2 hereof, at least 20 days (or 10 days in any case specified in clause (1) or (2) above) prior to the applicable record or effective date hereinafter specified, a notice stating:

(A) the date on which a record is to be taken for the purpose of such dividend, distribution, rights or warrants, or, if a record is not to be taken, the date as of which the holders of Common Stock of record to be entitled to such dividend, distribution, rights or warrants are to be determined, or

(B) the date on which such reclassification, merger, consolidation, statutory share exchange, combination, sale, transfer, conveyance, dissolution, liquidation or winding up is expected to become effective, and the date as of which it is expected that holders of Common Stock of record shall be entitled to exchange their shares of Common Stock for securities, cash or other property deliverable upon such reclassification, merger, consolidation, statutory share exchange, sale, transfer, dissolution, liquidation or winding up.

Neither the failure to give such notice nor any defect therein shall affect the legality or validity of the proceedings or actions described in clauses (1) through (4) of this Section 12.6.

SECTION 12.7 COMPANY TO RESERVE COMMON STOCK.

The Company shall at all times use its best efforts to reserve and keep available, free from preemptive rights, out of its authorized but unissued Common Stock, for the purpose of effecting the conversion of Securities, the full number of shares of fully paid and nonassessable Common Stock then issuable upon the conversion of all Outstanding Securities.

SECTION 12.8 TAXES ON CONVERSIONS.

Except as provided in the next sentence, the Company will pay any and all taxes (other than taxes on income) and duties that may be payable in respect of the issue or delivery of shares of Common Stock on conversion of Securities pursuant hereto. A Holder delivering a Security for conversion shall be liable for and will be required to pay any tax or duty which may be payable in respect of any transfer involved in the issue and delivery of shares of Common Stock in a name other than that of the Holder of the Security or Securities to be converted, and no such issue or delivery shall be made unless the Person requesting such issue has paid to the Company the amount of any such tax or duty, or has established to the satisfaction of the Company that such tax or duty has been paid.

SECTION 12.9 COVENANT AS TO COMMON STOCK.

The Company covenants that all shares of Common Stock which may be issued upon conversion of Securities will upon issue be fully paid and nonassessable and, except as provided in Section 12.8, the Company will pay all taxes, liens and charges with respect to the issue thereof.

SECTION 12.10 CANCELLATION OF CONVERTED SECURITIES.

All Securities delivered for conversion shall be delivered to the Trustee to be canceled by or at the direction of the Trustee, which shall dispose of the same as provided in Section 2.9.

SECTION 12.11 EFFECT OF RECAPITALIZATION, RECLASSIFICATION, CONSOLIDATION, MERGER OR SALE.

If any of following events occur, namely:

(I) any recapitalization, reclassification or change of the outstanding shares of Common Stock (other than a change in par value, or from par value to no par value, or from no par value to par value, or as a result of a subdivision or combination),

(II) any merger, consolidation, statutory share exchange or combination of the Company with another corporation as a result of which holders of Common Stock shall be entitled to receive stock, securities or other property or assets (including cash) with respect to or in exchange for such Common Stock or

(III) any sale, conveyance or lease of the properties and assets of the Company as, or substantially as, an entirety to any other corporation as a result of which holders of Common Stock shall be entitled to receive stock, securities or other property or assets (including cash) with respect to or in exchange for such Common Stock,

the Company or the successor or purchasing corporation, as the case may be, shall execute with the Trustee a supplemental indenture (which shall comply with the TIA as in force at the date of execution of such supplemental indenture if such supplemental indenture is then required to so comply) providing that each Security shall be convertible into the kind and amount of shares of stock and other securities or property or assets (including cash) which such Holder would have been entitled to receive upon such recapitalization, reclassification, change, merger, consolidation, statutory share exchange, combination, sale or conveyance had such Securities been converted into Common Stock immediately prior to such recapitalization, reclassification, change, merger, consolidation, statutory share exchange, combination, sale or conveyance assuming such holder of Common Stock did not exercise its rights of election, if any, as to the kind or amount of securities, cash or other property receivable upon such recapitalization, reclassification, change, merger, consolidation, statutory share exchange, combination, sale or conveyance (provided that, if the kind or amount of securities, cash or other property receivable upon such recapitalization, reclassification, change, merger, consolidation, statutory share exchange, combination, sale or conveyance is not the same for each share of Common Stock in respect of which such rights of election shall not have been exercised ("Non-Electing Share"), then for the purposes of this Section 12.11 the kind and amount of securities, cash or other property receivable upon such recapitalization, reclassification, change, merger, consolidation, statutory share exchange, combination, sale or conveyance for each Non-Electing Share shall be deemed to be the kind and amount so receivable per share by a plurality of the Non-Electing Shares). Such supplemental indenture shall provide for adjustments which shall be as nearly equivalent as may be practicable to the adjustments provided for in this Article 12. If, in the case of any such recapitalization, reclassification, change, merger, consolidation, statutory share exchange, combination, sale or conveyance, the stock or other securities and assets receivable thereupon by a holder of shares of Common Stock includes shares of stock or other securities and assets of a corporation other than the successor or purchasing corporation, as the case may be, in such recapitalization, reclassification, change, merger, consolidation, statutory share exchange, combination, sale or conveyance, then such supplemental indenture shall also be executed by such other corporation and shall contain such additional provisions to protect the interests of the Holders of the Securities as the Board of Directors shall reasonably consider necessary by reason of the foregoing, including to the extent practicable the provisions providing for the Repurchase Rights set forth in Article 11 hereof.

The Company shall cause notice of the execution of such supplemental indenture to be mailed to each Holder, at the address of such Holder as it appears on the Register, within 20 days after execution thereof. Failure to deliver such notice shall not affect the legality or validity of such supplemental indenture.

The above provisions of this Section shall similarly apply to successive recapitalizations, reclassifications, mergers, consolidations, statutory share exchanges, combinations, sales and conveyances.

If this Section 12.11 applies to any event or occurrence, Section 12.4 hereof shall not apply.

SECTION 12.12 RESPONSIBILITY OF TRUSTEE FOR CONVERSION PROVISIONS.

The Trustee, subject to the provisions of Section 5.1 hereof, and any Conversion Agent shall not at any time be under any duty or responsibility to any Holder of Securities to determine whether any facts exist which may require any adjustment of the Conversion Price, or with respect to the nature or intent of any such adjustments when made, or with respect to the method employed, or herein or in any supplemental indenture provided to be employed, in making the same. Neither the Trustee, subject to the provisions of Section 5.1 hereof, nor any Conversion Agent shall be accountable with respect to the validity or value (of the kind or amount) of any Common Stock, or of any other securities or property, which may at any time be issued or delivered upon the conversion of any Security; and it or they do not make any representation with respect thereto. Neither the Trustee, subject to the provisions of Section 5.1 hereof, nor any Conversion Agent shall be responsible for any failure of the Company to make any cash payment or to issue, transfer or deliver any shares of stock or share certificates or other securities or property upon the surrender of any Security for the purpose of conversion; and the Trustee, subject to the provisions of Section 5.1 hereof, and any Conversion Agent shall not be responsible or liable for any failure of the Company to comply with any of the covenants of the Company contained in this Article.

ARTICLE 13

SUBORDINATION

SECTION 13.1 SECURITIES SUBORDINATED TO SENIOR DEBT.

The Company covenants and agrees, and each Holder of Securities, by such Holder's acceptance thereof, likewise covenants and agrees, that the Indebtedness represented by the Securities and the payment of the principal of and premium, if any, and interest (including Liquidated Damages, if any) on each and all of the Securities is hereby expressly subordinated and junior, to the extent and in the manner set forth and as set forth in this Section 13.1, in right of payment to the prior payment in full of all Senior Debt.

(A) In the event of any distribution of assets of the Company upon any dissolution, winding up, liquidation or reorganization of the Company, whether in bankruptcy, insolvency, reorganization or receivership proceedings or upon an assignment for the benefit of creditors or any other marshalling of the assets and liabilities of the Company or otherwise, the holders of all Senior Debt shall first be entitled to receive payment of the full amount due thereon in respect of all such Senior Debt and all other amounts due or provision shall be made for such amount in cash, or other payments satisfactory to the holders of Senior Debt, before the Holders of any of the Securities are entitled to receive any payment or distribution of any character, whether in cash, securities or other property, on account of the principal of or premium, if any, or interest (including Liquidated Damages, if any) on the Securities.

(B) In the event of any acceleration of Maturity of the Securities because of an Event of Default, unless the full amount due in respect of all Senior Debt is paid in cash or other form of payment satisfactory to the holders of Senior Debt, no payment shall be made by the Company with respect to the principal of, premium, if any, or interest (including Liquidated Damages, if any) on the Securities or to acquire any of the Securities (including any redemption, conversion or cash repurchase pursuant to the exercise of the Repurchase Right), and the Company shall give prompt written notice of such acceleration to such holders of Senior Debt.

(C) In the event of and during the continuance of any default in payment of the principal of or premium, if any, or interest on, rent or other payment obligation in respect of, any Senior Debt, unless all such payments due in respect of such Senior Debt have been paid in full in cash or other payments satisfactory to the holders of Senior Debt, no payment shall be made by the Company with respect to the principal of, premium, if any, or interest (including Liquidated Damages, if any) on the Securities or to acquire any of the Securities (including any redemption, conversion or cash repurchase pursuant to the exercise of the Repurchase Right). The Company shall give prompt written notice to the Trustee of any default under any Senior Debt or under any agreement pursuant to which Senior Debt may have been issued.

(D) During the continuance of any event of default with respect to any Designated Senior Debt, as such event of default is defined under any such Designated Senior Debt or in any agreement pursuant to which any Designated Senior Debt has been issued (other than a default in payment of the principal of or premium, if any, or interest on, rent or other payment obligation in respect of any Designated Senior Debt), permitting the holder or holders of such Designated

Senior Debt to accelerate the maturity thereof (or in the case of any lease, permitting the landlord either to terminate the lease or to require the Company to make an irrevocable offer to terminate the lease following an event of default thereunder), no payment shall be made by the Company, directly or indirectly, with respect to principal of, premium, if any, or interest (including Liquidated Damages, if any) on the Securities for 179 days following notice in writing (a "Payment Blockage Notice") to the Company, from any holder or holders of such Designated Senior Debt or their representative or representatives or the trustee or trustees under any indenture or under which any instrument evidencing any such Designated Senior Debt may have been issued, that such an event of default has occurred and is continuing, unless such event of default has been cured or waived or such Designated Senior Debt has been paid in full in cash or other payment satisfactory to the holders of such Designated Senior Debt; provided, however, if the maturity of such Designated Senior Debt is accelerated (or in the case of any lease, as a result of such event of default, the landlord under the lease has given the Company notice of its intention to terminate the lease or to require the Company to make an irrevocable offer to terminate the lease following an event of default thereunder), no payment may be made on the Securities until such Designated Senior Debt has been paid in full in cash or other payment satisfactory to the holders of such Designated Senior Debt or such acceleration (or termination, in the case of a lease) has been cured or waived.

For purposes of this Section 13.1(d), such Payment Blockage Notice shall be deemed to include notice of all other events of default under such indenture or instrument which are continuing at the time of the event of default specified in such Payment Blockage Notice. The provisions of this Section 13.1(d) shall apply only to one such Payment Blockage Notice given in any period of 365 days with respect to any issue of Designated Senior Debt, and no such continuing event of default that existed or was continuing on the date of delivery of any Payment Blockage Notice shall be, or shall be made, the basis for a subsequent Payment Blockage Notice.

(E) In the event that, notwithstanding the foregoing provisions of Sections 13.1(a), 13.1(b), 13.1(c) and 13.1(d), any payment on account of principal, premium, if any, or interest (including Liquidated Damages, if any) on the Securities shall be made by or on behalf of the Company and received by the Trustee, by any Holder or by any Paying Agent (or, if the Company is acting as its own Paying Agent, money for any such payment shall be segregated and held in trust):

(I) after the occurrence of an event specified in Section 13.1(a) or 13.1(b), then, unless all Senior Debt is paid in full in cash, or provision shall be made therefor,

(II) after the happening of an event of default of the type specified in Section 13.1(c) above, then, unless the amount of such Senior Debt then due shall have been paid in full, or provision made therefor or such event of default shall have been cured or waived, or

(III) after the happening of an event of default of the type specified in Section 13.1(d) above and delivery of a Payment Blockage Notice, then, unless such event of default shall have been cured or waived or the 179-day period specified in Section 13.1(d) shall have expired,

such payment (subject, in each case, to the provisions of Section 13.7 hereof) shall be held in trust for the benefit of, and shall be immediately paid over to, the holders of Designated Senior Debt (unless an event described in Section 13.1(a), (b) or (c) has occurred, in which case the payment shall be held in trust for the benefit of, and shall be immediately paid over to all holders of Senior Debt) or their representative or representatives or the trustee or trustees under any indenture under which any instruments evidencing any of the Designated Senior Debt or Senior Debt, as the case may be, may have been issued, as their interests may appear.

SECTION 13.2 SUBROGATION.

Subject to the payment in full of all Senior Debt to which the Indebtedness evidenced by the Securities is in the circumstances subordinated as provided in Section 13.1 hereof, the Holders of the Securities shall be subrogated to the rights of the holders of such Senior Debt to receive payments or distributions of cash, property or securities of the Company applicable to such Senior Debt until all amounts owing on the Securities shall be paid in full, and, as between the Company, its creditors other than holders of such Senior Debt, and the Holders of the Securities, no such payment or distribution made to the holders of Senior Debt by virtue of this Article which otherwise would have been made to the holders of the Securities shall be deemed to be a payment by the Company on account of such Senior Debt, provided that the provisions of this Article are and are intended solely for the purpose of defining the relative rights of the Holders of the Securities, on the one hand, and the holders of Senior Debt, on the other hand.

SECTION 13.3 OBLIGATION OF THE COMPANY IS ABSOLUTE AND UNCONDITIONAL.

Nothing contained in this Article or elsewhere in this Indenture or in the Securities is intended to or shall impair, as between the Company, its creditors other than the holders of Senior Debt, and the Holders of the Securities, the obligation of the Company, which is absolute and unconditional, to pay to the Holders of the Securities the principal of and premium, if any, and interest (including Liquidated Damages, if any) on the Securities as and when the same shall become due and payable in accordance with their terms, or is intended to or shall affect the relative rights of the Holders of the Securities and creditors of the Company other than the holders of Senior Debt, nor shall anything contained herein or therein prevent the Trustee or the Holder of any Security from exercising all remedies otherwise permitted by applicable law upon default under this Indenture, subject to the rights, if any, under this Article of the holders of Senior Debt in respect of cash, property or securities of the Company received upon the exercise of any such remedy.

SECTION 13.4 MATURITY OF OR DEFAULT ON SENIOR DEBT.

Upon the maturity of any Senior Debt by lapse of time, acceleration or otherwise, all principal of or premium, if any, or interest on, rent or other payment obligations in respect of all such matured Senior Debt shall first be paid in full, or such payment shall have been duly provided for, before any payment on account of principal, or premium, if any, or interest (including Liquidated Damages, if any) is made upon the Securities.

SECTION 13.5 PAYMENTS ON SECURITIES PERMITTED.

Except as expressly provided in this Article, nothing contained in this Article shall affect the obligation of the Company to make, or prevent the Company from making, payments of the principal of, or premium, if any, or interest (including Liquidated Damages, if any) on the Securities in accordance with the provisions hereof and thereof, or shall prevent the Trustee or any Paying Agent from applying any moneys deposited with it hereunder to the payment of the principal of, or premium, if any, or interest (including Liquidated Damages, if any) on the Securities.

SECTION 13.6 EFFECTUATION OF SUBORDINATION BY TRUSTEE.

Each Holder of Securities, by such Holder's acceptance thereof, authorizes and directs the Trustee on such Holder's behalf to take such action as may be necessary or appropriate to effectuate the subordination provided in this Article and appoints the Trustee such Holder's attorney-in-fact for any and all such purposes.

Upon any payment or distribution of assets of the Company referred to in this Article, the Trustee and the Holders of the Securities shall be entitled to rely upon any order or decree made by any court of competent jurisdiction in which any such dissolution, winding up, liquidation or reorganization proceeding affecting the affairs of the Company is pending or upon a certificate of the trustee in bankruptcy, receiver, assignee for the benefit of creditors, liquidating trustee or agent or other Person making any payment or distribution, delivered to the Trustee or to the Holders of the Securities, for the purpose of ascertaining the Persons entitled to participate in such payment or distribution, and as to other facts pertinent to the right of such Persons under this Article, and if such evidence is not furnished, the Trustee may defer any payment to such Persons pending judicial determination as to the right of such Persons to receive such payment.

SECTION 13.7 KNOWLEDGE OF TRUSTEE.

Notwithstanding the provision of this Article or any other provisions of this Indenture, the Trustee shall not be charged with knowledge of the existence of any Senior Debt, of any default in payment of principal of, premium, if any, or interest on, rent or other payment obligation in respect of any Senior Debt, or of any facts which would prohibit the making of any payment of moneys to or by the Trustee, or the taking of any other action by the Trustee, unless a Responsible Officer of the Trustee having responsibility for the administration of the trust established by this Indenture shall have received written notice thereof from the Company, any Holder of Securities, any Paying or Conversion Agent of the Company or the holder or representative of any class of Senior Debt, and, prior to the receipt of any such written notice, the Trustee shall be entitled in all respects to assume that no such default or facts exist; provided, however, that unless on the third Business Day prior to the date upon which by the terms hereof any such moneys may become payable for any purpose the Trustee shall have received the notice provided for in this Section 13.7, then, anything herein contained to the contrary notwithstanding, the Trustee shall have full power and authority to receive such moneys and apply the same to the purpose for which they were received, and shall not be affected by any notice to the contrary which may be received by it on or after such date.

SECTION 13.8 TRUSTEE'S RELATION TO SENIOR DEBT.

The Trustee shall be entitled to all the rights set forth in this Article with respect to any Senior Debt at the time held by it, to the same extent as any other holder of Senior Debt and nothing in this Indenture shall deprive the Trustee of any of its rights as such holder.

Nothing contained in this Article shall apply to claims of or payments to the Trustee under or pursuant to Section 5.8 hereof.

With respect to the holders of Senior Debt, the Trustee undertakes to perform or to observe only such of its covenants and obligations as are specifically set forth in this Article, and no implied covenants or obligations with respect to the holders of Senior Debt shall be read into this Indenture against the Trustee. The Trustee shall not be deemed to owe any fiduciary duty to the holders of Senior Debt and the Trustee shall not be liable to any holder of Senior Debt if it shall pay over or deliver to Holders, the Company or any other Person moneys or assets to which any holder of Senior Debt shall be entitled by virtue of this Article or otherwise.

SECTION 13.9 RIGHTS OF HOLDERS OF SENIOR DEBT NOT IMPAIRED.

No right of any present or future holder of any Senior Debt to enforce the subordination herein shall at any time or in any way be prejudiced or impaired by any act or failure to act on the part of the Company or by any noncompliance by the Company with the terms, provisions and covenants of this Indenture, regardless of any knowledge thereof any such holder may have or be otherwise charged with.

SECTION 13.10 MODIFICATION OF TERMS OF SENIOR DEBT.

Any renewal or extension of the time of payment of any Senior Debt or the exercise by the holders of Senior Debt of any of their rights under any instrument creating or evidencing Senior Debt, including without limitation the waiver of default thereunder, may be made or done all without notice to or assent from the Holders of the Securities or the Trustee.

No compromise, alteration, amendment, modification, extension, renewal or other change of, or waiver, consent or other action in respect of, any liability or obligation under or in respect of, or of any of the terms, covenants or conditions of any indenture or other instrument under which any Senior Debt is outstanding or of such Senior Debt, whether or not such release is in accordance with the provisions or any applicable document, shall in any way alter or affect any of the provisions of this Article or of the Securities relating to the subordination thereof.

SECTION 13.11 CERTAIN CONVERSIONS NOT DEEMED PAYMENT.

For the purposes of this Article 13 only:

(1) the issuance and delivery of junior securities upon conversion of Securities in accordance with Article 12 hereof shall not be deemed to constitute a payment or distribution on account of the principal of, premium, if any, or interest (including Liquidated Damages, if any) on Securities or on account of the purchase or other acquisition of Securities, and

(2) the payment, issuance or delivery of cash (except in satisfaction of fractional shares pursuant to Section 12.3 hereof), property or securities (other than junior securities) upon conversion of a Security shall be deemed to constitute payment on account of the principal of, premium, if any, or interest (including Liquidated Damages, if any) on such Security.

For the purposes of this Section 13.11, the term "junior securities" means:

(B) shares of any common stock of the Company or

(C) other securities of the Company that are subordinated in right of payment to all Senior Debt that may be outstanding at the time of issuance or delivery of such securities to substantially the same extent as, or to a greater extent than, the Securities are so subordinated as provided in this Article.

Nothing contained in this Article 13 or elsewhere in this Indenture or in the Securities is intended to or shall impair, as among the Company, its creditors (other than holders of Senior Debt) and the Holders of Securities, the right, which is absolute and unconditional, of the Holder of any Security to convert such Security in accordance with Article 12 hereof.

ARTICLE 14

OTHER PROVISIONS OF GENERAL APPLICATION

SECTION 14.1 TRUST INDENTURE ACT CONTROLS.

This Indenture is subject to the provisions of the TIA which are required to be part of this Indenture, and shall, to the extent applicable, be governed by such provisions.

SECTION 14.2 NOTICES.

Any notice or communication to the Company or the Trustee is duly given if in writing and delivered in person or mailed by first-class mail to the address set forth below:

(A) if to the Company:

Vertex Pharmaceuticals Incorporated
130 Waverly Street
Cambridge, MA 02139
Attention: Dr. Joshua S. Boger

with a copy to:

Kirkpatrick & Lockhart LLP
75 State Street
Boston, MA 02109
Attention: Eileen Smith Ewing, Esq.

(B) if to the Trustee:

State Street Bank and Trust Company
2 Avenue de Lafayette
6th Floor
Boston, MA 02111-1724
Attention: Corporate Trust Dept.

The Company or the Trustee by notice to the other may designate additional or different addresses for subsequent notices or communications.

Any notice or communication to a Holder shall be mailed by first-class mail to his address shown on the Register kept by the Registrar. Failure to mail a notice or communication to a Holder or any defect in such notice or communication shall not affect its sufficiency with respect to other Holders.

If a notice or communication is mailed or sent in the manner provided above within the time prescribed, it is duly given as of the date it is mailed, whether or not the addressee receives it, except that notice to the Trustee shall only be effective upon receipt thereof by the Trustee.

If the Company mails a notice or communication to Holders, it shall mail a copy to the Trustee at the same time.

SECTION 14.3 COMMUNICATION BY HOLDERS WITH OTHER HOLDERS.

Holders may communicate pursuant to Section 312(b) of the TIA with other Holders with respect to their rights under the Securities or this Indenture. The Company, the Trustee, the Registrar and anyone else shall have the protection of Section 312(c) of the TIA.

SECTION 14.4 ACTS OF HOLDERS OF SECURITIES.

(A) Any request, demand, authorization, direction, notice, consent, waiver or other action provided by this Indenture to be given or taken by Holders of Securities may be embodied in and evidenced by:

(1) one or more instruments of substantially similar tenor signed by such Holders in person or by agent or proxy duly appointed in writing;

(2) the record of Holders of Securities voting in favor thereof, either in person or by proxies duly appointed in writing, at any meeting of Holders of Securities duly called and held in accordance with the provisions of Article 8; or

(3) a combination of such instruments and any such record.

Except as herein otherwise expressly provided, such action shall become effective when such instrument or instruments or record or both are delivered to the Trustee and, where it is hereby expressly required, to the Company. Such instrument or instruments and record (and the action embodied therein and evidenced thereby) are herein sometimes referred to as the "Act" of the Holders of Securities signing such instrument or instruments and so voting at such meeting. Proof of execution of any such instrument or of a writing appointing any such agent or proxy, or of the holding by any Person of a Security, shall be sufficient for any purpose of this Indenture and (subject to Section 5.1 hereof) conclusive in favor of the Trustee and the Company if made in the manner provided in this Section. The record of any meeting of Holders of Securities shall be proved in the manner provided in Section 8.6 hereof.

(B) The fact and date of the execution by any Person of any such instrument or writing may be provided in any manner which the Trustee reasonably deems sufficient.

(C) The principal amount and serial numbers of Securities held by any Person, and the date of such Person holding the same, shall be proved by the Register.

(D) Any request, demand, authorization, direction, notice, consent, election, waiver or other Act of the Holders of any Security shall bind every future Holder of the same Security and the Holder of every Security issued upon the registration of transfer thereof or in exchange therefor or in lieu thereof in respect of anything done, omitted or suffered to be done by the Trustee or the Company in reliance thereon, whether or not notation of such action is made upon such Security.

SECTION 14.5 CERTIFICATE AND OPINION AS TO CONDITIONS PRECEDENT.

In any case where several matters are required to be certified by, or covered by an opinion of, any specified Person, it is not necessary that all such matters be certified by, or covered by the opinion of, only one such Person, or that they be so certified or covered by only one document, but one such Person may certify or give an opinion with respect to some matters and one or more other such Persons as to other matters, and any such Person may certify or give an opinion as to such matters in one or several documents.

Any certificate or opinion of an officer of the Company may be based, insofar as it relates to legal matters, upon an Opinion of Counsel, unless such officer knows, or in the exercise of reasonable care should know, that the Opinion of Counsel with respect to the matters upon which such certificate or opinion is based is erroneous. Any such Opinion of Counsel may be based, insofar as it relates to factual matters, upon a certificate or representations by, an officer or officers of the Company stating that the information with respect to such factual matters is in the possession of the Company, unless such counsel knows, or in the exercise of reasonable care should know, that the certificate or representations with respect to such matters are erroneous.

Where any Person is required to make, give or execute two or more applications, requests, consents, certificates, statements, opinions or other instruments under this Indenture, they may, but need not, be consolidated and form one instrument.

Upon any application or request by the Company to the Trustee to take any action under any provision of this Indenture, the Company shall furnish to the Trustee an Officers' Certificate stating that all conditions precedent, if any, provided for in this Indenture relating to the proposed action have been complied with and an Opinion of Counsel stating that in the opinion of such Counsel all such conditions precedent, if any, have been complied with, except that in the case of any such application or request as to which the furnishing of such documents is specifically required by any provision of this Indenture relating to such particular application or request, no additional certificate or opinion need be furnished.

SECTION 14.6 STATEMENTS REQUIRED IN CERTIFICATE OR OPINION.

Each certificate or opinion with respect to compliance with a condition or covenant provided for in this Indenture shall include:

(1) a statement that each individual signing such certificate or opinion on behalf of the Company has read such covenant or condition and the definitions herein relating thereto;

(2) a brief statement as to the nature and scope of the examination or investigation upon which the statements or opinions contained in such certificate or opinion are based;

(3) a statement that, in the opinion of each such individual, he has made such examination or investigation as is necessary to enable him to express an informed opinion as to whether or not such covenant or condition has been complied with; and

(4) a statement as to whether, in the opinion of each such individual, such condition or covenant has been complied with.

SECTION 14.7 EFFECT OF HEADINGS AND TABLE OF CONTENTS.

The Article and Section headings herein and the Table of Contents are for convenience only and shall not affect the construction hereof.

SECTION 14.8 SUCCESSORS AND ASSIGNS.

All covenants and agreements in this Indenture by the Company shall bind its successors and assigns, whether so expressed or not.

SECTION 14.9 SEPARABILITY CLAUSE.

In case any provision in this Indenture or the Securities shall be invalid, illegal or unenforceable, the validity, legality and enforceability of the remaining provisions shall not in any way be affected or impaired thereby.

SECTION 14.10 BENEFITS OF INDENTURE.

Nothing contained in this Indenture or in the Securities, express or implied, shall give to any Person, other than the parties hereto and their successors hereunder, the holders of Senior Debt and the Holders of Securities, any benefit or legal or equitable right, remedy or claim under this Indenture.

SECTION 14.11 GOVERNING LAW.

THIS INDENTURE AND THE SECURITIES SHALL BE GOVERNED BY, AND CONSTRUED IN ACCORDANCE WITH, THE LAWS OF THE STATE OF NEW YORK.

SECTION 14.12 COUNTERPARTS.

This instrument may be executed in any number of counterparts, each of which when so executed shall be deemed to be an original but all such counterparts shall together constitute but one and the same instrument.

SECTION 14.13 LEGAL HOLIDAYS.

In any case where any Interest Payment Date, Redemption Date or Stated Maturity of any Security or the last day on which a Holder of a Security has a right to convert such Security shall not be a Business Day at any Place of Payment or Place of Conversion, then (notwithstanding any other provision of this Indenture or of the Securities) payment of interest (including Liquidated Damages, if any) or principal or premium, if any, or conversion of the Securities, need not be made at such Place of Payment or Place of Conversion on such day, but may be made on the next succeeding Business Day at such Place of Payment or Place of Conversion with the same force and effect as if made on the Interest Payment Date or Redemption Date or at the Stated Maturity or on such last day for conversion, provided, that in the case that payment is

made on such succeeding Business Day, no interest shall accrue on the amount so payable for the period from and after such Interest Payment Date, Redemption Date or Stated Maturity, as the case may be.

SECTION 14.14 RECOURSE AGAINST OTHERS.

No recourse for the payment of the principal of or premium, if any, or interest (including Liquidated Damages, if any) on any Security, or for any claim based thereon or otherwise in respect thereof, shall be had against any incorporator, shareholder, officer or director, as such, past, present or future, of the Company or of any successor corporation, whether by virtue of any constitution, statute or rule of law or by the enforcement of any assessment or penalty or otherwise, all such liability being, by the acceptance thereof and as part of the consideration for the issue thereof, expressly waived and released.

IN WITNESS WHEREOF, the parties hereto have caused this Indenture to be duly executed all as of the day and year first above written.

VERTEX PHARMACEUTICALS INCORPORATED

By:

Name: Dr. Joshua S. Boger
Title: Chairman, President & Chief Executive Officer

STATE STREET BANK AND TRUST COMPANY, AS TRUSTEE

By:

Name: Andrew M. Sinasky
Title: Assistant Vice President

EXHIBIT A

FORM OF SECURITY

[FACE OF SECURITY]

UNLESS THIS CERTIFICATE IS PRESENTED BY AN AUTHORIZED REPRESENTATIVE OF THE DEPOSITORY TRUST COMPANY ("DTC") TO VERTEX PHARMACEUTICALS INCORPORATED (OR ITS SUCCESSOR) OR ITS AGENT FOR REGISTRATION OF TRANSFER, EXCHANGE, CONVERSION OR PAYMENT, AND ANY CERTIFICATE ISSUED IS REGISTERED IN THE NAME OF CEDE & CO. OR IN SUCH OTHER ENTITY AS IS REQUESTED BY AN AUTHORIZED REPRESENTATIVE OF DTC (AND ANY PAYMENT HEREON IS MADE TO CEDE & CO. OR TO SUCH OTHER ENTITY AS IS REQUESTED BY AN AUTHORIZED REPRESENTATIVE OF DTC), ANY TRANSFER, PLEDGE OR OTHER USE HEREOF FOR VALUE OR OTHERWISE BY OR TO ANY PERSON IS WRONGFUL SINCE THE REGISTERED OWNER HEREOF, CEDE & CO., HAS AN INTEREST HEREIN.(1)

THE NOTES EVIDENCED HEREBY HAVE NOT BEEN REGISTERED UNDER THE U.S. SECURITIES ACT OF 1933, AS AMENDED (THE "SECURITIES ACT"), OR ANY STATE SECURITIES LAWS, AND MAY NOT BE OFFERED OR SOLD EXCEPT AS SET FORTH IN THE FOLLOWING SENTENCE. BY ITS ACQUISITION HEREOF, THE HOLDER (1) REPRESENTS THAT IT IS A "QUALIFIED INSTITUTIONAL BUYER" (AS DEFINED IN RULE 144A UNDER THE SECURITIES ACT); (2) AGREES THAT IT WILL NOT WITHIN TWO YEARS AFTER THE ORIGINAL ISSUANCE OF THE NOTE EVIDENCED HEREBY RESELL OR OTHERWISE TRANSFER THE NOTE EVIDENCED HEREBY OR THE COMMON STOCK ISSUABLE UPON CONVERSION OF SUCH NOTE EXCEPT (A) TO THE COMPANY OR ANY SUBSIDIARY THEREOF, (B) TO A QUALIFIED INSTITUTIONAL BUYER IN COMPLIANCE WITH RULE 144A UNDER THE SECURITIES ACT, (C) PURSUANT TO THE EXEMPTION FROM REGISTRATION PROVIDED BY RULE 144 UNDER THE SECURITIES ACT (IF AVAILABLE) OR (D) PURSUANT TO A REGISTRATION STATEMENT WHICH HAS BEEN DECLARED EFFECTIVE UNDER THE SECURITIES ACT (AND WHICH CONTINUES TO BE EFFECTIVE AT THE TIME OF SUCH TRANSFER); AND (3) AGREES THAT IT WILL DELIVER TO EACH PERSON TO WHOM THE NOTE EVIDENCED HEREBY IS TRANSFERRED (OTHER THAN A TRANSFER PURSUANT TO CLAUSE 2(D) ABOVE) A NOTICE SUBSTANTIALLY TO THE EFFECT OF THIS LEGEND. IN CONNECTION WITH ANY TRANSFER OF THE NOTE EVIDENCED HEREBY WITHIN TWO YEARS AFTER THE ORIGINAL ISSUANCE OF SUCH NOTE (OTHER THAN A TRANSFER PURSUANT TO CLAUSE 2(D) ABOVE), THE HOLDER MUST CHECK THE APPROPRIATE BOX SET FORTH ON THE REVERSE HEREOF RELATING TO THE MANNER OF SUCH TRANSFER AND SUBMIT THIS CERTIFICATE TO STATE STREET BANK AND TRUST COMPANY, AS TRUSTEE (OR ANY SUCCESSOR

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(1) This legend should be included only if the Security is issued in global form.

TRUSTEE, AS APPLICABLE). IF THE PROPOSED TRANSFER IS PURSUANT TO CLAUSE 2(C) ABOVE, THE HOLDER MUST, PRIOR TO SUCH TRANSFER, FURNISH TO STATE STREET BANK AND TRUST COMPANY, AS TRUSTEE (OR ANY SUCCESSOR TRUSTEE, AS APPLICABLE), SUCH CERTIFICATIONS, LEGAL OPINIONS AND OTHER INFORMATION AS THE COMPANY MAY REASONABLY REQUIRE TO CONFIRM THAT SUCH TRANSFER IS BEING MADE PURSUANT TO AN EXEMPTION FROM, OR IN A TRANSACTION NOT SUBJECT TO, THE REGISTRATION REQUIREMENTS OF THE SECURITIES ACT. THIS LEGEND WILL BE REMOVED UPON THE EARLIER OF THE TRANSFER OF THE NOTE EVIDENCED HEREBY PURSUANT TO CLAUSE 2(C) OR 2(D) ABOVE OR THE EXPIRATION OF TWO YEARS FROM THE ORIGINAL ISSUANCE OF THE NOTE EVIDENCED HEREBY.

VERTEX PHARMACEUTICALS INCORPORATED

5% Convertible Subordinated Note due 2007

CUSIP NO. -----------

No. ---------- $ ----------

VERTEX PHARMACEUTICALS INCORPORATED, a Massachusetts corporation (the "Company", which term includes any successor corporation under the Indenture hereinafter referred to), for value received, hereby promises to pay to Cede & Co., or its registered assigns, the principal sum of One Hundred Seventy-Five Million U.S. Dollars ($175,000,000) on March 14, 2007.

Interest Payment Dates: March 14 and September 14, commencing September 14, 2000.

Regular Record Dates: March 1 and September 1.

Reference is hereby made to the further provisions of this Security set forth on the reverse hereof, which further provisions shall for all purposes have the same effect as if set forth at this place.

IN WITNESS WHEREOF, the Company has caused this Security to be duly executed manually or by facsimile by its duly authorized officers.

Dated: VERTEX PHARMACEUTICALS INCORPORATED

By:

Name:
Title:

By:
Name:
Title:

Trustee's Certificate of Authentication

This is one of the 5% Convertible Subordinated Notes due 2007 described in the within-named Indenture.

STATE STREET BANK AND TRUST COMPANY
as Trustee

By:

Authorized Signatory

Dated:

[REVERSE OF SECURITY]

VERTEX PHARMACEUTICALS INCORPORATED

5% Convertible Subordinated Note due 2007

Capitalized terms used herein but not defined shall have the meanings assigned to them in the Indenture referred to below unless otherwise indicated.

1. Principal and Interest.

Vertex Pharmaceuticals Incorporated, a Massachusetts corporation (the "Company"), promises to pay interest on the principal amount of this Security at the Interest Rate from the date of issuance until repayment at Maturity, redemption or repurchase. The Company will pay interest on this Security semiannually in arrears on March 14 and September 14 of each year (each an "Interest Payment Date"), commencing September 14, 2000.

Interest on the Securities shall be computed (i) for any full semiannual period for which a particular Interest Rate is applicable on the basis of a 360-day year of twelve 30-day months and (ii) for any period for which a particular Interest Rate is applicable shorter than a full semiannual period for which interest is calculated, on the basis of a 30-day month and, for such periods of less than a month, the actual number of days elapsed over a 30-day month.

A Holder of any Security at the close of business on a Regular Record Date shall be entitled to receive interest on such Security on the corresponding Interest Payment Date. A Holder of any Security which is converted after the close of business on a Regular Record Date and prior to the corresponding Interest Payment Date (other than any Security whose Maturity is prior to such Interest Payment Date) shall be entitled to receive interest on the principal amount of such Security, notwithstanding the conversion of such Security prior to such Interest Payment Date. However, any such Holder which surrenders any such Security for conversion during the period between the close of business on such Regular Record Date and ending with the opening of business on the corresponding Interest Payment Date shall be required to pay the Company an amount equal to the interest on the principal amount of such Security so converted, which is payable by the Company to such Holder on such Interest Payment Date, at the time such Holder surrenders such Security for conversion. Notwithstanding the foregoing, any such Holder which surrenders for conversion any Security which has been called for redemption by the Company in a notice of redemption given by the Company pursuant to Section 10.5 of the Indenture (whether the Redemption Date for such Security is on such Interest Payment Date or otherwise) shall be entitled to receive (and retain) such interest and need not pay the Company an amount equal to the interest on the principal amount of such Security so converted at the time such Holder surrenders such Security for conversion.

In accordance with the terms of the Resale Registration Rights Agreement, dated March 14, 2000, between the Company and Merrill Lynch & Co., Merrill Lynch, Pierce, Fenner & Smith Incorporated, Bear, Stearns & Co. Inc., Credit Suisse First Boston Corporation, FleetBoston Robertson Stephens Inc. and SG Cowen Securities Corporation, during the first 90

days following a Registration Default (as defined in the Registration Rights Agreement), the Interest Rate borne by the Securities shall be increased by 0.25% on:

(A) June 13, 2000, if the shelf registration statement (the "Shelf Registration Statement") is not filed with the SEC prior to or on June 12, 2000;

(B) August 12, 2000, if the Shelf Registration Statement is not declared effective by the SEC prior to or on August 11, 2000;

(C) the day after the fifth Business Day after the Shelf Registration Statement, previously declared effective, ceases to be effective or fails to be usable, if a post-effective amendment (or report filed pursuant to the Exchange Act) that cures the Shelf Registration Statement is not filed with the SEC during such five Business Day period; or

(D) the day after the 45th or 60th day, as the case may be, of any period that the prospectus contained in the Shelf Registration Statement has been suspended, if such suspension has not been terminated.

From and after the 91st day following such Registration Default, the Interest Rate borne by the Securities shall be increased by 0.50%. In no event shall the Interest Rate borne by the Securities be increased by more than 0.50%.

Any amount of additional interest will be payable in cash semiannually, in arrears, on each Interest Payment Date and will cease to accrue on the date the Registration Default is cured. The Holder of this Security is entitled to the benefits of the Registration Rights Agreement.

2. Method of Payment.

Interest on any Security which is payable, and is punctually paid or duly provided for, on any Interest Payment Date shall be paid to the person in whose name that Security (or one or more Predecessor Securities) is registered at the close of business on the Regular Record Date for such interest.

Principal of, and premium, if any, and interest on, Global Securities will be payable to the Depositary in immediately available funds.

Principal and premium, if any, on Physical Securities will be payable at the office or agency of the Company maintained for such purpose, initially the Corporate Trust Office of the Trustee. Interest on Physical Securities will be payable by (i) U.S. Dollar check drawn on a bank located in the city where the Corporate Trust Office of the Trustee is located, mailed to the address of the Person entitled thereto as such address shall appear in the Register, or (ii) upon application to the Registrar not later than the relevant Record Date by a Holder of an aggregate principal amount in excess of $5,000,000, wire transfer in immediately available funds.

3. Paying Agent and Registrar.

Initially, State Street Bank and Trust Company, the Trustee under the Indenture, will act as Paying Agent and Registrar. The Company may change the Paying Agent or Registrar without notice to any Holder.

4. Indenture.

The Company issued this Security under an Indenture, dated as of March 14, 2000 (the "Indenture"), between the Company and State Street Bank and Trust Company, as trustee (the "Trustee"). The terms of the Security include those stated in the Indenture and those made part of the Indenture by reference to the Trust Indenture Act of 1939, as amended ("TIA"). This Security is subject to all such terms, and Holders are referred to the Indenture and the TIA for a statement of all such terms. To the extent permitted by applicable law, in the event of any inconsistency between the terms of this Security and the terms of the Indenture, the terms of the Indenture shall control.

5. Provisional Redemption.

The Securities may be redeemed at the election of the Company, as a whole or from time to time in part on any date, at any time prior to March 17, 2003 (a "Provisional Redemption"), at a Redemption Price equal to $1,000 per $1,000 principal amount of the Securities plus accrued and unpaid interest, if any, to but excluding the date of redemption (the "Provisional Redemption Date") if (i) the Closing Price of the Common Stock has exceeded 150% of the Conversion Price (as may be adjusted from time to time) then in effect for at least 20 Trading Days in any consecutive 30-Trading Day period ending on the Trading Day prior to the date of mailing of the provisional notice of redemption upon not less than 20 nor more than 60 days' notice (the "Notice Date"), and (ii) a registration statement covering resales of the Securities and Common Stock issuable upon the conversion thereof is effective and available for use and is expected to remain effective for the 30 days following the Provisional Redemption Date.

Upon any such Provisional Redemption, the Company shall make an additional payment in cash (the "Make-Whole Payment") with respect to the Securities called for redemption to Holders on the Notice Date in an amount equal to $107.14 per $1,000 principal amount of the Securities, less the amount of any interest actually paid on such Securities prior to the Notice Date. The Company shall make the Make-Whole Payment on all Securities called for Provisional Redemption, including those Securities converted into Common Stock between the Notice Date and the Provisional Redemption Date.

6. Optional Redemption.

Except as provided above, this Security is not redeemable prior to March 17, 2003. This Security may be redeemed in whole or in part, upon not less than 20 nor more than 60 days' notice, at any time on or after March 17, 2003, at the option of the Company, at the redemption price (expressed as percentages of the principal amount) set forth below if redeemed during the 12-month period beginning March 14 or 17, as the case may be, of the years indicated and ending March 13 of the following years, plus any interest accrued but not paid prior to the Optional Redemption Date.

During the Twelve Months COMMENCING	REDEMPTION PRICES
March 17, 2003, through March 13, 2004.....	102.857%
March 14, 2004, through March 13, 2005.....	102.143%
March 14, 2005, through March 13, 2006.....	101.429%
March 14, 2006 and thereafter.....	100.714%

If fewer than all the Securities are to be redeemed, the Trustee shall select the particular Securities to be redeemed from the Outstanding Securities by the methods as provided in the Indenture. If any Security selected for partial redemption is converted in part before termination of the conversion right with respect to the portion of the Security so selected, the converted portion of such Security shall be deemed to be the portion selected for redemption (provided, however, that the Holder of such Security so converted and deemed redeemed shall not be entitled to any additional interest payment as a result of such deemed redemption than such Holder would have otherwise been entitled to receive upon conversion of such Security). Securities which have been converted during a selection of Securities to be redeemed may be treated by the Trustee as Outstanding for the purpose of such selection.

On and after the Redemption Date, interest ceases to accrue on Securities or portions of Securities called for redemption, unless the Company defaults in the payment of the Redemption Price and accrued and unpaid interest.

Notice of redemption will be given by the Company to the Holders as provided in the Indenture.

7. Repurchase Right Upon a Change of Control.

If a Change of Control occurs, the Holder of Securities, at the Holder's option, shall have the right, in accordance with the provisions of the Indenture, to require the Company to repurchase the Securities (or any portion of the principal amount hereof that is at least $1,000 or an integral multiple thereof, provided that the portion of the principal amount of this Security to be Outstanding after such repurchase is at least equal to $1,000) at the Repurchase Price, plus any interest accrued and unpaid to the Repurchase Date.

Subject to the conditions provided in the Indenture, the Company may elect to pay the Repurchase Price by delivering a number of shares of Common Stock equal to (i) the Repurchase Price divided by (ii) 95% of the average of the Closing Prices per share for the five consecutive Trading Days immediately preceding and including the third Trading Day prior to the Repurchase Date.

No fractional shares of Common Stock will be issued upon repurchase of any Securities. Instead of any fractional share of Common Stock which would otherwise be issued upon conversion of such Securities, the Company shall pay a cash adjustment as provided in the Indenture.

A Company Notice will be given by the Company to the Holders as provided in the Indenture. To exercise a Repurchase Right, a Holder must deliver to the Trustee a written notice as provided in the Indenture.

8. Conversion Rights.

Subject to and upon compliance with the provisions of the Indenture, the Holder of Securities is entitled, at such Holder's option, at any time before the close of business on March 14, 2007 to convert the Holder's Securities (or any portion of the principal amount hereof which is $1,000 or an integral multiple thereof), at the principal amount thereof or of such portion, into duly authorized, fully paid and nonassessable shares of Common Stock of the Company at the Conversion Price in effect at the time of conversion.

In the case of a Security (or a portion thereof) is called for redemption, such conversion right in respect of the Security (or such portion thereof) so called, shall expire at the close of business on the Business Day immediately preceding the Redemption Date, unless the Company defaults in making the payment due upon redemption. In the case of a Change of Control for which the Holder exercises its Repurchase Right in respect of a Security (or a portion thereof), such conversion right in respect of the Security (or portion thereof) shall expire at the close of business on the Business Day immediately preceding the Repurchase Date.

The Conversion Price shall be initially equal to $80.64 per share of Common Stock. The Conversion Price shall be adjusted under certain circumstances as provided in the Indenture.

To exercise the conversion right, the Holder must surrender the Security (or portion thereof) duly endorsed or assigned to the Company or in blank, at the office of the Conversion Agent, accompanied by a duly signed conversion notice to the Company. Any Security surrendered for conversion during the period between the close of business on any Regular Record Date to the opening of business on the corresponding Interest Payment Date (other than any Security whose Maturity is prior to such Interest Payment Date), shall be accompanied by payment in New York Clearing House funds or other funds acceptable to the Company of an amount equal to the interest payable on such Interest Payment Date by the Company on the principal amount of the Security being surrendered for conversion. Notwithstanding the foregoing, any such Holder which surrenders for conversion any Security which has been called for redemption by the Company in a notice of redemption given by the Company pursuant to Section 10.5 hereof (whether the Redemption Date for such Security is on such Interest Payment Date or otherwise) need not pay the Company an amount equal to the interest on the principal amount of such Security so converted at the time such Holder surrenders such Security for conversion.

No fractional shares of Common Stock will be issued upon conversion of any Securities. Instead of any fractional share of Common Stock which would otherwise be issued upon conversion of such Securities, the Company shall pay a cash adjustment as provided in the Indenture.

9. Subordination.

The Indebtedness evidenced by this Security is, to the extent and in the manner provided in the Indenture, subordinated and subject in right of payment to the prior payment in full of all amounts then due on all Senior Debt of the Company, and this Security is issued subject to such provisions of the Indenture with respect thereto. Each Holder of this Security, by accepting the same, (a) agrees to and shall be bound by such provisions, (b) authorizes and directs the Trustee on such Holder's behalf to take such action as may be necessary or appropriate to effectuate the subordination so provided and (c) appoints the Trustee such Holder's attorney-in-fact for any and all such purposes.

10. Denominations; Transfer; Exchange.

The Securities are issuable in registered form, without coupons, in denominations of $1,000 and integral multiples of $1,000 in excess thereof. A Holder may register the transfer or exchange of Securities in accordance with the Indenture. The Registrar may require a Holder, among other things, to furnish appropriate endorsements and transfer documents and the Company may require a Holder to pay any taxes and fees required by law or permitted by the Indenture.

In the event of a redemption in part, the Company will not be required (a) to register the transfer of, or exchange, Securities for a period of 15 days immediately preceding the date notice is given identifying the serial numbers of the Securities called for such redemption, or (b) to register the transfer of, or exchange, any such Securities, or portion thereof, called for redemption.

In the event of redemption, conversion or repurchase of the Securities in part only, a new Security or Securities for the unredeemed, unconverted or unrepurchased portion thereof will be issued in the name of the Holder hereof.

11. Persons Deemed Owners.

The registered Holder of this Security shall be treated as its owner for all purposes.

12. Unclaimed Money.

The Trustee and the Paying Agent shall pay to the Company any money held by them for the payment of principal, premium, if any, or interest that remains unclaimed for two years after the date upon which such payment shall have become due. After payment to the Company, Holders entitled to the money must look to the Company for payment as general creditors unless an applicable abandoned property law designates another Person, and all liability of the Trustee and such Paying Agent with respect to such money shall cease.

13. Discharge Prior to Redemption or Maturity.

Subject to certain conditions contained in the Indenture, the Company may discharge its obligations under the Securities and the Indenture if (1) (a) all of the Outstanding

Securities shall become due and payable at their scheduled Maturity within one year or (b) all of the Outstanding Securities are scheduled for redemption within one year, and (2) the Company shall have deposited with the Trustee money and/or U.S. Government Obligations sufficient to pay the principal of, and premium, if any, and interest on, all of the Outstanding Securities on the date of Maturity or redemption, as the case may be.

14. Amendment; Supplement; Waiver.

The Indenture permits, with certain exceptions as therein provided, the amendment thereof and the modification of the rights and obligations of the Company and the rights of the Holders of the Securities under the Indenture at any time by the Company and the Trustee with the consent of the Holders of a majority in aggregate principal amount of the Outstanding Securities (or such lesser amount as shall have acted at a meeting pursuant to the provisions of the Indenture). The Indenture also contains provisions permitting the Holders of specified percentages in principal amount of the Securities at the time Outstanding, on behalf of the Holders of all the Securities, to waive compliance by the Company with certain provisions of the Indenture and certain past defaults under the Indenture and their consequences. Any such consent or waiver by the Holder of this Security shall be conclusive and binding upon such Holder and upon all future Holders of this Security and of any Security issued upon registration of transfer hereof or in exchange herefor or in lieu hereof, whether or not notation of such consent or waiver is made upon this Security or such other Security.

No reference herein to the Indenture and no provision of this Security or of the Indenture shall alter or impair the obligation of the Company, which is absolute and unconditional, to pay the principal of and premium, if any, and interest (including Liquidated Damages, if any) on this Security at the times, places and rate, and in the coin or currency, herein prescribed or to convert this Security (or pay cash in lieu of conversion) as provided in the Indenture.

15. Defaults and Remedies.

The Indenture provides that an Event of Default with respect to the Securities occurs when any of the following occurs:

(A) the Company defaults in the payment of the principal of or premium, if any, on any of the Securities when it becomes due and payable at Maturity, upon redemption or exercise of a Repurchase Right or otherwise, whether or not such payment is prohibited by the subordination provisions of Article 13 of the Indenture;

(B) the Company defaults in the payment of interest on any of the Securities when it becomes due and payable and such default continues for a period of 30 days, whether or not such payment is prohibited by the subordination provisions of Article 13 of the Indenture;

(C) the Company fails to deliver shares of Common Stock, together with cash instead of fractional shares, when those shares of Common Stock or cash instead of fractional shares are required to be delivered following conversion of a Security in accordance with the provisions of Article 12 of the Indenture;

(D) the Company fails to perform or observe any other term, covenant or agreement contained in the Securities or the Indenture and such default continues for a period of 60 days after written notice of such failure is given as specified in the Indenture;

(E) (i) the Company fails to make any payment by the end of the applicable grace period, if any, after the maturity of any Indebtedness for borrowed money in an amount in excess of $5,000,000, or (ii) there is an acceleration of any Indebtedness for borrowed money in an amount in excess of $5,000,000 because of a default with respect to such Indebtedness without such Indebtedness having been discharged or such acceleration having been cured, waived, rescinded or annulled, in the case of either clause (i) or (ii) above, for a period of 30 days after written notice is given to the Company as specified in the Indenture; and

(F) there are certain events of bankruptcy, insolvency or reorganization of the Company.

If an Event of Default shall occur and be continuing, the principal of all the Securities may be declared due and payable in the manner and with the effect provided in the Indenture.

16. Authentication.

This Security shall not be valid until the Trustee (or authenticating agent) executes the certificate of authentication on the other side of this Security.

17. Abbreviations.

Customary abbreviations may be used in the name of a Holder or an assignee, such as: TEN COM (= tenants in common), TEN ENT (= tenants by the entireties), JT TEN (= joint tenants with right of survivorship and not as tenants in common), CUST (= Custodian) and U/G/M/A (= Uniform Gifts to Minors Act).

18. Additional Rights of Holders of Transfer Restricted Securities.

In addition to the rights provided to Holders under the Indenture, Holders of Transfer Restricted Securities shall have all the rights set forth in the Registration Rights Agreement.

19. CUSIP Numbers.

Pursuant to a recommendation promulgated by the Committee on Uniform Security Identification Procedures, the Company has caused CUSIP numbers to be printed on this Security and the Trustee may use CUSIP numbers in notices of redemption as a convenience to Holders. No representation is made as to the accuracy of such numbers either as printed on this Security or as contained in any notice of redemption and reliance may be placed only on the other identification numbers placed thereon.

20. Governing Law.

The Indenture and this Security shall be governed by, and construed in accordance with, the law of the State of New York.

21. Successor Corporation.

In the event a successor corporation assumes all the obligations of the Company under this Security, pursuant to the terms hereof and of the Indenture, the Company will be released from all such obligations.

ASSIGNMENT FORM

To assign this Security, fill in the form below and have your signature guaranteed: (I) or (we) assign and transfer this Security to:

(Insert assignee's soc. sec. or tax I.D. no.)

(Print or type assignee's name, address and zip code)

and irrevocably appoint

---

to transfer this Security on the books of the Company. The agent may substitute another to act for him.

Dated: --- Your Name: ---

(Print your name exactly as it appears on the face of this Security)

Your Signature:

(Sign exactly as your name appears on the face of this Security)

Signature Guarantee*:

---

* PARTICIPANT IN A RECOGNIZED SIGNATURE GUARANTEE MEDALLION PROGRAM (OR OTHER SIGNATURE GUARANTOR ACCEPTABLE TO THE TRUSTEE).

In connection with any transfer of this Security occurring prior to the end of the period referred to in Rule 144(k) under the Securities Act, the undersigned confirms that without utilizing any general solicitation or general advertising that:

[Check One]

[ ] (a) this Security is being transferred in compliance with the exemption from registration under the Securities Act of 1933, as amended, provided by Rule 144A thereunder.

or

[ ] (b) this Security is being transferred other than in accordance with (a) above and documents are being furnished which comply with the conditions of transfer set forth in this Security and the Indenture.

If none of the foregoing boxes is checked, the Trustee or other Registrar shall not be obligated to register this Security in the name of any Person other than the Holder hereof unless the conditions to any such transfer of registration set forth herein and in Sections 2.7, 2.8 and 2.9 of the Indenture shall have been satisfied.

Dated:
---- -----

NOTICE: The signature to this assignment must correspond with the name as written upon the face of the within-mentioned instrument in every particular, without alteration or any change whatsoever.

Signature Guarantee:

Signature must be guaranteed by a participant in a recognized signature guaranty medallion program or other signature guarantor acceptable to the Trustee.

TO BE COMPLETED BY PURCHASER IF (a) ABOVE IS CHECKED.

The undersigned represents and warrants that it is purchasing this Security for its own account or an account with respect to which it exercises sole investment discretion, in each case for investment and not with a view to distribution, and that it and any such account is a "Qualified Institutional Buyer" within the meaning of Rule 144A under the Securities Act of 1933 and is aware that the sale to it is being made in reliance on Rule 144A and acknowledges that it has received such information regarding the Company as the undersigned has requested pursuant to Rule 144A or has determined not to request such information and that it is aware that the transferor is relying upon the undersigned's foregoing representations in order to claim the exemption from registration provided by Rule 144A.

Dated:
--- ----

NOTICE: To be executed by an executive officer

CONVERSION NOTICE

TO: VERTEX PHARMACEUTICALS INCORPORATED
130 Waverly Street
Cambridge, Massachusetts 02139

The undersigned registered owner of this Security hereby irrevocably exercises the option to convert this Security, or the portion hereof (which is $1,000 principal amount or an integral multiple thereof) below designated, into shares of Common Stock in accordance with the terms of the Indenture referred to in this Security, and directs that the shares issuable and deliverable upon such conversion, together with any check in payment for fractional shares and any Securities representing any unconverted principal amount hereof, be issued and delivered to the registered holder hereof unless a different name has been indicated below. If shares or any portion of this Security not converted are to be issued in the name of a person other than the undersigned, the undersigned will pay all transfer taxes payable with respect thereto. Any amount required to be paid to the undersigned on account of interest (including Liquidated Damages, if any) accompanies this Security.

Dated: --- Your Name: ---

(Print your name exactly as it appears on the face of this Security)

Your Signature:

(Sign exactly as your name appears on the face of this Security)

Signature Guarantee*:

Social Security or other Taxpayer Identification Number:

Principal amount to be converted (if less than all): $

* PARTICIPANT IN A RECOGNIZED SIGNATURE GUARANTEE MEDALLION PROGRAM (OR OTHER SIGNATURE GUARANTOR ACCEPTABLE TO THE TRUSTEE).

Fill in for registration of shares (if to be issued) and Securities (if to be delivered) other than to and in the name of the registered holder:

(Name)

(Street Address)

(City, State and Zip Code)

NOTICE OF EXERCISE OF REPURCHASE RIGHT

TO: VERTEX PHARMACEUTICALS INCORPORATED
130 Waverly Street
Cambridge, Massachusetts 02139

The undersigned registered owner of this Security hereby irrevocably acknowledges receipt of a notice from Vertex Pharmaceuticals Incorporated (the "Company") as to the occurrence of a Change of Control with respect to the Company and requests and instructs the Company to repay the entire principal amount of this Security, or the portion thereof (which is $1,000 principal amount or an integral multiple thereof) below designated, in accordance with the terms of the Indenture referred to in this Security, together with interest (including Liquidated Damages, if any) accrued and unpaid to, but excluding, such date, to the registered holder hereof, in cash.

Dated: --- Your Name: ---

(Print your name exactly as it appears on the face of this Security)

Your Signature: ---

(Sign exactly as your name appears on the face of this Security)

Signature Guarantee*: ---

Social Security or other Taxpayer Identification Number: ---

Principal amount to be repaid (if less than all): $

* PARTICIPANT IN A RECOGNIZED SIGNATURE GUARANTEE MEDALLION PROGRAM (OR OTHER SIGNATURE GUARANTOR ACCEPTABLE TO THE TRUSTEE).

SCHEDULE OF EXCHANGES FOR PHYSICAL SECURITIES(2)

The following exchanges of a part of this Global Security for Physical Securities have been made:

Date of Exchange	Amount of decrease in Principal Amount of this Global Security	Amount of increase in Principal Amount of this Global Security	Principal Amount of this Global Security following such decrease (or increase)	Signature of authorized officer of Trustee

(2) This schedule should be included only if the Security is issued in global form.

EXHIBIT 4.2

RESALE REGISTRATION RIGHTS AGREEMENT

among

VERTEX PHARMACEUTICALS INCORPORATED,

and

MERRILL LYNCH & CO.
MERRILL LYNCH, PIERCE, FENNER & SMITH INCORPORATED
BEAR, STEARNS & CO. INC.
CREDIT SUISSE FIRST BOSTON CORPORATION
FLEETBOSTON ROBERTSON STEPHENS INC.
SG COWEN SECURITIES CORPORATION,
as Representatives of the several Initial Purchasers

Dated March 14, 2000

Resale Registration Rights Agreement (this "Agreement"), dated March 14, 2000, among Vertex Pharmaceuticals Incorporated, a Massachusetts corporation (together with any successor entity, the "Issuer"), and Merrill Lynch & Co., Merrill Lynch, Pierce, Fenner & Smith Incorporated ("Merrill Lynch"), Bear, Stearns & Co. Inc., Credit Suisse First Boston Corporation, FleetBoston Robertson Stephens Inc. and SG Cowen Securities Corporation, as Representatives of the several Initial Purchasers (collectively, the "Initial Purchasers").

Pursuant to the Purchase Agreement, dated March 8, 2000, between the Issuer and the Initial Purchasers (the "Purchase Agreement"), the Initial Purchasers have agreed to purchase from the Issuer $175,000,000 ($201,250,000 if the Initial Purchasers exercise the over-allotment option in full) in aggregate principal amount of 5% Convertible Subordinated Notes due 2007 (the "Notes"). The Notes will be convertible into fully paid, nonassessable common stock, par value $.01 per share, of the Issuer (the "Common Stock") on the terms, and subject to the conditions, set forth in the Indenture (as defined herein). To induce the Initial Purchasers to purchase the Notes, the Issuer has agreed to provide the registration rights set forth in this Agreement pursuant to the Purchase Agreement.

The parties hereby agree as follows:

1. DEFINITIONS. As used in this Agreement, the following capitalized terms shall have the following meanings:

ADVICE: As defined in Section 4(c)(ii) hereof.

BUSINESS DAY: A day other than a Saturday or Sunday or any federal holiday in the United States.

COMMISSION: Securities and Exchange Commission.

COMMON STOCK: As defined in the preamble hereto.

DAMAGES PAYMENT DATE: Each Interest Payment Date. For purposes of this Agreement, if no Notes are outstanding, "DAMAGES PAYMENT DATE" shall mean each March 14 and September 14.

EFFECTIVENESS PERIOD: As defined in Section 2(a)(iii) hereof.

EFFECTIVENESS TARGET DATE: As defined in Section 2(a)(ii) hereof.

EXCHANGE ACT: Securities Exchange Act of 1934, as amended.

HOLDER: A Person who owns, beneficially or otherwise, Transfer Restricted Securities.

INDENTURE: The Indenture, dated as of March 14, 2000, between the Issuer and State Street Bank and Trust Company, as trustee, pursuant to which the Notes are to be issued, as such Indenture is amended, modified or supplemented from time to time in accordance with the terms thereof.

INITIAL PURCHASERS: As defined in the preamble hereto.

INTEREST PAYMENT DATE: As defined in the Indenture.

ISSUER: As defined in the preamble hereto.

LIQUIDATED DAMAGES: As defined in Section 3(a) hereof.

MAJORITY OF HOLDERS: Holders holding over 50% of the aggregate principal amount of Notes outstanding; PROVIDED that, for purpose of this definition, a holder of shares of Common Stock which constitute Transfer Restricted Securities and were issued upon conversion of the Notes shall be deemed to hold an aggregate principal amount of Notes (in addition to the aggregate principal amount of Notes held by such holder) equal to the aggregate principal amount of Notes converted by such Holder into such shares of Common Stock.

NASD: National Association of Securities Dealers, Inc.

NOTES: As defined in the preamble hereto.

PERSON: An individual, partnership, corporation, unincorporated organization, trust, joint venture or a government or agency or political subdivision thereof.

PROSPECTUS: The prospectus included in a Shelf Registration Statement, as amended or supplemented by any prospectus supplement and by all other amendments thereto, including post-effective amendments, and all material incorporated by reference into such Prospectus.

QUESTIONNAIRE DEADLINE: As defined in Section 2(b) hereof.

RECORD HOLDER: With respect to any Damages Payment Date, each Person who is a Holder on the record date with respect to the Interest Payment Date on which such Damages Payment Date shall occur. In the case of a Holder of shares of Common Stock issued upon conversion of the Notes, "RECORD HOLDER" shall mean each Person who is a

Holder of shares of Common Stock which constitute Transfer Restricted Securities on the March 1 or September 1 immediately preceding the Damages Payment Date.

REGISTRATION DEFAULT: As defined in Section 3(a) hereof.

SALE NOTICE: As defined in Section 4(e) hereof.

SECURITIES ACT: Securities Act of 1933, as amended.

SHELF FILING DEADLINE: As defined in Section 2(a)(i) hereof.

SHELF REGISTRATION STATEMENT: As defined in Section 2(a)(i) hereof.

SUSPENSION PERIOD: As defined in Section 4(b)(i) hereof.

TIA: Trust Indenture Act of 1939, as in effect on the date the Indenture is qualified under the TIA.

TRANSFER RESTRICTED SECURITIES: Each Note and each share of Common Stock issued upon conversion of Notes until the earlier of:

(i) the date on which such Note or such share of Common Stock issued upon conversion has been effectively registered under the Securities Act and disposed of in accordance with the Shelf Registration Statement;

(ii) the date on which such Note or such share of Common Stock issued upon conversion is transferred in compliance with Rule 144 under the Securities Act or may be sold or transferred pursuant to Rule 144(k) under the Securities Act (or any other similar provision then in force); or

(iii) the date on which such Note or such share of Common Stock issued upon conversion ceases to be outstanding (whether as a result of redemption, repurchase and cancellation, conversion or otherwise).

UNDERWRITTEN REGISTRATION OR UNDERWRITTEN OFFERING: A registration in which securities of the Issuer are sold to an underwriter for reoffering to the public.

2. SHELF REGISTRATION.

(a) The Issuer shall:

(i) not later than 90 days after the date hereof (the "Shelf Filing Deadline"), cause to be filed a registration statement pursuant to Rule 415 under

the Securities Act (the "Shelf Registration Statement"), which Shelf Registration Statement shall provide for resales of all Transfer Restricted Securities held by Holders that have provided the information required pursuant to the terms of Section 2(b) hereof;

(ii) use its best efforts to cause the Shelf Registration Statement to be declared effective by the Commission as promptly as practicable, but in no event later than 150 days after the date hereof (the "Effectiveness Target Date"); and

(iii) use its best efforts to keep the Shelf Registration Statement continuously effective, supplemented and amended as required by the provisions of Section 4(b) hereof to the extent necessary to ensure that (A) it is available for resales by the Holders of Transfer Restricted Securities entitled to the benefit of this Agreement and (B) conforms with the requirements of this Agreement and the Securities Act and the rules and regulations of the Commission promulgated thereunder as announced from time to time for a period (the "Effectiveness Period") of:

(1) two years following the last date of original issuance of Notes; or

(2) such shorter period that will terminate when (x) all of the Holders of Transfer Restricted Securities are able to sell all Transfer Restricted Securities immediately without restriction pursuant to Rule 144(k) under the Securities Act or any successor rule thereto, (y) when all Transfer Restricted Securities have ceased to be outstanding (whether as a result of redemption, repurchase and cancellation, conversion or otherwise) or (z) all Transfer Restricted Securities registered under the Shelf Registration Statement have been sold.

(b) No Holder may include any of its Transfer Restricted Securities in the Shelf Registration Statement pursuant to this Agreement unless such Holder furnishes to the Issuer in writing, prior to or on the 20th Business Day after receipt of a request therefor (the "Questionnaire Deadline"), such information as the Issuer may reasonably request for use in connection with the Shelf Registration Statement or the Prospectus or preliminary Prospectus included therein and in any application to be filed with or under state securities laws. In connection with all such requests for information from Holders, the Issuer shall notify such Holders of the requirements set forth in the preceding sentence. No Holder shall be entitled to Liquidated Damages pursuant to Section 3 hereof unless such Holder shall have provided all such reasonably requested information prior to or on the Questionnaire Deadline.

3. LIQUIDATED DAMAGES.

(a) If:

(i) the Shelf Registration Statement is not filed with the Commission prior to or on the Shelf Filing Deadline;

(ii) the Shelf Registration Statement has not been declared effective by the Commission prior to or on the Effectiveness Target Date;

(iii) subject to the provisions of Section 4(b)(i) hereof, the Shelf Registration Statement is filed and declared effective but, during the Effectiveness Period, shall thereafter cease to be effective or fail to be usable for its intended purpose without being succeeded within five Business Days by a post-effective amendment to the Shelf Registration Statement or a report filed with the Commission pursuant to Section 13(a), 13(c), 14 or 15(d) of the Exchange Act that cures such failure and, in the case of a post-effective amendment, is itself immediately declared effective; or

(iv) prior to or on the 45th or 60th day, as the case may be, of any Suspension Period, such suspension has not been terminated,

(each such event referred to in foregoing clauses (i) through (iv), a "Registration Default"), the Issuer hereby agrees to pay liquidated damages ("Liquidated Damages") with respect to the Transfer Restricted Securities from and including the day following the Registration Default to but excluding the day on which the Registration Default has been cured:

(A) in respect of the Notes, to each holder of Notes, (x) with respect to the first 90-day period during which a Registration Default shall have occurred and be continuing, in an amount per year equal to an additional 0.25% of the principal amount of the Notes and (y) with respect to the period commencing on the 91st day following the day the Registration Default shall have occurred and be continuing, in an amount per year equal to an additional 0.50% of the principal amount of the Notes; PROVIDED that in no event shall Liquidated Damages accrue at a rate per year exceeding 0.50% of the principal amount of the Notes; and

(B) in respect of any shares of Common Stock, to each holder of shares of Common Stock issued upon conversion of Notes, (x) with respect to the first 90-day period in which a Registration Default shall have occurred and be continuing, in an amount per year equal to 0.25% of

the principal amount of the converted Notes and (y) with respect to the period commencing the 91st day following the day the Registration Default shall have occurred and be continuing, in an amount per year equal to 0.50% of the principal amount of the converted Notes; PROVIDED that in no event shall Liquidated Damages accrue at a rate per year exceeding 0.50% of the principal amount of the converted Notes.

(b) All accrued Liquidated Damages shall be paid in arrears to Record Holders by the Issuer on each Damages Payment Date by wire transfer of immediately available funds or by federal funds check. Following the cure of all Registration Defaults relating to any particular Note or share of Common Stock, the accrual of Liquidated Damages with respect to such Note or share of Common Stock will cease.

All obligations of the Issuer set forth in this Section 3 that are outstanding with respect to any Transfer Restricted Security at the time such security ceases to be a Transfer Restricted Security shall survive until such time as all such obligations with respect to such Transfer Restricted Security shall have been satisfied in full.

The Liquidated Damages set forth above shall be the exclusive monetary remedy available to the Holders for such Registration Default.

4. REGISTRATION PROCEDURES.

(a) In connection with the Shelf Registration Statement, the Issuer shall comply with all the provisions of Section 4(b) hereof and shall use its best efforts to effect such registration to permit the sale of the Transfer Restricted Securities being sold in accordance with the intended method or methods of distribution thereof, and pursuant thereto, shall as expeditiously as possible prepare and file with the Commission a Shelf Registration Statement relating to the registration on any appropriate form under the Securities Act.

(b) In connection with the Shelf Registration Statement and any Prospectus required by this Agreement to permit the sale or resale of Transfer Restricted Securities, the Issuer shall:

(i) Subject to any notice by the Issuer in accordance with this Section 4(b) of the existence of any fact or event of the kind described in Section 4(b)(iii)(D), use its best efforts to keep the Shelf Registration Statement continuously effective during the Effectiveness Period. Upon the occurrence of any event that would cause the Shelf Registration Statement or the Prospectus contained therein (A) to contain a material misstatement or omission or (B) not be effective and usable for resale of Transfer Restricted Securities during the

Effectiveness Period, the Issuer shall file - promptly an appropriate amendment to the Shelf Registration Statement or a report filed with the Commission pursuant to Section 13(a), 13(c), 14 or 15(d) of the Exchange Act, in the case of clause (A), correcting any such misstatement or omission, and, in the case of either clause (A) or (B), use its best efforts to cause any such amendment to be declared effective and the Shelf Registration Statement and the related Prospectus to become usable for their intended purposes as soon as practicable thereafter. Notwithstanding the foregoing, the Issuer may suspend the effectiveness of the Shelf Registration Statement by written notice to the Holders for a period not to exceed an aggregate of 45 days in any 90-day period (each such period, a "Suspension Period") if:

(x) an event occurs and is continuing as a result of which the Shelf Registration Statement would, in the Issuer's reasonable judgment, contain an untrue statement of a material fact or omit to state a material fact required to be stated therein or necessary to make the statements therein not misleading; and

(y) the Issuer reasonably determines that the disclosure of such event at such time would have a material adverse effect on the business of the Issuer (and its subsidiaries, if any, taken as a whole);

PROVIDED, that in the event the disclosure relates to a previously undisclosed proposed or pending material business transaction, the disclosure of which would impede the Issuer's ability to consummate such transaction, the Issuer may extend a Suspension Period from 45 days to 60 days; PROVIDED, HOWEVER, that Suspension Periods shall not exceed an aggregate of 90 days in any 360-day period.

(ii) Prepare and file with the Commission such amendments and post-effective amendments to the Shelf Registration Statement as may be necessary to keep the Shelf Registration Statement effective during the Effectiveness Period; cause the Prospectus to be supplemented by any required Prospectus supplement, and as so supplemented to be filed pursuant to Rule 424 under the Securities Act, and to comply fully with the applicable provisions of Rules 424 and 430A under the Securities Act in a timely manner; and comply with the provisions of the Securities Act with respect to the disposition of all securities covered by the Shelf Registration Statement during the applicable period in accordance with the intended method or methods of distribution by the sellers thereof set forth in the Shelf Registration Statement or Prospectus supplement.

(iii) Advise the selling Holders, Merrill Lynch, as representative of the Initial Purchasers, and the underwriter(s), if any, promptly (but in any event

within five Business Days) and, if requested by such Persons, confirm such advice in writing:

(A) with respect to the Shelf Registration Statement or any post-effective amendment thereto, when the same has become effective, and when the Prospectus or any Prospectus supplement or post-effective amendment has been filed,

(B) of any request by the Commission for amendments to the Shelf Registration Statement or amendments or supplements to the Prospectus or for additional information relating thereto,

(C) of the issuance by the Commission of any stop order suspending the effectiveness of the Shelf Registration Statement under the Securities Act or of the suspension by any state securities commission of the qualification of the Transfer Restricted Securities for offering or sale in any jurisdiction, or the initiation of any proceeding for any of the preceding purposes, or

(D) of the existence of any fact or the happening of any event, during the Effectiveness Period, that makes any statement of a material fact made in the Shelf Registration Statement or the Prospectus, any amendment or supplement thereto, or any document incorporated by reference therein untrue, or that requires the making of any additions to or changes in the Shelf Registration Statement or the Prospectus in order to make the statements therein not misleading.

If at any time the Commission shall issue any stop order suspending the effectiveness of the Shelf Registration Statement, or any state securities commission or other regulatory authority shall issue an order suspending the qualification or exemption from qualification of the Transfer Restricted Securities under state securities or Blue Sky laws, the Issuer shall use its reasonable best efforts to obtain the withdrawal or lifting of such order at the earliest possible time.

(iv) Furnish to each of the selling Holders, each Initial Purchaser and each of the underwriter(s), if any, before filing with the Commission, a copy of the Shelf Registration Statement and copies of any Prospectus included therein or any amendments or supplements to the Shelf Registration Statement or Prospectus (other than documents incorporated by reference after the initial filing of the Shelf Registration Statement), which documents will be subject to the review of such Holders, Initial Purchasers and underwriter(s), if any, for a period of at least ten

Business Days, and the Issuer will not file any Shelf Registration Statement or Prospectus or any amendment or supplement to the Shelf Registration Statement or Prospectus (other than documents incorporated by reference) to which a selling Holder of Transfer Restricted Securities covered by the Shelf Registration Statement, Merrill Lynch, as representative of the Initial Purchasers, or the underwriter(s), if any, shall reasonably object within five Business Days after the receipt thereof. A selling Holder, Merrill Lynch, as representative of the Initial Purchasers, or an underwriter, if any, shall be deemed to have reasonably objected to such filing if the Shelf Registration Statement, amendment, Prospectus or supplement, as applicable, as proposed to be filed, contains a material misstatement or omission. Notwithstanding the foregoing, the Issuer shall not be required to furnish the selling Holders with any amendment or supplement to the Shelf Registration Statement or Prospectus filed solely to reflect changes to the amount of Notes held by any particular Holder at the request of such Holder or immaterial revisions to the information contained therein.

(v) Make available at reasonable times for inspection by one or more representatives of the selling Holders, designated in writing by a Majority of Holders whose Transfer Restricted Securities are included in the Shelf Registration Statement, any underwriter participating in any distribution pursuant to the Shelf Registration Statement and any attorney or accountant retained by such selling Holders or any of the underwriter(s), all financial and other records, pertinent corporate documents and properties of the Issuer as shall be reasonably necessary to enable them to exercise any applicable due diligence responsibilities, and cause the Issuer's officers, directors, managers and employees to supply all information reasonably requested by any such representative or representatives of the selling Holders, underwriter, attorney or accountant in connection with the Shelf Registration Statement after the filing thereof and before its effectiveness; PROVIDED, HOWEVER, that any information designated by the Issuer as confidential at the time of delivery of such information shall be kept confidential by the recipient thereof.

(vi) If requested by any selling Holders, Merrill Lynch, as representative of the Initial Purchasers, or the underwriter(s), if any, promptly incorporate in the Shelf Registration Statement or Prospectus, pursuant to a supplement or post-effective amendment if necessary, such information as such selling Holders, Merrill Lynch, as representative of the Initial Purchasers, and such underwriter(s), if any, may reasonably request to have included therein, including, without limitation: (1) information relating to the "Plan of Distribution" of the Transfer Restricted Securities, (2) - - information with respect to the principal amount of Notes or number of shares of Common Stock being sold to such underwriter(s), (3) the purchase - price being paid therefor and (4) any other

terms of the offering of the Transfer Restricted Securities to be sold in such offering; and make all - required filings of such Prospectus supplement or post-effective amendment as soon as reasonably practicable after the Issuer is notified of the matters to be incorporated in such Prospectus supplement or post-effective amendment. Notwithstanding the foregoing, following the effective date of the Shelf Registration Statement, the Issuer shall not be required to file more than one such supplement or post-effective amendment to reflect changes in the amount of Notes held by any particular Holder at the request of such Holder in any 30-day period.

(vii) Furnish to each selling Holder, each Initial Purchaser and each of the underwriter(s), if any, without charge, at least one copy of the Shelf Registration Statement, as first filed with the Commission, and of each amendment thereto (and any documents incorporated by reference therein or exhibits thereto (or exhibits incorporated in such exhibits by reference) as such Person may request).

(viii) Deliver to each selling Holder, each Initial Purchaser and each of the underwriter(s), if any, without charge, as many copies of the Prospectus (including each preliminary prospectus) and any amendment or supplement thereto as such Persons reasonably may request; subject to any notice by the Issuer in accordance with this Section 4(b) of the existence of any fact or event of the kind described in Section 4(b)(iii)(D), the Issuer hereby consents to the use of the Prospectus and any amendment or supplement thereto by each of the selling Holders and each of the underwriter(s), if any, in connection with the offering and the sale of the Transfer Restricted Securities covered by the Prospectus or any amendment or supplement thereto.

(ix) If an underwriting agreement is entered into and the registration is an Underwritten Registration, the Issuer shall:

(A) upon request, furnish to each selling Holder and each underwriter, if any, in such substance and scope as they may reasonably request and as are customarily made by issuers to underwriters in primary underwritten offerings, upon the date of closing of any sale of Transfer Restricted Securities in an Underwritten Registration:

(1) a certificate, dated the date of such closing, signed by the Chief Financial Officer of the Issuer and confirming, as of the date thereof, the matters set forth in Section 5(c) of the Purchase Agreement and such other matters as such parties may reasonably request;

(2) opinions, each dated the date of such closing, of counsel to the Issuer covering such of the matters set forth in the exhibits to the Purchase Agreement referred to in Section 5(a) thereof as are customarily covered in legal opinions to underwriters in connection with primary underwritten offerings of securities; and

(3) customary comfort letters, dated the date of such closing, from the Issuer's independent certified public accountants (and from any other accountants whose report is contained or incorporated by reference in the Shelf Registration Statement), in the customary form and covering matters of the type customarily covered in comfort letters to underwriters in connection with primary underwritten offerings of securities;

(B) set forth in full in the underwriting agreement, if any, indemnification provisions and procedures which provide rights no less protective than those set forth in Section 6 hereof with respect to all parties to be indemnified; and

(C) deliver such other documents and certificates as may be reasonably requested by such parties to evidence compliance with clause (A) above and with any customary conditions contained in the underwriting agreement or other agreement entered into by the selling Holders pursuant to this clause (ix).

(x) Before any public offering of Transfer Restricted Securities, cooperate with the selling Holders, the underwriter(s), if any, and their respective counsel in connection with the registration and qualification of the Transfer Restricted Securities under the securities or Blue Sky laws of such jurisdictions as the selling Holders or underwriter(s), if any, may reasonably request and do any and all other acts or things necessary or advisable to enable the disposition in such jurisdictions of the Transfer Restricted Securities covered by the Shelf Registration Statement; PROVIDED, HOWEVER, that the Issuer shall not be required (A) to register or qualify as a foreign corporation or a dealer of securities where it is not now so qualified or to take any action that would subject it to the service of process in any jurisdiction where it is not now so subject or (B) to subject itself to taxation in any such jurisdiction if it is not now so subject.

(xi) Cooperate with the selling Holders and the underwriter(s), if any, to facilitate the timely preparation and delivery of certificates representing Transfer Restricted Securities to be sold and not bearing any restrictive legends

(unless required by applicable securities laws); and enable such Transfer Restricted Securities to be in such denominations and registered in such names as the Holders or the underwriter(s), if any, may request at least two Business Days before any sale of Transfer Restricted Securities made by such underwriter(s).

(xii) Use its best efforts to cause the Transfer Restricted Securities covered by the Shelf Registration Statement to be registered with or approved by such other U.S. governmental agencies or authorities as may be necessary to enable the seller or sellers thereof or the underwriter(s), if any, to consummate the disposition of such Transfer Restricted Securities.

(xiii) Subject to Section 4(b)(i) hereof, if any fact or event contemplated by Section 4(b)(iii)(D) hereof shall exist or have occurred, use its reasonable best efforts to prepare a supplement or post-effective amendment to the Shelf Registration Statement or related Prospectus or any document incorporated therein by reference or file any other required document so that, as thereafter delivered to the purchasers of Transfer Restricted Securities, the Prospectus will not contain an untrue statement of a material fact or omit to state any material fact required to be stated therein or necessary to make the statements therein not misleading.

(xiv) Provide CUSIP numbers for all Transfer Restricted Securities not later than the effective date of the Shelf Registration Statement and provide the Trustee under the Indenture with certificates for the Notes that are in a form eligible for deposit with The Depository Trust Company.

(xv) Cooperate and assist in any filings required to be made with the NASD and in the performance of any due diligence investigation by any underwriter that is required to be retained in accordance with the rules and regulations of the NASD.

(xvi) Otherwise use its best efforts to comply with all applicable rules and regulations of the Commission and all reporting requirements under the rules and regulations of the Exchange Act.

(xvii) Cause the Indenture to be qualified under the TIA not later than the effective date of the Shelf Registration Statement required by this Agreement, and, in connection therewith, cooperate with the trustee and the holders of Notes to effect such changes to the Indenture as may be required for such Indenture to be so qualified in accordance with the terms of the TIA; and execute and use its best efforts to cause the trustee thereunder to execute all documents that may be required to effect such changes and all other forms and documents required to be

filed with the Commission to enable such Indenture to be so qualified in a timely manner.

(xviii) Cause all Transfer Restricted Securities covered by the Shelf Registration Statement to be listed or quoted, as the case may be, on each securities exchange or automated quotation system on which similar securities issued by the Issuer are then listed or quoted.

(xix) Provide promptly to each Holder upon written request each document filed with the Commission pursuant to the requirements of Section 13 and Section 15 of the Exchange Act after the effective date of the Shelf Registration Statement.

(xx) If requested by the underwriters, make appropriate officers of the Issuer available to the underwriters for meetings with prospective purchasers of the Transfer Restricted Securities and prepare and present to potential investors customary "road show" material in a manner consistent with new issuances of other securities similar to the Transfer Restricted Securities.

(c) Each Holder agrees by acquisition of a Transfer Restricted Security that, upon receipt of any notice from the Issuer of the existence of any fact of the kind described in Section 4(b)(iii)(D) hereof, such Holder will, and will use its reasonable best efforts to cause any underwriter(s) in an Underwritten Offering to, forthwith discontinue disposition of Transfer Restricted Securities pursuant to the Shelf Registration Statement until:

(i) such Holder has received copies of the supplemented or amended Prospectus contemplated by Section 4(b)(xiii) hereof; or

(ii) such Holder is advised in writing by the Issuer that the use of the Prospectus may be resumed, and has received copies of any additional or supplemental filings that are incorporated by reference in the Prospectus.

If so directed by the Issuer, each Holder will deliver to the Issuer (at the Issuer's expense) all copies, other than permanent file copies then in such Holder's possession, of the Prospectus covering such Transfer Restricted Securities that was current at the time of receipt of such notice of suspension.

(d) Each Holder who intends to be named as a selling Holder in the Shelf Registration Statement shall furnish to the Issuer in writing, prior to or on the 20th Business Day after receipt of a request therefor as set forth in a questionnaire, such information regarding such Holder and the proposed distribution by such Holder of its

Transfer Restricted Securities as the Issuer may reasonably request for use in connection with the Shelf Registration Statement or Prospectus or preliminary Prospectus included therein. (The form of the questionnaire is attached hereto as Exhibit A.) Holders that do not complete the questionnaire and deliver it to the Issuer shall not be named as selling securityholders in the Prospectus or preliminary Prospectus included in the Shelf Registration Statement and therefore shall not be permitted to sell any Transfer Restricted Securities pursuant to the Shelf Registration Statement. Each Holder who intends to be named as a selling Holder in the Shelf Registration Statement shall promptly furnish to the Issuer in writing such other information as the Issuer may from time to time reasonably request in writing. Each Holder as to which the Shelf Registration Statement is being effected agrees to furnish promptly to the Issuer all information required to be disclosed in order to make information previously furnished to the Issuer by such Holder not materially misleading.

(e) Upon the effectiveness of the Shelf Registration Statement, each Holder shall notify the Issuer at least three Business Days prior to any intended distribution of Transfer Restricted Securities pursuant to the Shelf Registration Statement (a "Sale Notice"). Each Holder of this Security, by accepting the same, agrees to hold any communication by the Issuer in response to a Sale Notice in confidence.

5. REGISTRATION EXPENSES.

(a) All expenses incident to the Issuer's performance of or compliance with this Agreement shall be borne by the Issuer regardless of whether a Shelf Registration Statement becomes effective, including, without limitation:

(i) all registration and filing fees and expenses (including filings made by any Initial Purchasers, Holders or underwriters with the NASD);

(ii) all fees and expenses of compliance with federal securities and state Blue Sky or securities laws;

(iii) all expenses of printing (including printing of Prospectuses and certificates for the Common Stock to be issued upon conversion of the Notes), messenger and delivery services and telephone;

(iv) all fees and disbursements of counsel to the Issuer and, subject to Section 5(b) below, the Holders of Transfer Restricted Securities;

(v) all application and filing fees in connection with listing (or authorizing for quotation) the Common Stock on a national securities exchange or automated quotation system pursuant to the requirements hereof; and

(vi) all fees and disbursements of independent certified public accountants of the Issuer (including the expenses of any special audit and comfort letters required by or incident to such performance).

The Issuer shall bear its internal expenses (including, without limitation, all salaries and expenses of its officers and employees performing legal, accounting or other duties), the expenses of any annual audit and the fees and expenses of any Person, including special experts, retained by the Issuer.

(b) In connection with the Shelf Registration Statement required by this Agreement, the Issuer shall reimburse the Initial Purchasers and the Holders of Transfer Restricted Securities being registered pursuant to the Shelf Registration Statement, as applicable, for the reasonable fees and disbursements of not more than one counsel, which shall be Debevoise & Plimpton, or such other counsel as may be chosen by a Majority of Holders for whose benefit the Shelf Registration Statement is being prepared.

6. INDEMNIFICATION AND CONTRIBUTION.

(a) The Issuer agrees to indemnify and hold harmless each Initial Purchaser, each Holder and each Person who participates as an underwriter (any such Person being an "Underwriter") and each Person, if any, who controls any Initial Purchaser, Holder or Underwriter within the meaning of either Section 15 of the Securities Act or Section 20 of the Exchange Act as follows:

(i) against any and all loss, liability, claim, damage and expense whatsoever, as incurred, arising out of any untrue statement or alleged untrue statement of a material fact contained in any Shelf Registration Statement (or any amendment thereto), including all documents incorporated therein by reference, or the omission or alleged omission therefrom of a material fact required to be stated therein or necessary to make the statements therein not misleading, or arising out of any untrue statement or alleged untrue statement of a material fact contained in any Prospectus (or any amendment or supplement thereto) or the omission or alleged omission therefrom of a material fact necessary in order to make the statements therein, in the light of the circumstances under which they were made, not misleading;

(ii) against any and all loss, liability, claim, damage and expense whatsoever, as incurred, to the extent of the aggregate amount paid in settlement of any litigation, or any investigation or proceeding by any governmental agency or body, commenced or threatened, or of any claim whatsoever based upon any such untrue statement or

omission, or any such alleged untrue statement or omission; PROVIDED that (subject to Section 6(d) below) any such settlement is effected with the written consent of the Issuer; and

(iii) against any and all expense whatsoever, as incurred (including the fees and disbursements of counsel chosen by any indemnified party), reasonably incurred in investigating, preparing or defending against any litigation, or any investigation or proceeding by any governmental agency or body, commenced or threatened, or any claim whatsoever based upon any such untrue statement or omission, or any such alleged untrue statement or omission, to the extent that any such expense is not paid under subparagraph (i) or (ii) above;

PROVIDED, HOWEVER, that this indemnity agreement shall not apply to any loss, liability, claim, damage or expense to the extent arising out of any untrue statement or omission or alleged untrue statement or omission made in reliance upon and in conformity with written information furnished to the Issuer by the Initial Purchasers, such Holder or such Underwriter expressly for use in a Shelf Registration Statement (or any amendment thereto) or any Prospectus (or any amendment or supplement thereto).

(b) Each Holder, severally but not jointly, agrees to indemnify and hold harmless the Issuer, the Initial Purchasers, each Underwriter and the other selling Holders and each Person, if any, who controls the Issuer, the Initial Purchasers, any Underwriter or any other selling Holder within the meaning of Section 15 of the Securities Act or Section 20 of the Exchange Act, against any and all loss, liability, claim, damage and expense described in the indemnity contained in Section 6(a) hereof, as incurred, but only with respect to untrue statements or omissions, or alleged untrue statements or omissions, made in any Shelf Registration Statement (or any amendment thereto) or any Prospectus (or any amendment or supplement thereto) in reliance upon and in conformity with written information with respect to such Holder furnished to the Issuer by such Holder expressly for use in the Shelf Registration Statement (or any amendment thereto) or such Prospectus (or any amendment or supplement thereto); PROVIDED, HOWEVER, that no such Holder shall be liable for any claims hereunder in excess of the amount of net proceeds received by such Holder from the sale of Transfer Restricted Securities pursuant to such Shelf Registration Statement.

(c) Each indemnified party shall give notice as promptly as reasonably practicable to each indemnifying party of any action or proceeding commenced against it in respect of which indemnity may be sought hereunder, but failure so to notify an indemnifying party shall not relieve such indemnifying party from any liability hereunder to the extent it is not materially prejudiced as a result thereof and in any event shall not relieve it from any liability which it may have otherwise than on account of this indemnity agreement. An indemnifying party may participate at its own expense in the defense of such action; PROVIDED, HOWEVER, that counsel to the indemnifying party shall not (except with the

consent of the indemnified party) also be counsel to the indemnified party. In no event shall the indemnifying party or parties be liable for the fees and expenses of more than one counsel (in addition to any local counsel) separate from their own counsel for all indemnified parties in connection with any one action or separate but similar or related actions in the same jurisdiction arising out of the same general allegations or circumstances. No indemnifying party shall, without the prior written consent of the indemnified parties, settle or compromise or consent to the entry of any judgment with respect to any litigation, or any investigation or proceeding by any governmental agency or body, commenced or threatened, or any claim whatsoever in respect of which indemnification or contribution could be sought under this Section 6 (whether or not the indemnified parties are actual or potential parties thereto), unless such settlement, compromise or consent (i) includes an unconditional release of each indemnified party from all liability arising out of such litigation, investigation, proceeding or claim and (ii) does not include a statement as to or an admission of fault, culpability or a failure to act by or on behalf of any indemnified party.

(d) If at any time an indemnified party shall have requested an indemnifying party to reimburse the indemnified party for fees and expenses of counsel, such indemnifying party agrees that it shall be liable for any settlement of the nature contemplated by Section 6(a)(ii) effected without its written consent if (i) such settlement is entered into more than 45 days after receipt by such indemnifying party of the aforesaid request, (ii) such indemnifying party shall have received notice of the terms of such settlement at least 30 days prior to such settlement being entered into and (iii) such indemnifying party shall not have reimbursed such indemnified party in accordance with such request prior to the date of such settlement.

(e) If the indemnification provided for in this Section 6 is for any reason unavailable to or insufficient to hold harmless an indemnified party in respect of any losses, liabilities, claims, damages or expenses referred to therein, then each indemnifying party shall contribute to the aggregate amount of such losses, liabilities, claims, damages and expenses incurred by such indemnified party, as incurred, in such proportion as is appropriate to reflect the relative fault of the indemnifying party or parties on the one hand and the indemnified party or parties on the other hand in connection with the statements or omissions which resulted in such losses, liabilities, claims, damages or expenses, as well as any other relevant equitable considerations.

The relative fault of the indemnifying party or parties on the one hand and the indemnified party or parties on the other hand shall be determined by reference to, among other things, whether any such untrue or alleged untrue statement of a material fact or omission or alleged omission to state a material fact relates to information supplied by the indemnifying party or parties on the one hand or the indemnified party or parties on the

other hand and the parties' relative intent, knowledge, access to information and opportunity to correct or prevent such statement or omission.

The parties hereto agree that it would not be just and equitable if contribution pursuant to this Section 6 were determined by pro rata allocation or by any other method of allocation which does not take account of the equitable considerations referred to above in this Section 6. The aggregate amount of losses, liabilities, claims, damages and expenses incurred by an indemnified party and referred to above in this Section 6 shall be deemed to include any legal or other expenses reasonably incurred by such indemnified party in investigating, preparing or defending against any litigation, or any investigation or proceeding by any governmental agency or body, commenced or threatened, or any claim whatsoever based upon any such untrue or alleged untrue statement or omission or alleged omission.

Notwithstanding the provisions of this Section 6, no Holder shall be required to contribute any amount in excess of the amount by which the total price at which the Transfer Restricted Securities purchased by it were resold exceeds the amount of any damages which such Holder has otherwise been required to pay by reason of any untrue or alleged untrue statement or omission or alleged omission. The Holders' obligations to contribute as provided in this Section 6(e) are several and not joint.

No Person guilty of fraudulent misrepresentation (within the meaning of Section 11(f) of the Securities Act) shall be entitled to contribution from any Person who was not guilty of such fraudulent misrepresentation.

For purposes of this Section 6, each Person, if any, who controls an Initial Purchaser, a Holder or an Underwriter within the meaning of Section 15 of the Securities Act or Section 20 of the Exchange Act shall have the same rights to contribution as such Initial Purchaser, such Holder or such Underwriter, and each director of the Issuer, and each Person, if any, who controls the Issuer within the meaning of Section 15 of the Securities Act or Section 20 of the Exchange Act shall have the same rights to contribution as the Issuer.

7. RULE 144A. In the event the Issuer is not subject to Section 13 or 15(d) of the Exchange Act, the Issuer hereby agrees with each Holder, for so long as any Transfer Restricted Securities remain outstanding, to make available to any Holder or beneficial owner of Transfer Restricted Securities in connection with any sale thereof and any prospective purchaser of such Transfer Restricted Securities from such Holder or beneficial owner, the information required by Rule 144A(d)(4) under the Securities Act in order to permit resales of such Transfer Restricted Securities pursuant to Rule 144A.

8. PARTICIPATION IN UNDERWRITTEN REGISTRATIONS. No Holder may participate in any Underwritten Registration hereunder unless such Holder:

(i) agrees to sell such Holder's Transfer Restricted Securities on the basis provided in any underwriting arrangements approved by the Persons entitled hereunder to approve such arrangements and

(ii) completes and executes all reasonable questionnaires, powers of attorney, indemnities, underwriting agreements, lock-up letters and other documents required under the terms of such underwriting arrangements.

9. SELECTION OF UNDERWRITERS. The Holders of Transfer Restricted Securities covered by the Shelf Registration Statement who desire to do so may sell such Transfer Restricted Securities in an Underwritten Offering. In any such Underwritten Offering, the investment banker or investment bankers and manager or managers that will administer the offering will be selected by a Majority of Holders whose Transfer Restricted Securities are included in such offering; PROVIDED, that such investment bankers and managers must be reasonably satisfactory to the Issuer.

10. MISCELLANEOUS.

(a) REMEDIES. The Issuer acknowledges and agrees that any failure by the Issuer to comply with its obligations under Section 2 hereof may result in material irreparable injury to the Initial Purchasers or the Holders for which there is no adequate remedy at law, that it will not be possible to measure damages for such injuries precisely and that, in the event of any such failure, the Initial Purchasers or any Holder may obtain such relief as may be required to specifically enforce the Issuer's obligations under Section 2 hereof. The Issuer further agrees to waive the defense in any action for specific performance that a remedy at law would be adequate.

(b) ADJUSTMENTS AFFECTING TRANSFER RESTRICTED SECURITIES. The Issuer shall not, directly or indirectly, take any action with respect to the Transfer Restricted Securities as a class that would adversely affect the ability of the Holders to include such Transfer Restricted Securities in a registration undertaken pursuant to this Agreement.

(c) NO INCONSISTENT AGREEMENTS. The Issuer will not, on or after the date of this Agreement, enter into any agreement with respect to its securities that is inconsistent with the rights granted to the Holders in this Agreement or otherwise conflicts with the provisions hereof. In addition, the Issuer shall not grant to any of its security holders (other than the holders of Transfer Restricted Securities in such capacity) the right to include any of its securities in the Shelf Registration Statement provided for in this Agreement other than the Transfer Restricted Securities. The Issuer has not previously entered into any agreement (which has not expired or been terminated) granting any registration rights with respect to its securities to any Person which rights conflict with the provisions hereof.

(d) AMENDMENTS AND WAIVERS. This Agreement may not be amended, modified or supplemented, and waivers or consents to or departures from the provisions hereof may not be given, unless the Issuer has obtained the written consent of a Majority of Holders.

(e) NOTICES. All notices and other communications provided for or permitted hereunder shall be made in writing by hand-delivery, first-class mail (registered or certified, return receipt requested), telex, telecopier, or air courier guaranteeing overnight delivery:

(i) if to a Holder, at the address set forth on the records of the registrar under the Indenture or the transfer agent of the Common Stock, as the case may be; and

(ii) if to the Issuer:

Vertex Pharmaceuticals Incorporated
130 Waverly Street
Cambridge, Massachusetts 02139
Attention: Thomas G. Auchincloss, Jr., Vice President of Finance

With a copy to:

Kirkpatrick & Lockhart
75 State Street
Boston, Massachusetts 02109
Attention: Eileen Smith Ewing, Esq.

All such notices and communications shall be deemed to have been duly given: at the time delivered by hand, if personally delivered; five Business Days after being deposited in the mail, postage prepaid, if mailed; when answered back, if telexed; when

receipt acknowledged, if telecopied; and on the next Business Day, if timely delivered to an air courier guaranteeing overnight delivery.

(f) SUCCESSORS AND ASSIGNS. This Agreement shall inure to the benefit of and be binding upon the successors and assigns of each of the parties, including without limitation and without the need for an express assignment, subsequent Holders of Transfer Restricted Securities; PROVIDED, HOWEVER, that (i) this Agreement shall not inure to the benefit of or be binding upon a successor or assign of a Holder unless and to the extent such successor or assign acquired Transfer Restricted Securities from such Holder and (ii) nothing contained herein shall be deemed to permit any assignment, transfer or other disposition of Transfer Restricted Securities in violation of the terms of the Purchase Agreement or the Indenture. If any transferee of any Holder shall acquire Transfer Restricted Securities, in any manner, whether by operation of law or otherwise, such Transfer Restricted Securities shall be held subject to all of the terms of this Agreement, and by taking and holding such Transfer Restricted Securities such person shall be conclusively deemed to have agreed to be bound by and to perform all of the terms and provisions of this Agreement.

(g) COUNTERPARTS. This Agreement may be executed in any number of counterparts and by the parties hereto in separate counterparts, each of which when so executed shall be deemed to be an original and all of which taken together shall constitute one and the same agreement.

(h) SECURITIES HELD BY THE ISSUER OR ITS AFFILIATES. Whenever the consent or approval of Holders of a specified percentage of Transfer Restricted Securities is required hereunder, Transfer Restricted Securities held by the Issuer or its "affiliates" (as such term is defined in Rule 405 under the Securities Act) shall not be counted in determining whether such consent or approval was given by the Holders of such required percentage.

(i) HEADINGS. The headings in this Agreement are for convenience of reference only and shall not limit or otherwise affect the meaning hereof.

(j) GOVERNING LAW. This Agreement shall be governed by, and construed in accordance with, the law of the State of New York, without regard to conflict of laws principles thereof.

(k) SEVERABILITY. If any one or more of the provisions contained herein, or the application thereof in any circumstance, is held invalid, illegal or unenforceable, the validity, legality and enforceability of any such provision in every other respect and of the remaining provisions contained herein shall not be affected or impaired thereby.

(l) ENTIRE AGREEMENT. This Agreement is intended by the parties as a final expression of their agreement and intended to be a complete and exclusive statement of the agreement and understanding of the parties hereto in respect of the subject matter contained herein. There are no restrictions, promises, warranties or undertakings, other than those set forth or referred to herein with respect to the registration rights granted by the Issuer with respect to the Transfer Restricted Securities. This Agreement supersedes all prior agreements and understandings between the parties with respect to such subject matter

IN WITNESS WHEREOF, the parties have executed this Agreement as of the date first written above.

VERTEX PHARMECEUTICALS INCORPORATED

By

Name:
Title:

MERRILL LYNCH & CO.
MERRILL LYNCH, PIERCE, FENNER & SMITH
INCORPORATED
BEAR, STEARNS & CO. INC.
CREDIT SUISSE FIRST BOSTON
CORPORATION
FLEETBOSTON ROBERTSON STEPHENS INC.
SG COWEN SECURITIES CORPORATION,
as Representatives of the several Initial Purchasers

By: Merrill Lynch, Pierce, Fenner & Smith
Incorporated

By:

Authorized Signatory

Exhibit A

VERTEX PHARMACEUTICALS INCORPORATED

FORM OF SELLING SECURITYHOLDER NOTICE AND QUESTIONNAIRE

The undersigned beneficial holder of 5% Convertible Subordinated Notes due 2007 (the "Notes") of Vertex Pharmaceuticals Incorporated (the "Issuer"), or common stock, par value $.01 per share (the "Shares" and together with the Notes, the "Transfer Restricted Securities"), of the Issuer understands that the Issuer has filed, or intends to file, with the Securities and Exchange Commission (the "Commission") a registration statement (the "Shelf Registration Statement"), for the registration and resale under Rule 415 of the Securities Act of 1933, as amended (the "Securities Act"), of the Transfer Restricted Securities in accordance with the terms of the Registration Rights Agreement, dated March 14, 2000 (the "Registration Rights Agreement"), between the Issuer and Merrill Lynch & Co., Merrill Lynch, Pierce, Fenner & Smith Incorporated, Bear, Stearns & Co. Inc., Credit Suisse First Boston Corporation, FleetBoston Robertson Stephens Inc. and SG Cowen Securities Corporation, as Representatives of the several Initial Purchasers. A copy of the Registration Rights Agreement is available from the Issuer upon request at the address set forth below. All capitalized terms not otherwise defined herein have the meaning ascribed thereto in the Registration Rights Agreement.

Each beneficial owner of Transfer Restricted Securities is entitled to the benefits of the Registration Rights Agreement. In order to sell or otherwise dispose of any Transfer Restricted Securities pursuant to the Shelf Registration Statement, a beneficial owner of Transfer Restricted Securities generally will be required to be named as a selling securityholder in the related Prospectus, deliver a Prospectus to purchasers of Transfer Restricted Securities and be bound by those provisions of the Registration Rights Agreement applicable to such beneficial owner (including certain indemnification provisions, as described below). BENEFICIAL OWNERS THAT DO NOT COMPLETE THIS NOTICE AND QUESTIONNAIRE WITHIN 20 BUSINESS DAYS OF RECEIPT HEREOF AND DELIVER IT TO THE ISSUER AS PROVIDED BELOW WILL NOT BE NAMED AS SELLING SECURITYHOLDERS IN THE PROSPECTUS AND THEREFORE WILL NOT BE PERMITTED TO SELL ANY TRANSFER RESTRICTED SECURITIES PURSUANT TO THE SHELF REGISTRATION STATEMENT.

Certain legal consequences arise from being named as a selling securityholder in the Shelf Registration Statement and the related Prospectus. Accordingly, holders and beneficial owners of Transfer Restricted Securities are advised to consult their own securities law counsel regarding the consequences of being named or not being named as a selling securityholder in the Shelf Registration Statement and the related Prospectus.

NOTICE

The undersigned beneficial owner (the "Selling Securityholder") of Transfer Restricted Securities hereby gives notice to the Issuer of its intention to sell or otherwise dispose of Transfer Restricted Securities beneficially owned by it and listed below in Item 3 (unless otherwise specified under Item 3) pursuant to the Shelf Registration Statement. The undersigned, by signing and returning this Notice and Questionnaire, understands that it will be bound by the terms and conditions of this Notice and Questionnaire and the Registration Rights Agreement.

Pursuant to the Registration Rights Agreement, the undersigned has agreed to indemnify and hold harmless the Issuer, the Initial Purchasers, any Underwriter and the other selling holders and each person, if any, who controls such persons within the meaning of either Section 15 of the Securities Act or Section 20 of the Exchange Act, from and against certain losses arising in connection with statements concerning the undersigned made in the Shelf Registration Statement or the related Prospectus in reliance upon the information provided in this Notice and Questionnaire.

The undersigned hereby provides the following information to the Issuer and represents and warrants that such information is accurate and complete:

QUESTIONNAIRE

1. (a) Full legal name of Selling Securityholder:

(b) Full legal name of registered holder (if not the same as (a) above) through which Transfer Restricted Securities listed in (3) below are held:

(c) Full legal name of DTC participant (if applicable and if not the same as (b) above) through which Transfer Restricted Securities listed in (3) are held:

2. Address for notices to Selling Securityholders:

Telephone:

Fax:

Contact Person:

3. Beneficial ownership of Transfer Restricted Securities:

(a) Type of Transfer Restricted Securities beneficially owned, and principal amount of Notes or number of shares of Common Stock, as the case may be, beneficially owned:

(b) CUSIP No(s). of such Transfer Restricted Securities beneficially owned:

4. Beneficial ownership of the Issuer's securities owned by the Selling Securityholder:

EXCEPT AS SET FORTH BELOW IN THIS ITEM (4), THE UNDERSIGNED IS NOT THE BENEFICIAL OR REGISTERED OWNER OF ANY SECURITIES OF THE ISSUER OTHER THAN THE TRANSFER RESTRICTED SECURITIES LISTED ABOVE IN ITEM (3) ("OTHER SECURITIES").

(a) Type and amount of Other Securities beneficially owned by the Selling Securityholder:

(b) CUSIP No(s). of such Other Securities beneficially owned:

5. Relationship with the Issuer

Except as set forth below, neither the undersigned nor any of its affiliates, officers, directors or principal equity holders (5% or more) has held any position or office or has had any other material relationship with the Issuer (or their predecessors or affiliates) during the past three years.

State any exceptions here:

6. Plan of Distribution

Except as set forth below, the undersigned (including its donees or pledgees) intends to distribute the Transfer Restricted Securities listed above in Item (3) pursuant to the Shelf Registration Statement only as follows (if at all). Such Transfer Restricted Securities may be sold from time to time directly by the undersigned or, alternatively, through underwriters, broker-dealers or agents. If

the Transfer Restricted Securities are sold through underwriters or broker-dealers, the Selling Securityholder will be responsible for underwriting discounts or commissions or agent's commissions. Such Transfer Restricted Securities may be sold in one or more transactions at fixed prices, at prevailing market prices at the time of sale, at varying prices determined at the time of sale, or at negotiated prices. Such sales may be effected in transactions (which may involve crosses or block transactions):

(i) on any national securities exchange or quotation service on which the Transfer Restricted Securities may be listed or quoted at the time of sale;

(ii) in the over-the-counter market;

(iii) in transactions otherwise than on such exchanges or services or in the over-the-counter market; or

(iv) through the writing of options.

In connection with sales of the Transfer Restricted Securities or otherwise, the undersigned may enter into hedging transactions with broker-dealers, which may in turn engage in short sales of the Transfer Restricted Securities and deliver Transfer Restricted Securities to close out such short positions, or loan or pledge Transfer Restricted Securities to broker-dealers that in turn may sell such securities.

State any exceptions here:

Note: In no event will such method(s) of distribution take the form of an underwritten offering of the Transfer Restricted Securities without the prior agreement of the Issuer.

The undersigned acknowledges that it understands its obligation to comply with the provisions of the Exchange Act and the rules and regulations promulgated thereunder relating to stock manipulation, particularly Regulation M thereunder (or any successor rules or regulations), in connection with any offering of Transfer Restricted Securities pursuant to the Shelf Registration Statement. The undersigned agrees that neither it nor any person acting on its behalf will engage in any transaction in violation of such provisions.

The Selling Securityholder hereby acknowledges its obligations under the Registration Rights Agreement to indemnify and hold harmless certain persons as set forth therein.

Pursuant to the Registration Rights Agreement, the Issuer has agreed under certain circumstances to indemnify the Selling Securityholders against certain liabilities.

In accordance with the undersigned's obligation under the Registration Rights Agreement to provide such information as may be required by law for inclusion in the Shelf Registration Statement, the undersigned agrees to promptly notify the Issuer of any inaccuracies or changes in the information provided herein that may occur subsequent to the date hereof at any time while the Shelf Registration Statement remains effective. All notices hereunder and pursuant to the Registration Rights Agreement shall be made in writing at the address set forth below.

By signing below, the undersigned consents to the disclosure of the information contained herein in its answers to items (1) through (6) above and the inclusion of such information in the Shelf Registration Statement and the related Prospectus. The undersigned understands that such information will be relied upon by the Issuer in connection with the preparation or amendment of the Shelf Registration Statement and the related Prospectus.

IN WITNESS WHEREOF, the undersigned, by authority duly given, has caused this Notice and Questionnaire to be executed and delivered either in person or by its duly authorized agent.

Dated:

Beneficial Owner

By:

Name:
Title:

Please return the completed and executed Notice and Questionnaire to Vertex Pharmaceuticals Incorporated at:

Vertex Pharmaceuticals Incorporated
130 Waverly Street
Cambridge, Massachusetts 02139
Attention: Thomas G. Auchincloss, Jr.,
Vice President of Finance

EXHIBIT 10.1
(With certain confidential information deleted and
marked with bracketed asteriks)

RESEARCH AND EARLY DEVELOPMENT AGREEMENT

between

Vertex Pharmaceuticals Incorporated

and

Novartis Pharma AG

Research and Early Development Agreement

TABLE OF CONTENTS

TABLE OF CONTENTS

RESEARCH AND EARLY DEVELOPMENT AGREEMENT

AGREEMENT made this 8th day of May, 2000 between VERTEX PHARMACEUTICALS INCORPORATED ("VERTEX"), a Massachusetts corporation with principal offices at 130 Waverly Street, Cambridge, MA 02139-4242, and NOVARTIS PHARMA AG ("NOVARTIS"), a Swiss corporation with principal offices at CH-4002 Basel, Switzerland.

This Agreement has been executed by the parties on the date stated above, and shall become effective (the "Effective Date") upon the later of (a) approval of the execution of this Agreement by each party's Board of Directors; and (b) clearance of the Agreement and the transactions contemplated herein under the United States statute known as the Hart, Scott, Rodino Anti-Trust Improvements Act of 1976 ("HSR"), either pursuant to notice to that effect from the United States Federal Trade Commission or the Justice Department, or as a result of passage, without comment, of the waiting period specified under HSR; provided, that this Agreement shall terminate unless extended by written mutual agreement of the parties if it has not become effective as set forth above on or before July 14, 2000.

INTRODUCTION

WHEREAS, VERTEX has undertaken a broad drug discovery program with the objective of designing novel, small-molecule compounds targeting the kinase protein super-family;

WHEREAS, NOVARTIS is also interested in developing and commercializing drugs targeting kinase proteins and has particular expertise in developing, registering, manufacturing, marketing and selling pharmaceuticals worldwide;

WHEREAS, both parties desire to enter into a collaboration the objective of which will be for VERTEX to generate eight (8) novel chemical entities, targeting selected Kinases, that establish proof of concept with results sufficient to justify further clinical studies, and thereafter for NOVARTIS to develop, market and sell those compounds as drugs upon the terms set forth herein and in a License, Development and Commercialization Agreement identical in substance to Exhibit A hereto;

NOW THEREFORE, in consideration of the mutual covenants set forth in this Agreement, and other good and valuable consideration, the parties agree as follows:

ARTICLE I

DEFINITIONS

1.1. "Affiliate" shall mean, with respect to any Person, any other Person which directly or indirectly, by itself or through one or more intermediaries, controls, or is controlled by, or is under direct or indirect common control with, such Person. The term "control" means the possession, direct or indirect, of the power to direct or cause the direction of the management and policies of a Person, whether through the ownership of voting securities, by contract or otherwise. Control will be presumed if one Person owns, either of record or beneficially, more than 50% of the voting stock of any other Person. For the avoidance of any doubt, the Novartis Institute for Functional Genomics, Inc. and The Friedrich Miescher Institute, as currently operated, are not Affiliates of NOVARTIS for the purposes of this Agreement.

1.2. "Bulk Drug Substance" shall mean a Drug Product Candidate in bulk crystal, powder or other form suitable for incorporation in a Drug Product.

1.3. "Compound" shall mean any chemical compound, including salts thereof, which affects a kinase and which is synthesized and/or tested (including by screening) by or under the direction of either party hereto or its Affiliates during the term of the Research Program conducted under this Agreement, or was synthesized or tested by either party or its Affiliates prior to the Effective Date in a program targeted toward kinase modulation; provided that the term "Compound" shall not include any Excluded Compounds unless those Excluded Compounds have been designated as Compounds hereunder by agreement of the parties hereto after the Effective Date.

1.4. "Controlled" shall mean the legal authority or right of a party hereto to grant a license or sublicense of intellectual property rights to another party hereto, or to otherwise disclose proprietary or trade secret information to such other party, without breaching the terms of any agreement with a Third Party, infringing upon the intellectual property rights of a Third Party, or misappropriating the proprietary or trade secret information of a Third Party.

1.5. "Development Candidate" shall mean a Compound selected by VERTEX, during the term of the Research Program and (if the Program is not terminated early) during the six-month period immediately following expiration of the Research Program, for formal pre-clinical development in the Field.

1.6. "Development Election" shall have the meaning set forth in Section 4.1 hereof.

1.7. "Development Program" shall mean activities associated with development of a Drug Product Candidate as specified in the License Agreement.

1.8. "Drug Candidate" shall mean any Development Candidate which has completed Proof of Concept Studies with results sufficient to satisfy the Proof of Concept Study requirements adopted by the JRC with respect to that Development Candidate.

1.9. "Drug Product" shall mean a finished dosage form which is prepared from Bulk Drug Substance and is ready for administration to the ultimate consumer as a pharmaceutical.

1.10. "Drug Product Candidate" shall mean a Drug Candidate which has been accepted by NOVARTIS for development under the License Agreement referenced in Section 4.3 hereof.

1.11. "Early Development Plan" shall have the meaning set forth in Section 2.4.2 hereof.

1.12. "Effective Date" shall mean the effective date of this Agreement as set forth on the first page hereof.

1.13. "Excluded Compounds" shall mean any chemical compounds the therapeutic effect of which in humans is thought to be principally derived from an effect on one or more Excluded Kinases. "Excluded Compounds" shall also include the Compound known as [**********]. An "analog" shall mean any compounds (or salts thereof) which are claimed in [**********]

**********] which NOVARTIS can demonstrate by written record were synthesized by NOVARTIS before the Effective Date.

1.14. "Excluded Kinases" shall mean the human kinases specifically identified in Schedule 1.13 hereto. "Excluded Kinases" shall also include any Kinase hereafter added to the list of Excluded Kinases, at VERTEX's option exercisable upon written notice to NOVARTIS, pursuant to the provisions of Sections 2.9.2(a) or 2.9.5 hereof.

1.15. "Extended Development Period" shall mean the two-year period immediately following expiration of the term of the Research Program.

1.16. "Field" shall mean the treatment or prevention of conditions or diseases in humans, principally by affecting a Kinase other than an Excluded Kinase.

1.17. "Filing Outside the U.S." means any application or regulatory filing to be made hereunder with a regulatory authority outside the United States, for approval to manufacture and sell Drug Product(s) outside the U.S., and any correspondence, approvals or governmental licenses relating thereto.

1.18. "FTE" shall mean the equivalent of the work of one VERTEX scientist or other project managerial professional, full time for one year, which equates to a total of forty-seven (47) weeks or one thousand eight hundred eighty (1880) hours per year of work, on or directly related to the Research Program. Work in the Research Program can include, but is not limited to, experimental laboratory work, work related to Proof of Concept Studies, project and research management, activities directed toward evaluation of the commercial potential of a possible Drug Candidate, recording and writing up results, reviewing literature and references, holding scientific discussions, attending appropriate seminars and symposia, and carrying out Joint Research Committee duties. FTE's shall include equivalent scientific work in the Research Program delegated to and carried out by contractors, under the general direction of VERTEX scientists; provided, that the nature and quantity (as a percentage of total program FTE's) of the delegated work shall not be such that the most substantial parts of the overall Research Program, in terms of projected value creation, have been delegated to Third Parties. FTE's which result from work delegated to and carried out by contractors will be separately identified by VERTEX on its invoices provided to NOVARTIS under Section 12.19 hereof.

1.19. "GLP" shall mean the current Good Laboratory Practices regulations promulgated by the FDA, published at 21 CFR Part 58, as such regulations may be from time to time amended, and such equivalent regulations or standards of countries outside the United States as may be applicable to activities conducted hereunder.

1.20. "GMP" shall mean the current Good Manufacturing Practice regulations promulgated by the FDA, published at 21 CFR Part 210 et seq., as such regulations may from time to time be amended, and such equivalent regulations or standards of countries outside the United States as may be applicable to activities conducted hereunder.

1.21. "Joint Research Committee" or "JRC" shall have the meaning ascribed to it in Section 2.5 of this Agreement.

1.22. "Joint Steering Committee" or "JSC" shall have the meaning ascribed to it in Section 2.6 of this Agreement.

1.23. "Kinase" shall mean a human enzyme that catalyzes the transfer of a phosphate group from a nucleoside triphosphate to a protein.

1.24. "Kinase Technology" shall mean all data, technical information, know-how, experience, inventions (whether or not patented) trade secrets, processes and methods discovered, developed or applied (with the consent of its owner) and Controlled by either party or its Affiliates, in connection with performance by either party under the Research Program, or in connection with the conduct of a Development Program under the License Agreement prior to termination of the Research Program, that relate to the research, development, utilization, manufacture or use of Compounds, Development Candidates, Drug Candidates, Drug Product Candidates or Drug Products (other than any such technology which is exclusive to Excluded Kinases); provided, however, that the term Kinase Technology shall not apply to VERTEX's general drug design technology whether in hardware or software form, tangible or intangible.

1.25. "Know-How" means all Kinase Technology other than inventions which are the subject of Patents.

1.26. "License Agreement" shall mean the License, Development and Commercialization Agreement, identical in substance to Exhibit A hereto, to be executed by VERTEX and NOVARTIS with respect to each Drug Product Candidate.

1.27. "NOVARTIS Know-How" shall mean all Know-How of NOVARTIS.

1.28. "NOVARTIS Patents" shall mean any Patents controlled by NOVARTIS or its Affiliates claiming Kinase Technology.

1.29. "NOVARTIS Kinase Technology" shall mean all NOVARTIS Patents and NOVARTIS Know-How.

1.30. "Patents" means all existing patents and patent applications and all patent applications hereafter filed, including any continuation, continuation-in-part, division, provisional or any substitute applications, any patent issued with respect to any such patent applications, any reissue, reexamination, renewal or extension (including any supplementary protection certificate) of any such patent, and any confirmation patent or registration patent or patent of addition based on any such patent, and all foreign counterparts of any of the foregoing.

1.31. "Person" means any individual, corporation, partnership, association, joint-stock company, trust, unincorporated organization or government or political subdivision thereof.

1.32. "Pivotal Registration Study" shall mean a human clinical trial conducted for inclusion in (i) that portion of the FDA submission and approval process which provides for the continued trials of a Drug Candidate on sufficient numbers of patients to generate safety and efficacy data to support Regulatory Approval in the proposed therapeutic indication, as more fully defined in 21 C.F. R. ss. 312.21(c), and (ii) equivalent submissions with similar requirements in other countries.

1.33. "Proof of Concept Studies" shall mean clinical studies conducted in up to 50 patients with multiple dose exposure, or in healthy volunteers if, with the approval of NOVARTIS (which shall not be unreasonably withheld), the objectives of the proof of concept can be achieved in volunteers. The clinical studies will demonstrate the following results (or such other results as may be agreed by NOVARTIS and VERTEX):

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In addition to human clinical studies, Proof of Concept Studies shall include completion of the following activities. These activities may be modified from time to time by the JRC with respect to a particular Drug Candidate, with the consent of NOVARTIS (which shall not be unreasonably withheld):

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1.34. "Refused Candidate" shall have the meaning set forth in Section 4.4 hereof.

1.35. "Regulatory Approval" shall mean, with respect to any country, all authorizations by the appropriate governmental entity or entities necessary for commercial sale of a Drug Product in that country including, without limitation and where applicable, approval of labeling, price, reimbursement and manufacturing. "Regulatory Approval" in the United States shall mean final approval of a new drug application pursuant to 21 CFR ss. 314, permitting marketing of the applicable Drug Product in interstate commerce in the United States. "Regulatory Approval" in the European Union shall mean final approval of a Marketing

Authorization Application pursuant to Council Directive 75/319/EEC, as amended, or Council Regulation 2309/93/EEC, as amended.

1.36. "Research Plan" shall have the meaning set forth in Section 2.4.1 hereto.

1.37. "Research Program" shall mean all research activities and development activities undertaken under this Agreement, including the activities addressed by Proof of Concept Studies, associated with the identification, design and development of Compounds and Drug Candidates as provided herein; including but not limited to identification and initial testing of Compounds; selection of Development Candidates from Compounds and preparation for preclinical assessment of those Candidates; formulation and manufacture of Development Candidates for use in preclinical and clinical studies; preclinical animal studies performed in accordance with GLP (or the applicable equivalent); planning, implementation, administration and evaluation of human clinical trials included in Proof of Concept Studies; and manufacturing process development and scale-up as appropriate at the stage of development encompassed within the Proof of Concept Studies.

1.38. "Research Year" means a twelve-month period during the term of the Research Program commencing on May 1, and ending on April 30 of each year. The first Research Year hereunder shall be deemed to have commenced on May 1, 2000.

1.39. "Subsequent Candidate" shall mean any Drug Candidate proposed by VERTEX for further development at the First Opportunity, prior to the end of the Extended Development Period, after NOVARTIS has accepted eight (8) Drug Candidates for development at the First or Second Opportunity.

1.40. "Technology" shall mean NOVARTIS Kinase Technology and VERTEX Kinase Technology.

1.41. "Third Party" shall mean any person or entity which is not a party or an Affiliate of any party to this Agreement.

1.42. "Third Party Referral" shall mean the procedure for resolution of certain disputes hereunder which is set forth in Section 11.2 hereof.

1.43. "VERTEX Know-How" shall mean all Know-How of VERTEX.

1.44. "VERTEX Patents" shall mean any Patents Controlled by VERTEX or its Affiliates claiming Kinase Technology.

1.45. "VERTEX Kinase Technology" shall mean all VERTEX Patents and VERTEX Know-How.

Capitalized terms used but not otherwise defined herein which are defined in the License Agreement shall have the meaning ascribed to them therein.

ARTICLE II

RESEARCH PROGRAM

2.1. Commencement.

The Research Program shall commence as soon as practicable after the Effective Date. VERTEX shall have principal responsibility for the conduct of the Research Program and NOVARTIS shall provide consultation, advice and such research effort as may be deemed appropriate by the JRC and accepted by NOVARTIS. The JRC shall review and coordinate all of the parties' efforts with respect to the Research Program.

2.2. Term.

The Research Program will conclude six (6) years from the Effective Date, unless earlier terminated in accordance with the provisions hereof. At the request of either party made during the Fourth Research Year, the parties will discuss whether, and upon what basis, the Research Program might be extended on comparable terms beyond its initial 6 year term.

2.3. Research Diligence.

The common objective of the parties is to identify at least eight (8) Drug Product Candidates as soon as practicable for worldwide development and marketing under the terms of the License Agreement. VERTEX will work diligently and use all reasonable efforts, consistent with prudent business judgment, to identify and develop such Drug Candidates for acceptance by NOVARTIS as Drug Product Candidates. VERTEX intends to dedicate to the Research Program at least that level of staffing referenced in Section 3.2 hereof, and expects to employ an optimal combination of experience and training in the Field. As a matter of corporate strategy,

VERTEX has chosen to dedicate a significant amount of its overall research and early development efforts to work in the Field, and will not change that overall strategy during the term of the Research Program without prior notice to and approval by NOVARTIS.

2.4. Research Plan; Early Development Plan.

2.4.1. General. VERTEX will prepare an overall research plan (the "Research Plan") for the Research Program which it will submit to the JRC for its review and comment at the first meeting of the JRC after the Effective Date. The Research Plan will be revised, updated and submitted to the JRC at least annually for its review and comment.

2.4.2. Plan for Development Candidates. As soon as practicable after VERTEX has selected a Development Candidate for formal development in accordance with its usual internal procedures, the JRC shall meet and discuss a specific pre-clinical and clinical development plan for that Candidate, including process development and formulation activities necessary or useful for the manufacture of clinical trial material for Proof of Concept Studies, and preparation for more extensive clinical trials and commercial supply. Based on these discussions, VERTEX will finalize a development plan for the Development Candidate (an "Early Development Plan") for review by the JRC. To the extent practicable at the time, the Early Development Plan will include, among other things, a full description of the Proof of Concept Studies to be undertaken with respect to that Drug Candidate, a target product profile, a preliminary assessment of the market potential [**********
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**********], a development timeline and budget, and the identity of the development team to be responsible for implementing the Early Development Plan.

2.4.3. Plan Review. VERTEX, in developing the Research Plan and the Early Development Plan, will take into account the general criteria and guidelines (without being bound in each detail) attached as Schedule 2.4.3 hereto, to ensure a timely continuation of further clinical development of the Drug Candidate after completion of Proof of Concept Studies in accordance with the normal sequence of clinical development activity. The Research Plan, the

Early Development Plan with respect to each Development Candidate, and the target product profile with respect to a Development Candidate will be reviewed as necessary at each meeting of the JRC, and at any other time upon the request of either party, and shall be modified as appropriate to reflect material scientific or commercial developments. Any disagreements among the parties with respect to these matters may be referred by either party to the Joint Steering Committee for resolution. Notwithstanding the foregoing, VERTEX shall have the final say with respect to the Research Plan and the Early Development Plan.

2.5. Joint Research Committee.

2.5.1. Composition and Purposes. Upon the execution of this Agreement, VERTEX and NOVARTIS will establish a Joint Research Committee ("JRC") which shall consist of at least eight (8) representatives (as may be increased or decreased by the JRC), half of whom shall be designated from time to time by each party. If the JRC chooses to designate a Committee Chair, the Chair will be appointed from among the members of the Committee designated by VERTEX. The JRC shall meet formally at least quarterly, or with such other frequency, and at such time and location, as may be established by the Committee, for the following purposes:

(i) To receive and review reports by VERTEX and its project teams, and by NOVARTIS if it is involved in research and early development activities in the Field, which shall be prepared and submitted to the JRC on a quarterly basis within fifteen (15) days after the end of each calendar quarter (commencing with the first full quarter after the execution of this Agreement), summarizing progress under the Research Plan, and any Early Development Plan then in effect, during the preceding quarter;

(ii) To review a proposal by either party that specified Excluded Compounds or Excluded Kinases be included in the Research Program, or that an included Kinase be added to the list of Excluded Kinases; provided that the JRC shall have no authority to include or exclude any Compound or Kinase from the Research Program;

(iii) To review Development Candidates selected by VERTEX, to discuss recommended product profiles for those Candidates and to review Proof of Concept Study requirements;

(iv) To review the Research Plan, any Early Development Plan, and any proposed revisions to either;

(v) To consider whether redirection or termination of the Research Program should be recommended under Section 2.8 hereof; and

(vi) To discuss matters relating to Patents, as may be presented to the JRC by VERTEX or NOVARTIS.

The party hosting a particular JRC meeting shall prepare and deliver to the members of the JRC, within thirty (30) days after the date of each meeting, minutes of such meeting setting forth, inter alia, all decisions of the JRC, and including a report on the progress of work performed. In case the JRC meets by means of telephone or video conferences, this responsibility shall lie with VERTEX. VERTEX also expects to provide NOVARTIS with reports from its early development project teams if and when they become available and are appropriate for distribution.

2.5.2. Decision-Making.

(i) Each of VERTEX and NOVARTIS shall have one vote on the JRC. The objective of the JRC shall be to reach agreement by consensus on all matters within the scope of the Research Plan and the Early Development Plan. However, in the event of a deadlock with respect to any action (which shall be deemed to have occurred if either party shall request a vote of the JRC on a matter and that vote shall either not be taken within thirty (30) days of the request or if taken shall result in a tie vote) and subject to the procedure set forth in subsection (ii) below as to certain matters, the vote of VERTEX, rendered after reasonable and open discussion among the members of the JRC, shall be final and controlling.

(ii) Notwithstanding the foregoing, if VERTEX and NOVARTIS deadlock on any matters being considered by the JRC which might have a significant impact on the time or likely success of the Research Program, the matter shall be referred to the JSC for resolution in accordance with Section 2.6 hereof.

(iii) Each party shall retain the rights, powers, and discretion granted to it under this Agreement, and the JRC shall not be delegated or vested with any such rights, powers or discretion except as expressly provided in this Agreement. The JRC shall not have the power to amend or modify this Agreement, which may only be amended or modified as provided in Section 12.15.

2.6. Joint Steering Committee.

2.6.1. Composition and Purposes. Upon execution of this Agreement, VERTEX and NOVARTIS will establish a Joint Steering Committee ("JSC") which shall consist of an equal number of senior executives as may be designated by each party from time to time. The JSC shall initially have four (4) members. If the JSC chooses to designate a Committee Chair, the Chair will be appointed from among the members of the JSC designated by NOVARTIS. The JSC shall meet annually, or with such other frequency, and at such time and location, as may be established by the Committee, for the following purposes:

(i) General oversight of the entire collaboration between VERTEX and NOVARTIS, including the Research Program and any development and commercialization of a Drug Product Candidate under the License Agreement;

(ii) Periodically review the overall goals and strategy of the Research Program;

(iii) Attempt to resolve any disagreement between the parties with regard to Proof of Concept Studies for a particular Development Candidate, and discuss and attempt to resolve any other deadlocked issues submitted to it by the JRC (although the vote of VERTEX's representatives shall prevail if the JSC is unable to reach a consensus on any of these matters);

(iv) To address any matters raised under relevant provisions (such as Section 3.2.3 or Section 4.2.3) of the License Agreement.

2.7. Exchange of Information.

2.7.1. VERTEX and NOVARTIS will share information with the JRC, as soon as it is available, necessary to facilitate mutual understanding of the status of the Research Program and decision-making in connection therewith.

2.7.2. Neither VERTEX nor NOVARTIS shall use Kinase Technology disclosed by the other party (excluding information which is no longer subject to confidentiality restrictions under Article V by reason of the exceptions set forth in Section 5.2) for any purpose, including the filing of patent applications containing such information without the other party's consent (which shall not be reasonably withheld), other than for carrying out the Research Program or discharging its responsibilities under the License Agreement, or as otherwise permitted under the License Agreement or under Section 9.6 hereof.

2.7.3. Upon conclusion of the Research Program and subject to the provisions of Article V hereof, each party shall disclose to the other all technical information known to it which constitutes Kinase Technology covered by Patents. The parties will have the right to use the other party's Kinase Technology to the full extent set forth in Section 9.6 hereto.

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2.8. Redirection or Termination of Research Program.

If at any time during the term of this Agreement, the JRC shall determine in good faith (i) that the Research Program or any portion thereof cannot be successfully completed or if so completed will not produce Compounds that are commercially viable, or (ii) that in other

material respects the Research Program will not conform to the parties' reasonable expectations when entering into this Agreement, then the JRC may suggest revision, reorientation or termination of the Research Program to each party's top management, and upon mutual consent VERTEX and NOVARTIS shall thereafter promptly modify their respective activities in connection with the Research Program, or terminate the Research Program, accordingly.

2.9. Exclusivity.

2.9.1. If a proprietary Kinase target or Compound (other than an Excluded Kinase or Excluded Compound) is made available to NOVARTIS through collaborations, or under the framework of collaborations, existing on the Effective Date of this Agreement between NOVARTIS and any Third Party, [**********]; and if, during the term of the Research Program and the six (6) month period immediately thereafter, NOVARTIS decides to commence any material research work (e.g., chemistry efforts aimed at identifying lead compounds or biology efforts aimed at target validation) targeting that Kinase (a "Special Kinase"), or decides to commence formal preclinical development of any such initial Compound in the Field (a "Special Compound"), then the following shall apply:

[**********]

2.9.2. NOVARTIS will promptly notify VERTEX if NOVARTIS decides to commence any material research work (e.g., chemistry efforts aimed at identifying lead compounds or biology efforts aimed at target validation) targeting a novel Kinase other than an

Excluded Kinase (an "Internal Kinase"), or decides to commence formal preclinical development of any novel Compound in the Field other than an Excluded Compound (an "Internal Compound"), in either case identified or discovered by NOVARTIS or any of its Affiliates, and will provide along with that notice a summary of available information concerning that Internal Kinase or Internal Compound. Within ninety (90) days after receipt of that notice and information, VERTEX shall decide whether it wishes to include the Internal Kinase or Internal Compound in the collaboration, and will notify NOVARTIS of that decision.

(a) If VERTEX decides to include the Internal Kinase or Internal Compound, then it will diligently pursue the exploitation of that Kinase or Compound under the terms of this Research Agreement.

(b) If VERTEX chooses not to include the Internal Kinase or Internal Compound in the collaboration, then NOVARTIS shall be free to pursue exploitation of the Internal Kinase or Internal Compound free of the provisions of this Agreement, including the provisions of Section 2.9.3 which shall not be applicable to any such Internal Kinase or Internal Compound.

2.9.3. During the term of the Research Program neither VERTEX nor NOVARTIS, nor any of their Affiliates: (a) will enter into any agreement or collaboration with a Third Party (other than an amendment to any agreements referenced in Section 2.9.1); nor (b) establish an internal drug discovery effort; which in either case are aimed at identifying or developing Compounds, other than Excluded Compounds, unless those Compounds are included in the collaboration between VERTEX and NOVARTIS.

2.9.4. It is not the intention of NOVARTIS to use [**********] to form the basis of new Kinase research programs within NOVARTIS. However, NOVARTIS has identified [**********] as an Excluded Compound and is currently conducting research aimed at determining its principal mode of action. If that principal mode of action is determined to involve an effect on Kinases which are not, on the Effective Date hereof, Excluded Kinases, then at its option upon written notice to NOVARTIS, VERTEX may designate those Kinases as additional Excluded Kinases

hereunder, unless NOVARTIS shall agree within thirty (30) days after receipt of the foregoing notice from VERTEX that [**********] shall no longer be considered as Excluded Compounds but shall be considered Compounds hereunder subject to the provisions of this Agreement otherwise applicable to Compounds.

2.9.5. If NOVARTIS selects a compound (other than a compound which was in late stage development or commercialization on the Effective Date) for formal pre-clinical development and

(a) at the time of selection there is no scientific basis for concluding that the compound acts through an effect on a Kinase other than an Excluded Kinase; and

(b) it is later discovered that the compound's principal mode of action derives from its effect on a Kinase or Kinases (other than an Excluded Kinase);

then, that compound shall be considered a Special Compound under Section 2.9.1 as to which a Special Notice has been given, and the parties' rights and responsibilities thereafter with respect to that Special Compound shall be as set forth in and determined by Section 2.9.1.

2.9.6. Except as specified in Sections 2.9.1 through 2.9.5 hereof, no Kinase targets or Compounds Controlled by NOVARTIS and its Affiliates shall be subject to or included in this Agreement.

ARTICLE III

PAYMENTS

3.1. Signature Payment by NOVARTIS.

Upon the Effective Date of this Agreement NOVARTIS will make an initial non-refundable payment of $15,000,000 to VERTEX.

3.2. Staffing and Research Support Payments.

NOVARTIS will make the payments specified below to VERTEX during each Research Year in support of the Research Program under this Agreement. The required

payments are based upon the following assumptions: (a) the average number of FTE's which VERTEX will have employed in the Research Program during a Research Year will be approximately equal to the FTE Level listed in the third column below; and (b) the annual rate per FTE is approximately [**********]. If the average FTE level for any Research Year is less than the level specified below for that year (the difference being referred to in this section as an "FTE Shortfall"), then the amount of funding specified below for that Research Year shall be reduced by an amount (the "FTE Shortfall Amount") which bears the same relation to the total funding specified below for that Research Year as the FTE Shortfall bears to the projected FTE Level for that Year. The FTE Shortfall Amount shall be carried over from year to year and applied to compensate VERTEX for FTE Levels in subsequent Research Years which exceed the level for those Years as specified below. In any such subsequent Research Year, VERTEX shall be entitled to receive out of any remaining FTE Shortfall Amount a payment equal to the value (computed with reference to the inflation-adjusted FTE rate specified above) of any FTE's actually employed during that Research Year in excess of the FTE Level specified for that year ("Excess FTE's"). Notwithstanding the foregoing, the FTE Shortfall Amount will not be applied to compensate VERTEX on account of more than 20 Excess FTE's in any one Research Year.

Research Year	Funding	FTE Level
1	[*******]	[****]
2	[*******]	[****]
3	[*******]	[****]
4	[*******]	[****]
5	[*******]	[****]
6	[*******]	[****]

Research Year 1 will be deemed to have commenced on May 1, 2000. Payments due for each Research Year shall be made quarterly in advance on or before May 1, August 1, November 1 and February 1 of each Research Year except that the quarterly payment due May 1, 2000 shall be made within thirty business days after the Effective Date of this Agreement. All payments shall be made without deduction for withholding or other similar taxes, in United States dollars to the credit of such bank account as may be designated by VERTEX in writing to NOVARTIS. Any payments which fall due on a date which is a legal holiday in the

Commonwealth of Massachusetts may be made on the next following day which is not a legal holiday in the Commonwealth.

3.3. Development Loan Facility.

3.3.1. General. During the term of the Research Program and the Extended Development Period, NOVARTIS shall create, reserve and maintain an internal loan facility of [**********], from which it shall advance funds to VERTEX, and from which VERTEX may draw funds from time to time, for purposes of supporting Proof of Concept Studies for Development Candidates hereunder. For any Development Candidate, VERTEX may draw no more than the budgeted cost of the Proof of Concept Studies for that Candidate, as specified in the budget submitted to the JRC by VERTEX as provided in Section 2.4.2 above, [**********], whichever is less. No loan may be drawn to finance development activities undertaken by VERTEX with respect to a Drug Candidate after the expiration of the First Opportunity with respect to that Candidate. VERTEX may draw no more than [***********] in the aggregate, and the available amount of the facility shall be reduced by the principal amount of each loan drawn by VERTEX. All loans shall be interest-free.

3.3.2. Draw. To draw on the loan facility, VERTEX shall submit a notice of funding (a "Funding Notice") to NOVARTIS, signed by its Principal Financial Officer, specifying the amount requested (which shall not be less than [**********] per request), the Development Candidate to which the advance relates, and certifying that the advance, plus any prior advances with respect to that Development Candidate, do not exceed [***********] or the budgeted cost of Proof of Concept Studies for that Development Candidate, whichever is less. Advances shall be made by NOVARTIS by wire transfer at VERTEX's direction within thirty (30) days after receipt of a Funding Notice.

3.3.3. Repayment. The full amount of any advances relating to a particular Development Candidate will be forgiven by NOVARTIS, and the repayment obligation of VERTEX in connection therewith automatically extinguished, upon acceptance of that Development Candidate by NOVARTIS as a Drug Product Candidate hereunder, whether at the First Opportunity, the Second Opportunity or as a Subsequent Candidate. If the Development Candidate is not accepted by NOVARTIS as a Drug Product Candidate or a Subsequent

Candidate, then VERTEX shall repay the full amount of the Development Loan advanced with respect to that Development Candidate no later than the last day of the Extended Development Period. The unpaid amount of any such Development Loans not theretofore forgiven as provided above shall be repaid in full: (a) on or before April 30, 2006, if NOVARTIS terminates the Research Program early under Section 9.4 of this Agreement; and (b) on or before the first anniversary of the effective date of any termination of this Agreement by NOVARTIS for cause under Section 9.2 hereof.

3.4. Records.

VERTEX shall keep accurate records and books of accounts containing all data reasonably required for the calculation and verification of FTE's employed by VERTEX in the Research Program.

At NOVARTIS' request, VERTEX shall make those records available, no more than once a year, during reasonable working hours, for review by a recognized independent accounting firm acceptable to both parties, at NOVARTIS' expense, for the sole purpose of verifying the accuracy of those records in the calculation of Research Program FTE's. VERTEX shall not, however, be required to retain or make available to NOVARTIS or its accountants, any such records or books of account for any Research Year, beyond thirty-six (36) months from the conclusion of that Research Year. NOVARTIS shall cause the accounting firm to retain all such information in confidence.

In the event of a negative difference between the average number of FTE's stated to be involved in the Research Program and the number of FTE's actually employed, the amount previously advanced to VERTEX and attributable to any such negative difference shall be due and payable to NOVARTIS without delay. If the negative difference is more than [***] in any Research Year, then VERTEX shall also pay the reasonable costs of the independent accountant employed by NOVARTIS in the review. Interest at the rate of [**********], assessed from the end of the Research Year to which the negative difference relates, shall be due from VERTEX upon prior written notice.

ARTICLE IV

LICENSE, DEVELOPMENT AND COMMERCIALIZATION RIGHTS

4.1. Development Election.

NOVARTIS shall have the exclusive right (the "Development Election") to develop and commercialize each Drug Candidate proposed to it by VERTEX as set forth below, for any and all Indications, under the terms and conditions set forth in the License Agreement. While the Development Election is in effect, VERTEX will not grant to any Third Party rights to VERTEX Kinase Technology which are inconsistent with the grant of the Development Election to NOVARTIS hereunder. The Development Election will expire and NOVARTIS shall no longer have the right to select Drug Candidates hereunder upon the first to occur of:

(1) Expiration of the Research Program in the ordinary course without early termination;

(2) Early termination of the Research Program by NOVARTIS under Section 9.4 hereof;

(3) Termination of the Research Program by VERTEX for Cause under Section 9.3 hereof;

(4) Termination of the Research Program by either party hereto for Scientific Cause under Section 9.5 hereof.

Notwithstanding the foregoing, in the circumstance set forth in Section 4.1(1) above, the Development Election shall expire only at the end of the Extended Development Period, with respect to any Drug Candidates which were selected as Development Candidates by VERTEX during the Research Program (if they were still active Development Candidates on the date of expiration of the Research Program) or the six month period after normal expiration of the Research Program. NOVARTIS may exercise its Development Election with respect to any such Development Candidates upon completion of Proof of Concept Studies during the Extended Development Period. If Proof of Concept Studies with respect to a particular Development Candidate are underway but have not yet been completed, or if a Drug Candidate not accepted by NOVARTIS at the First Opportunity is still in development but has not yet reached the Second

Opportunity stage, ninety (90) days prior to the end of the Extended Development Period, NOVARTIS may nonetheless exercise its Development Election during that ninety (90) day period with respect to that Development Candidate as if Proof of Concept Studies had been successfully completed, or with respect to that Drug Candidate as if it had reached the Second Opportunity, and the Election will have the same effect hereunder as if it had been exercised upon successful completion of Proof of Concept Studies hereunder with respect to that Development Candidate or at the Second Opportunity with respect to that Drug Candidate. Upon written request from NOVARTIS delivered one hundred twenty (120) days prior to the end of the Extended Development Period, VERTEX will deliver to NOVARTIS, as soon as practicable thereafter, all Development Information (as referenced in Section 4.2 hereof) in its possession with respect to any such Development Candidate, specifically identified in the foregoing Notice from NOVARTIS, and all Further Development Information (as referenced in Section 4.4.1 hereof) in its possession with respect to any such Drug Candidate, specifically identified in the foregoing Notice from NOVARTIS. In the event NOVARTIS terminates the Research Program early under Section 9.4 hereof, NOVARTIS may exercise the Development Election with respect to any Development Candidate, during the one-year period between the date of notice and the effective date of early termination, whether or not that Development Candidate has completed Proof of Concept Studies during that period. VERTEX will provide NOVARTIS with Development Information, as referenced in the preceding sentence, with respect to any such Development Candidate(s), upon sixty (60) days prior written notice from NOVARTIS delivered not less than one hundred twenty (120) days before the effective termination date. In the event NOVARTIS validly terminates the Research Program for Cause under Section 9.2 hereof, the Development Election may nonetheless be exercised for the one-year period after the effective date of the termination for cause, but only with respect to Development Candidates that had not completed Proof of Concept Studies on or prior to the effective termination date.

4.2. Process for Determining Drug Candidates.

VERTEX will notify NOVARTIS each time it selects a Compound as a Development Candidate. After consultation with the JRC, VERTEX will determine the content of the Proof of Concept Studies which will be applicable with respect to that Development

Candidate. If the Compound successfully completes the Proof of Concept Studies and therefore becomes a Drug Candidate, VERTEX will notify NOVARTIS that the Proof of Concept Studies have been concluded and will provide with that notification all material information (the "Development Information") known to VERTEX about the Drug Candidate, including analysis results and raw data from the Proof of Concept Studies, which NOVARTIS should reasonably require in order to decide whether to accept the Drug Candidate for further development. The Development Information shall also include any previously undisclosed information with respect to VERTEX Kinase Technology which is important to a scientific and commercial evaluation of the Drug Candidate.

4.3. Optional Exercise.

NOVARTIS may exercise its Development Election and accept a Drug Candidate for further development (a "Drug Product Candidate") by delivery to VERTEX, within ninety (90) days after receipt of the Development Information from VERTEX with respect to that Drug Candidate, of written notice of exercise (an "Exercise Notice"), specifying the Drug Candidate as to which the Development Election is being exercised. The parties shall then promptly execute a License, Development and Commercialization Agreement identical in substance to Exhibit A hereto (the "License Agreement"), the terms of which are incorporated by reference into, and are a part of, this Research Agreement, pursuant to which NOVARTIS will further develop and commercialize the Drug Product Candidate. If the Development Election has previously been exercised with respect to another Drug Product Candidate and a License Agreement is in effect with respect to that Candidate, then the License Agreement will be amended to reflect the addition of another Drug Product Candidate for development. Development of each Drug Product Candidate shall proceed immediately after the Development Election is exercised, in accordance with the terms of the License Agreement. The ninety (90) day period during which the Development Election must be exercised, as referenced above, shall be referred to in this Agreement as the "First Opportunity." NOVARTIS may propose to VERTEX by written notice delivered during the initial forty-five 45 days of the First Opportunity period with respect to a Drug Candidate, that the First Opportunity for the Drug Candidate be extended for good reason for a specified time to permit NOVARTIS, at its expense and under its direction, to conduct such additional studies of that Drug Candidate as may be specified in the notice. VERTEX shall

discuss this request with NOVARTIS and the parties shall attempt in good faith to reach mutual agreement with respect to the requested extension of the First Opportunity period and the conduct of additional studies, but failing agreement the First Opportunity period shall expire after ninety (90) days as specified above.

4.4. Refused Candidate.

4.4.1. If NOVARTIS does not exercise its Development Election with respect to a particular Drug Candidate (a "Refused Candidate") within the First Opportunity, then the Development Election shall expire with respect to that Refused Candidate (subject to the proviso set forth below), and VERTEX will thereafter be free to develop and commercialize the Refused Candidate at its expense free of any obligation to NOVARTIS hereunder, including the obligation to submit information concerning that Refused Candidate for review by the JRC; provided that VERTEX will not enter into any agreement with a Third Party to develop or commercialize the Refused Candidate prior to the end of the Second Opportunity as defined below; and provided further that if VERTEX continues development of the Refused Candidate, VERTEX will notify NOVARTIS after VERTEX has received all data from its development studies of that Refused Candidate concluded after the First Opportunity, including analysis results and raw data, which is material to and will form the basis for, VERTEX's decision to commence its first Pivotal Registration Study with respect to the Refused Candidate (the "Further Development Information"). VERTEX will include a copy of the Further Development Information with that notice. During the thirty (30) day period immediately following delivery to NOVARTIS of the Further Development Information (the "Second Opportunity"), NOVARTIS shall have the right to exercise the Development Election with respect to that Refused Candidate; except that the provisions of Article VI of the License Agreement shall be applicable to any Drug Product Candidates which are accepted at the Second Opportunity.

4.4.2. The provisions of Section 4.4.1 shall not apply to [*********
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**********]

4.5. Subsequent Candidates.

After NOVARTIS has selected eight (8) Drug Candidates, whether at the First Opportunity or the Second Opportunity, as Drug Product Candidates hereunder it may nonetheless exercise its Development Election at the First Opportunity with respect to additional Drug Candidates ("Subsequent Candidates") prior to expiration of the Development Election; provided, that

(a) development of any such Subsequent Candidate as to which NOVARTIS has exercised its Development Election shall proceed in accordance with the terms of Article VI of the License Agreement; and

(b) the Development Election shall expire and NOVARTIS shall have no further rights with respect to any Subsequent Candidate which is not accepted by NOVARTIS at the First Opportunity. As part of the Development Information provided to NOVARTIS with respect to any Subsequent Candidate, VERTEX shall inform NOVARTIS whether it will propose that development of the Subsequent Compound be undertaken pursuant to a Joint Venture as described in Section 6.4.2 of the License Agreement, and if not, whether VERTEX will manufacture and supply Bulk Drug Product with respect to that Subsequent Candidate under Section 6.4.1 of the License Agreement.

The provisions of the last sentence of Section 4.4.2 above shall apply during the term of the Extended Development Period to any Subsequent Candidates which fall within the category of Drug Candidates described in Section 4.4.2.

4.6. Unexpected Results.

Notwithstanding any of the foregoing provisions:

(a) if NOVARTIS has chosen not to exercise its Development Election with respect to a particular Drug Candidate at the First Opportunity, and during development activities conducted by VERTEX thereafter, but prior to the Second Opportunity, VERTEX discovers significant evidence that the Drug Candidate being studied for specified Indications and with reference to one or more particular mechanisms of action (i) would be a promising candidate for development in an Indication which was not previously considered by the JRC to be relevant to the targeted mechanism of action (a "New Indication"); or (ii) acts by means of a mechanism of action not previously considered by the JRC with respect to that Drug Candidate (a "New Mechanism"), and by reason of that New Mechanism would be a promising candidate for development in a New Indication;

(b) then NOVARTIS shall have the right to elect to develop that Drug Candidate, for the New Indication only, as if development were being proposed by VERTEX as a First Opportunity Candidate under Section 4.3 hereof.

If NOVARTIS elects under (b) above to develop that Drug Candidate, it will compensate VERTEX, on a basis to be agreed, for any development work which it has performed beyond the First Opportunity which is useful for NOVARTIS in development of the Drug Candidate for the New Indication. In turn, VERTEX will allow NOVARTIS to cross-reference any of its filings with regulatory authorities relative to that Drug Candidate, which are necessary in the course of developing the Drug Candidate for the New Indication.

4.7. Clinical Trial Material. VERTEX will conduct its clinical studies with clinical trial material the manufacture of which is designed to conform, as and to the extent required by applicable U.S. federal regulations or as directed by the JRC, to GMP standards. As soon as practicable after the exercise of its Development Election with respect to a Drug Product Candidate, VERTEX will deliver to NOVARTIS, and NOVARTIS will accept, all clinical trial material for that Candidate in its possession to the extent it is usable in connection with further

development of that Candidate. NOVARTIS will reimburse VERTEX for the Manufacturing Cost of that material within thirty (30) days of receipt of VERTEX's invoice therefor.

ARTICLE V

CONFIDENTIALITY

5.1. Undertaking.

During the term of this Agreement, each party shall keep confidential, and other than as provided herein shall not use or disclose, directly or indirectly, any trade secrets, confidential or proprietary information, or any other knowledge, information, documents or materials, owned, developed or possessed by the other party, whether in tangible or intangible form, the confidentiality of which such other party takes reasonable measures to protect, including but not limited to VERTEX Kinase Technology and NOVARTIS Kinase Technology.

(a) Each party shall take any and all lawful measures to prevent the unauthorized use and disclosure of such information, and to prevent unauthorized persons or entities from obtaining or using such information.

(b) Each party further agrees to refrain from directly or indirectly taking any action which would constitute or facilitate the unauthorized use or disclosure of such information. Each party may disclose such information to its officers, employees and agents, to authorized licensees and sublicensees, and to subcontractors in connection with the development or manufacture of Drug Candidates, Drug Product Candidates or Drug Products, to the extent necessary to enable such parties to perform their obligations hereunder or under the applicable license, sublicense or subcontract, as the case may be; provided, that such officers, employees, agents, licensees, sublicensees and subcontractors have entered into appropriate confidentiality agreements for secrecy and non-use of such information which by their terms shall be enforceable by injunctive relief at the instance of the disclosing party.

(c) Each party shall be liable for any unauthorized use and disclosure of such information by its officers, employees and agents and any such sublicensees and subcontractors.

5.2. Exceptions.

Notwithstanding the foregoing, the provisions of Section 5.1 hereof shall not apply to knowledge, information, documents or materials which the receiving party can conclusively establish:

(a) have entered the public domain without such party's breach of any obligation owed to the disclosing party;

(b) are permitted to be disclosed by the prior written consent of the disclosing party;

(c) have become known to the receiving party from a source other than the disclosing party, other than by breach of an obligation of confidentiality owed to the disclosing party;

(d) are disclosed by the disclosing party to a Third Party without restrictions on its disclosure;

(e) are independently developed by the receiving party without breach of this Agreement; or

(f) are required to be disclosed by the receiving party to comply with applicable laws or regulations, to defend or prosecute litigation or to comply with governmental regulations, provided that the receiving party provides prior written notice of such disclosure to the disclosing party and takes reasonable and lawful actions to avoid or minimize the degree of such disclosure.

5.3. Publicity.

The parties will agree upon the timing and content of any initial press release or other public communications relating to this Agreement and the transactions contemplated herein.

(a) Except to the extent already disclosed in that initial press release or other public communication, no public announcement concerning the existence or the terms of this Agreement or concerning the transactions described herein shall be made, either directly or indirectly, by VERTEX or NOVARTIS, except as may be legally required by applicable laws, regulations, or judicial order, without first obtaining the approval of the other party and agreement upon the nature, text, and timing of such announcement, which approval and agreement shall not be unreasonably withheld.

(b) The party desiring to make any such public announcement shall provide the other party with a written copy of the proposed announcement in sufficient time prior to public release to allow such other party to comment upon such announcement, prior to public release.

5.4. Survival.

The provisions of this Article V shall survive the termination of this Agreement and shall extend for a period of five (5) years thereafter.

ARTICLE VI

PUBLICATION

Each of NOVARTIS and VERTEX reserves the right to publish or publicly present the results (the "Results") of the Research Program, subject to the following terms and conditions. The party proposing to publish or publicly present the Results (the "publishing party") will submit a draft of any proposed manuscript or speech to the other party (the "non-publishing party") for comments at least thirty (30) days prior to submission for publication or oral presentation. The non-publishing party shall notify the publishing party in writing within fifteen

(15) days of receipt of such draft whether such draft contains (i) information of the non-publishing party which it considers to be confidential under the provisions of Article V hereof, (ii) information that if published would have an adverse effect on a patent application covering the subject matter of this Agreement which the non-publishing party intends to file, or (iii) information which the non-publishing party reasonably believes would be likely to have a material adverse impact on the development or commercialization of a Development Candidate, a Drug Candidate or a Drug Product Candidate. In any such notification, the non-publishing party shall indicate with specificity its suggestions regarding the manner and degree to which the publishing party may disclose such information. In the case of item (ii) above, the non-publishing party may request a delay and the publishing party shall delay such publication, for a period not exceeding ninety (90) days, to permit the timely preparation and filing of a patent application or an application for a certificate of invention on the information involved. In the case of item (i) above, no party may publish confidential information of the other party without its consent in violation of Article V of this Agreement. In the case of item (iii) above, if the publishing party shall disagree with the non-publishing party's assessment of the impact of the publication, then the issue shall be referred to the JSC for resolution. If the JSC is unable to reach agreement on the matter within thirty (30) days after such referral, the matter shall be referred by the JSC to the Chief Executive Officer of NOVARTIS and the Chief Executive Officer of VERTEX who shall attempt in good faith to reach a fair and equitable resolution of this disagreement. If the disagreement is not resolved in this manner within two (2) weeks of referral by the JSC as aforesaid, then the decision of the publishing party as to publication of any information generated by it, subject always to the confidentiality provisions of Article V hereof, shall be final, provided that such decision shall be exercised with reasonable regard for the interests of the non-publishing party. The parties agree that authorship of any publication will be determined based on the customary standards then being applied in the relevant scientific journal. The parties will use their best efforts to gain the right to review proposed publications relating to the subject matter of the Research Program by consultants or contractors.

This Article VI shall terminate with the termination of this Agreement, but the provisions of Article V hereof shall continue to govern the disclosure by one party, whether by publication or otherwise, of Confidential Information of the other, during the period set forth in Section 5.4.

ARTICLE VII

INDEMNIFICATION

7.1. Indemnification by VERTEX.

VERTEX will indemnify and hold NOVARTIS and its Affiliates, and their employees, officers and directors harmless against any loss, damages, action, suit, claim, demand, liability, expense, bodily injury, death or property damage (a "Loss"), that may be brought, instituted or arise against or be incurred by such persons to the extent such Loss is based on or arises out of:

(a) the development, manufacture, use, sale, storage or handling of a Compound, a Development Candidate, a Drug Candidate, a Drug Product Candidate or a Drug Product by VERTEX or its Affiliates or their representatives, agents, authorized sublicensees or subcontractors under this Agreement, or any actual or alleged violation of law resulting therefrom (with the exception of Losses based on infringement or misappropriation of intellectual property rights); or

(b) the breach by VERTEX of any of its covenants, representations or warranties set forth in this Agreement; and

(c) provided however, that the foregoing indemnification shall not apply to any Loss to the extent such Loss is caused by the negligent or willful misconduct of NOVARTIS or its Affiliates.

7.2. Indemnification by NOVARTIS.

NOVARTIS will indemnify and hold VERTEX, and its Affiliates, and their employees, officers and directors harmless against any Loss that may be brought, instituted or arise against or be incurred by such persons to the extent such Loss is based on or arises out of:

(a) the development, manufacture, use, sale, storage or handling of a Compound, a Development Candidate, a Drug Candidate, a Drug Product Candidate or a Drug Product by NOVARTIS or its Affiliates or their representatives, agents, authorized sublicensees or subcontractors under

this Agreement, or any actual or alleged violation of law resulting therefrom (with the exception of Losses based on infringement or misappropriation of intellectual property rights); or

(b) the breach by NOVARTIS of any of its covenants, representations or warranties set forth in this Agreement; and

(c) provided that the foregoing indemnification shall not apply to any Loss to the extent such Loss is caused by the negligent or willful misconduct of VERTEX or its Affiliates.

7.3. Claims Procedures.

Each Party entitled to be indemnified by the other Party (an "Indemnified Party") pursuant to Section 7.1 or 7.2 hereof shall give notice to the other Party (an "Indemnifying Party") promptly after such Indemnified Party has actual knowledge of any threatened or asserted claim as to which indemnity may be sought, and shall permit the Indemnifying Party to assume the defense of any such claim or any litigation resulting therefrom; provided:

(a) That counsel for the Indemnifying Party, who shall conduct the defense of such claim or any litigation resulting therefrom, shall be approved by the Indemnified Party (whose approval shall not unreasonably be withheld) and the Indemnified Party may participate in such defense at such party's expense (unless (i) the employment of counsel by such Indemnified Party has been authorized by the Indemnifying Party; or (ii) the Indemnified Party shall have reasonably concluded that there may be a conflict of interest between the Indemnifying Party and the Indemnified Party in the defense of such action, in each of which cases the Indemnifying Party shall pay the reasonable fees and expenses of one law firm serving as counsel for the Indemnified Party, which law firm shall be subject to approval, not to be unreasonably withheld, by the Indemnifying Party); and

(b) The failure of any Indemnified Party to give notice as provided herein shall not relieve the Indemnifying Party of its obligations under this Agreement to the extent that the failure to give notice did not result in harm to the Indemnifying Party.

(c) No Indemnifying Party, in the defense of any such claim or litigation, shall, except with the approval of each Indemnified Party which approval shall not be unreasonably withheld, consent to entry of any judgment or enter into any settlement which (i) would result in injunctive or other relief being imposed against the Indemnified Party; or (ii) does not include as an unconditional term thereof the giving by the claimant or plaintiff to such Indemnified Party of a release from all liability in respect to such claim or litigation.

(d) Each Indemnified Party shall furnish such information regarding itself or the claim in question as an Indemnifying Party may reasonably request in writing and shall be reasonably required in connection with the defense of such claim and litigation resulting therefrom.

7.4. Compliance.

The parties shall comply fully with all applicable laws and regulations in connection with their respective activities under this Agreement.

ARTICLE VIII

PATENTABLE INVENTIONS

8.1. Ownership.

All inventions made and all Know-How generated exclusively by either party or its Affiliates (directly or through others acting on its behalf) prior to and during the term of this Agreement shall be owned by the party making the invention or generating the Know-How claimed, or if such invention is made jointly (a "Joint Invention"), shall be owned jointly, all as determined in accordance with United States laws of inventorship.

8.2. Preparation.

VERTEX shall take responsibility for the preparation, filing, prosecution and maintenance of all VERTEX Patents, and any patents and patent applications claiming Joint Inventions, and NOVARTIS shall take responsibility for the preparation, filing, prosecution and maintenance of all NOVARTIS Patents. VERTEX shall provide the JRC with periodic reports listing, by name, patents filed by VERTEX in the United States and other jurisdictions, along with a general summary of the claims made and the jurisdictions of filing. In good time, before the deadline for foreign filing of any patent application filed in the United States, VERTEX will notify NOVARTIS whether it intends to foreign file such patent application, and if it intends to do so, in what countries it proposes to foreign file. Upon timely written notice from NOVARTIS, VERTEX will file in such additional countries -- all being countries in which NOVARTIS would customarily file its own cases dealing with similar subject matter -- as NOVARTIS shall request.

8.3. Costs.

(a) During the Research Program. NOVARTIS shall reimburse VERTEX for [**********]. If the full amount of any reimbursement commitment is not applied in any Research Year, the unused balance may be carried over from year to year during the Research Program.

(b) After the Research Program. Upon expiration of the Research Program, the parties shall determine which Patents covering Drug Product Candidates and Drug Products, and Development Candidates as to which the Development Election is still applicable (until it expires), are included in the Kinase Technology, and thereafter [**********]. Either party may at any time thereafter elect, by written notice to the other party, to discontinue support for one or more such Patents (a "Discontinued Patent") and shall not be responsible for any costs relating to a Discontinued Patent which are incurred more than sixty (60) days after receipt of that notice by the other party. In such case, the other party may elect at its sole discretion to continue

preparation, filing, prosecution or maintenance of the Discontinued Patent at its sole expense. The party so continuing shall own any such Patent, and if the party electing to discontinue support is the owner of the Discontinued Patent, it shall execute such documents of transfer or assignment and perform such acts as may be reasonably necessary to transfer ownership of the Discontinued Patent to the other party and enable that party to file or to continue prosecution or maintenance, if the other party elects to do so. Discontinuance may be on a country-by-country basis or for a Patent series in total.

ARTICLE IX

TERM AND TERMINATION

9.1. Term.

This Agreement will extend until the termination (including any early termination hereunder) of the Research Program (including any extension thereof) and thereafter until the end of the Extended Development Period, unless earlier terminated by either party hereto in accordance with this Agreement, or unless extended by mutual agreement of the parties.

9.2. Termination of the Research Program by NOVARTIS for Cause.

Upon written notice to VERTEX, NOVARTIS may at its sole discretion unilaterally terminate the Research Program and this Agreement upon the occurrence of any of the following events:

(a) VERTEX shall materially breach any of its material obligations, such as its obligations under Section 3.2 hereof, under this Agreement or the License Agreement, and such material breach shall not have been remedied or steps initiated to remedy the same to NOVARTIS' reasonable satisfaction, within sixty (60) days after NOVARTIS sends written notice of breach to VERTEX; or

(b) VERTEX shall cease to function as a going concern by suspending or discontinuing its business for any reason except for interruptions caused by Force Majeure, strike, labor dispute or any other events over which it has no control.

In the event of any valid termination under this Section 9.2, NOVARTIS shall not be required to make any payments under Section 3.2 hereof which are not due and payable prior to receipt by VERTEX of the notice of breach referenced under Section 9.2(a) or receipt by VERTEX of the notice of termination pursuant to Section 9.2(b), as the case may be. Notwithstanding the foregoing, any License Agreement then in effect shall continue in effect unless it is expressly terminated in accordance with its terms.

9.3. Termination of the Research Program by VERTEX for Cause.

VERTEX may at its sole discretion terminate this Agreement upon written notice to NOVARTIS upon the occurrence of any of the following events:

(a) NOVARTIS shall materially breach any of its material obligations under this Agreement or the License Agreement and such material breach shall not have been remedied or steps initiated to remedy the same to VERTEX's reasonable satisfaction, within sixty (60) days after VERTEX sends written notice of breach to NOVARTIS; or

(b) NOVARTIS shall cease to function as a going concern by suspending or discontinuing its business for any reason except for interruptions caused by Force Majeure, strike, labor dispute or any other events over which it has no control.

Notwithstanding the foregoing, any License Agreement then in effect shall continue in effect unless it is expressly terminated in accordance with its terms.

9.4. Early Termination of Research Program by NOVARTIS.

NOVARTIS may in its absolute discretion terminate its participation in the Research Program effective no earlier than the end of the Fourth Research Year, upon one year's prior written notice to VERTEX (the "Notice Period"), in which event NOVARTIS must nevertheless make all of the payments required to be made hereunder which accrue or fall due during the Notice Period. The Development Election shall terminate on the effective date of termination of the Research Program pursuant to the foregoing.

9.5. Termination for Scientific Cause.

Either party may terminate this Agreement upon six months' prior written notice to the other party, if (a) the terminating party can demonstrate to the reasonable satisfaction of the other party that, by reason of scientific developments unknown on the Effective Date, the Research Program is unlikely to produce any Compounds that can achieve a commercially viable therapeutic effect through an effect on a Kinase target; and (b) the parties have not agreed, prior to expiration of the six month notice period, to redirect the Research Program as provided in Section 2.8 herein.

9.6. Effect of Termination.

(a) Except where explicitly provided elsewhere herein, termination of this Agreement for any reason, or expiration of this Agreement, will not affect: (i) obligations which have accrued as of the date of termination or expiration, and (ii) obligations and rights which, expressly or from the context thereof, are intended to survive termination or expiration of this Agreement, including obligations of confidentiality under Article V hereof and the indemnification provisions of Article VII hereof.

(b) Upon termination or expiration of this Agreement, VERTEX and NOVARTIS shall each have a worldwide, non-exclusive, royalty-free license in the Field to the other party's Kinase Technology which is the subject of a Valid Patent Claim as defined in the License Agreement, including the use of any Kinase claimed under the other party's Kinase Technology as a drug target; except that the foregoing license (i) shall not include a right on the part of NOVARTIS to make, use or sell, as drugs, Compounds claimed under VERTEX Patents, except as Drug Product Candidates and Drug Products under the License Agreement; (ii) shall not include a right on the part of VERTEX to make, use or sell Compounds claimed under NOVARTIS Patents (other than a prodrug of a Compound claimed under VERTEX Patents if that Compound is not included in a Drug Product Candidate or a Drug Product under the License Agreement);

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ARTICLE X

REPRESENTATIONS AND WARRANTIES

10.1. Representations and Warranties of VERTEX.

VERTEX represents and warrants to NOVARTIS as follows:

(a) Authorization. This Agreement has been duly executed and delivered by VERTEX and constitutes the valid and binding obligation of VERTEX, enforceable against VERTEX in accordance with its terms except as enforceability may be limited by bankruptcy, fraudulent conveyance, insolvency, bankruptcy, reorganization, moratorium and other laws relating to or affecting creditors' rights generally and by general equitable principles. The execution, delivery and performance of this Agreement have been duly authorized by all necessary action on the part of VERTEX, its officers and directors.

(b) No Third Party Rights. VERTEX owns or possesses adequate licenses or other rights to use all VERTEX Kinase Technology relating to the Field and to grant the licenses herein. The granting of the Development Election to NOVARTIS hereunder does not violate any right known to VERTEX of any Third Party.

(c) Third Party Patents. Except as disclosed in writing between the parties to this Agreement or their respective agents, VERTEX is not aware of any

issued patents or pending patent application that, if issued, would be infringed by the development, manufacture, use or sale of any Compound, Development Candidate, Drug Candidate or Drug Product pursuant to this Agreement.

10.2. Representations and Warranties of NOVARTIS.

NOVARTIS represents and warrants to VERTEX as follows:

(a) Authorization. This Agreement has been duly executed and delivered by NOVARTIS and constitutes the valid and binding obligation of NOVARTIS, enforceable against NOVARTIS in accordance with its terms except as enforceability may be limited by bankruptcy, fraudulent conveyance, insolvency, bankruptcy, reorganization, moratorium and other laws relating to or affecting creditors' rights generally and by general equitable principles. The execution, delivery and performance of this Agreement have been duly authorized by all necessary action on the part of NOVARTIS, its officers and directors.

(b) Third Party Rights. NOVARTIS owns or possesses adequate licenses or other rights to use all NOVARTIS Kinase Technology relating to the Field in accordance with the provisions of this Agreement.

(c) Third Party Patents. Except as disclosed in writing between the parties to this Agreement or their respective agents, NOVARTIS is not aware of any issued patent or pending patent application that, if issued, would be infringed by the development, manufacture, use or sale of any Compound, Development Candidate, Drug Candidate or Drug Product pursuant to this Agreement.

ARTICLE XI

DISPUTE RESOLUTION

11.1. Governing Law, and Jurisdiction.

This Agreement shall be governed and construed in accordance with the internal laws of the State of New York.

11.2. Dispute Resolution Process.

(a) General. Except as set forth in (b) below or as otherwise explicitly provided herein, in the event of any controversy or claim arising out of or relating to any provision of this Agreement, or the collaborative effort contemplated hereby, the parties shall, and either party may, initially refer such dispute to the JSC, and failing resolution of the controversy or claim within thirty (30) days after such referral, the matter shall be referred to the Chief Executive Officer of VERTEX and the Chief Executive Officer of NOVARTIS who shall, as soon as practicable, attempt in good faith to resolve the controversy or claim. If such controversy or claim is not resolved within sixty (60) days of the date of initial referral of the matter to the JSC, either party shall be free to initiate proceedings in any court having requisite jurisdiction.

(b) Third Party Referral. Any dispute or claim relating to the "Referral Matters" as defined below which the parties are unable to resolve pursuant to the other dispute resolution mechanisms provided in this Agreement (other than litigation) shall, upon the written request of one party delivered to the other party, be submitted to and settled by a panel of Third Parties (a "Third Party Panel") appointed by VERTEX and NOVARTIS as provided below. The "Referral Matter" shall consist solely of disagreements concerning whether Proof of Concept Studies as specified by the JRC have been completed. Within thirty (30) days after delivery of the above-referenced written request, each party will appoint one person who is not an Affiliate of the party appointing that person, and

who is knowledgeable in the areas of pharmaceutical science, business and commercial aspects of drug development and sale, or the clinical development of pharmaceuticals, to hear and determine the dispute. The two persons so chosen will select another impartial Third Party and their majority decision will be final and conclusive upon the parties hereto. If either party fails to designate its appointee within the thirty (30) day period referenced above, then the appointee who has been designated by the other party will serve as the sole member of the Third Party Panel and will be deemed to be the single, mutually approved party to resolve the dispute. Each party will bear its own costs in the Third Party Referral process, and the parties will split equally the costs of the Third Party Panel members. The Third Party Panel will, upon the request of either party, issue its final determination in writing.

ARTICLE XII

MISCELLANEOUS PROVISIONS

12.1. Official Language.

English shall be the official language of this Agreement and the License Agreement, and all communications between the parties hereto shall be conducted in that language.

12.2. Waiver.

No provision of this Agreement may be waived except in writing by both parties hereto. No failure or delay by either party hereto in exercising any right or remedy hereunder or under applicable law will operate as a waiver thereof, or a waiver of any right or remedy on any subsequent occasion.

12.3. Force Majeure.

Neither party will be in breach hereof by reason of its delay in the performance of or failure to perform any of its obligations hereunder, if that delay or failure is caused by strikes, acts of God or the public enemy, riots, incendiaries, interference by civil or military authorities,

compliance with governmental priorities for materials, or any fault beyond its control or without its fault or negligence.

12.4. Severability.

Should one or more provisions of this Agreement be or become invalid, then the parties hereto shall attempt to agree upon valid provisions in substitution for the invalid provisions, which in their economic effect come so close to the invalid provisions that it can be reasonably assumed that the parties would have accepted this Agreement with those new provisions. If the parties are unable to agree on such valid provisions, the invalidity of such one or more provisions of this Agreement shall nevertheless not affect the validity of the Agreement as a whole, unless the invalid provisions are of such essential importance for this Agreement that it may be reasonably presumed that the parties would not have entered into this Agreement without the invalid provisions.

12.5. Government Acts.

In the event that any act, regulation, directive, or law of a country or its government, including its departments, agencies or courts, should make impossible or prohibit, restrain, modify or limit any material act or obligation of NOVARTIS or VERTEX under this Agreement, the party, if any, not so affected, shall have the right, at its option, to suspend or terminate this Agreement as to such country, if good faith negotiations between the parties to make such modifications therein as may be necessary to fairly address the impact thereof, are not successful after a reasonable period of time in producing mutually acceptable modifications to this Agreement.

12.6. Government Approvals.

Each party will obtain any government approval required in its country of domicile to enable this Agreement to become effective, or to enable any payment hereunder to be made, or any other obligation hereunder to be observed or performed. Each party will keep the other informed of progress in obtaining any such government approval, and will cooperate with the other party in any such efforts.

12.7. Export Controls.

This Agreement is made subject to any restrictions concerning the export of materials and Technology from the United States which may be imposed upon or related to either party to this Agreement from time to time by the Government of the United States. Furthermore, NOVARTIS will not export, directly or indirectly, any VERTEX Kinase Technology or any Bulk Drug Substance, Drug Product Candidates or Drug Products utilizing such Technology to any countries for which the United States Government or any agency thereof at the time of export requires an export license or other governmental approval, without first obtaining the written consent to do so from the Department of Commerce or other agency of the United States Government when required by applicable statute or regulation.

12.8. Assignment.

This Agreement may not be assigned or otherwise transferred by either party without the prior written consent of the other party; provided, however, that either party may assign this Agreement, without the consent of the other party, (i) to any of its Affiliates, if the assigning party guarantees the full performance of its Affiliates' obligations hereunder, or (ii) in connection with the transfer or sale of all or substantially all of its assets or business or in the event of its merger or consolidation with another company. Any purported assignment in contravention of this Section 12.8 shall, at the option of the nonassigning party, be null and void and of no effect. No assignment shall release either party from responsibility for the performance of any accrued obligation of such party hereunder. This Agreement shall be binding upon and enforceable against the successor to or any permitted assignees from either of the parties hereto.

12.9. Affiliates.

Each party may perform its obligations hereunder personally or through one or more Affiliates, although each party shall nonetheless be solely responsible for the performance of its Affiliates. Neither party shall permit any of its Affiliates to commit any act (including any act or omission) which such party is prohibited hereunder from committing directly. The use of subcontractors by either party shall not increase the financial obligations of the other party hereunder in any respect.

12.10. Counterparts.

This Agreement may be executed in duplicate, each of which shall be deemed to be original and both of which shall constitute one and the same Agreement.

12.11. No Agency.

Nothing herein contained shall be deemed to create an agency, joint venture, amalgamation, partnership or similar relationship between NOVARTIS and VERTEX. Notwithstanding any of the provisions of this Agreement, neither party to this Agreement shall at any time enter into, incur, or hold itself out to third parties as having authority to enter into or incur, on behalf of the other party, any commitment, expense, or liability whatsoever, and all contracts, expenses and liabilities in connection with or relating to the obligations of each party under this Agreement shall be made, paid, and undertaken exclusively by such party on its own behalf and not as an agent or representative of the other.

12.12. Notice.

All communications between the parties with respect to any of the provisions of this Agreement will be sent to the addresses set out below, or to such other addresses as may be designated by one party to the other by notice pursuant hereto, by prepaid, certified air mail (which shall be deemed received by the other party on the seventh business day following deposit in the mails), or by facsimile transmission, or other electronic means of communication (which shall be deemed received when transmitted), with confirmation by first class letter, postage pre-paid, given by the close of business on or before the next following business day:

if to NOVARTIS, at:

NOVARTIS PHARMA AG
Business Development and Licensing
P.O. Box _____
CH-4002
Basel, Switzerland
Attention: Victor A. Hartmann, Vice President

with a copy to: Legal Services, at the address referenced above

if to VERTEX, at:

Vertex Pharmaceuticals Incorporated
130 Waverly Street
Cambridge, MA U.S.A. 02139-4211
Attention: Richard H. Aldrich, Senior Vice President and Chief Business Officer

with a copy to:

Kirkpatrick & Lockhart LLP
75 State Street
Boston, MA U.S.A. 02109
Attention: Kenneth S. Boger, Esq.
Fax: (617) 951-9151

12.13. Headings.

The paragraph headings are for convenience only and will not be deemed to affect in any way the language of the provisions to which they refer.

12.14. Authority.

The undersigned represent that they are authorized to sign this Agreement on behalf of the parties hereto. The parties each represent that no provision of this Agreement will violate any other agreement that such party may have with any other person or company. Each party has relied on that representation in entering into this Agreement.

12.15. Entire Agreement.

This Agreement contains the entire understanding of the parties relating to the matters referred to herein, and may only be amended by a written document, duly executed on behalf of the respective parties.

12.16. Standstill.

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12.17. Notice of Pharmaceutical Side-Effects.

During the term of this Agreement, the parties shall keep each other promptly and fully informed and will promptly notify appropriate authorities in accordance with applicable law, after receipt of information with respect to any serious adverse reaction, as defined by the World Health Organization, directly or indirectly attributable to the use or application of Compounds, a Development Candidate, Bulk Drug Substance, a Drug Product Candidate or a Drug Product.

12.18. Inflation Adjustment.

All payments required to be made to VERTEX hereunder (except any royalty payments required to be made under the provisions of Sections 5.3 and 6.4.3 of the License Agreement, and any product supply payments required to be made under Section 6.4.1 of the License Agreement) shall be adjusted at the beginning of each Research Year (commencing at the beginning of Research Year 2) to reflect the impact of inflation since the Effective Date of the Agreement, as measured by the biotech worker inflation rate defined and reported in the Radford Survey (Radford/AON Consulting Inc., San Francisco, CA), or other mutually acceptable index. Notwithstanding the foregoing, no adjustment shall be required in any Research Year in which the appropriate inflation adjustment, if applied, would result in a change of less than 3% in the relevant payment amount.

12.19. Invoice Requirement.

Any amounts payable to VERTEX hereunder (except any royalty payments required to be made under the provisions of Sections 5.3 and 6.4.3 of the License Agreement) shall be made within thirty days after receipt by NOVARTIS, or its nominee designated for that

purpose in advance by NOVARTIS in writing to VERTEX, of an invoice covering such payment, which invoice shall conform to the extent reasonably practicable to the form of invoice contained in Exhibit B to this Agreement.

12.20. Hardship.

If as a result of unforeseen events or developments relating to the subject matter of this Agreement, the performance of this Agreement shall cause inequitable economic hardship for one party which runs counter to the objectives of this Agreement and which the other party cannot reasonably and in good faith expect the first party to bear unrelieved, the parties will meet and seek in good faith to find equitable means of amending this Agreement to reestablish a fair and reasonable economic balance under this Agreement between the parties hereto.

VERTEX PHARMACEUTICALS INCORPORATED

By:_____
Joshua S. Boger
Title: Chairman, President and Chief Executive Officer

NOVARTIS PHARMA AG

By:_____

Title:_____

By:_____

Title:_____

Schedule 1.13

Excluded Compounds and Excluded Kinases

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Excluded Kinases

SWISSPROT Designation	*SPTREMBL Designation
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Excluded Compounds

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Schedule 2.4.3

General Criteria and Guidelines

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EXHIBIT A

LICENSE, DEVELOPMENT AND COMMERCIALIZATION AGREEMENT

between

Vertex Pharmaceuticals Incorporated

and

Novartis Pharma AG

License, Development and Commercialization Agreement

TABLE OF CONTENTS

TABLE OF CONTENTS (continued)

Page Number

License, Development and Commercialization Agreement

This Agreement is made and entered into as of _____, _____ (the "Effective Date") between Vertex Pharmaceuticals Incorporated (hereinafter "VERTEX"), a Massachusetts corporation with principal offices at 130 Waverly Street, Cambridge, MA 02139-4242, and NOVARTIS PHARMA AG (hereinafter "NOVARTIS"), a Swiss corporation with principal offices at CH-4002 Basel, Switzerland.

INTRODUCTION

WHEREAS, VERTEX and NOVARTIS are parties to a certain Research and Early Development Agreement dated May 8, 2000 (the "Research Agreement") under which VERTEX is attempting to design novel, small-molecule compounds targeting the Kinase protein superfamily; and

WHEREAS, NOVARTIS may elect to develop and commercialize compounds proposed by VERTEX under the terms set forth in the Research Agreement; and

WHEREAS, in accordance with the Research Agreement NOVARTIS has elected to develop and commercialize the Drug Product Candidates designated on Schedule 1.12 hereto, and the parties therefore wish to execute this License, Development and Commercialization Agreement, which is identical in substance to the agreement attached as Exhibit A to the Research Agreement, to memorialize the provisions specific to development and commercialization of Drug Product Candidates and Subsequent Candidates; and

NOW THEREFORE, in consideration of the foregoing premises, the parties agree as follows:

ARTICLE I

DEFINITIONS

1.1 "Affiliate" shall mean, with respect to any Person, any other Person which directly or indirectly, by itself or through one or more intermediaries, controls, or is controlled

by, or is under direct or indirect common control with, such Person. The term "control" means the possession, direct or indirect, of the power to direct or cause the direction of the management and policies of a Person, whether through the ownership of voting securities, by contract or otherwise. Control will be presumed if one Person owns, either of record or beneficially, more than 50% of the voting stock of any other Person. For the avoidance of any doubt, the Novartis Institute for Functional Genomics, Inc. and The Friedrich Miescher Institute, as currently operated, are not Affiliates of NOVARTIS for the purposes of this Agreement.

1.2 "Global Brand Team" or "GBT" shall have the meaning set forth in Section 5.2 hereof.

1.3 "Bulk Commercial Supply Option" shall have the meaning set forth in Section 7.4.1 hereof.

1.4 "Bulk Drug Substance" shall mean a Drug Product Candidate in bulk crystal, powder or other form suitable for incorporation in a Drug Product.

1.5 "Controlled" shall mean the legal authority or right of a party hereto to grant a license or sublicense of intellectual property rights to another party hereto, or to otherwise disclose proprietary or trade secret information to such other party, without breaching the terms of any agreement with a Third Party, infringing upon the intellectual property rights of a Third Party, or misappropriating the proprietary or trade secret information of a Third Party.

1.6 "Co-promote" shall mean, as applied to VERTEX, to promote and Detail (as defined in this Section) Drug Products through its own sales force and to otherwise engage in activities in accordance with the provisions of Section 5.3 hereof. "Detail" as used above, shall mean a personal in-office visit by a VERTEX sales representative to a health care provider, during which the representative promotes the use of a Drug Product according to generally recognized standards in the pharmaceutical industry.

1.7 "Development Candidate" shall mean a Compound selected by VERTEX, during the term of the Research Program under the Research Agreement, and (if the Program is

not terminated early) during the six-month period immediately following expiration of the Research Program, for formal pre-clinical development in the Field.

1.8 "Development Plan" shall have the meaning set forth to it in Section 3.2.2 hereof.

1.9 "Development Program" shall mean activities associated with development of a Drug Product Candidate which are conducted by or at the direction of NOVARTIS after the Development Election has been exercised with respect to that Drug Candidate, including but not limited to (a) manufacture and formulation of Drug Product Candidates for clinical studies; (b) planning, implementation, evaluation and administration of human clinical trials; (c) manufacturing process development and scale-up for the commercial manufacture of Bulk Drug Substance and Drug Product; (d) preparation and submission of applications for Regulatory Approval; and (e) post-market surveillance of approved drug indications, as required or agreed as part of a marketing approval by any governmental regulatory authority.

1.10 [This Section is intentionally left blank.]

1.11 "Drug Product" shall mean a finished dosage form which is prepared from Bulk Drug Substance and is ready for administration to the ultimate consumer as a pharmaceutical.

1.12 "Drug Product Candidate" shall mean any Drug Candidate listed from time to time on Schedule 1.12 hereof, as to which NOVARTIS has exercised the Development Election under Article IV of the Research Agreement and which has become a subject of this License Agreement in accordance with the provisions thereof.

1.13 "Effective Date" shall mean the effective date of this Agreement as set forth on the first page hereof.

1.14 "Extended Development Period" shall mean the two-year period immediately following expiration of the term of the Research Program.

1.15 "Field" shall mean the treatment or prevention of conditions or diseases in humans, principally by affecting a Kinase other than an Excluded Kinase.

1.16 "First Commercial Sale" shall mean the first sale of a Drug Product by NOVARTIS or an Affiliate or sublicensee of NOVARTIS in a country in the Territory following Regulatory Approval of the Drug Product in that country or, if no such Regulatory Approval or similar marketing approval is required, the date upon which the Drug Product is first commercially launched in such country.

1.17 "Filing Outside the U.S." shall mean any application or regulatory filing to be made hereunder with a regulatory authority outside the United States, for approval to manufacture and sell Drug Product(s) outside the U.S., and any correspondence, approvals or governmental licenses relating thereto.

1.18 "First Opportunity" shall mean the ninety (90) day period following completion of Proof of Concept Studies with respect to a Drug Candidate, during which NOVARTIS may first exercise its Development Election and accept the Drug Candidate for development under the License Agreement, in accordance with Section 4.3 of the Research Agreement.

1.19 "GMP" shall mean the current Good Manufacturing Practice regulations promulgated by the FDA, published at 21 CFR Part 210 et seq., as such regulations may from time to time be amended, and such equivalent regulations or standards of countries outside the United States as may be applicable to activities conducted hereunder.

1.20 "Indication" shall mean a recognized disease or condition, an important manifestation of a disease or condition, or symptom associated with a disease or syndrome for which use of a Drug Product is indicated, as would be identified in the Drug Product's label under applicable FDA regulations or the foreign equivalent thereof.

1.21 "IND" means the investigational new drug application relating to a Drug Product Candidate filed with the FDA pursuant to 21 CFR Part 312, including any amendments thereto. References herein to IND shall include, to the extent applicable, any comparable Filing(s) Outside the U.S. (such as a CTX in the European Union).

1.22 "International Project Team" or "IPT" shall have the meaning set forth in Section 3.2.1 hereof.

1.23 "Joint Steering Committee" or "JSC" shall have the meaning set forth in Section 2.6 of the Research Agreement.

1.24 "Know-How" means all proprietary material and information including data, technical information, know-how, experience, inventions, discoveries, trade secrets, compositions of matter and methods, whether currently existing or developed or obtained during the course of this Agreement and whether or not patentable or confidential, that are now Controlled by a Party or its Affiliates and that relate to the development, utilization, manufacture or use of any Drug Product Candidate or Drug Product, including but not limited to processes, techniques, methods, products, materials and compositions; provided however, that for the purposes of the definition of VERTEX Know-How only, the term "Know-How" shall not include VERTEX's general drug design technology, whether in software or hardware, tangible or intangible, form.

1.25 "Major Markets" shall mean those countries listed on Schedule 1.25 hereto.

1.26 "Manufacturing Cost" shall mean [**********
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1.27 "Net Sales" with respect to any Drug Product shall mean the gross amount invoiced by NOVARTIS and any NOVARTIS Affiliate, licensee or sublicensee for that Drug Product sold to Third Parties in bona fide, arms-length transactions, less [**********
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all as determined in accordance with NOVARTIS' usual and customary accounting methods, which are in accordance with generally accepted accounting principles (GAAP).

1.27.1 In the case of any sale or other disposal of a Drug Product between or among NOVARTIS and its Affiliates, licensees and sublicensees, for resale, Net Sales shall be calculated as above only on the value charged or invoiced on the first arm's-length sale thereafter to a Third Party;

1.27.2 In the case of any sale which is not invoiced or is delivered before invoice, Net Sales shall be calculated at the time of shipment or when the Drug Product is paid for, if paid for before shipment or invoice;

1.27.3 In the case of any sale or other disposal for value, such as barter or counter-trade, of any Drug Product, or part thereof, other than in an arm's length transaction exclusively for money, Net Sales shall be calculated as above on the value of the consideration received or the fair market price (if higher) of the Drug Product in the country of sale or disposal;

1.27.4 In the event the Drug Product is sold in a finished dosage form containing the Drug Product in combination with one or more other active ingredients (a "Combination Product"), the Net Sales of the Drug Product, for the purposes of determining royalty payments, shall be determined by
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1.28 "NOVARTIS Know-How" shall mean all Know-How of NOVARTIS.

1.29 "NOVARTIS Patents" shall mean any Patents Controlled by NOVARTIS or any of its Affiliates claiming Bulk Drug Substance, a Drug Product Candidate or a Drug Product, or a formulation or prodrug thereof, discovered or identified by NOVARTIS or its Affiliates during the course of the Research Program or a Development Program, or a method of making or using Bulk Drug Substance, a Drug Product Candidate or a Drug Product, or a prodrug thereof, or an improvement to the subject matter of a Patent covering any of the foregoing. A list of NOVARTIS Patents is appended hereto as Schedule 1.29 and will be updated periodically to reflect additions thereto during the term of this Agreement. NOVARTIS shall keep VERTEX periodically informed in writing of all NOVARTIS patents.

1.30 "NOVARTIS Technology" shall mean all NOVARTIS Patents and all NOVARTIS Know-How which is applied by NOVARTIS to the development, manufacture or use of Bulk Drug Substance, a Drug Product Candidate or a Drug Product.

1.31 "Patents" means all existing patents and patent applications and all patent applications hereafter filed, including any continuation, continuation-in-part, division, provisional or any substitute applications, any patent issued with respect to any such patent applications, any reissue, reexamination, renewal or extension (including any supplementary protection certificate) of any such patent, and any confirmation patent or registration patent or patent of addition based on any such patent, and all foreign counterparts of any of the foregoing.

1.32 "Person" shall mean any individual, corporation, partnership, association. joint-stock company, trust, unincorporated organization or government or political subdivision thereof.

1.33 "Pivotal Registration Study" shall mean a human clinical trial conducted for inclusion in (i) that portion of the FDA submission and approval process which provides for the continued trials of a Drug Candidate on sufficient numbers of patients to generate safety and efficacy data to support Regulatory Approval in the proposed therapeutic indication, as more fully defined in 21 C.F. R. ss. 312.21(c), and (ii) equivalent submissions with similar requirements in other countries.

1.34 "Regulatory Approval" shall mean, with respect to any country, all authorizations by the appropriate governmental entity or entities necessary for commercial sale of a Drug Product in that country including, without limitation and where applicable, approval of labeling, price, reimbursement and manufacturing. "Regulatory Approval" in the United States shall mean final approval of a new drug application pursuant to 21 CFR ss. 314, permitting marketing of the applicable Drug Product in interstate commerce in the United States. "Regulatory Approval" in the European Union shall mean final approval of a Marketing Authorization Application pursuant to Council Directive 75/319/EEC, as amended, or Council Regulation 2309/93/EEC, as amended.

1.35 "Research Agreement" shall mean that certain Research Agreement between VERTEX and NOVARTIS dated May 8, 2000.

1.36 "Second Opportunity" shall mean the thirty (30) day period immediately following delivery to NOVARTIS of the Further Development Information in accordance with Section 4.4.1 of the Research Agreement, relating to development studies completed by VERTEX with respect to a Refused Candidate after the First Opportunity, during which period NOVARTIS may exercise its Development Election and accept the Refused Candidate for development under the License Agreement in accordance with Section 4.4 of the Research Agreement.

1.37 "Subsequent Candidate" shall mean any Drug Candidate proposed by VERTEX for further development at the First Opportunity, prior to the end of the Extended Development Period, after NOVARTIS has accepted eight (8) Drug Candidates for development at the First or Second Opportunity.

1.38 "Technology" shall mean VERTEX Technology and NOVARTIS Technology.

1.39 "Territory" shall mean all the countries in the world.

1.40 "Third Party" shall mean any person or entity which is not a party or an Affiliate of any party to this Agreement.

1.41 "Total Costs" shall mean
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1.42 "Valid Patent Claim" shall mean either (a) a claim of an issued and unexpired Patent which has not been revoked or held permanently unenforceable or invalid by a decision of a court or other governmental agency of competent jurisdiction, unappealable or unappealed within the time allowed for appeal, and which has not been admitted to be invalid or unenforceable through reissue or disclaimer or otherwise, or (b) a claim of a pending patent application which claim was filed in good faith and has not been abandoned or finally disallowed without the possibility of appeal or refiling of said application.

1.43 "VERTEX Know-How" shall mean all Know-How of VERTEX.

1.44 "VERTEX Patents" shall mean any Patents Controlled by VERTEX or any of its Affiliates claiming Bulk Drug Substance, a Drug Product Candidate or a Drug Product, or a formulation or prodrug thereof, discovered or identified by VERTEX or its Affiliates during the course of the Research Program and the Development Program, or a method of making or using Bulk Drug Substance, a Drug Product Candidate or a Drug Product, or a prodrug thereof, or an improvement to the subject matter of a Patent covering any of the foregoing. A list of VERTEX

Patents is appended hereto as Schedule 1.44 and will be updated periodically to reflect additions thereto during the term of this Agreement.

1.45 "VERTEX Technology" shall mean all VERTEX Patents and all VERTEX Know-How.

1.46 The term "North America" shall mean Canada, the United States and Mexico, and the term "European Union" shall mean those countries which are now or later become members of the European Union.

Capitalized terms used but not otherwise defined herein which are defined in the Research Agreement shall have the meaning ascribed to them therein.

ARTICLE II

LICENSE

2.1 Grant to NOVARTIS.

(a) Subject to the other provisions of this Agreement, VERTEX hereby grants to NOVARTIS an exclusive worldwide license under VERTEX Technology to the extent useful to permit NOVARTIS to carry out its rights and obligations set forth in this Agreement and to develop, manufacture, have manufactured, market, use, sell and import for sale, as provided herein, Bulk Drug Substance, Drug Product Candidates and Drug Products worldwide. NOVARTIS shall have the right to sublicense under this Agreement. Subject to the provisions of this Agreement, VERTEX shall have the right to use VERTEX Technology to discharge its obligations and exercise its rights under this Agreement. VERTEX retains all rights to VERTEX Technology except to the extent explicitly granted to NOVARTIS hereunder.

(b) NOVARTIS may subcontract its rights to manufacture Bulk Drug Substance and Drug Product and may contract with reputable organizations to conduct or assist in the conduct of human clinical trials and the evaluation of trials data, after prior notice to, but without the consent of, VERTEX. NOVARTIS shall be responsible to VERTEX for the performance of any of its sublicensees or subcontractors under any provisions of this Agreement for which NOVARTIS is responsible. NOVARTIS shall not permit any subcontractors or sublicensees to use VERTEX Technology without provisions safeguarding confidentiality at least equivalent to those provided in this Agreement. Any such provisions will allow VERTEX the right to directly enforce the obligations of confidentiality with respect to VERTEX Technology in possession of the Third Party.

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2.2 Grant to VERTEX. Subject to the other provisions of this Agreement, NOVARTIS hereby grants to VERTEX a non-exclusive, worldwide license or (as appropriate) sublicense under NOVARTIS Technology, only to the extent necessary to permit VERTEX to

carry out the activities which it is permitted to undertake in this Agreement. VERTEX shall not sublicense the foregoing license to the NOVARTIS Technology without the consent of NOVARTIS (which shall not be unreasonably withheld). Any permitted sublicense will contain provisions safeguarding confidentiality at least equivalent to those provided in this Agreement, which will allow NOVARTIS the right to directly enforce the obligations of confidentiality with respect to NOVARTIS Technology in possession of the Third Party. NOVARTIS retains all rights to NOVARTIS Technology except to the extent explicitly granted to VERTEX hereunder.

2.3 Information Transfer.

(a) Each party shall deliver to the other all information Controlled by it and requested by the other party relating to Bulk Drug Substance, Drug Product Candidates and Drug Products, and methods of manufacturing the same, which is necessary or useful for exercise by such other party of the rights granted hereunder. The information to be delivered shall include copies of all Patents, copyrights, copyright registrations and applications therefor and all other manifestations of the intellectual property embodied in the Bulk Drug Substance, Drug Product Candidates or Drug Products, whether in human or machine readable form.

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ARTICLE III

DEVELOPMENT

3.1 Commencement of Development Program. NOVARTIS shall promptly and diligently commence and pursue a Development Program with respect to each Drug Candidate as soon as practicable after exercise by NOVARTIS of its Development Election with respect to that Drug Candidate. Any Drug Candidate for which a Development Program has been commenced by NOVARTIS hereunder shall be called a Drug Product Candidate under this Agreement. The provisions set forth in this Article III shall not apply to any Subsequent Candidates or Drug Candidates accepted by NOVARTIS at the Second Opportunity as to which development and marketing will proceed in the form of a joint venture, as provided in Section 7.4.2.

3.2 International Project Team.

3.2.1 Formation and Responsibilities. As soon as practicable after the exercise by NOVARTIS of its Development Election with respect to a Drug Product Candidate, NOVARTIS will establish an International Project Team ("IPT") which shall include one representative designated by VERTEX from time to time. Additional IPT's, which shall also include one VERTEX representative, may be established from time to time in connection with the development of additional Drug Product Candidates. The IPT (or its successor organization, as designated by NOVARTIS) will be the principal organization through which the development of a Drug Product Candidate is planned, administered, evaluated and completed, subject to appropriate review and approval at senior management levels as required by NOVARTIS from time to time. In addition to the VERTEX member, the IPT will typically have members from the various functional groups (e.g., research, preclinical safety, clinical, regulatory, marketing) which are or will be expected to be involved in development and launch of the Drug Product Candidate and Drug Product. NOVARTIS will appoint the IPT Chair. The IPT will typically meet every four to six weeks,

depending on the level of current development activity, and will be responsible for preparation and implementation of the Development Plan described in Section 3.2.2 below with respect to each Drug Product Candidate.

3.2.2 Development Plan. The IPT shall prepare and oversee the implementation of the overall Development Plan for each Drug Product Candidate. The Development Plan shall, among other things, detail, schedule and fully describe the proposed toxicology studies, clinical trials, regulatory plans, clinical trial and commercial material requirements, and process development and manufacturing plans for each Drug Product Candidate, along with relevant budget information for the described items, and will outline the key elements involved in obtaining Regulatory Approval in each country where the Drug Product is to be marketed. The parties expect that development tasks will be advanced in parallel rather than serially where practicable and appropriate, if doing so would be likely to advance the ultimate date of Regulatory Approval and launch and is otherwise commercially reasonable.

3.2.3 Meeting Materials. The IPT will consider all information that is material to an assessment of the status, direction and progress of the Development Program, including all clinical trials protocols, data and reports. The IPT Leader will ensure that full and complete minutes are prepared and distributed to each member of the IPT promptly after each meeting. Those minutes shall contain a full report on the activities of the IPT during its meeting. VERTEX's representative on the IPT will receive all documents and information distributed or communicated to members of the IPT generally, and may review copies of all other information relative to the development of a Drug Product Candidate unless the IPT Leader denies access to that information for good reason.

3.2.4 Referral to JSC. If VERTEX disagrees with the decision of the IPT on any matter which might have a significant impact on the presumed value of the Drug Product Candidate or the timing of the Development Program, then VERTEX may refer the matter for consideration by the JSC, by written notice to the IPT chair and the JSC Chair, describing the basis for its disagreement in reasonable detail. The matter will be promptly reviewed and discussed at a special meeting of the JSC to be called and held within 30 days of the referral.

3.3 Development Responsibility and Costs. Except as provided in Section 3.5 below, NOVARTIS will have sole responsibility for, and bear the cost of conducting, the Development Program with respect to each Drug Product Candidate.

3.4 Regulatory Approvals. NOVARTIS shall be solely responsible for preparing and submitting registration dossiers for Regulatory Approval of Drug Product Candidates in the Territory.

3.4.1 NOVARTIS Ownership. All Regulatory Approvals shall be held by and in the name of NOVARTIS, and NOVARTIS shall own all submissions in connection therewith, provided that VERTEX shall have a right of reference to all or any part of the submissions if the "Assistance Rights" become effective under Section 3.5 hereof.

3.4.2 Principal Interface. All formulary or marketing approvals shall also be obtained by and in the name of NOVARTIS, and NOVARTIS will be the principal interface with and will otherwise handle all interactions with regulatory agencies concerning any Drug Product including, to the extent legally possible, being the sole contact with such agencies, subject to the rights of VERTEX under Section 3.4.3.

3.4.3 Regulatory Meetings. To the extent not prohibited by law or regulation, VERTEX shall have the right, after consultation with NOVARTIS and unless VERTEX's presence would impede the regulatory approval

process, to have one representative participate in all material meetings between representatives of NOVARTIS and any of the FDA, the EMEA and Koseisho (MHW Japan).

(a) NOVARTIS will undertake to provide VERTEX with information reasonably in advance of the meeting sufficient to ensure that the VERTEX representative is adequately informed about the issues to be presented at any such meeting.

(b) VERTEX may request NOVARTIS to provide VERTEX with a copy of any correspondence between the FDA, the EMEA and Koseisho that relates to any material issues involving Regulatory Approval of a Drug Product Candidate, and NOVARTIS shall provide that information upon request, unless NOVARTIS has good reason to withhold any such correspondence, in which case it will notify VERTEX of that reason promptly.

(c) Notwithstanding the foregoing, NOVARTIS will have sole discretion as to the regulatory strategy and decision-making for any Drug Product Candidate or Drug Product.

3.5 Assistance Rights.

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3.5.2 If VERTEX pursues its Assistance Rights:

(a) Regulatory Actions. NOVARTIS will continue to make any necessary and appropriate regulatory filings with respect to the Development Work and will, if required for VERTEX to exercise its Assistance Rights effectively, transfer to VERTEX at VERTEX's expense any IND material (or equivalents thereof) relevant to such Development Work.

(b) Manufacture of Clinical Supply of Drug Product Candidate. NOVARTIS will supply VERTEX (for up to two years) with the necessary clinical supply of Drug Product Candidate required to perform such Development Work in accordance with NOVARTIS' then current scale of manufacturing at NOVARTIS' Manufacturing Cost and upon such other reasonable and customary terms as to shipment, delivery and similar matters as may be agreed.

(c) Milestones. If NOVARTIS elects to resume the Development Program for a Drug Product Candidate, it will provide VERTEX with ninety (90) days prior notice thereof, and will reimburse VERTEX for the actual direct cost of the Development Work of good quality, if such work conforms with the requirements of the relevant Development Plan. NOVARTIS will pay VERTEX interest on the reimbursable costs incurred by VERTEX in the conduct of the Development Work, at a rate compounded quarterly equal to the thirty-day London InterBank Offered Rate ("LIBOR") for the local currency in which payment is made, as quoted in The Financial Times as determined on the date the Development

Work is first undertaken by VERTEX and on the last Business Day of each calendar quarter thereafter.

3.6 Reasonable Efforts in Development. NOVARTIS will use diligent, commercially reasonable efforts consistent with those used by NOVARTIS for its own compounds of similar commercial potential to develop Drug Product Candidates and Subsequent Candidates into Drug Products. NOVARTIS will promptly notify VERTEX in writing if it should determine that development of any Drug Product Candidate or Drug Product is not technically feasible or commercially justifiable, specifying in reasonable detail the reasons for that determination.

ARTICLE IV

MANUFACTURING AND SUPPLY

4.1 Supply of Bulk Drug Substance and Drug Product. Subject to VERTEX's Bulk Supply Option set forth in Section 7.4.1 below, NOVARTIS will be responsible for manufacturing and supply of all Bulk Drug Substance, Drug Product Candidates and Drug Product as necessary for the conduct of the Development Plan and for all commercial purposes in the Territory. The parties will agree on reasonable and appropriate measures by which manufacturing previously being undertaken by VERTEX shall be transitioned to NOVARTIS following the exercise of its Development Election with respect to a particular Drug Product Candidate. The objective of both parties will be to accomplish a smooth and timely transition. Any Bulk Drug Substance provided to NOVARTIS during the transition period will be supplied at VERTEX's reasonable Manufacturing Cost.

4.2 Bulk Supply Option. If VERTEX elects under the circumstances set forth in Section 7.4 hereof to exercise its Bulk Supply Option, all Bulk Drug Substance will be supplied under the terms of a supply agreement to be negotiated as set forth in Section 7.4.1(d) hereof.

4.3 Formulation and Packaging. In all events, NOVARTIS will be responsible for formulation and packaging of Drug Products.

ARTICLE V

COMMERCIALIZATION

5.1 Marketing and Promotion. NOVARTIS shall have exclusive rights to market, sell and distribute all Drug Products in the Territory, subject to VERTEX's Co-promotion rights set forth in Section 5.3, and subject to the provisions relating to Subsequent and Second Opportunity Candidates set forth in Article VI hereof. NOVARTIS will book all sales of Drug Products (unless otherwise specified with respect to any joint venture established as provided in Section 7.4.2 hereof) and will report those sales to VERTEX as specified in Section 6.5 of this Agreement.

5.2 Global Brand Team. Not later than six months prior to the commencement of Phase III Clinical Trials for any Drug Product Candidate, NOVARTIS will form a Global Brand Team ("GBT"), which will include one representative designated by VERTEX. Additional GBT's, which shall also include one VERTEX representative, may be established from time to time in connection with the marketing of additional Drug Product Candidates. The GBT (or its successor organization, as designated by NOVARTIS) will be the principal organization through which the marketing of a Drug Product is planned, administered, evaluated and effected, subject to appropriate review at senior management levels as required by NOVARTIS. NOVARTIS will appoint the chair of the GBT, who will normally be the Brand Director. The GBT will periodically meet as necessary, depending on the level of marketing activity at the time.

5.2.1 Marketing Plans. The Global Brand Team will prepare and oversee the implementation of a detailed marketing plan (a "Marketing Plan") for the launch of each Drug Product, addressing the overall branding and branding elements as well as the key promotional product claims. The GBT will select an external agency or agencies which will be charged with the execution of some components of the Marketing Plan. The Marketing Plan will contain among other things budgets, schedules, product positioning, pricing, market research plans and results and other customary planning and marketing material with respect to marketing and launch of

the Drug Product. The Marketing Plan will be periodically updated to reflect changes in market information, sales performance and forecasts, sales force deployment, communication plans and information concerning competition and competitors.

5.2.2 Local Product Teams. Local Product Teams will be established in each country to prepare and execute the product launch for a Drug Product within the framework of the Marketing Plan. The local Product Teams will be chaired by a NOVARTIS Brand Director, and VERTEX may designate one Product Team representative where it Co-Promotes the Drug Product.

5.2.3 Campaigns and Promotional Materials. The GBT will review all general product campaigns (including target audience and principal messages) and may from time to time review the principal promotional material to be used in connection with the marketing and sale of a Drug Product. If VERTEX is Co-promoting a Drug Product under Section 5.3 hereof, it will provide the GBT, for prior review and comment, with copies of all advertising, promotional material and other literature which VERTEX intends to use on, or in connection with, a Drug Product in North America and the EU, which will be in accordance with the Marketing Plan, and will also submit all such material to NOVARTIS for approval by its regulatory affairs group as not to be in violation of applicable laws and regulations governing its use. Any such material shall not be utilized by VERTEX unless and until it has been approved by NOVARTIS.

5.2.4 Referral to JSC. If VERTEX disagrees with the GBT on any matter which might have a significant impact on the presumed value of the Drug Product or the timing of commercial launch, then VERTEX may refer the matter for consideration by the JSC, by written notice to the GBT Chair

and the JSC Chair, describing the basis for its disagreement in reasonable detail. The matter will be promptly reviewed and discussed at a special meeting of the JSC to be called and held within 30 days of the referral.

5.3 Co-Promotion in North America and the European Union ("EU"). VERTEX may elect to Co-Promote a Drug Product in North America and the countries of the European Union (except where prohibited by law) in the manner and to the extent set forth below. The right to Co-Promote as set forth herein is non-exclusive, and also may not be sublicensed or sub-contracted by VERTEX to a Third Party.

5.3.1 Co-Promotion Option. VERTEX will notify NOVARTIS in writing, if it wishes to Co-Promote a Drug Product, not less than twelve (12) months prior to the projected date of First Commercial Sale of the Drug Product in North America or the EU (as that projected date has been previously provided to VERTEX a reasonable time before commencement of the twelve (12) month period referenced above). The parties will meet as soon as practicable to discuss a Co-Promotion Plan, which will include terms and conditions allowing VERTEX an opportunity to promote the Drug Product commensurate with VERTEX's sales and marketing resources then available for the effort [**********].

The Co-Promotion Plan will be an amendment to the Marketing Plan (referenced in Section 5.2.1) and will be finalized not later than six (6) months before launch in the country to which Co-Promotion applies. The Co-Promotion Plan will include in particular (a) strategies and plans for the detailing and marketing of the Product, including allocation of responsibilities for marketing activities; (b) planned marketing and promotion efforts by each Party (including number of sales representatives, number of calls, target lists, detail priority and sampling activities); (c) market forecasts as well as sales and market-share

objectives. VERTEX will establish its promotional efforts to coincide with those of NOVARTIS (in compliance with the marketing plans and campaigns provided in the Marketing Plan reviewed by the GBT for the Drug Product). The Co-Promotion Plan will provide, for both parties, for the number of representatives, calls per day, target lists, and details to be delivered, to achieve specific sales targets, as well as reimbursement to VERTEX by NOVARTIS of VERTEX's Co-Promotion costs, with respect to North America only, as provided in (a) below, and may provide additional compensation as set forth in (b) below.

(a) Reimbursement of Costs. NOVARTIS will reimburse VERTEX for the cost of its Details delivered on target in Co-Promoting the Drug Product in North America (but not the EU) under the Co-Promotion Plan, as follows:
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(b) Additional Compensation.
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5.4 Termination of Co-Promotion Obligation. Upon not less than twelve (12) months' prior written notice to NOVARTIS, VERTEX may terminate its right and obligation to Co-promote a particular Drug Product in North America or in the European Union. NOVARTIS shall not be responsible for reimbursement of any of VERTEX's costs under Section 5.3.1(a) incurred after the effective date of termination of its co-promotion rights and obligations, or any additional compensation provided under Section 5.3.1(b), with respect to Net Sales made after the effective date of termination.

5.5 Co-labeling. To the extent not prohibited by law or regulation and subject to Regulatory Approval, all Drug Products (including labels, packaging and inserts) and all promotional materials for the same, sold in North America, the countries of the European Union and Japan will bear both NOVARTIS' and VERTEX's company names and logos with equal prominence (including equal sized type face), or if equal prominence is prohibited by law, with such prominence as may otherwise be permitted by law. To the extent not prohibited by law or regulation and subject to any required Regulatory Approval, Drug Products (including labels, packaging and inserts) and all promotional materials for the same, sold in the rest of the world will include VERTEX's company name (in the English alphabet) and logo with the designation: "under license from." Any trademark for a Drug Product will be selected by, and will be the property of, NOVARTIS.

5.5.1 Review of Regulatory Filings. NOVARTIS will permit VERTEX to review all material regulatory filings which relate to product labeling, and all proposed labels, packaging, package inserts, and promotional materials required under the Agreement to bear VERTEX's name, if permitted by law, prior to the filing of any such materials with any regulatory authority.

5.5.2 Regulatory Communications.

(a) NOVARTIS will permit VERTEX to participate with NOVARTIS in material communications with regulatory

officials which concern the matters referenced in this Section 5.5.

(b) NOVARTIS will immediately inform VERTEX of any material regulatory communications received by NOVARTIS which might operate to restrict VERTEX's rights under this Section 5.5.2, and will cooperate with any reasonable request of VERTEX aimed at facilitating approval by a regulatory authority for co-labeling consistent with this provision.

5.6 Due Diligence. NOVARTIS shall use diligent and commercially reasonable efforts consistent with the requirements of the Development Program and sound and reasonable business practices and judgment to effect introduction of Drug Products into Major Markets as soon as reasonably practicable, devoting the same degree of attention and diligence to such efforts that it devotes to such activities for other of its products of comparable market potential. Following the First Commercial Sale of a Drug Product and until the expiration of this Agreement, NOVARTIS shall endeavor to keep Drug Products reasonably available to the public in each of the Major Markets. NOVARTIS shall promptly notify VERTEX if it shall determine that the marketing and sale of a Drug Product in any country is not commercially reasonable or economically profitable or if for other unforeseen reasons further commercial support of the Drug Product in certain territories is no longer prudent or practical. In determining whether NOVARTIS is in compliance with the foregoing provisions, there shall be taken into account the normal course of assertive drug development programs in the pharmaceutical industry conducted with sound and reasonable business practices and judgment.

ARTICLE VI

PAYMENTS

6.1 Development Election Payment. NOVARTIS will pay to VERTEX the amount specified below each time NOVARTIS exercises its Development Election with respect to a Drug Candidate, whether at the First Opportunity or the Second Opportunity. The amount payable

shall vary depending upon the Research Year or year of the Expanded Development Period during which the particular Drug Candidate first completes Proof of Concept Studies ("POCS"), as follows:

Year of POCS Completion	Payment Amount
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4	*********
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6.2 Development Milestone Payments by NOVARTIS.

6.2.1 NOVARTIS will make the following payments to VERTEX upon the achievement of any of the following milestones with respect to a Drug Product Candidate or Drug Product as to which NOVARTIS has exercised its Development Election at the First Opportunity:

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6.2.2 NOVARTIS will make the following payments to VERTEX upon the achievement of any of the following milestones with respect to a Subsequent Drug Product Candidate or a Drug Product as to which

NOVARTIS exercised its Development Election at the Second Opportunity:

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6.2.3 All payments shall be made by wire transfer in United States dollars ("Dollars") to the credit of such bank account as may be designated by VERTEX in writing to NOVARTIS. Any payment which falls due on a date which is a Saturday, Sunday or a legal holiday in the Commonwealth of Massachusetts may be made on the next succeeding day which is not a Saturday, Sunday or a legal holiday in the Commonwealth.

6.2.4 If a Drug Product Candidate is abandoned during the term of this Agreement for any scientific or medical reasons after any one or more of the foregoing milestone payments are made, and if a backup Drug Product Candidate is developed to replace the abandoned Drug Product Candidate for the same Indications, then no milestone payment shall be required with respect to the backup Drug Product Candidate to the extent that that milestone payment has already been made with respect to the abandoned Drug Product Candidate.

6.3 Royalties. NOVARTIS shall pay to VERTEX the following annual royalties on Net Sales of each Drug Product in the Territory.

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The royalty percentage provided above shall be increased by [**********
**********] with respect to Net Sales of any Drug Product derived from a Drug Candidate which completes Proof of Concept Studies during any of the first four Research Years.

6.3.1 Third Party Royalties: If NOVARTIS is required to pay royalties to any Third Party in order to exercise its rights to sell a Drug Product in a country, then [**********
**********] payable to such Third Party in any calendar quarter for such Drug Product in such country shall be deductible from the royalties payable to VERTEX under this Agreement in respect of sales of that Drug Product in such country for the same calendar quarter, provided that in no event shall the net royalty rate payable fall below [**********], as a result of the application of this Section 6.3.1 and Sections 6.3.2 and 6.4.

6.3.2 Unlicensed Competition: If in any country a Third Party sells a pharmaceutical product which is a "generic version" of a Drug Product being sold in that country (a "Third Party Product") -- where "generic version" means a pharmaceutical product (other than a product originally sold as a Drug Product) that includes the same active ingredient as that used in a Drug Product -- then for the period in which the sales of such Third Party Product in such country are at least [**********
**********], the royalties

payable to VERTEX by NOVARTIS on sales of such Product in such country for such period shall be [**********] in Section 6.3 or Section 7.4.3 hereof, but in no event shall the royalties owed for such Drug Product in such country, when combined with any royalty reduction provided under Section 6.3.1 hereof, reduce the royalties payable on Net Sales of such Drug Product in that country by more than [**********]

6.4 Performance Reductions. The Research Agreement provides that VERTEX will attempt during the term of that Agreement to produce Drug Candidates that have successfully completed Proof of Concept Studies as defined in the Research Agreement. NOVARTIS has an option (the "Development Election") to license any one or more of those Drug Candidates under the terms of the Research Agreement. If at the end of the Extended Development Period (the "Expiration Date"), VERTEX has not presented to NOVARTIS at least [**********] as to which NOVARTIS has exercised its Development Election, then the royalty rate otherwise payable to VERTEX under Section 6.3 or Section 7.4.3 hereof on Net Sales made after the Expiration Date (but before considering the effect of Sections 6.3.1 or 6.3.2 on the royalty rate otherwise applicable) shall be reduced by [**********]. In such event, the provisions of Section 6.3.1 and Section 6.3.2 above, if applicable, shall be applied thereafter only to the royalty as reduced under this section. The provisions of this section shall not be applicable if the Research Agreement is validly terminated by either party prior to the end of its six year term. Notwithstanding the foregoing, in no event shall the royalty otherwise payable to VERTEX on Net Sales in a particular country be reduced by operation of this Section 6.4 and Sections 6.3.1 and 6.3.2, [**********].

6.5 Sales Reports.

(a) During the term of this Agreement and after the First Commercial Sale of a Drug Product, NOVARTIS shall furnish or cause to be furnished to VERTEX on a quarterly basis a written report or reports covering each calendar quarter (each such calendar quarter being

sometimes referred to herein as a "reporting period") showing (i) the Net Sales of each Drug Product in each country in the world during the reporting period by NOVARTIS and each Affiliate and sublicensee; (ii) the royalties, payable in Dollars, which shall have accrued under Section 7.4 or Section 7.4.3 hereof in respect of such sales and the basis of calculating those royalties; (iii) amounts due under Section 7.4.1 hereof on account of the purchase of Bulk Drug Substance, and the basis for calculating those amounts due (including unit sales data); (iv) withholding taxes, if any, required by law to be deducted in respect of any such sales; (v) the exchange rates used in converting into Dollars, from the currencies in which sales were made, any payments due which are based on Net Sales; (vi) dispositions of Drug Products other than pursuant to sale for cash. With respect to sales of Drug Products invoiced in Dollars, the Net Sales amounts and the amounts due to VERTEX hereunder shall be expressed in Dollars. With respect to sales of Drug Products invoiced in a currency other than Dollars, the Net Sales and amounts due to VERTEX hereunder shall be expressed in the domestic currency of the party making the sale, together with the Dollar equivalent of the amount payable to VERTEX, calculated using NOVARTIS' then-current standard exchange rate methodology for the translation of foreign currency sales into U.S. dollars. In each report the methodology will be disclosed, will be identical to that employed by NOVARTIS, generally, in its external financial reporting, as reviewed and approved by its independent auditors and will be in conformity with NOVARTIS' usual and customary general accounting principles consistently applied. If any sublicensee makes any sales invoiced in a currency other than its domestic currency, the Net Sales shall be converted to its domestic currency in accordance with the sublicensee's normal accounting principles. NOVARTIS shall furnish to VERTEX appropriate evidence of payment of any tax or other amount required by applicable laws or regulations to be deducted from any royalty payment, including any tax or withholding levied by a foreign taxing authority in respect of the payment or accrual of any royalty. Reports shall be due on the thirtieth (30th) day following the close of each reporting period, although NOVARTIS shall also provide VERTEX with a "flash" report of Net Sales, only, within ten (10) business days after the end of each month. NOVARTIS shall keep accurate records in sufficient detail to enable the amounts due hereunder to be determined and to be verified by VERTEX.

(b) Amounts shown to have accrued by each sales report provided for under Subsection 5.5(a), above, shall be due and payable on the date such sales report is due.

(c) All payments shall be made in Dollars. If at any time legal restrictions prevent the prompt remittance of any payments with respect to any country of the Territory where Drug Products are sold, NOVARTIS or its sublicensees shall have the right and option to make such payments by depositing the amount thereof in local currency to VERTEX's account in a bank or depository in such country.

(d) Upon the written request of VERTEX, at VERTEX's expense and not more than once in or in respect of any calendar year, NOVARTIS shall permit an independent accountant of national prominence selected by VERTEX, to have access during normal business hours to those records of NOVARTIS as may be reasonably necessary to verify the accuracy of the sales reports furnished by NOVARTIS pursuant to this Section 5.5, in respect of any calendar year ending not more than thirty-six (36) months prior to the date of such notice. NOVARTIS shall include in each sublicense entered into by it pursuant to this Agreement a provision requiring the sublicensee to keep and maintain adequate records of sales made pursuant to such sublicense and to grant access to such records by the aforementioned independent accountant for the reasons specified in this Section 6.5. Upon the expiration of thirty-six (36) months following the end of any calendar year, the calculation of amounts payable with respect to such fiscal year shall be binding and conclusive upon VERTEX, and NOVARTIS and its sublicensees shall be released from any liability or accountability with respect to payments for such year. The report prepared by such independent accountant, a copy of which shall be sent or otherwise provided to NOVARTIS by such independent accountant at the same time it is sent or otherwise provided to VERTEX, shall contain the conclusions of such independent accountant regarding the audit and will specify that the amounts paid to VERTEX pursuant thereto were correct or, if incorrect, the amount of any underpayment or overpayment. If such independent accountant's report shows any underpayment, NOVARTIS shall remit or shall cause its sublicensees to remit to VERTEX within thirty (30) days after NOVARTIS' receipt of such report, (i) the amount of such underpayment and (ii) if such underpayment exceeds [**********] for the calendar year then being audited, the

reasonable and necessary fees and expenses of such independent accountant performing the audit, subject to reasonable substantiation thereof. Any overpayments shall be fully creditable against amounts payable in subsequent payment periods. VERTEX agrees that all information subject to review under this Section 6.5 or under any sublicense agreement is confidential and that VERTEX shall retain and cause its accountant to retain all such information in confidence.

(e) In case of any delay in payment by NOVARTIS to VERTEX not occasioned by Force Majeure, interest at the rate of [**********], assessed from the thirty-first day after the due date of the payment, shall be due from NOVARTIS upon prior written notice.

6.6 Withholding Tax. If during the term of this Agreement, withholding tax should be required by law to be deducted from any payments required to be made by NOVARTIS to VERTEX hereunder, the parties will agree upon an equitable division of liability for any sum which is withheld and for which VERTEX is not compensated or reimbursed by way of usable tax credits or otherwise. In that connection VERTEX at NOVARTIS' request shall sign a usual and customary exemption application and in addition shall apply for a tax refund at the request of NOVARTIS from any tax authority to which NOVARTIS has paid withholding tax on account of any payments made by NOVARTIS to VERTEX hereunder.

ARTICLE VII

SECOND OPPORTUNITY CANDIDATES AND SUBSEQUENT CANDIDATES

7.1 General. Under the conditions provided in the Research Agreement, NOVARTIS has the right to exercise its Development Election with respect to each Drug Candidate at the First Opportunity or the Second Opportunity, and also has the right to exercise its Development Election at the First Opportunity for Subsequent Candidates. The following specific provisions will apply to any Subsequent Candidates as to which NOVARTIS exercises its Development Election (a "Subsequent Drug Candidate"), and to any Drug Candidate as to which NOVARTIS exercises its Development Election at the Second Opportunity (a "Second Opportunity Candidate"). The provisions of Section 6.3 shall not be applicable to any Drug Product containing a Second Opportunity Candidate or a Subsequent Drug Candidate.

7.2 Information. As part of the Development Information with respect to a Subsequent Drug Candidate supplied by VERTEX to NOVARTIS under Section 5.2 of the Research Agreement, or as part of the Further Development Information with respect to a Second Opportunity Candidate supplied by VERTEX to NOVARTIS under Section 5.4 of the Research Agreement, VERTEX will include binding notice to NOVARTIS of the Development and Commercialization Option undertaken by VERTEX under Section 7.4 below, with respect to a particular Second Opportunity Candidate or Subsequent Drug Candidate if NOVARTIS exercises its Development Election with respect thereto.

7.3 Additional Second Opportunity Information and Payment. VERTEX will also provide to NOVARTIS as part of the Further Development Information with respect to a Second Opportunity Candidate, a detailed summary of the Total Costs reasonably incurred by VERTEX with respect to the development of that Second Opportunity Candidate between the First Opportunity and the Second Opportunity (the "Second Opportunity Costs"). If NOVARTIS exercises its Development Election with respect to that Second Opportunity Candidate, it shall pay to VERTEX, along with and as part of its notice of exercise, an amount equal to one hundred fifty (150%) percent of the reasonable Second Opportunity Costs.

7.4 Development and Commercialization Option. Pursuant to the binding notice referenced in Section 7.2 above, VERTEX shall elect one of the following options with respect to each Subsequent Candidate and Second Opportunity Candidate:

7.4.1 VERTEX Bulk Supply Option. VERTEX shall have the option (the "Bulk Supply Option") to manufacture or have manufactured and to supply NOVARTIS with its entire requirements of Bulk Drug Substance for all clinical trials and for commercial sales of Drug Product in the Territory. If VERTEX exercises the Bulk Supply Option and NOVARTIS exercises its Development Election, with respect to that Candidate, NOVARTIS, its Affiliates and sublicensees, shall purchase from VERTEX all of their respective requirements of Bulk Drug Substance to be incorporated in the Drug Product Candidate and Drug Product. No

payments shall be required under the provisions of Section 6.3 hereof with respect to any Subsequent Candidate or Second Opportunity Candidate as to which the Bulk Supply Option is exercised by VERTEX.

(a) Supply Prices for Clinical Trials.

Bulk Drug Substance supplied to NOVARTIS under Section 7.4.1 hereto shall be supplied at a price equal to [**********].

(b) Commercial Supply.

(i) The total supply price for a unit of Bulk Drug Substance supplied by VERTEX for the manufacture of Drug Product sold in the Territory shall be [**********
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(c) Third Party Manufacture. In the event that VERTEX has exercised its Bulk Supply Option with respect to Bulk Drug Substance for a particular Drug Product, VERTEX may engage as a manufacturing subcontractor any Third Party which has a demonstrated ability to deliver high quality pharmaceutical products on a timely basis. VERTEX will notify NOVARTIS of its intention to subcontract to a Third Party not less than sixty (60) days (and earlier if reasonably practicable) prior to concluding a manufacturing arrangement with any such Third Party. If NOVARTIS notifies VERTEX within sixty (60) days after receipt of that notice that NOVARTIS wishes to manufacture the Bulk Drug Substance, VERTEX will provide NOVARTIS with an opportunity to negotiate a mutually agreeable manufacturing agreement before entering into any manufacturing agreement with a Third Party.

(d) Bulk Drug Substance Supply Terms. All Bulk Drug Substance manufactured by VERTEX for NOVARTIS hereunder shall be supplied to NOVARTIS (for formulation and packaging) pursuant to the terms of a supply agreement containing usual and customary terms of supply not inconsistent with any provisions of this Agreement, including a requirement that any Bulk Drug Substance supplied will meet mutually agreed specifications.

7.4.2 Joint Venture Option. VERTEX may propose that the parties enter into a worldwide joint venture or other mutually agreeable form of collaborative arrangement ("Joint Venture") that involves [**********]

sharing of costs and profits, to develop, manufacture and commercialize the Subsequent Drug Candidate or Second Opportunity Candidate. The party or parties performing development activities, or providing manufacturing and marketing to the Joint Venture, will be entitled to recovery from the Joint Venture of their associated development costs, Manufacturing Cost and marketing costs with respect to those services. The parties will share leadership of the Joint Venture as may be agreed at the time of its organization. The specific terms and conditions of the Joint Venture will be discussed and agreed between the parties prior to the exercise by NOVARTIS of its Development Election with respect to the Drug Product Candidate to which the Joint Venture proposal relates. Nothing in this Section 7.4.2 shall be interpreted to require NOVARTIS to exercise its Development Election if the parties do not come to agreement on the specific terms of the proposed Joint Venture.

7.4.3 Royalty Option. In the event that VERTEX does not exercise the Bulk Supply Option or the Joint Venture Option with respect to a particular Second Opportunity Candidate or Subsequent Drug Candidate, NOVARTIS shall undertake production using its own manufacturing resources or Third Party manufacturers pursuant to the license granted in Section 2.1 of this Agreement, and shall have access to all information generated by VERTEX relating to the supply of that Bulk Drug Substance. In such event, NOVARTIS shall pay the following royalties to VERTEX (subject to the provisions of Section 6.3 providing for royalty reduction in certain instances), in lieu of the royalties set forth in Section 6.3 hereof, on Net Sales of a Drug Product containing the foregoing Second Opportunity or Subsequent Drug Candidate:
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ARTICLE VIII

INTELLECTUAL PROPERTY

8.1 Patentable Inventions and Know-How.

8.1.1 Ownership. Any inventions made and all Know-How generated by either party or its Affiliates during the term of this Agreement, and Controlled by such party, relating to the manufacture or use of Bulk Drug Substance, a Drug Product Candidate or a Drug Product, or a prodrug thereof, will be disclosed to the other party promptly after the disclosing party recognizes the significance thereof. All patents and technology shall be owned by the party making the invention claimed or contained therein or, if such invention is made jointly, shall be owned jointly, all as determined in accordance with U.S. laws of inventorship.

8.1.2 Patent Prosecution. VERTEX shall be responsible for the preparation, filing, prosecution and maintenance of all patents and patent applications included in VERTEX Patents and all patents and patent applications included in Patents claiming inventions jointly owned with NOVARTIS. NOVARTIS shall be responsible for the preparation, filing, prosecution and maintenance of all patents and patent applications included in NOVARTIS Patents. In each case the responsible party shall consult from time to time with the other party with respect thereto. VERTEX shall provide NOVARTIS with periodic reports listing the jurisdictions in which the VERTEX Patents licensed hereunder have been filed. Subject to the next succeeding sentences, VERTEX will file patent applications with respect to those VERTEX Patents in such other countries as NOVARTIS shall request in writing, all such other countries being countries in which NOVARTIS would customarily file its own cases dealing with similar subject matters. The party initially responsible for preparation, filing, prosecution and maintenance of a particular Patent (the "Initial Responsible Party") shall give thirty (30) days advance notice (the

"Discontinuance Election") to the other party of any decision to cease preparation, filing, prosecution and maintenance of that Patent in any jurisdiction (a "Discontinued Patent"). In such case, the other party may elect at its sole discretion to continue preparation, filing and prosecution or maintenance of the Discontinued Patent at its sole expense. The party so continuing shall own any such Patent; and the Initial Responsible Party shall execute such documents and perform such acts as may be reasonably necessary for the other party to file or to continue prosecution or maintenance, including assigning ownership of such Patent to such electing party. Discontinuance may be on a country-by-country basis or for a patent application or patent series in total.

Each party will consult the other party with respect to its choice of patent counsel and will keep that party continuously informed of all matters relating to the preparation, filing, prosecution and maintenance of Patents covered by this Agreement. Each party shall endeavor in good faith to coordinate its efforts with those of the other party to minimize or avoid interference with the prosecution of the other party's patent applications.

8.1.3 Costs. Costs incurred in the preparation, prosecution and maintenance of Patents shall be borne by each party as set forth in Section 8.3 of the Research Agreement.

8.2 Infringement Claims by Third Parties.

8.2.1 Notice. If the manufacture, use or sale of Bulk Drug Substance and/or Drug Product results in a claim against a party hereto for patent infringement or for inducing or contributing to patent infringement ("Infringement Claim"), the party first having notice of an Infringement Claim shall promptly notify the other in writing. The notice shall set forth the facts of the Infringement Claim in reasonable detail.

8.2.2 Third Party Licenses. In the event that practicing the Technology in connection with the manufacture, use or sale of a Drug Product in any

country would infringe a Third Party's patent, then VERTEX will use reasonable efforts to obtain a license under the Third Party's patents with a right to sublicense to NOVARTIS, under terms reasonably acceptable to both VERTEX and NOVARTIS, [**********
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8.2.3 Discontinued Sales, License or Defense of Suit. If the required license is either unavailable or its terms are unacceptable both to VERTEX and to NOVARTIS, then NOVARTIS may elect in its sole discretion to discontinue sales of the Drug Product in such country or to undertake the defense of a patent infringement action or the prosecution of a declaratory judgment action with respect to the Third Party patents. [**********
****
**********] Provided that NOVARTIS is conducting the defense of the Infringement Claim or the prosecution of such declaratory judgment actions, [**********] The costs and expenses of all suits brought by a party under this Section 8.2.3 shall be reimbursed to such party and then to the other party, if it participates in such suit, pro rata, out of any damages or other monetary awards recovered therein in favor of VERTEX or NOVARTIS. [**********
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**********] Any remaining exemplary or punitive damages shall then be [**********

**********] No settlement or consent judgment or other voluntary final disposition of a suit under this Section 8.2 may be entered into without the joint consent of VERTEX and NOVARTIS (which consent shall not be unreasonably withheld).

8.3 Infringement Claims Against Third Parties.

8.3.1 VERTEX and NOVARTIS each agree to take reasonable actions to protect their respective patents and technology from infringement and from unauthorized possession or use.

8.3.2 If any VERTEX Patents or NOVARTIS Patents are infringed or VERTEX Know-How or NOVARTIS Know-How is misappropriated, as the case may be, by a Third Party, the party to this Agreement first having knowledge of such infringement or misappropriation, or knowledge of a reasonable probability of such infringement or misappropriation, shall promptly notify the other in writing. The notice shall set forth the facts of such infringement or misappropriation in reasonable detail. The owner of the patent or technology, or VERTEX, in the case of joint ownership between the parties hereto, shall have the primary right, but not the obligation, to institute, prosecute, and control with its own counsel any action or proceeding with respect to infringement or misappropriation of such patent or technology and the other party shall have the right, at its own expense, to be represented in such action by its own counsel. If the party having the primary right or responsibility to institute, prosecute, and control such action or prosecution fails to do so within a period of one hundred twenty (120) days after receiving notice of the infringement, the other party shall have the right to bring and control any such action by counsel of its own choice, and the other shall have the right, at its own expense, to be represented in any such action by counsel of its own choice. If one party brings any such action or proceeding, the second party may be joined as a party plaintiff and, in case of joining, the second party agrees to

give the first party reasonable assistance and authority to file and to prosecute such suit. The costs and expenses of all suits brought by a party under this Section 8.3.2 shall be reimbursed to such party and to the other party, if it participates in such suit, pro rata, out of any damages or other monetary awards recovered therein in favor of VERTEX or NOVARTIS. [**********] No settlement or consent judgment or other voluntary final disposition of a suit under this Section 8.3 may be entered into without the joint consent of VERTEX and NOVARTIS (which consent shall not be unreasonably withheld).

8.4 Notice of Certification. VERTEX and NOVARTIS each shall immediately give notice to the other of any certification filed under the U.S. "Drug Price Competition and Patent Term Restoration Act of 1984" claiming that a VERTEX Patent or a NOVARTIS Patent is invalid or that any infringement will not arise from the manufacture, use or sale of any product by a third party. If VERTEX decides not to bring infringement proceedings against the entity making such a certification, VERTEX shall give notice to NOVARTIS of its decision not to bring suit within twenty-one (21) days after receipt of notice of such certification. NOVARTIS may then, but is not required to, bring suit against the party that filed the certification. Any suit by NOVARTIS or VERTEX shall either be in the name of NOVARTIS or in the name of VERTEX, or jointly by NOVARTIS and VERTEX, as may be required by law. For this purpose, the party not bringing suit shall execute such legal papers necessary for the prosecution of such suit as may be reasonably requested by the party bringing suit.

8.5 Patent Term Extensions. The parties shall cooperate in good faith with each other in gaining patent term extension wherever applicable to VERTEX Patents and NOVARTIS Patents covering Drug Product Candidates or Drug Products. NOVARTIS and VERTEX shall mutually determine which patents shall be extended. All filings for such extension shall be made by the party who owns

the patent, provided, however, that in the event that the party who owns the patent elects not to file for an extension, such party shall (i) inform the other party of its intention not to file and (ii) grant the other party the right to file for such extension.

ARTICLE IX

REPRESENTATIONS AND WARRANTIES

9.1 Representations and Warranties of VERTEX. Vertex represents and warrants to NOVARTIS as follows:

9.1.1 Authorization. This Agreement has been duly executed and delivered by VERTEX and constitutes the valid and binding obligation of VERTEX, enforceable against VERTEX in accordance with its terms except as enforceability may be limited by bankruptcy, fraudulent conveyance, insolvency, reorganization, moratorium and other laws relating to or affecting creditors' rights generally and by general equitable principles. The execution, delivery and performance of this Agreement have been duly authorized by all necessary action on the part of VERTEX, its officers and directors.

9.1.2 No Third Party Rights. Except as previously disclosed in writing to NOVARTIS on or before the date set forth on the first page hereof, (a) VERTEX owns or possesses adequate licenses or other rights to use all VERTEX Technology, and to grant the licenses herein; and (b) the granting of the licenses to NOVARTIS hereunder does not violate any right known to VERTEX of any Third Party.

9.1.3 No Third Party Patents. Except as disclosed in writing by VERTEX to NOVARTIS or its agents, to VERTEX's knowledge and based on its current understanding of the Drug Product Candidate(s) and its use, the development, manufacture, use or sale of any Bulk Drug Substance, Drug Product Candidates or Drug Products pursuant to this Agreement will not infringe or conflict with any Third Party right or patent, and VERTEX is

not aware of any issued patent or pending patent application that, if issued, would be infringed by the development, manufacture, use or sale of any Bulk Drug Substance, Drug Product Candidates or Drug Products pursuant to this Agreement.

9.1.4 Maintenance of Patents and Licenses. Subject to the provisions of Section 8.1.2 with respect to Discontinued Patents, VERTEX will take all reasonable steps to obtain any consent required for and to maintain in effect, including by means of extension, any license, sublicense, patent or patent application applicable to the Field for which it has granted rights to NOVARTIS hereunder.

9.2 Representations and Warranties of NOVARTIS. NOVARTIS represents and warrants to VERTEX as follows:

9.2.1 Authorization. This Agreement has been duly executed and delivered by NOVARTIS and constitutes the valid and binding obligation of NOVARTIS, enforceable against NOVARTIS in accordance with its terms, except as enforceability may be limited by bankruptcy, fraudulent conveyance, insolvency, reorganization, moratorium and other laws relating to creditors' rights generally and by general equitable principles. The execution, delivery and performance of this Agreement have been duly authorized by all necessary action on the part of NOVARTIS, its officers and directors.

9.2.2 No Third Party Rights. Except as previously disclosed in writing to VERTEX on or before the date set forth on the first page hereof, (a) NOVARTIS owns or possesses adequate licenses or other rights to use all NOVARTIS Technology, and to grant the licenses herein; and (b) the granting of the licenses to VERTEX hereunder does not violate any right known to NOVARTIS of any Third Party.

9.2.3 No Third Party Patents. Except as disclosed in writing by NOVARTIS to VERTEX or its agents, to NOVARTIS' knowledge and based on its current understanding of the Drug Product Candidate(s) and its use, the manufacture, use or sale of any Bulk Drug Substance, Drug Product Candidates or Drug Products pursuant to this Agreement will not infringe or conflict with any Third Party right or patent, and NOVARTIS is not aware of any issued patent or pending patent application that, if issued, would be infringed by the development, manufacture, use or sale of any Bulk Drug Substance, Drug Product Candidates or Drug Products pursuant to this Agreement.

9.2.4 Maintenance of Patents and Licenses. Subject to the provisions of Section 7.2.2 with respect to Discontinued Patents, NOVARTIS will take all reasonable steps to obtain any consent required for and to maintain in effect, including by means of extension, any license, sublicense, patent or patent application applicable to the Field for which it has granted rights to VERTEX hereunder.

ARTICLE X

CONFIDENTIALITY

10.1 Undertaking. During the term of this Agreement, each party shall keep confidential, and other than as provided herein shall not use or disclose, directly or indirectly, any trade secrets, confidential or proprietary information, or any other knowledge, information, documents or materials, owned, developed or possessed by the other party, whether in tangible or intangible form, the confidentiality of which such other party takes reasonable measures to protect, including but not limited to VERTEX Technology and NOVARTIS Technology.

10.1.1 Each party shall take any and all lawful measures to prevent the unauthorized use and disclosure of such information, and to prevent unauthorized persons or entities from obtaining or using such information.

10.1.2 Each party further agrees to refrain from directly or indirectly taking any action which would constitute or facilitate the unauthorized use or disclosure of such information. Each party may disclose such information to its officers, employees and agents, to authorized licensees and sublicensees, and to subcontractors in connection with the development or manufacture of Bulk Drug Substance, Drug Product Candidates or Drug Products, to the extent necessary to enable such parties to perform their obligations hereunder or under the applicable license, sublicense or subcontract, as the case may be; provided, that such officers, employees, agents, licensees, sublicensees and subcontractors have entered into appropriate confidentiality agreements for secrecy and non-use of such information which by their terms shall be enforceable by injunctive relief at the instance of the disclosing party.

10.1.3 Each party shall be liable for any unauthorized use and disclosure of such information by its officers, employees and agents and any such sublicensees and subcontractors.

10.2 Exceptions. Notwithstanding the foregoing, the provisions of Section 10.1 hereof shall not apply to knowledge, information, documents or materials which the receiving party can conclusively establish:

10.2.1 have entered the public domain without such party's breach of any obligation owed to the disclosing party;

10.2.2 are permitted to be disclosed by the prior written consent of the disclosing party;

10.2.3 have become known to the receiving party from a source other than the disclosing party, other than by breach of an obligation of confidentiality owed to the disclosing party;

10.2.4 are disclosed by the disclosing party to a Third Party without restrictions on its disclosure;

10.2.5 are independently developed by the receiving party without breach of this Agreement; or

10.2.6 are required to be disclosed by the receiving party to comply with applicable laws or regulations, to defend or prosecute litigation or to comply with governmental regulations, provided that the receiving party provides prior written notice of such disclosure to the disclosing party and takes reasonable and lawful actions to avoid or minimize the degree of such disclosure.

10.3 Publicity. The parties will agree upon the timing and content of any initial press release or other public communications relating to this Agreement and the transactions contemplated herein.

10.3.1 Except to the extent already disclosed in that initial press release or other public communication, no public announcement concerning the existence or the terms of this Agreement or concerning the transactions described herein shall be made, either directly or indirectly, by VERTEX or NOVARTIS, except as may be legally required by applicable laws, regulations, or judicial order, without first obtaining the approval of the other party and agreement upon the nature, text, and timing of such announcement, which approval and agreement shall not be unreasonably withheld.

10.3.2 The party desiring to make any such public announcement shall provide the other party with a written copy of the proposed announcement in sufficient time prior to public release to allow such other party to comment upon such announcement, prior to public release.

10.4 Survival. The provisions of this Article X shall survive the termination of this Agreement and shall extend for a period of five (5) years thereafter.

ARTICLE XI

PUBLICATION

Each of NOVARTIS and VERTEX reserves the right to publish or publicly present the results (the "Results") of the Development Program, subject to the following terms and conditions. The party proposing to publish or publicly present the Results (the "publishing party") will submit a draft of any proposed manuscript or speech to the other party (the "non-publishing party") for comments at least thirty (30) days prior to submission for publication or oral presentation. The non-publishing party shall notify the publishing party in writing within fifteen (15) days of receipt of such draft whether such draft contains (i) information of the non-publishing party which it considers to be confidential under the provisions of Article IX hereof, (ii) information that if published would have an adverse effect on a patent application covering the subject matter of this Agreement which the non-publishing party intends to file, or (iii) information which the non-publishing party reasonably believes would be likely to have a material adverse impact on the development or commercialization of a Drug Product Candidate or Drug Product. In any such notification, the non-publishing party shall indicate with specificity its suggestions regarding the manner and degree to which the publishing party may disclose such information. In the case of item (ii) above, the non-publishing party may request a delay and the publishing party shall delay such publication, for a period not exceeding ninety (90) days, to permit the timely preparation and filing of a patent application or an application for a certificate of invention on the information involved. In the case of item (i) above, no party may publish confidential information of the other party without its consent in violation of Article IX of this Agreement. In the case of item (iii) above, if the publishing party shall disagree with the non-publishing party's assessment of the impact of the publication, then the issue shall be referred to the Joint Steering Committee for resolution. If the Joint Steering Committee is unable to reach agreement on the matter within thirty (30) days after such referral, the matter shall be referred by the Joint Steering Committee to the Chief Executive Officer of NOVARTIS and the Chief Executive Officer of VERTEX who shall attempt in good faith to reach a fair and equitable resolution of this disagreement. If the disagreement is not resolved in this manner within two (2) weeks of referral by the Joint Steering Committee as aforesaid, then the decision of the

publishing party as to publication of any information generated by it, subject always to the confidentiality provisions of Article X hereof, shall be final, provided that such decision shall be exercised with reasonable regard for the interests of the non-publishing party. The parties agree that authorship of any publication will be determined based on the customary standards then being applied in the relevant scientific journal. The parties will use their best efforts to gain the right to review proposed publications relating to the subject matter of the Development Program by consultants or contractors.

This Article XI shall terminate with the termination of this Agreement, but the provisions of Article X hereof shall continue to govern the disclosure by one party, whether by publication or otherwise, of Confidential Information of the other, during the period set forth in Section 10.4.

ARTICLE XII

DISPUTE RESOLUTION

12.1 Governing Law, and Jurisdiction. This Agreement shall be governed and construed in accordance with the internal laws of the State of New York.

12.2 Dispute Resolution Process. Except as otherwise explicitly provided herein, in the event of any controversy or claim arising out of or relating to any provision of this Agreement, or the collaborative effort contemplated hereby, the parties shall, and either party may, initially refer such dispute to the Joint Steering Committee, and failing resolution of the controversy or claim within thirty (30) days after such referral, the matter shall be referred to the Chief Executive Officer of VERTEX and the Chief Executive Officer of NOVARTIS who shall, as soon as practicable, attempt in good faith to resolve the controversy or claim. If such controversy or claim is not resolved within sixty (60) days of the date of initial referral of the matter to the JSC, either party shall be free to initiate proceedings in any court having requisite jurisdiction.

ARTICLE XIII

TERM AND TERMINATION

13.1 Term. The term of this Agreement shall extend with respect to a Drug Product in a particular country until the later of: (a) the last to expire of any VERTEX Patents containing a Valid Patent Claim covering the Drug Product or its use or manufacture in that country; or (b) if there is no such Valid Patent Claim under a VERTEX Patent in a particular country, ten (10) years from the earlier of the date Regulatory Approval is received in that country for sale of the Drug Product, or the date of First Commercial Sale of the Drug Product in that country.

13.2 Termination For Cause. In addition to rights of termination which may be granted to either party under other provisions of this Agreement, either party may terminate this Agreement (i) upon sixty (60) days prior written notice to the other party upon the material breach by such other party of any of its obligations under this Agreement, provided that such termination shall become effective only if the breaching party shall fail to remedy or cure the breach within such sixty (60) day period; or (ii) upon termination by such party of the Research Agreement for cause in accordance with Section 9.2 or 9.3 of the Research Agreement.

13.3 Termination for Bankruptcy. If at any time during the term of this Agreement, an Event of Bankruptcy (as defined below) relating to either party (the "Bankrupt Party") occurs, the other party (the "Other Party") shall have, in addition to all other legal and equitable rights and remedies available hereunder, the option to terminate this Agreement upon 30 days' written notice to the Bankrupt Party. It is agreed and understood that if the Other Party does not elect to terminate this Agreement upon the occurrence of an Event of Bankruptcy, except as may otherwise be agreed with the trustee or receiver appointed to manage the affairs of the Bankrupt Party, the Other Party shall continue to make all payments required of it under this Agreement as if the Event of Bankruptcy had not occurred, and the Bankrupt Party shall not have the right to terminate any license granted herein. As used above, the term "Event of Bankruptcy" shall mean (a) dissolution, termination of existence, liquidation or business failure of either party; (b) the appointment of a custodian or receiver for either party who has not been terminated or dismissed within 90 days; (c) the institution by either party of any proceeding under national, federal or state bankruptcy, reorganization, receivership or other similar laws affecting the rights of

creditors generally or the making by either party of a composition or any assignment or trust mortgage for the benefit of creditors or under any national, federal or state bankruptcy, reorganization, receivership or other similar law affecting the rights of creditors generally, which proceeding is not dismissed within 90 days of filing.

13.4 Termination by NOVARTIS. NOVARTIS may terminate this Agreement at any time with respect to one or more Drug Product Candidates or Drug Products, upon six (6) months' prior written notice to VERTEX if either scientific or economic circumstances, in NOVARTIS' sole judgment, do not warrant further development. In such event NOVARTIS, at the request of VERTEX, shall assign or otherwise transfer to VERTEX all of its regulatory filings with respect to the Drug Product Candidate or Drug Product as to which NOVARTIS has terminated this Agreement.

13.5 Effect of Termination.

(a) Termination of this Agreement for any reason, or expiration of this Agreement, will not affect: (i) obligations, including the payment of any royalties and any supply price payments, which have accrued as of the date of termination or expiration, and (ii) rights and obligations which, from the context thereof, are intended to survive termination or expiration of this Agreement.

(b) For each country, at the end of the Agreement term as provided in Section 13.1 hereof in respect of a Drug Product, NOVARTIS shall have a perpetual, nonexclusive, transferable, paid-up, royalty-free license under VERTEX Technology, in each case which is in existence at the end of such Agreement term, to use, make, have made and sell that Drug Product in that country and to make or have made Drug Product for use and sale in that country.

ARTICLE XIV

INDEMNIFICATION

14.1 Indemnification by VERTEX. VERTEX will indemnify and hold NOVARTIS and its Affiliates, and their employees, officers and directors harmless against any loss, damages, action, suit, claim, demand, liability, expense, bodily injury, death or property damage (a "Loss"), that may be brought, instituted or arise against or be incurred by such persons to the extent such Loss is based on or arises out of:

14.1.1 the development, manufacture, use, sale, storage or handling of a Drug Product Candidate or a Drug Product by VERTEX or its Affiliates or their representatives, agents or subcontractors under this Agreement, or any actual or alleged violation of law resulting therefrom (with the exception of Losses based on infringement or misappropriation of intellectual property rights); or

14.1.2 the breach by VERTEX of any of its covenants, representations or warranties set forth in this Agreement; and

14.1.3 provided however, that the foregoing indemnification shall not apply to any Loss to the extent such Loss is caused by the negligent or willful misconduct of NOVARTIS or its Affiliates.

14.2 Indemnification by NOVARTIS. NOVARTIS will indemnify and hold VERTEX, and its Affiliates, and their employees, officers and directors harmless against any Loss that may be brought, instituted or arise against or be incurred by such persons to the extent such Loss is based on or arises out of:

14.2.1 the development, manufacture, use, sale, storage or handling of a Drug Product Candidate or a Drug Product by NOVARTIS or its Affiliates or their representatives, agents or subcontractors under this Agreement, or any actual or alleged violation of law resulting therefrom (with the

exception of Losses based on infringement or misappropriation of intellectual property rights); or

14.2.2 the breach by NOVARTIS of any of its covenants, representations or warranties set forth in this Agreement; and

14.2.3 provided that the foregoing indemnification shall not apply to any Loss to the extent such Loss is caused by the negligent or willful misconduct of VERTEX or its Affiliates.

14.3 Claims Procedures. Each Party entitled to be indemnified by the other Party (an "Indemnified Party") pursuant to Section 14.1 or 14.2 hereof shall give notice to the other Party (an "Indemnifying Party") promptly after such Indemnified Party has actual knowledge of any threatened or asserted claim as to which indemnity may be sought, and shall permit the Indemnifying Party to assume the defense of any such claim or any litigation resulting therefrom; provided: That counsel for the Indemnifying Party, who shall conduct the defense of such claim or any litigation resulting therefrom, shall be approved by the Indemnified Party (whose approval shall not unreasonably be withheld) and the Indemnified Party may participate in such defense at such party's expense (unless (i) the employment of counsel by such Indemnified Party has been authorized by the Indemnifying Party; or (ii) the Indemnified Party shall have reasonably concluded that there may be a conflict of interest between the Indemnifying Party and the Indemnified Party in the defense of such action, in each of which cases the Indemnifying Party shall pay the reasonable fees and expenses of one law firm serving as counsel for the Indemnified Party, which law firm shall be subject to approval, not to be unreasonably withheld, by the Indemnifying Party); and

14.3.1 The failure of any Indemnified Party to give notice as provided herein shall not relieve the Indemnifying Party of its obligations under this Agreement to the extent that the failure to give notice did not result in harm to the Indemnifying Party.

14.3.2 No Indemnifying Party, in the defense of any such claim or litigation, shall, except with the approval of each Indemnified Party which approval

shall not be unreasonably withheld, consent to entry of any judgment or enter into any settlement which (i) would result in injunctive or other relief being imposed against the Indemnified Party; or (ii) does not include as an unconditional term thereof the giving by the claimant or plaintiff to such Indemnified Party of a release from all liability in respect to such claim or litigation.

14.3.3 Each Indemnified Party shall furnish such information regarding itself or the claim in question as an Indemnifying Party may reasonably request in writing and shall be reasonably required in connection with the defense of such claim and litigation resulting therefrom.

14.4 Compliance. The parties shall comply fully with all applicable laws and regulations in connection with their respective activities under this Agreement.

14.5 Insurance. Each party shall use all commercially reasonable efforts to maintain insurance, including product liability insurance, with respect to its activities hereunder.

14.5.1 Such insurance shall be in such amounts and subject to such deductibles as the parties may agree based upon standards prevailing in the industry at the time.

14.5.2 Either party may satisfy its obligations under this Section through self-insurance to the same extent.

14.5.3 At such time as a Drug Product is being manufactured by a party for commercial sale, that party shall name the other party as an additional insured on any such policies.

ARTICLE XV

MISCELLANEOUS PROVISIONS

15.1 Notice of Pharmaceutical Side-Effects. During the term of this Agreement, each of the parties will notify appropriate authorities in accordance with applicable law, and the other

party, promptly after receipt of information with respect to any serious adverse reaction, as defined by the World Health Organization, directly or indirectly attributable to the use or application of a Development Candidate, Bulk Drug Substance, a Drug Product Candidate or a Drug Product.

15.2 Waiver. No provision of the Agreement may be waived except in writing by both parties hereto. No failure or delay by either party hereto in exercising any right or remedy hereunder or under applicable law will operate as a waiver thereof, or a waiver of a particular right or waiver of any right or remedy on any subsequent occasion.

15.3 Force Majeure. Neither party shall be held liable or responsible to the other party nor be deemed to have defaulted under or breached this Agreement for failure or delay in fulfilling or performing any term of this Agreement, other than an obligation to make a payment, when such failure or delay is caused by or results from fire, floods, embargoes, government regulations, prohibitions or interventions, war, acts of war (whether war be declared or not), insurrections, riots, civil commotions, strikes, lockouts, acts of God, or any other cause beyond the reasonable control of the affected party.

15.4 Registration of License. NOVARTIS may, at its expense, register the license granted under this Agreement in any country where the use, sale or manufacture of a Drug Product in such country would be covered by a Valid Patent Claim. Upon request by NOVARTIS, VERTEX agrees promptly to execute any "short form" licenses submitted to it by NOVARTIS in order to effect the foregoing registration in such country, but such licenses shall in no way alter or affect the obligations of the parties hereunder.

15.5 Severability. It is the intention of the parties to comply with all applicable laws domestic or foreign in connection with the performance of its obligations hereunder. In the event that any provision of this Agreement, or any part hereof, is found invalid or unenforceable, the remainder of this Agreement will be binding on the parties hereto, and will be construed as if the invalid or unenforceable provision or part thereof had been deleted, and the Agreement shall be deemed modified to the extent necessary to render the surviving provisions enforceable to the fullest extent permitted by law.

15.6 Government Acts. In the event that any act, regulation, directive, or law of a government, including its departments, agencies or courts, should make impossible or prohibit, restrain, modify or limit any material act or obligation of NOVARTIS or VERTEX under this Agreement, the party, if any, not so affected shall have the right, at its option, to suspend or terminate this Agreement as to such country, if good faith negotiations between the parties to make such modifications to this Agreement as may be necessary to fairly address the impact thereof, are not successful after a reasonable period of time in producing mutually acceptable modifications to this Agreement.

15.7 Government Approvals. NOVARTIS will use reasonable efforts to obtain any government approval required to enable this Agreement to become effective, or to enable any payment hereunder to be made, or any other obligation hereunder to be observed or performed. Each party will keep the other informed of progress in obtaining any such approvals.

15.8 Assignment. This Agreement may not be assigned or otherwise transferred by either party without the prior written consent of the other party; provided, however, that either party may assign this Agreement, without the consent of the other party, (i) to any of its Affiliates, if the assigning party guarantees the full performance of its Affiliates' obligations hereunder, or (ii) in connection with the transfer or sale of all or substantially all of its assets or business or in the event of its merger or consolidation with another company. Any purported assignment in contravention of this Section 15.8 shall, at the option of the nonassigning party, be null and void and of no effect. No assignment shall release either party from responsibility for the performance of any accrued obligation of such party hereunder. This Agreement shall be binding upon and enforceable against the successor to or any permitted assignee from either of the parties hereto.

15.9 Affiliates. Each party may perform its obligations hereunder personally or through one or more Affiliates, although each party shall nonetheless be solely responsible for the performance of its Affiliates. Neither party shall permit any of its Affiliates to commit any act (including any act of omission) which such party is prohibited hereunder from committing

directly. The use of subcontractors by either party shall not increase the financial obligations of the other party hereunder in any respect.

15.10 Counterparts. This Agreement may be executed in duplicate both of which shall be deemed to be originals, and both of which shall constitute one and the same Agreement.

15.11 No Agency. Nothing herein contained shall be deemed to create an agency, joint venture, amalgamation, partnership or similar relationship between NOVARTIS and VERTEX. Notwithstanding any of the provisions of this Agreement, neither party shall at any time enter into, incur, or hold itself out to third parties as having authority to enter into or incur, on behalf of the other party, any commitment, expense, or liability whatsoever, and all contracts, expenses and liabilities undertaken or incurred by one party in connection with or relating to the development, manufacture or sale of Bulk Drug Substance, Drug Product Candidates or Drug Products shall be undertaken, incurred or paid exclusively by that party, and not as an agent or representative of the other party.

15.12 Notice. All communications between the parties with respect to any of the provisions of this Agreement will be sent to the addresses set out below, or to other addresses as designated by one party to the other by notice pursuant hereto, by prepaid certified, air mail (which shall be deemed received by the other party on the seventh business day following deposit in the mails), or by cable, telex, facsimile transmission, or other electronic means of communication (which shall be deemed received when transmitted), with confirmation by letter given by the close of business on or before the next following business day:

If to NOVARTIS, at:

NOVARTIS PHARMA AG
Business Development and Licensing
P.O. Box _____
CH-4002
Basel, Switzerland

Attention: Victor A. Hartmann, Vice President

with a copy to: Legal Services, at the address referenced above

and

if to VERTEX, at:

Vertex Pharmaceutical Incorporated
130 Waverly Street
Cambridge, MA U.S.A. 02139-4211

Attention: Richard H. Aldrich
Senior Vice President and Chief Business Officer

with a copy to:

Kirkpatrick & Lockhart LLP
75 State Street
Boston, MA U.S.A. 02109
Attention: Kenneth S. Boger, Esq.
Fax: (617) 951-9151

15.13 Headings. The paragraph headings are for convenience only and will not be deemed to affect in any way the language of the provisions to which they refer.

15.14 Authority. The undersigned represent that they are authorized to sign this Agreement on behalf of the parties hereto. The parties each represent that no provision of this Agreement will violate any other agreement that such party may have with any other person or company. Each party has relied on that representation in entering into this Agreement.

15.15 Entire Agreement. This Agreement, including the Schedules appended hereto, contains the entire understanding of the parties relating to the matters referred to herein, except

as matters referenced herein are also addressed in the Research Agreement, and may only be amended by a written document, duly executed on behalf of the respective parties.

15.16 Inflation Adjustment. All payments required to be made to VERTEX hereunder (except any royalty payments required to be made under the provisions of Sections 6.3 and 7.4.3 hereof, and any product supply payments required to be made under Section 7.4.1 hereof) shall be adjusted at the beginning of each calendar year to reflect the impact of inflation since the Effective Date of the Research Agreement, as measured by the biotech worker inflation rate defined and reported in the Radford Survey (Radford/AON Consulting Inc., San Francisco, CA), or other mutually acceptable index. Notwithstanding the foregoing, no adjustment shall be required in any calendar year in which the appropriate inflation adjustment, if applied, would result in a change of less than [**********].

15.17 Invoice Requirement. Any amounts payable to VERTEX hereunder (except any royalty payments required to be made under the provisions of Sections 6.3 and 7.4.1 hereof) shall be made within thirty days after receipt by NOVARTIS, or its nominee designated for that purpose in advance by NOVARTIS in writing to VERTEX, of an invoice covering such payment, which invoice shall conform to the extent reasonably practicable to the form of invoice contained in Exhibit B to the Research Agreement.

15.18 Hardship. If as a result of unforeseen events or developments relating to the subject matter of this Agreement, the performance of this Agreement shall cause inequitable economic hardship for one party which runs counter to the objectives of this Agreement and which the other party cannot reasonably and in good faith expect the first party to bear unrelieved, the parties will meet and seek in good faith to find equitable means of amending this Agreement to reestablish a fair and reasonable economic balance under this Agreement between the parties hereto.

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be executed by their duly authorized representatives as of the day and year first above written.

VERTEX PHARMACEUTICALS INCORPORATED

By: _____
Joshua S. Boger

Title: Chairman, President and Chief Executive Officer

NOVARTIS PHARMA AG

By: _____

Title: _____

By: _____

Title: _____

Schedule 1.12

List of Drug Product Candidates

- ---

To be supplied

Schedule 1.25

List of Major Markets

- ----------

[**********
****
****
****
****
**********]

Schedule 1.29

NOVARTIS Patents

- ---

Schedule 1.44

VERTEX Patents

- ---

Schedule 4.6

Terms of Supply

- ---

To be agreed

5511253-49/364798v8

EXHIBIT B

Form of Invoice

- ---

[COMPANY Letterhead]

[Date]

Novartis Pharma AG
Zentraler Faktureneingang
Attn: Ms. M. Gnehm
Lichtstrasse 35
CH - 4002 Basel
Switzerland

Dear Ms. Gnehm,

Re: [COMPANY] License Agreement for [PRODUCT]

This is an invoice requesting payment in connection the above-captioned Agreement between [COMPANY] and Novartis Pharma AG.

Novartis Contract Code No:	[will be assigned within Novartis following execution]
Novartis Cost Centre:	630926 / 393120
SPECIFICATION:	[PLEASE SPECIFY THE EVENT FOR WHICH THE INVOICE IS DUE, AND ADD ANY COPIES OF INVOICES FROM THIRD PARTIES IN CASE REIMBURSEMENT FOR THIRD PARTY WORK IS AGREED TO]
Amount and Currency:	[self-explanatory]
Bank address and Account No:	[insert the name and address of the bank to which the payment should be sent and the account number to which it should be credited]

Sincerely yours,

[COMPANY]

5

THIS SCHEDULE CONTAINS SUMMARY FINANCIAL INFORMATION EXTRACTED FROM THE
COMPANY'S QUARTERLY REPORT ON FORM 10Q FOR THE THREE-MONTHS ENDED MARCH 31, 2000
AND IS QUALIFIED IN ITS ENTIRETY BY REFERENCE TO SUCH FINANCIAL STATEMENTS.

1,000

3-MOS
DEC-31-2000
JAN-01-2000
MAR-31-2000
191,750
155,498
4,506
0
0
353,751
61,405
36,195
396,931
16,039
179,155
0
0
262
201,475
396,931
2,619
7,523
0
26,084
(19)
0
860
(16,159)
0
0
0
0
0
(16,159)
(0.62)
0

Exhibit 99

May 15, 2000
Securities and Exchange Commission
450 Fifth Street, N.W.
Washington, D.C. 20549

Commissioners:

We are aware that our report dated April 28, 2000 on our review of interim financial information of Vertex Pharmaceuticals Incorporated (the "Company") for the period ended March 31, 2000 and included in the Company's quarterly report on Form 10-Q for the quarter then ended is incorporated by reference in its registration statements on Form S-8 (File Nos. 33-48030, 33-48348, 33-65742, 33-93224, 33-12325, 333-27011, 333-56179 and 333-79549). Pursuant to Rule 436(c) under the Securities Act of 1933, this report should not be considered a part of the registration statement prepared or certified by us within the meaning of Sections 7 and 11 of that Act.

Yours very truly,

PricewaterhouseCoopers LLP

Boston, MA