

**BUY : VRTX**

**Price : \$232**

**PT : \$300**

**Upside : 28.8%**

# Vertex Pharmaceuticals [NASDAQ: VRTX]



**Binghamton Investment Fund | Healthcare Sector**

Sector Head: Hannah Kozlenko

Junior Analysts: Elisheva Ezor, Ethan Gee, Ryan Levine, Aidan Milroy, Karan Tulsiani

# Agenda

---

**Executive Summary**

**Company & Industry Overview**

**Investment Thesis & Catalysts**

**Valuation Range**

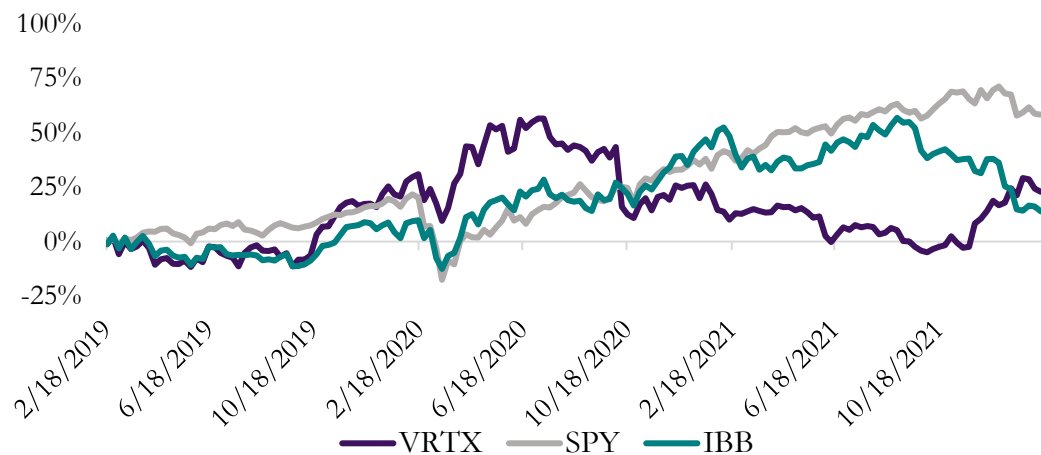
**Risks & Mitigations**

# Executive Summary

## Overview

- Vertex Pharmaceuticals' Trikafta is the **leading treatment globally** for patients with cystic fibrosis
- Approval of CTX001, a sickle cell disease treatment, will provide Vertex with a first mover advantage in hospitals and create a **medical advancement in specialty rare disease treatments**
- **A robust pipeline** to enter other specialties rather than just cystic fibrosis and will allow the company to acquire more market share

## Historical Stock Chart



## Catalysts

Cystic Fibrosis

Partnership with Crispr

Market Opportunities

**BUY:  
VRTX**

**Target:  
\$300**

**Change:  
28.8%**

# Company Overview

Vertex Pharmaceuticals is a **global biotechnology** company that invests in scientific innovation to create transformative medicines for people with **serious diseases** with a focus on **specialty markets**

## Key Statistics

Share Price	\$232.77
52 Week Range	\$176.36 - \$254.93
Market Cap.	\$59.4B
Enterprise Value	\$52.3B
Beta	0.66
P/E Ratio	25.91
IPO	1991

## Management



**Reshma Kewalramani**  
President & Chief Executive Officer



**David Altshuler**  
Executive Vice President & Chief Scientific Officer

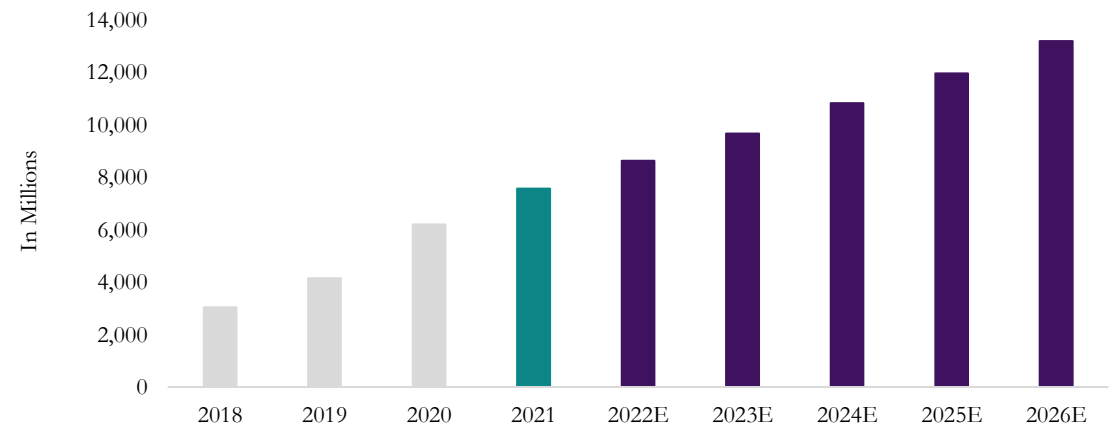


**Stuart Arbuckle**  
Executive Vice President & Chief Operating Officer

## Key Products

Products	% of Revenue	Patent Exp.
	75.2%	2037
	5.6%	2028
	10.2%	2026
	9.0%	2025

## VRTX Projected Revenue



# Industry Overview

## Key Trends



More companies are investing in **gene therapies** to treat and cure specialty diseases

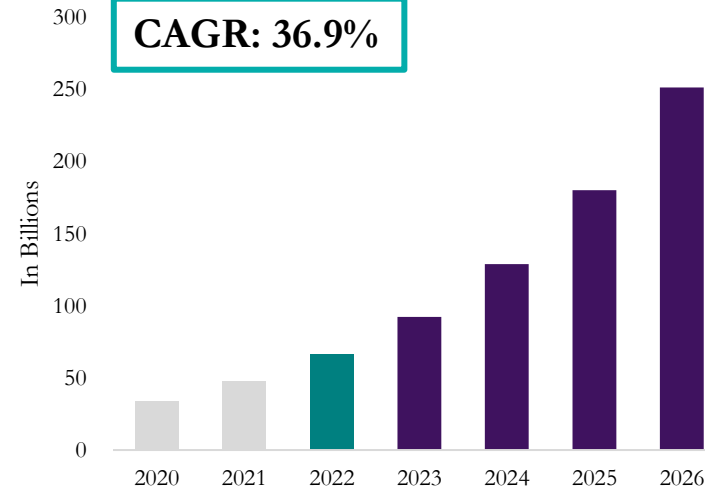


Companies are looking towards **high-tech solutions** to boost **R&D efficiency**



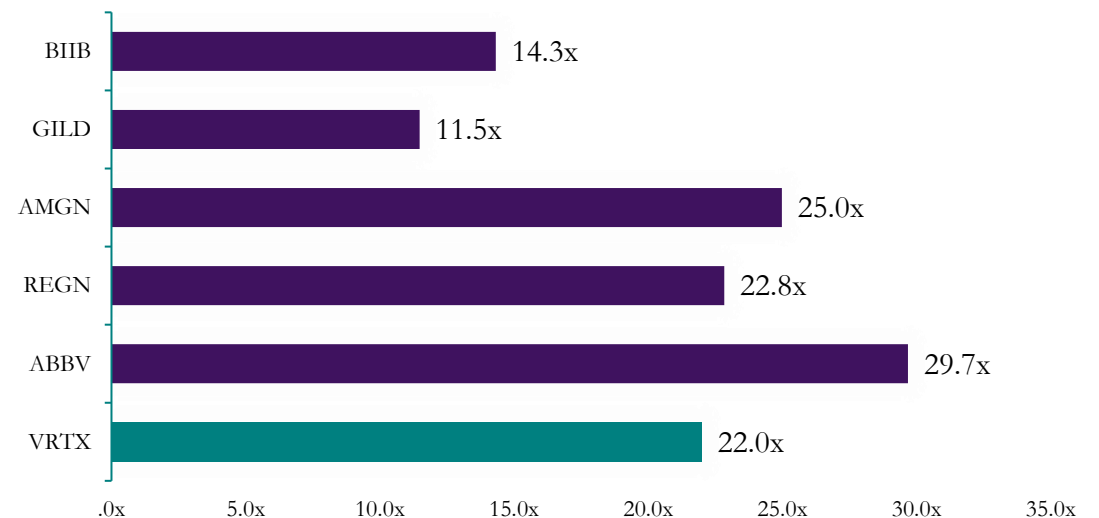
Industry leaders are looking at **mRNA treatments** to help patients

## Specialty Pharmaceuticals Market



**40 million people globally each year require specialty care, and only 14.0% receive it**

## EV/R&D Vs. Peers

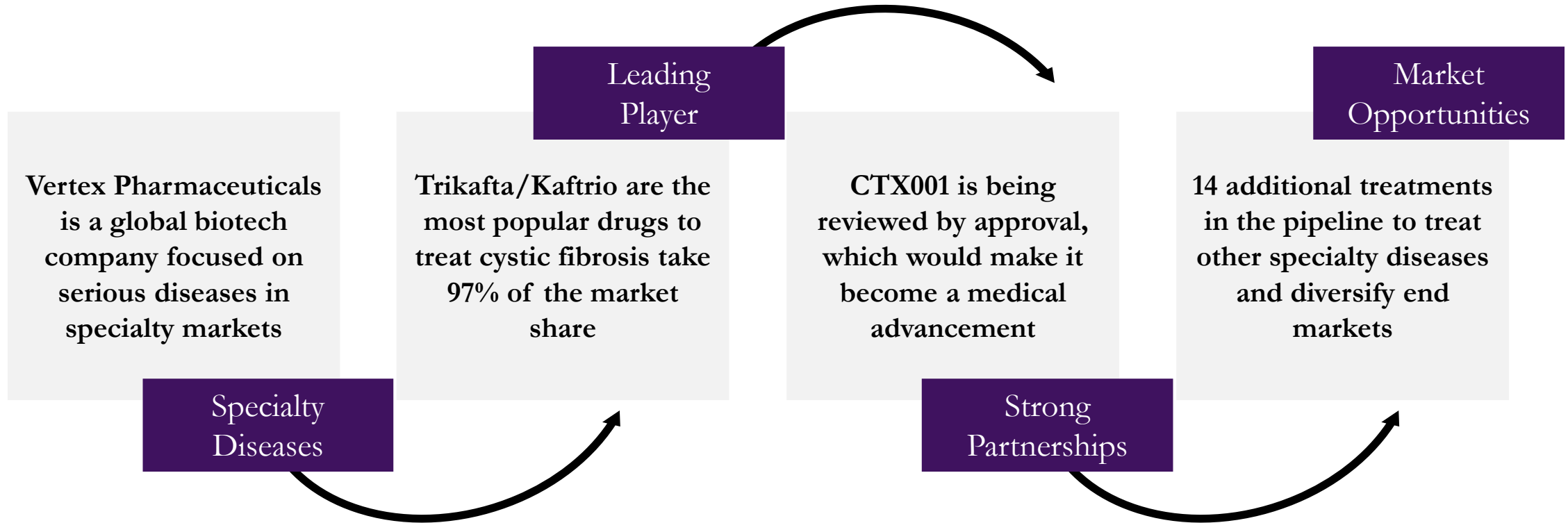


## Competitors

AbbVie has plans to develop a triple combination CFTR modular therapy used to treat CF that would **compete with Vertex's Trikafta**

Arcturus Therapeutics is currently developing nucleic acid therapies which would **compete with Vertex's company - Exonic**

# Investment Thesis



# Trikafta & Cystic Fibrosis

## What is Trikafta

Trikafta is a **breakthrough treatment** for people with Cystic Fibrosis aged 6 years and older who have a defective protein that causes thick, sticky, mucus to build up in important organs like the lungs

Trikafta is a form of triple therapy where a CFTR modulator is introduced that helps the defective CFTR proteins from **Cystic Fibrosis work more efficiently**

## Crown Jewel of CF Treatment

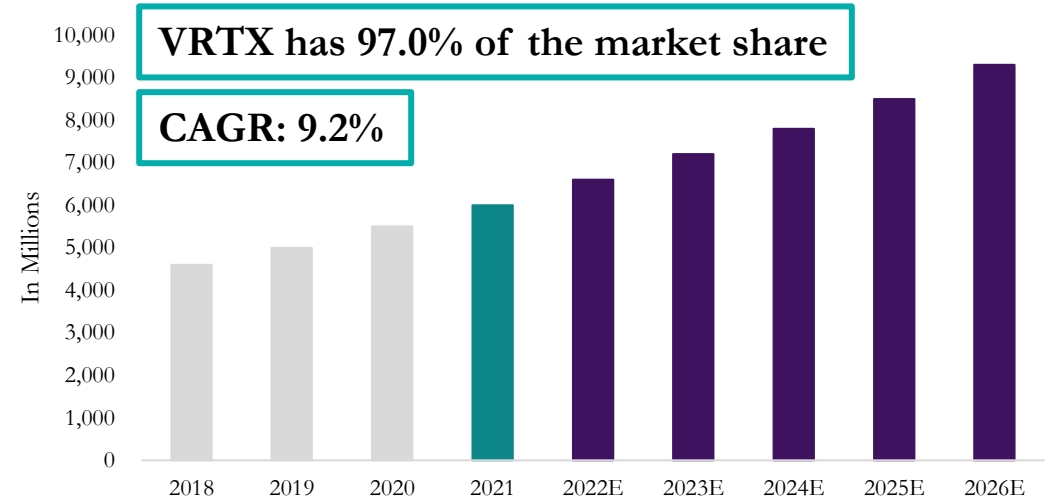
**Reduction in Risk of Lung Transplant**  
**87.0%**

**Reduction in Risk of Death**  
**74.0%**

**Lung Function Increase vs Symdeko**  
**10.0%**

**Increase with Placebo**  
**14.3%**

## Cystic Fibrosis Market Size



## Successful Launch in the US for Children Ages 6-11



**Only CFTR modulator for children**



**Expands customer base by 2,000 patients**



**Early start prevents irreversible lung damage**



**Can now treat 90.0% of CF patients**

# Partnership With Crispr

## Crispr



Crispr is a leading gene editing company that aims to target serious diseases using the CRISPR/Cas9 gene



Disrupt



Delete

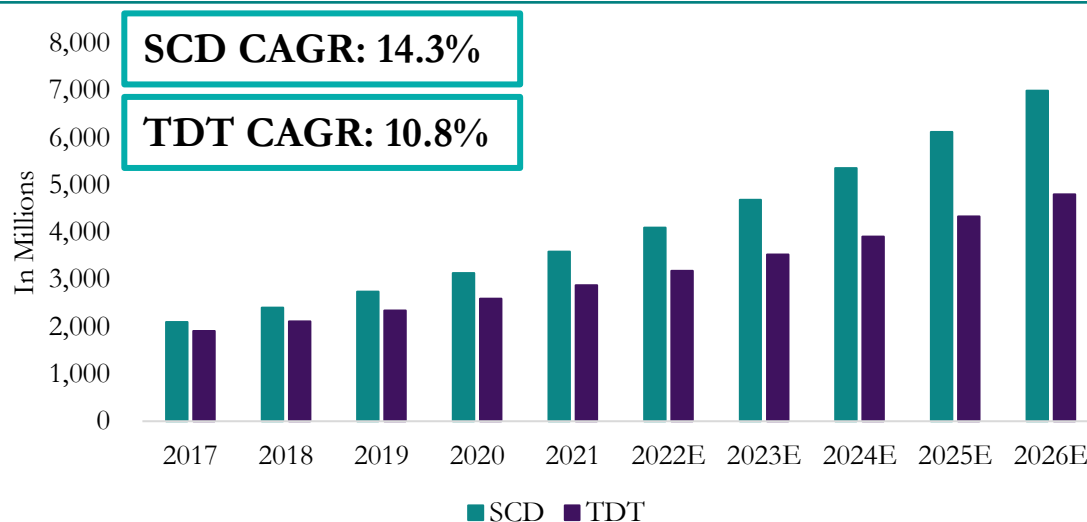


Correct

## Partnership Details

- Vertex and Crispr have a strategic partnership to produce and market CTX001, a potential cure for sickle cell disease (SCD) and  $\beta$ -thalassemia (TDT)
- **Profits are split 60/40** between Vertex and Crispr, with an initial multi-billion dollar opportunity of around 32,000 patients with severe disease
- Both companies together **lead the competition with 11 programs for TDT and 16 programs for SCD** in various stages of clinical development – potential launch in 2H 2022

## Entrance of New Markets Potential & Benefits



Phase 3 enrollment complete, over 70 patients dosed to date

First-mover advantage to become entrenched in medical facilities

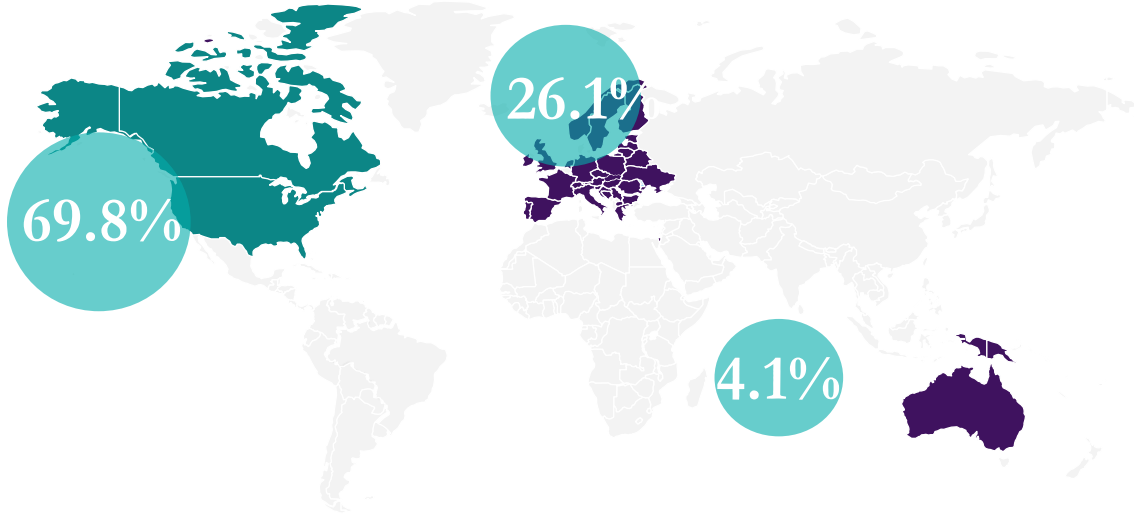
Half of patients treated with gene-therapy 5-years after launch

Significant decrease in transfusions compared to competitors



# Market Opportunities & Diversification

## Geographic Growth



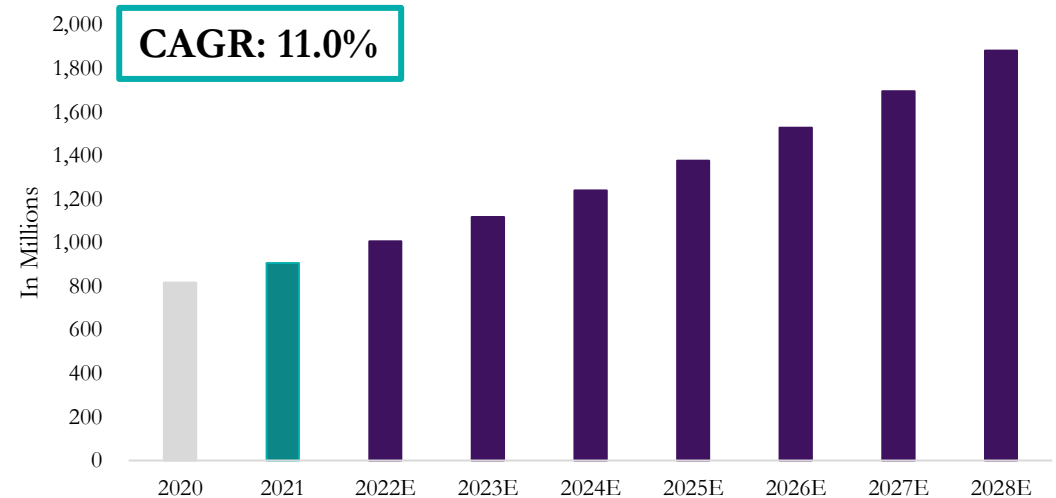
## Duchenne muscular dystrophy (DMD & DM1)

- DMD is a **genetic disorder** that leads to muscle degeneration and weakness by alteration in dystrophin
- Vertex's involvement within the DMD market first began with its **acquisition of Exonics Therapeutics** and then its **partnership with Affinia Therapeutics**
- The industry is split into three main segments: corticosteroids, pain management drugs, and physical therapy which Vertex intends to enter through their Adeno-associated virus (**AAV**) **technology**

## Acquisitions and partnerships

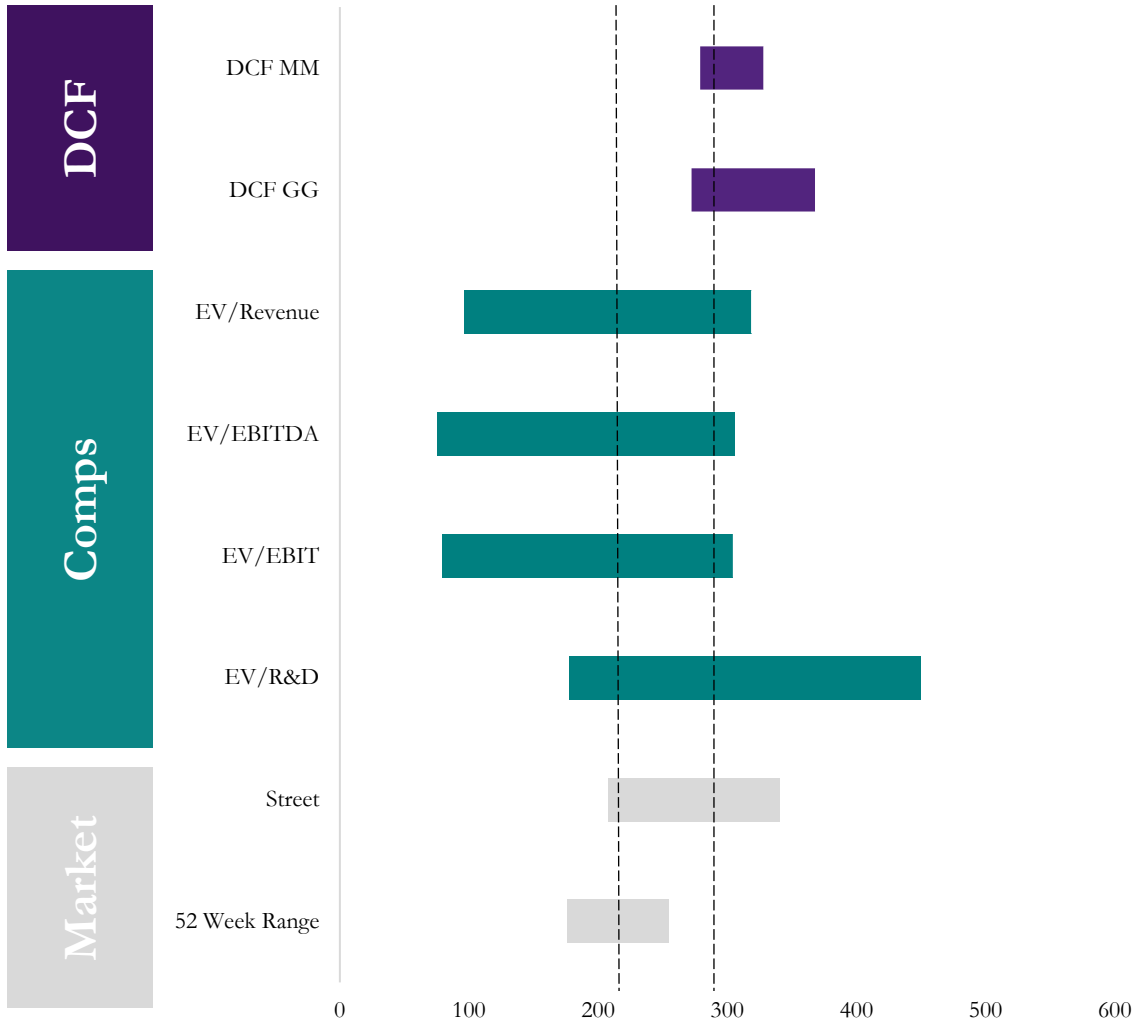


Vertex has partnerships with all of these companies in relation to creating therapies using **gene-editing in order to combat other serious diseases**, such as T1 Diabetes

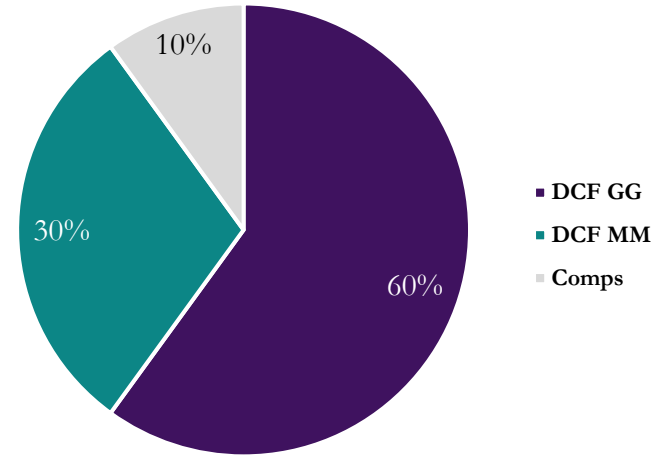


# Valuation

**Current Price: \$232**      **Price Target: \$300**



## Valuation Weighting



**DCF GG: \$313**

**DCF MM: \$303**

**Comps: \$211**

## Analyst Ratings

Cowen	BUY	\$300 PT
Barclays	BUY	\$285 PT
Goldman Sachs	BUY	\$326 PT
JP Morgan	BUY	\$288 PT
Oppenheimer	BUY	\$305 PT

# Risks & Mitigations

AbbVie's pipeline drug CF Combo is in line for approval and challenges Vertex's market share

Vertex's cystic fibrosis medicine already covers 97% of global sales and has strong partnerships with medical facilities worldwide

Vertex and Crispr's pipeline may never reach market due to unforeseen obstacles from FDA approval

Crispr and Vertex's collaborated drug has already been granted Priority Medicine as patients have shown consistent success from treatments

Vertex's new market opportunities do not gain market share due to competition superseding their products

Vertex's pipeline drugs introduce powerful gene-therapy medication which give it a competitive edge over competing products

# Conclusion

## *Action*

BUY : VRTX

Price : \$232

PT : \$300

Upside : 28.8%

## *Investment Thesis*

- Trikafta is the **leading therapy globally** to treat patients with cystic fibrosis, which is one of the most serious diseases with a significant increase in people diagnosed with it per year (~1,000 new cases)
- CTX001, the partnership with Crispr, will allow Vertex to **enter the SCD & TDT markets**, as well as diversify their products generating revenue in the serious diseases market
- Geographic growth into Europe, as well as a **robust pipeline that will increase the amount of products Vertex has**

## *Valuation Rationale*

- Weighed the intrinsic valuation higher than the relative valuation due to no pure-play peers and lack of strong competitors
- Have a bullish point of view on Vertex's future due to catalysts and recent success in phase trials for upcoming drugs
- **Vertex is undervalued due to the street not taking into account the company's pipeline, approval of CTX001, and international growth**

# Appendix

---

Appendix A: Income Statement

Appendix B: Balance Sheet

Appendix C: Cash Flow Statement

Appendix D: Revenue Build

Appendix E: NWC and D&A Projections

Appendix F: WACC

Appendix G: Comparable Companies Analysis

Appendix H: Discounted Cash Flow Analysis

Appendix I: VRTX Financial Analysis

Appendix J: Pipeline & Phases

Appendix K: Partnership Details

# Appendix A: Income Statement



Vertex Pharmaceuticals, Inc. (NASDAQ: VRTX)									
<i>Income Statement (in millions of USD)</i>	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022E	FY 2023E	FY 2024E	FY 2025E	FY 2026E
<b>Revenues</b>	<b>3,047.6</b>	<b>4,162.8</b>	<b>6,205.7</b>	<b>7,574.4</b>	<b>8,672.8</b>	<b>9,667.2</b>	<b>10,770.0</b>	<b>11,862.4</b>	<b>13,064.0</b>
<b>Costs and expenses:</b>									
Cost of sales	409.5	547.8	736.3	904.2	954.0	1,015.1	1,109.3	1,186.2	1,241.1
Gross Profit	2,638.1	3,615.1	5,469.4	6,670.2	7,718.8	8,652.1	9,660.7	10,676.2	11,822.9
<i>Gross Margin</i>	86.6%	86.8%	88.1%	88.1%	89.0%	89.5%	89.7%	90.0%	90.5%
Research and development expenses	1,416.5	1,754.5	1,829.6	3,051.1	3,642.6	4,156.9	4,577.3	4,982.2	5,356.2
Sales, general and administrative expenses	557.6	658.5	770.4	840.1	1,040.7	1,111.7	1,211.6	1,304.9	1,404.4
Change in fair value of contingent consideration	0.0	4.5	13.1	(3.1)	2.2	4.8	4.8	4.8	4.8
Restructuring income	(0.2)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other operating expense	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Intangible asset impairment charge	29.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total costs and expenses	2,412.4	2,965.3	3,349.4	4,792.4	5,639.5	6,288.5	6,903.0	7,478.1	8,006.5
<b>EBIT</b>	<b>635.2</b>	<b>1,197.6</b>	<b>2,856.3</b>	<b>2,782.1</b>	<b>3,033.2</b>	<b>3,378.7</b>	<b>3,867.0</b>	<b>4,384.3</b>	<b>5,057.5</b>
<i>EBIT Margin</i>	20.8%	28.8%	46.0%	36.7%	35.0%	35.0%	35.9%	37.0%	38.7%
Interest income	38.4	63.7	22.2	4.9	20.9	41.4	41.4	41.4	41.4
Interest expense	(72.5)	(58.5)	(58.2)	(61.5)	(62.7)	(62.7)	(62.7)	(62.7)	(62.7)
Other income (expense), net	(0.8)	192.2	296.4	4.9	66.2	66.2	66.2	66.2	66.2
<b>Income before provision for (benefit from) income taxes</b>	<b>600.2</b>	<b>1,394.9</b>	<b>3,116.8</b>	<b>2,730.3</b>	<b>3,057.7</b>	<b>3,423.6</b>	<b>3,911.9</b>	<b>4,429.2</b>	<b>5,102.4</b>
Provision for (benefit from) income taxes	(1,486.9)	218.1	405.1	388.3	657.4	838.8	958.4	1,085.2	1,250.1
<i>Tax Rate</i>	-247.7%	15.6%	13.0%	14.2%	21.5%	24.5%	24.5%	24.5%	24.5%
<b>Net income</b>	<b>2,087.1</b>	<b>1,176.8</b>	<b>2,711.7</b>	<b>2,342.1</b>	<b>2,400.3</b>	<b>2,584.8</b>	<b>2,953.5</b>	<b>3,344.0</b>	<b>3,852.3</b>

# Appendix B: Balance Sheet

Vertex Pharmaceuticals, Inc. (NASDAQ: VRTX)									
<b>Balance Sheet (in millions of USD)</b>	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022E	FY 2023E	FY 2024E	FY 2025E	FY 2026E
<b>Current assets:</b>									
Cash and cash equivalents	2,650.1	3,109.3	5,988.2	6,795.0					
Marketable securities	518.1	699.0	670.7	729.9					
Accounts receivable, net	409.7	633.5	885.4	1,136.8	1,256.2	1,400.2	1,559.9	1,718.2	1,892.2
Inventories	124.4	167.5	280.8	353.1	329.4	351.9	385.2	412.7	432.7
Prepaid expenses and other current assets	140.8	213.5	308.4	545.8	475.4	529.9	590.3	650.2	716.1
<b>Total current assets</b>	<b>3,843.1</b>	<b>4,822.8</b>	<b>8,133.4</b>	<b>9,560.6</b>					
Property and equipment, net	812.0	745.1	958.5	1,094.1					
Goodwill	50.4	1,002.2	1,002.2	1,002.2					
Intangible assets	0.0	400.0	400.0	400.0					
Deferred tax assets	1,499.7	1,190.8	882.8	934.5					
Operating lease assets	0.0	88.2	325.6	330.3					
Other assets	40.7	69.4	49.4	110.8					
<b>Total non-current assets</b>	<b>2,402.8</b>	<b>3,495.6</b>	<b>3,618.4</b>	<b>3,871.9</b>					
<b>Total assets</b>	<b>6,245.9</b>	<b>8,318.5</b>	<b>11,751.8</b>	<b>13,432.5</b>					
<b>Current liabilities:</b>									
Accounts payable	111.0	87.6	155.1	195.0	204.5	217.6	237.8	254.2	266.0
Accrued expenses	958.9	1,116.9	1,405.0	1,678.6	1,942.6	2,066.9	2,258.8	2,415.5	2,527.2
Other current liabilities	50.4	130.3	317.4	268.4	259.7	276.3	302.0	322.9	337.9
<b>Total current liabilities</b>	<b>1,120.3</b>	<b>1,334.8</b>	<b>1,877.5</b>	<b>2,142.0</b>					
Long-term finance lease liabilities	581.6	538.6	539.0	509.8					
Long-term operating lease liabilities	0.0	84.3	350.5	377.4					
Long-term contingent consideration	0.0	176.5	189.6	186.5					
Other long-term liabilities	108.9	99.0	108.4	116.8					
<b>Total non-current liabilities</b>	<b>690.4</b>	<b>898.4</b>	<b>1,187.5</b>	<b>1,190.5</b>					
<b>Total liabilities</b>	<b>1,810.7</b>	<b>2,233.2</b>	<b>3,065.0</b>	<b>3,332.5</b>					
Commitments and contingencies	0.0	0.0	0.0	0.0					
<b>Shareholders' equity:</b>									
Common stock, \$0.01 par value; 500,000 shares authorized	2.5	2.6	2.6	2.5					
Additional paid-in capital	7,421.5	7,937.6	7,894.0	6,880.8					
Accumulated other comprehensive loss	0.7	(2.0)	(68.5)	15.9					
Retained earnings (accumulated deficit)	(2,989.5)	(1,853.0)	858.7	3,200.8					
<b>Total shareholders' equity</b>	<b>4,435.2</b>	<b>6,085.2</b>	<b>8,686.8</b>	<b>10,100.0</b>					
<b>Total liabilities and shareholders' equity</b>	<b>6,245.9</b>	<b>8,318.5</b>	<b>11,751.8</b>	<b>13,432.5</b>					

# Appendix C: Cash Flow Statement

Vertex Pharmaceuticals, Inc. (NASDAQ: VRTX)									
Statement of Cash Flows (in millions of USD)									
	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022E	FY 2023E	FY 2024E	FY 2025E	FY 2026E
<b>Cash flows from operating activities:</b>									
Net income	2,087.1	1,176.8	2,711.7	2,342.1					
<b>Adjustments to reconcile net income:</b>									
Stock-based compensation expense	325.0	360.5	429.5	441.4					
Depreciation expense	72.4	106.9	109.5	125.6	159.1	207.0	263.5	326.5	391.6
Deferred income taxes (including benefit from valuation adjustments)	(1,512.3)	167.4	277.3	(154.6)					
Gains on equity securities	(2.6)	(197.6)	(311.9)	(17.1)					
Increase in fair value of contingent consideration	0.0	4.5	13.1	(3.1)					
Intangible asset impairment charge	29.0	0.0	0.0	0.0					
Other non-cash items, net	33.6	16.9	78.8	14.4					
<b>Changes in operating assets and liabilities:</b>									
Accounts receivable, net	(108.2)	(225.6)	(223.4)	(274.7)					
Inventories	(32.0)	(64.0)	(132.0)	(92.8)					
Prepaid expenses and other assets	16.7	35.4	(297.6)	(91.8)					
Accounts payable	36.6	(22.8)	51.3	31.9					
Accrued expenses	302.8	172.9	122.2	305.4					
Other liabilities	22.1	38.0	425.1	16.8					
<b>Net cash provided by operating activities</b>	<b>1,270.3</b>	<b>1,569.3</b>	<b>3,253.5</b>	<b>2,643.5</b>					
<b>Cash flows from investing activities:</b>									
Payments to acquire businesses, net of cash acquired	0.0	(1,154.2)	0.0	0.0					
Purchases of available-for-sale debt securities	(431.9)	(537.2)	(431.4)	(528.2)					
Maturities of available-for-sale debt securities	431.6	475.9	372.3	499.3					
Sale of equity securities	0.0	94.9	437.6	0.0					
Purchases of property and equipment	(95.4)	(75.5)	(259.8)	(235.0)	265.2	295.7	329.4	362.8	399.5
Investment in equity securities	(83.5)	(39.3)	(19.3)	(77.0)					
Investment in note receivable	(15.0)	0.0	0.0	0.0					
Decrease in restricted cash due to deconsolidation of	(7.9)	0.0	0.0	0.0					
<b>Net cash provided by (used in) investing activities</b>	<b>(202.2)</b>	<b>(1,235.3)</b>	<b>99.4</b>	<b>(340.9)</b>					
<b>Cash flows from financing activities:</b>									
Issuances of common stock under benefit plans	289.3	343.2	264.9	102.0					
Repurchases of common stock	(350.0)	(186.0)	(539.1)	(1,425.4)					
Payments in connection with common stock withheld	0.0	(6.0)	(200.3)	(135.9)					
Payments on finance leases	(33.4)	(39.2)	(42.3)	(47.0)					
Proceeds from finance leases	20.8	10.0	13.3	22.6					
Other financing activities	2.1	4.7	(1.8)	5.7					
<b>Net cash (used in) provided by financing activities</b>	<b>(71.2)</b>	<b>126.8</b>	<b>(505.3)</b>	<b>(1,478.0)</b>					
Effect of changes in exchange rates on cash	(6.2)	1.6	20.6	(13.4)					
<b>Net increase in cash, cash equivalents and restricted cash</b>	<b>990.7</b>	<b>462.4</b>	<b>2,868.4</b>	<b>811.2</b>					
Cash, cash equivalents and restricted cash—beginning	1,667.5	2,658.3	3,120.7	5,989.1					
Cash, cash equivalents and restricted cash—end of period	2,658.3	3,120.7	5,989.1	6,800.3					
<b>Supplemental disclosure of cash flow information:</b>									
Cash paid for interest	66.5	55.6	54.5	56.3					
Cash paid for income taxes	12.4	24.7	191.8	476.3					
Capitalization of costs related to construction financing	3.4	0.0	0.0	0.0					
Issuances of common stock from employee benefit plans	0.1	2.8	0.6	0.0					



# Appendix D: Revenue Build

Vertex Pharmaceuticals, Inc. (NASDAQ: VRTX)									
Revenue Build (in millions of USD)	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022E	FY 2023E	FY 2024E	FY 2025E	FY 2026E
<b>Total Revenue</b>	<b>3,047.6</b>	<b>4,162.8</b>	<b>6,205.7</b>	<b>7,574.4</b>	<b>8,672.8</b>	<b>9,667.2</b>	<b>10,770.0</b>	<b>11,862.4</b>	<b>13,064.0</b>
<i>% Growth</i>		36.6%	49.1%	22.1%	14.5%	11.5%	11.4%	10.1%	10.1%
<b>Revenue by Product</b>									
Trikafta/Kaftrio	0.0	420.1	3,863.8	5,697.0	7,198.4	8,313.8	9,477.6	10,676.2	12,018.9
<i>% Growth</i>			819.7%	47.4%	26.4%	15.5%	14.0%	12.6%	12.6%
<i>% of Total Revenue</i>	0.0%	10.1%	62.3%	75.2%	83.0%	86.0%	88.0%	90.0%	92.0%
<i>% Market Share</i>	0.0%	5.4%	45.5%	61.5%	71.4%	75.7%	79.2%	81.9%	84.6%
Orkambi	1,262.2	1,331.9	907.5	772.0	607.1	580.0	538.5	474.5	391.9
<i>% Growth</i>		5.5%	-31.9%	-14.9%	-21.4%	-4.5%	-7.2%	-11.9%	-17.4%
<i>% of Total Revenue</i>	41.4%	32.0%	14.6%	10.2%	7.0%	6.0%	5.0%	4.0%	3.0%
<i>% Market Share</i>	17.6%	17.1%	10.7%	8.3%	6.0%	5.3%	4.5%	3.6%	2.8%
Kalydeco	1,007.5	991.1	802.9	684.0	520.4	483.4	484.7	415.2	261.3
<i>% Growth</i>		-1.6%	-19.0%	-14.8%	-23.9%	-7.1%	0.3%	-14.3%	-37.1%
<i>% of Total Revenue</i>	33.1%	23.8%	12.9%	9.0%	6.0%	5.0%	4.5%	3.5%	2.0%
<i>% Market Share</i>	14.1%	12.7%	9.4%	7.4%	5.2%	4.4%	4.1%	3.2%	1.8%
Symdeko/Symkevi	768.7	1,417.7	628.6	420.0	338.2	280.3	258.5	284.7	378.9
<i>% Growth</i>		84.4%	-55.7%	-33.2%	-19.5%	-17.1%	-7.8%	10.1%	33.1%
<i>% of Total Revenue</i>	25.2%	34.1%	10.1%	5.5%	3.9%	2.9%	2.4%	2.4%	2.9%
<i>% Market Share</i>	10.7%	18.2%	7.4%	4.5%	3.4%	2.6%	2.2%	2.2%	2.7%
Collaborative and royalty revenue	9.3	2.1	2.9	1.0	9.0	10.0	13.5	16.0	19.6
<i>% of Total Revenue</i>	0.30%	0.05%	0.05%	0.01%	0.10%	0.10%	0.13%	0.14%	0.15%
<b>Global CFTR Modulator Market Size</b>	<b>7,161.9</b>	<b>7,801.7</b>	<b>8,498.5</b>	<b>9,257.7</b>	<b>10,084.6</b>	<b>10,985.4</b>	<b>11,966.7</b>	<b>13,035.6</b>	<b>14,200.0</b>
<i>Vertex Market Share</i>	42.6%	53.4%	73.0%	81.8%	86.0%	88.0%	90.0%	91.0%	92.0%

# Appendix E: NWC and D&A Projections

Vertex Pharmaceuticals, Inc. (NASDAQ: VRTX)									
<i>Net Working Capital (in millions of USD)</i>	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022E	FY 2023E	FY 2024E	FY 2025E	FY 2026E
Accounts Receivable	409.7	633.5	885.4	1,136.8	1,256.2	1,400.2	1,559.9	1,718.2	1,892.2
Revenue	3,047.6	4,162.8	6,205.7	7,574.4	8,672.8	9,667.2	10,770.0	11,862.4	13,064.0
<i>Days Sales Outstanding</i>	48.4	54.8	51.4	54.0	52.1	52.1	52.1	52.1	52.1
Inventory	124.4	167.5	280.8	353.1	329.4	351.9	385.2	412.7	432.7
COGS	409.5	547.8	736.3	904.2	954.0	1,015.1	1,109.3	1,186.2	1,241.1
<i>Days Sales in Inventory</i>	109.3	110.1	137.3	140.6	124.3	124.8	125.0	125.3	125.5
Other Current Assets	140.8	213.5	308.4	545.8	475.4	529.9	590.3	650.2	716.1
Revenue	3,047.6	4,162.8	6,205.7	7,574.4	8,672.8	9,667.2	10,770.0	11,862.4	13,064.0
<i>As a % of Revenue</i>	4.6%	5.1%	5.0%	7.2%	5.5%	5.5%	5.5%	5.5%	5.5%
Accounts Payable	111.0	87.6	155.1	195.0	204.5	217.6	237.8	254.2	266.0
COGS	409.5	547.8	736.3	904.2	954.0	1,015.1	1,109.3	1,186.2	1,241.1
<i>Days Payables Outstanding</i>	97.6	57.6	75.9	77.6	77.2	77.2	77.2	77.2	77.2
Accrued Expenses	958.9	1,116.9	1,405.0	1,678.6	1,942.6	2,066.9	2,258.8	2,415.5	2,527.2
COGS	409.5	547.8	736.3	904.2	954.0	1,015.1	1,109.3	1,186.2	1,241.1
<i>As a % of COGS</i>	234.1%	203.9%	190.8%	185.6%	203.6%	203.6%	203.6%	203.6%	203.6%
Other Current Liabilities	50.4	130.3	317.4	268.4	259.7	276.3	302.0	322.9	337.9
COGS	409.5	547.8	736.3	904.2	954.0	1,015.1	1,109.3	1,186.2	1,241.1
<i>As a % of COGS</i>	12.3%	23.8%	43.1%	29.7%	27.2%	27.2%	27.2%	27.2%	27.2%
Net Working Capital	(445.4)	(320.3)	(403.1)	(106.3)	(345.8)	(278.8)	(263.1)	(211.6)	(90.1)
<b>Change in Net Working Capital</b>		<b>125.1</b>	<b>0.0</b>	<b>296.8</b>	<b>(239.5)</b>	<b>67.0</b>	<b>15.7</b>	<b>51.6</b>	<b>121.5</b>

# Appendix E2: CapEx and D&A Projections



Vertex Pharmaceuticals, Inc. (NASDAQ: VRTX)									
<b>Net Working Capital (in millions of USD)</b>	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022E	FY 2023E	FY 2024E	FY 2025E	FY 2026E
Capital Expenditures	(95.4)	(75.5)	(259.8)	(235.0)	265.2	295.7	329.4	362.8	399.5
Revenue	3,047.6	4,162.8	6,205.7	7,574.4	8,672.8	9,667.2	10,770.0	11,862.4	13,064.0
<i>As a % of Revenue</i>	<i>3.1%</i>	<i>1.8%</i>	<i>4.2%</i>	<i>3.1%</i>	<i>3.1%</i>	<i>3.1%</i>	<i>3.1%</i>	<i>3.1%</i>	<i>3.1%</i>
Depreciation & Amortization	72.4	106.9	109.5	125.6	159.1	207.0	263.5	326.5	391.6
<i>As a % of CapEx</i>	<i>75.9%</i>	<i>141.7%</i>	<i>42.2%</i>	<i>53.4%</i>	<i>60%</i>	<i>70%</i>	<i>80%</i>	<i>90%</i>	<i>98%</i>

# Appendix F: WACC

Vertex Pharmaceuticals, Inc. (NASDAQ: VRTX)	
<i>Weighted Average Cost of Capital</i>	
Market Value of Debt	509.8
Weight of Debt	0.8%
Pre-Tax Cost of Debt	2.70%
Tax Rate	24.50%
<b>Tax Effected Cost of Debt</b>	<b>2.03%</b>
Market Value of Equity	60,470.9
Weight of Equity	99.2%
Risk-free rate	1.945%
Equity Risk Premium	8%
Beta	0.66
<b>Cost of Equity</b>	<b>7.20%</b>
<b>Weighted Average Cost of Capital</b>	<b>7.16%</b>

# Appendix G: Comparable Companies Analysis



Vertex Pharmaceuticals, Inc. (NASDAQ: VRTX)								2021					2024				
<i>Comparable Companies Analysis</i>								Revenue	R&D	EBITDA	EBIT	EPS	Revenue	R&D	EBITDA	EBIT	EPS
<b>Vertex Pharmaceuticals</b>	<b>VRTX</b>	<b>232.67</b>	<b>259.9</b>	<b>60,470.9</b>	<b>509.8</b>	<b>6,795.0</b>	<b>66,756.1</b>	<b>7,574.4</b>	<b>3,051.1</b>	<b>2,907.7</b>	<b>2,782.1</b>	<b>9.09</b>	<b>10,770.0</b>	<b>4,577.3</b>	<b>4,130.5</b>	<b>3,867.0</b>	<b>11.46</b>
AbbVie	ABBV	144.60	1,767.9	255,638.3	70,163.0	12,594.1	198,069.4	56,197.0	6,518.0	29,127.2	28,290.0	6.45	56,480.7	7,091.5	27,683.7	26,798.3	7.58
Regeneron Pharmaceuticals	REGN	626.76	105.7	66,248.5	1,980.0	2,885.6	67,154.1	16,071.7	2,908.1	9,233.0	8,946.8	76.40	13,036.2	3,403.9	5,537.0	5,139.8	43.06
Gilead Sciences	GILD	61.28	1,254.0	76,845.1	25,726.0	7,829.0	58,948.1	27,305.0	5,363.0	14,102.0	12,548.0	5.42	25,473.7	5,119.8	12,804.4	11,408.8	7.33
Biogen	BIIB	210.42	147.0	30,931.7	1,320.5	3,802.5	33,413.7	10,981.7	2,501.2	3,957.7	2,840.7	10.44	9,584.4	2,083.0	3,633.7	3,164.5	16.25
Novartis	NVS	86.66	2,430.0	210,583.8	22,902.0	28,224.0	215,905.8	51,626.0	9,041.0	22,701.0	16,588.0	6.29	56,178.1	9,555.0	22,694.2	17,706.3	7.30
<b>Vertex Pharmaceuticals</b>	<b>VRTX</b>							<b>EV/Revenue</b>	<b>EV/R&amp;D</b>	<b>EV/EBITDA</b>	<b>EV/EBIT</b>	<b>P/E</b>	<b>EV/Revenue</b>	<b>EV/R&amp;D</b>	<b>EV/EBITDA</b>	<b>EV/EBIT</b>	<b>P/E</b>
								<b>8.8x</b>	<b>21.9x</b>	<b>23.0x</b>	<b>24.0x</b>	<b>25.6x</b>	<b>6.2x</b>	<b>14.6x</b>	<b>16.2x</b>	<b>17.3x</b>	<b>20.3x</b>
AbbVie	ABBV							3.5x	30.4x	6.8x	7.0x	22.4x	3.5x	27.9	7.2x	7.4x	19.1x
Regeneron Pharmaceuticals	REGN							4.2x	23.1x	7.3x	7.5x	8.2x	5.2x	19.7	12.1x	13.1x	14.6x
Gilead Sciences	GILD							2.2x	11.0x	4.2x	4.7x	11.3x	2.3x	11.5	4.6x	5.2x	8.4x
Biogen	BIIB							3.0x	13.4x	8.4x	11.8x	20.2x	3.5x	16.0	9.2x	10.6x	12.9x
Novartis	NVS							4.2x	23.9x	9.5x	13.0x	13.8x	3.8x	22.6	9.5x	12.2x	11.9x
Min								2.2x	11.0x	4.2x	4.7x	8.2x	2.3x	2.4	2.4x	2.4x	2.4x
Q1								3.2x	15.5x	6.9x	7.1x	11.9x	3.5x	14.9x	7.7x	8.2x	12.1x
Med								3.9x	22.5x	7.9x	9.6x	17.0x	3.7x	17.9x	9.4x	11.4x	13.8x
Q3								4.2x	23.7x	9.2x	12.7x	21.9x	4.8x	21.9x	11.5x	12.8x	17.9x
Max								8.8x	30.4x	23.0x	24.0x	25.6x	6.2x	27.9x	16.2x	17.3x	20.3x
Mean								4.3x	20.6x	9.9x	11.3x	16.9x	4.1x	18.7x	9.8x	10.9x	14.5x

# Appendix H: Discounted Cash Flow Analysis

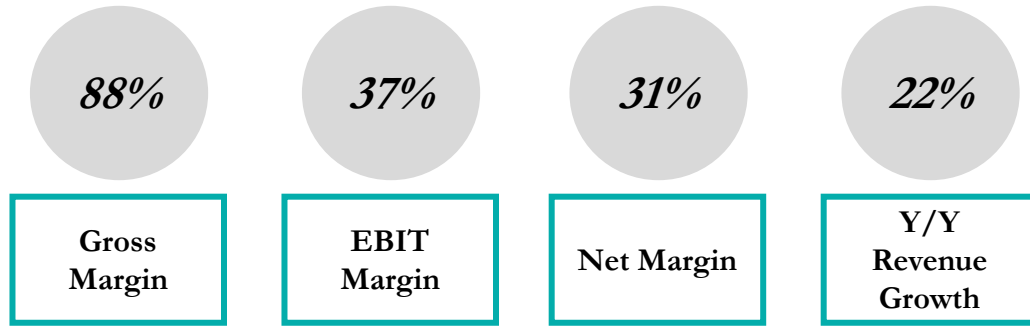
Vertex Pharmaceuticals, Inc. (NASDAQ: VRTX)									
<i>Discounted Cash Flow (in millions of USD)</i>									
	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022E	FY 2023E	FY 2024E	FY 2025E	FY 2026E
Revenue	3,047.6	4,162.8	6,205.7	7,574.4	8,672.8	9,667.2	10,770.0	11,862.4	13,064.0
EBIT	635.2	1,197.6	2,856.3	2,782.1	3,033.2	3,378.7	3,867.0	4,384.3	5,057.5
NOPAT	2,208.5	1,010.3	2,485.1	2,386.5	2,381.1	2,550.9	2,919.6	3,310.1	3,818.4
Plus: D & A	72.4	106.9	109.5	125.6	159.1	207.0	263.5	326.5	391.6
Less: CapEx	(95.4)	(75.5)	(259.8)	(235.0)	265.2	295.7	329.4	362.8	399.5
Less: Change in NWC	0.0	125.1	0.0	296.8	(239.5)	67.0	15.7	51.6	121.5
FCFF	2,185.5	916.7	2,334.8	1,980.3	3,045.0	2,986.6	3,496.8	3,947.9	4,488.0
Terminal Value (growth rate)									88,742.5
Terminal Value (multiple)									
Cash Flows (growth rate)									
Cash Flows (multiple)									
PV of Cash Flows (growth rate)					2,841.6	2,600.9	2,841.8	2,994.0	3,176.3
PV of Cash Flows (multiple)					2,841.6	2,600.9	2,841.8	2,994.0	3,176.3
Discount factor (years)					1.0	2.0	3.0	4.0	5.0

<b>Growth Rate Method</b>	
Terminal Value	88,742.5
PV of Terminal Value	62,805.7
Enterprise Value	74,084.0
Less: Debt	509.8
Add: Cash	6,795.0
Equity Value	81,388.8
Diluted Share Outstanding	259.9
Price Per Share	313.15
<b>Upside</b>	<b>34.6%</b>

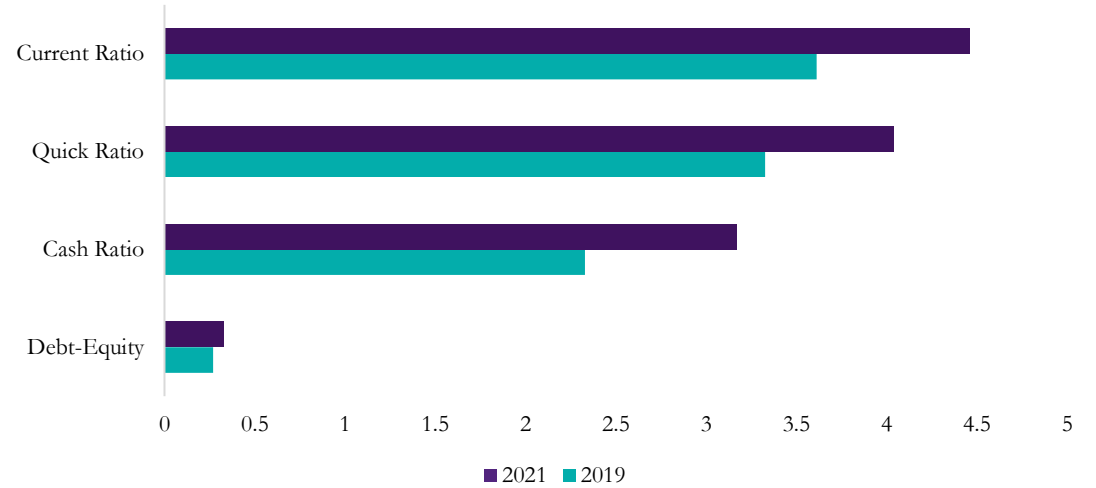
<b>Terminal Multiple Method</b>	
Terminal R&D	4,577.3
EV/R&D	17.88
Terminal Value	81,862.88
PV of Terminal Value	57,936.78
Enterprise Value	72,391.33
Less: Debt	509.8
Add: Cash	6795
Equity Value	78,676.53
Diluted Shares Outstanding	259.9
Price Per Share	302.72
<b>Upside</b>	<b>30.1%</b>

# Appendix I: VRTX Financial Analysis

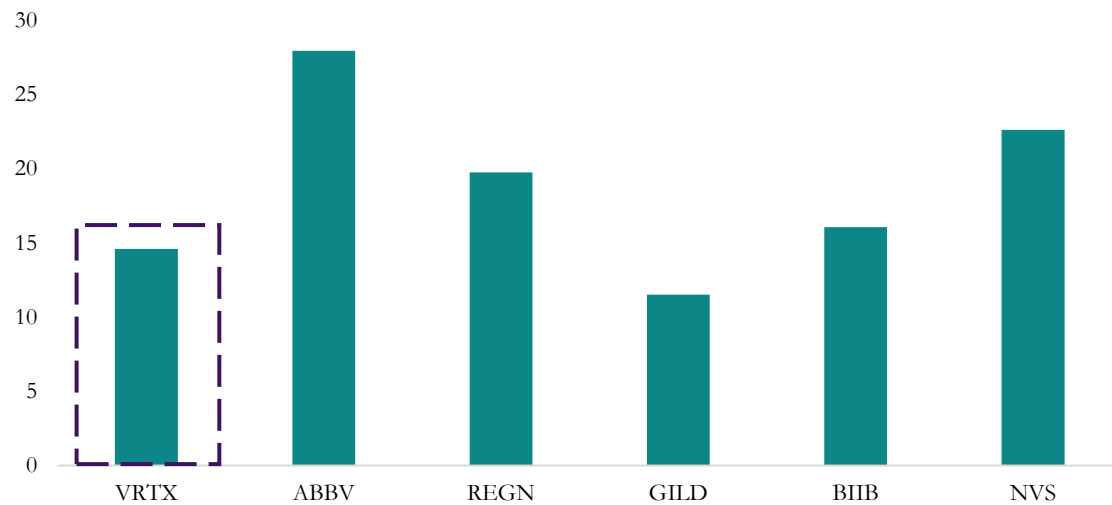
## FY 2021 Key Metrics



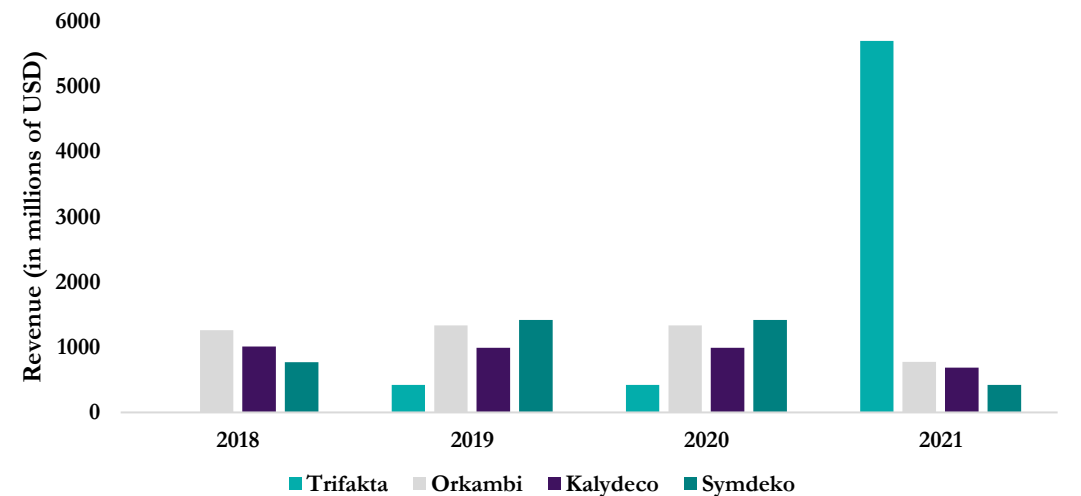
## Key Ratios



## 2024 EV/R&D vs. Peers

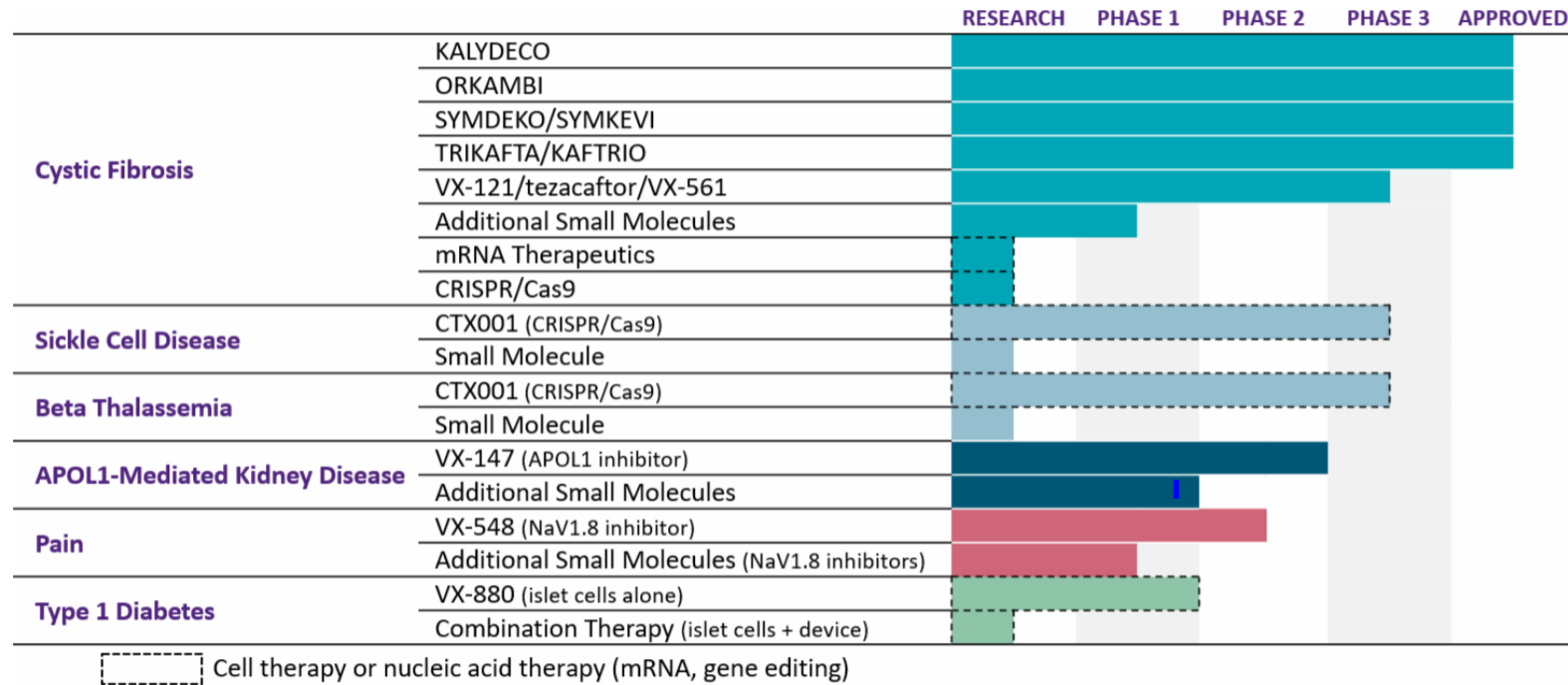


## Revenue by Product



# Appendix J: Pipeline & Phases

The following chart represents our pipeline programs by disease area, stage of development, and modality, for programs that have lead assets in the clinic.








# Appendix K: Partnership Details

## VRTX has used some cash to partner with potential game changers but most programs are still **VERY** early in development

### Building the Cell and Gene Therapy Toolbox – Acquisitions and Collaborations

	Acquired; developing gene editing therapies to repair mutations that cause DMD and other severe neuromuscular diseases
	Collaborating; developing gene-editing therapies for genetic diseases like sickle cell, $\beta$ -thalassemia, and CF
	Collaborating; developing mRNA gene editing therapies for CF
	Collaborating; developing novel proteins (ex: DNA endonucleases) to advance new gene-editing therapies for CF
	Collaborating; leveraging Genomics's expertise in genomics, machine learning and drug discovery to identify novel targets
	Collaborating; engineering novel AAV capsids to deliver transformative genetic therapies for DMD, DM1, and CF
	Collaborating; developing novel targeted conditioning regimens that may enhance the hematopoietic stem cell transplant process
	Collaborating; developing novel small molecule therapeutics that modulate RNA splicing
	Collaborating; developing novel therapies that regulate gene-editing for the treatment of serious diseases
	Collaborating; develop in vivo gene-editing therapies for serious diseases by leveraging ultracompact Cas enzymes, including Cas14 and Cas $\phi$