UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

Form 10-Q

(Mark One)

☑ **QUARTERLY REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the quarterly period ended March 31, 2022

OR

☐ **TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the transition period from _____ to

Commission file number: 001-36740

FIBROGEN, INC.
(Exact name of registrant as specified in its charter)

Delaware	**77-0357827**
(State or Other Jurisdiction of Incorporation or Organization)	**(I.R.S. Employer Identification No.)**
409 Illinois Street San Francisco, CA	**94158**
(Address of Principal Executive Offices)	**(Zip Code)**

(415) 978-1200
Registrant's telephone number, including area code:

Securities registered pursuant to Section 12(b) of the Act:

Title of each class	Trading Symbol	Name of each exchange on which registered
Common Stock, $0.01 par value	FGEN	The Nasdaq Global Select Market

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 ☑ No ☐

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (§ 232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files). Yes ☑ No ☐

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, a smaller reporting company, or an emerging growth company. See the definitions of "large accelerated filer," "accelerated filer," "smaller reporting company," and "emerging growth company" in Rule 12b-2 of the Exchange Act:

Large accelerated filer	☑	Accelerated filer	☐
Non-accelerated filer	☐	Smaller reporting company	☐
		Emerging growth company	☐

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act. ☐

Indicate by check mark whether the registrant is a shell company (as defined in Exchange Act Rule 12b-2). Yes ☐ No ☑

The number of shares of common stock outstanding as of April 30, 2022 was 93,297,542.

FIBROGEN, INC.

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FIBROGEN, INC.

PART I—FINANCIAL INFORMATION

ITEM 1. CONDENSED CONSOLIDATED FINANCIAL STATEMENTS

CONDENSED CONSOLIDATED BALANCE SHEETS
(In thousands, except per share amounts)
(Unaudited)

	March 31, 2022	December 31, 2021
Assets		
Current assets:		
Cash and cash equivalents	$ 185,896	$ 171,223
Short-term investments	242,179	233,967
Accounts receivable, net ($38,755 and $10,930 from related parties)	43,883	17,401
Inventories	43,067	31,015
Prepaid expenses and other current assets	9,390	20,453
Total current assets	524,415	474,059
Restricted time deposits	2,072	2,072
Long-term investments	93,488	167,796
Property and equipment, net	26,881	28,277
Equity method investment in unconsolidated variable interest entity	4,155	3,825
Operating lease right-of-use assets	87,990	91,112
Other assets	6,933	6,680
Total assets	$ 745,934	$ 773,821
Liabilities, stockholders' equity and non-controlling interests		
Current liabilities:		
Accounts payable	$ 36,353	$ 26,097
Accrued and other current liabilities ($49,677 and $4 to a related party)	203,299	172,599
Deferred revenue ($3,303 and $3,201 to related parties)	4,744	15,857
Operating lease liabilities, current	10,978	10,944
Total current liabilities	255,374	225,497
Product development obligations	17,374	17,613
Deferred revenue, net of current ($26,285 and $25,891 to a related party)	184,893	186,801
Operating lease liabilities, non-current	85,948	88,776
Other long-term liabilities	24,330	26,021
Total liabilities	567,919	544,708
Commitments and Contingencies		
Stockholders' equity:		
Preferred stock, $0.01 par value; 125,000 shares authorized; no shares issued and outstanding at March 31, 2022 and December 31, 2021	—	—
Common stock, $0.01 par value; 225,000 shares authorized at March 31, 2022 and December 31, 2021; 93,289 and 92,881 shares issued and outstanding at March 31, 2022 and December 31, 2021	933	929
Additional paid-in capital	1,490,859	1,476,414
Accumulated other comprehensive loss	(6,505)	(4,163)
Accumulated deficit	(1,327,239)	(1,264,034)
Total stockholders' equity	158,048	209,146
Non-controlling interests	19,967	19,967
Total equity	178,015	229,113
Total liabilities, stockholders' equity and non-controlling interests	$ 745,934	$ 773,821

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

FIBROGEN, INC.

CONDENSED CONSOLIDATED STATEMENTS OF OPERATIONS
(In thousands, except per share amounts)
(Unaudited)

	Three Months Ended March 31,	
	2022	2021
Revenue:		
License revenue (includes $22,590 and $0 from a related party)	$ 22,590	$ —
Development and other revenue (includes $5,180 and $3,611 from a related party)	11,762	14,587
Product revenue, net (includes $16,223 and $10,406 from a related party)	18,881	15,362
Drug product revenue (includes $7,594 and $4,030 from a related party)	7,594	8,480
Total revenue	60,827	38,429
Operating costs and expenses:		
Cost of goods sold	4,238	3,401
Research and development	89,018	74,676
Selling, general and administrative	30,564	30,779
Total operating costs and expenses	123,820	108,856
Loss from operations	(62,993)	(70,427)
Interest and other, net		
Interest expense	(97)	(501)
Interest income and other income (expenses), net	(322)	(453)
Total interest and other, net	(419)	(954)
Loss before income taxes	(63,412)	(71,381)
Provision for income taxes	113	134
Investment income (loss) in unconsolidated variable interest entity	320	(240)
Net loss	$ (63,205)	$ (71,755)
Net loss per share - basic and diluted	$ (0.68)	$ (0.78)
Weighted average number of common shares used to calculate net loss per share - basic and diluted	93,043	91,688

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

FIBROGEN, INC.

CONDENSED CONSOLIDATED STATEMENTS OF COMPREHENSIVE LOSS
(In thousands)
(Unaudited)

	Three Months Ended March 31,	
	2022	2021
Net loss	$ (63,205)	$ (71,755)
Other comprehensive income (loss):		
Foreign currency translation adjustments	249	(70)
Available-for-sale investments:		
Unrealized loss on investments, net of tax effect	(2,591)	(55)
Other comprehensive loss, net of taxes	(2,342)	(125)
Comprehensive loss	$ (65,547)	$ (71,880)

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

FIBROGEN, INC.

CONDENSED CONSOLIDATED STATEMENTS OF CHANGES IN EQUITY
(In thousands, except share data)
(Unaudited)

	For The Three Month Period						
	Common Stock		Additional Paid-in Capital	Accumulated Other Comprehensive Income (Loss)	Accumulated Deficit	Non Controlling Interests	Total
	Shares	Amount					
Balance at December 31, 2021	92,880,533	$ 929	$ 1,476,414	$ (4,163)	$ (1,264,034)	$ 19,967	$ 229,113
Net loss	—	—	—	—	(63,205)	—	(63,205)
Change in unrealized gain or loss on investments	—	—	—	(2,591)	—	—	(2,591)
Foreign currency translation adjustments	—	—	—	249	—	—	249
Shares issued from stock plans, net of payroll taxes paid	408,051	4	(2,707)	—	—	—	(2,703)
Stock-based compensation	—	—	17,152	—	—	—	17,152
Balance at March 31, 2022	93,288,584	$ 933	$ 1,490,859	$ (6,505)	$ (1,327,239)	$ 19,967	$ 178,015
Balance at December 31, 2020	91,440,633	$ 914	$ 1,399,774	$ (4,499)	$ (974,011)	$ 19,271	$ 441,449
Net loss	—	—	—	—	(71,755)	—	(71,755)
Change in unrealized gain or loss on investments	—	—	—	(55)	—	—	(55)
Foreign currency translation adjustments	—	—	—	(70)	—	—	(70)
Shares issued from stock plans, net of payroll taxes paid	639,766	7	1,313	—	—	—	1,320
Stock-based compensation	—	—	19,384	—	—	—	19,384
Balance at March 31, 2021	92,080,399	$ 921	$ 1,420,471	$ (4,624)	$ (1,045,766)	$ 19,271	$ 390,273

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

FIBROGEN, INC.

CONDENSED CONSOLIDATED STATEMENTS OF CASH FLOWS
(In thousands)
(Unaudited)

	Three Months Ended March 31,	
	2022	2021
Operating activities		
Net loss	$ (63,205)	$ (71,755)
Adjustments to reconcile net loss to net cash used in operating activities:		
Depreciation	2,450	2,723
Amortization of finance lease right-of-use assets	134	2,616
Net accretion of premium and discount on investments	928	131
Investment (gain) loss in unconsolidated variable interest entity	(320)	240
Loss on disposal of property and equipment	5	—
Stock-based compensation	17,152	19,384
Realized loss on sales of available-for-sale securities	5	—
Changes in operating assets and liabilities:		
Accounts receivable, net	(26,481)	1,336
Inventories	(12,000)	(4,288)
Prepaid expenses and other current assets	11,382	(5,457)
Operating lease right-of-use assets	3,132	(3,118)
Other assets	(459)	(2,503)
Accounts payable	10,207	(669)
Accrued and other liabilities	65,993	(294)
Operating lease liabilities, current	31	546
Deferred revenue	(13,024)	17,196
Accrued interest for finance lease liabilities	(21)	(29)
Operating lease liabilities, non-current	(2,835)	2,535
Other long-term liabilities	(1,550)	(3,578)
Net cash used in operating activities	(8,476)	(44,984)
Investing activities		
Purchases of property and equipment	(1,638)	(518)
Payment made for acquired in-process research and development asset	(35,000)	—
Purchases of available-for-sale securities	(20,912)	(196,243)
Proceeds from sales of available-for-sale securities	7,382	—
Proceeds from maturities of investments	76,103	42
Net cash provided by (used in) investing activities	25,935	(196,719)
Financing activities		
Repayments of finance lease liabilities	(1)	(3,299)
Repayments of lease obligations	(101)	(101)
Cash paid for payroll taxes on restricted stock unit releases	(2,974)	(4,757)
Proceeds from issuance of common stock	183	6,077
Net cash used in financing activities	(2,893)	(2,080)
Effect of exchange rate change on cash and cash equivalents	107	(1,102)
Net increase (decrease) in cash and cash equivalents	14,673	(244,885)
Total cash and cash equivalents at beginning of period	171,223	678,393
Total cash and cash equivalents at end of period	$ 185,896	$ 433,508

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

FIBROGEN, INC.

NOTES TO THE CONDENSED CONSOLIDATED FINANCIAL STATEMENTS
(Unaudited)

1. Significant Accounting Policies

Description of Operations

FibroGen, Inc. (“FibroGen” or the “Company”) is headquartered in San Francisco, California, with subsidiary offices in Beijing and Shanghai, People’s Republic of China (“China”). FibroGen is a leading biopharmaceutical company developing and commercializing a pipeline of first-in-class therapeutics. The Company applies its pioneering expertise in hypoxia-inducible factor ("HIF") biology, 2-oxoglutarate enzymology, and connective tissue growth factor to advance innovative medicines for the treatment of anemia, fibrotic disease, and cancer.

Pamrevlumab, a human monoclonal antibody targeting connective tissue growth factor, is in Phase 3 clinical development for the treatment of idiopathic pulmonary fibrosis, locally advanced unresectable pancreatic cancer and Duchenne muscular dystrophy.

Roxadustat is an oral small molecule inhibitor of HIF prolyl hydroxylase (“HIF-PH”) activity that is approved for the treatment of anemia caused by chronic kidney disease (“CKD”) in dialysis and non-dialysis patients, under the tradename EVRENZO®, in the European Union, Great Britain, Japan, South Korea, Chile, Russia, the United Arab Emirates, and Kuwait. Roxadustat is being commercialized in China for CKD anemia in dialysis and non-dialysis patients under the tradename: 爱瑞卓®.

Roxadustat is in Phase 3 clinical development for anemia associated with myelodysplastic syndromes. We have completed a Phase 2 study of roxadustat in chemotherapy-induced anemia and are running a Phase 3 trial for roxadustat in China.

We have a pipeline of late-stage clinical programs as well as pre-clinical drug candidates at various stages of development that include both small molecules and biologics. We have leveraged our internally developed 2-oxoglutarate and connective tissue growth factor biology expertise as well as in-licensing of additional programs, such as antibodies targeting Galectin-9 protein (“Gal-9”) and C-C Motif Chemokine Receptor 8 (“CCR8”), to further enhance our late-stage preclinical pipeline. Our goal is to build a diversified pipeline with novel drugs that will address unmet patient needs in oncology, immunology, and fibrosis.

Basis of Presentation and Principles of Consolidation

The condensed consolidated financial statements include the accounts of FibroGen, its wholly owned subsidiaries and its majority-owned subsidiaries, FibroGen Europe Oy and FibroGen China Anemia Holdings, Ltd. All inter-company transactions and balances have been eliminated in consolidation. For any variable interest entity (“VIE”) for which FibroGen is not the primary beneficiary, the Company uses the equity method of accounting. The Company operates as one reportable segment — the discovery, development and commercialization of novel therapeutics to treat serious unmet medical needs.

The unaudited condensed consolidated financial statements and related disclosures have been prepared in accordance with accounting principles generally accepted in the United States (“U.S. GAAP”) applicable to interim financial reporting and with the instructions to Form 10-Q and Rule 10-01 of Regulation S-X of the U.S. Securities and Exchange Commission (“SEC”) and, therefore, do not include all information and footnote disclosures normally included in the annual consolidated financial statements. The financial information included herein should be read in conjunction with the consolidated financial statements and related notes in the Company’s Annual Report on Form 10-K for the year ended December 31, 2021, filed on February 28, 2022 and as amended on March 4, 2022 (“2021 Form 10-K”).

Use of Estimates

The preparation of the condensed consolidated financial statements in conformity with U.S. GAAP requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements and reported amounts of revenues and expenses during the reporting period. The more significant areas requiring the use of management estimates and assumptions include valuation and recognition of revenue, specifically, estimates in variable consideration for drug product sales, and estimates in transaction price per unit for the China performance obligation (as defined and discussed under *Significant Accounting Policies* below). On an ongoing basis, management reviews these estimates and assumptions. Changes in facts and circumstances may alter such estimates and actual results could differ from those estimates. In the Company's opinion, the accompanying unaudited condensed consolidated financial statements include all normal recurring adjustments necessary for a fair statement of its financial position, results of operations and cash flows for the interim periods presented.

Significant Accounting Policies

The accounting policies used by the Company in its presentation of interim financial results are consistent with those presented in Note 2 to the consolidated financial statements included in the 2021 Form 10-K, except for the updates to the following:

Stock-Based Compensation

The Company maintains equity incentive plans under which incentive and nonqualified stock options are granted to employees, which are comprised of stock options, service-based restricted stock units ("RSUs"), performance-based RSUs and total shareholder return ("TSR") awards.

The Company measures and recognizes compensation expense for all stock options, service and performance-based restricted stock units granted to its employees and directors based on the estimated fair value of the award on the grant date. The Company uses the Black-Scholes valuation model to estimate the fair value of stock option awards. The determination of the grant date fair value of options using the Black-Scholes valuation model is affected by the Company's estimated common stock fair value and requires management to make a number of assumptions including the expected life of the option, the volatility of the underlying stock, the risk-free interest rate and expected dividends. To estimate the fair value of the TSR awards, the Company uses the Monte Carlo valuation model to simulate the probabilities of achievement, which requires management to make a number of assumptions including 30-day average price, volatility of the underlying stock and our peers, and the risk-free interest rate.

The compensation cost of service-based stock options and restricted stock units is recognized net of any estimated forfeitures on a straight-line basis over the employee requisite service period. Compensation cost for performance-based RSUs is expensed over the respective vesting periods when the achievement of performance criteria is probable. Compensation cost for the TSR awards is recognized over the requisite service period, regardless of when, if ever, the market condition is satisfied.

The Company believes that the fair value of stock options granted to non-employees is more reliably measured than the fair value of the services received.

Net Loss per Share

Potential common shares that would have the effect of increasing diluted earnings per share are considered to be anti-dilutive and as such, these shares are not included in the calculation of diluted earnings per share. For the three months ended March 31, 2022 and 2021, the Company reported a net loss, respectively. Therefore, dilutive common shares are not assumed to have been issued since their effect is anti-dilutive.

Diluted weighted average shares excluded potential common shares related to stock options, restricted stock units (including service-based RSUs, performance-based RSUs and TSR awards) and shares to be purchased under the employee stock purchase plan totaling 12.2 million and 7.8 million for the three months ended March 31, 2022 and 2021, respectively, as they were anti-dilutive.

Risks and Uncertainties

The Company's future results of operations involve a number of risks and uncertainties. Factors that could affect the Company's future operating results and cause actual results to vary materially from expectations include, but are not limited to, rapid technological change, obtaining second source suppliers, regulatory approval from the U.S. Food and Drug Administration ("FDA") or other regulatory authorities, the results of clinical trials and the achievement of milestones, market acceptance of the Company's product candidates, competition from other products and larger companies, protection of proprietary technology, strategic relationships and dependence on key individuals.

Recently Issued Accounting Guidance Not Yet Adopted

In March 2020, the FASB issued ASU 2020-04, *Reference Rate Reform (Topic 848): Facilitation of the Effects of Reference Rate Reform on Financial Reporting* ("*ASU 2020-04*"), which provides companies with optional financial reporting alternatives to reduce the cost and complexity associated with the accounting for contracts and hedging relationships affected by reference rate reform. This guidance is effective as of March 12, 2020 through December 31, 2022. Subsequently in January 2021, the FASB issued ASU 2021-01, *Reference Rate Reform (Topic 848): Scope*, which clarifies ASU 2020-04 and provides certain optional expedients that allow derivative instruments impacted by changes in the interest rate used for margining, discounting or contract price alignment to qualify for certain optional relief. ASU 2021-01 is effective in the same timeframe as ASU2020-04. The relief offered by this guidance, if adopted, is available to companies for the period March 12, 2020 through December 31, 2022. The Company has certain lease arrangements that are linked to the London Inter-Bank Offered Rate ("LIBOR"). The Company is in the process of evaluating options for transitioning away from LIBOR and expects to complete this analysis by the time LIBOR is phased out. The Company did not elect to apply any of the expedients or exceptions as of and for the three months ended March 31, 2022 and is currently evaluating the impact on its condensed consolidated financial statements and related disclosures upon adoption of this guidance.

2. Collaboration Agreements, License Agreement and Revenues

Astellas Agreements

Japan Agreement

In June 2005, the Company entered into a collaboration agreement with Astellas Pharma Inc. ("Astellas") for the development and commercialization (but not manufacture) of roxadustat for the treatment of anemia in Japan ("Japan Agreement"). Under this agreement, Astellas agreed to pay license fees, other upfront consideration and various milestone payments, totaling $172.6 million. The Japan Agreement also provides for tiered payments based on net sales of product (as defined) in the low 20% range of the list price published by Japan's Ministry of Health, Labour and Welfare, adjusted for certain elements, after commercial launch.

The aggregate amount of consideration received through March 31, 2022 totaled $105.1 million, excluding drug product revenue that is discussed separately below.

Amounts recognized as license revenue and development revenue under the Japan Agreement with Astellas were as follows for the three months ended March 31, 2022 and 2021 (in thousands):

		Three Months Ended March 31,	
Agreement	**Performance Obligation**	**2022**	**2021**
Japan	License revenue	$ —	$ —
	Development revenue	$ 32	$ 80

The transaction price related to consideration received and accounts receivable has been allocated to each of the following performance obligations under the Japan Agreement with Astellas, along with any associated deferred revenue as follows (in thousands):

Japan Agreement	Cumulative Revenue Through March 31, 2022	Deferred Revenue at March 31, 2022	Total Consideration Through March 31, 2022
License	$ 100,347	$ —	$ 100,347
Development revenue	16,630	—	16,630
Total license and development revenue	$ 116,977	$ —	$ 116,977

There was no revenue resulting from changes to estimated variable consideration in the current period relating to performance obligations satisfied or partially satisfied in previous periods for the three months ended March 31, 2022 under the Japan Agreement. The Company does not expect material variable consideration from estimated future co-development billing beyond the development period in the transaction price related to the Japan Agreement.

In 2018, FibroGen and Astellas entered into an amendment to the Japan Agreement that allows Astellas to manufacture roxadustat drug product for commercialization in Japan (the "Japan Amendment"). The related drug product revenue, as described in details under *Drug Product Revenue* section below, was $7.6 million and $4.0 million for the three months ended March 31, 2022 and 2021, respectively.

Europe Agreement

In April 2006, the Company entered into a separate collaboration agreement with Astellas for the development and commercialization of roxadustat for the treatment of anemia in Europe, the Middle East, the Commonwealth of Independent States and South Africa ("Europe Agreement"). Under the terms of the Europe Agreement, Astellas agreed to pay license fees, other upfront consideration and various milestone payments, totaling $745.0 million. Under the Europe Agreement, Astellas committed to fund 50% of joint development costs for Europe and North America, and all territory-specific costs. The Europe Agreement also provides for tiered payments based on net sales of product (as defined) in the low 20% range.

On March 21, 2022, EVRENZO® (roxadustat) was registered with the Russian Ministry of Health. The Company evaluated the regulatory milestone payment associated with the approval in Russia under the Europe Agreement and concluded that this milestone was achieved in the first quarter of 2022. Accordingly, the consideration of $25.0 million associated with this milestone was included in the transaction price and allocated to performance obligations under the Europe Agreement, all of which was recognized as revenue during the first quarter of 2022 from performance obligations satisfied. Such amount was billed and recorded in accounts receivable from Astellas as of March 31, 2022, and received in April 2022.

The aggregate amount of consideration received under the Europe Agreement through March 31, 2022 totaled $660.0 million, excluding drug product revenue that is discussed separately below.

Amounts recognized as license revenue and development revenue under the Europe Agreement with Astellas were as follows for the three months ended March 31, 2022 and 2021 (in thousands):

		Three Months Ended March 31,	
Agreement	Performance Obligation	2022	2021
Europe	License revenue	$ 22,590	$ —
	Development revenue	$ 5,148	$ 3,531

The transaction price related to consideration received and accounts receivable has been allocated to each of the following performance obligations under the Europe Agreement with Astellas, along with any associated deferred revenue as follows (in thousands):

Europe Agreement	Cumulative Revenue Through March 31, 2022	Deferred Revenue at March 31, 2022	Total Consideration Through March 31, 2022
License	$ 618,975	$ —	$ 618,975
Development revenue	275,789	—	275,789
Total license and development revenue	$ 894,764	$ —	$ 894,764

The revenue recognized under the Europe Agreement for the three months ended March 31, 2022 included an increase in revenue of $25.0 million resulting from changes to estimated variable consideration in the current period relating to performance obligations satisfied or partially satisfied in previous periods. The remainder of the transaction price related to the Europe Agreement includes $14.6 million of variable consideration from estimated future co-development billing and is expected to be recognized over the remaining development service period.

Under the Europe Agreement, Astellas has an option to purchase roxadustat bulk drug product in support of commercial supplies. During the first quarter of 2021, the Company entered into an EU Supply Agreement under the Europe Agreement with Astellas ("EU Supply Agreement") to define general forecast, order, supply and payment terms for Astellas to purchase roxadustat bulk drug product from FibroGen in support of commercial supplies. There was no related drug product revenue for the three months ended March 31, 2022 and 2021. See details under *Drug Product Revenue* section below.

AstraZeneca Agreements

U.S./Rest of World ("RoW") Agreement

Effective July 30, 2013, the Company entered into a collaboration agreement with AstraZeneca for the development and commercialization of roxadustat for the treatment of anemia in the U.S. and all other countries in the world, other than China, not previously licensed under the Astellas Europe and Astellas Japan Agreements ("U.S./RoW Agreement"). It also excludes China, which is covered by a separate agreement with AstraZeneca described below. Under the terms of the U.S./RoW Agreement, AstraZeneca agreed to pay upfront, non-contingent, non-refundable and time-based payments, and potential milestone payments, totaling $1.2 billion. AstraZeneca will pay the Company tiered royalty payments on AstraZeneca's future net sales (as defined in the agreement) of roxadustat in the low 20% range. In addition, the Company will receive a transfer price for shipment of commercial product based on a percentage of AstraZeneca's net sales (as defined in the agreement) in the low- to mid-single digit range.

The aggregate amount of consideration received under the U.S./RoW Agreement through March 31, 2022 totaled $439.0 million, excluding drug product revenue that is discussed separately below. While FibroGen and AstraZeneca continue to develop roxadustat in the U.S. for the treatment of anemia in patients with MDS, the Company has not been able to agree on a path forward for AstraZeneca to fund further roxadustat development for CKD anemia in the U.S. Therefore, the Company does not expect to receive most or all of the remaining U.S./RoW Agreement milestones from AstraZeneca.

In 2020, the Company entered into Master Supply Agreement under the U.S./RoW Agreement with AstraZeneca ("Master Supply Agreement") to define general forecast, order, supply and payment terms for AstraZeneca to purchase roxadustat bulk drug product from FibroGen in support of commercial supplies. There was no related drug product revenue for the three months ended March 31, 2022, and the related drug product revenue for the three months ended March 31, 2021 was $4.5 million. See details under *Drug Product Revenue* section below.

China Agreement

Effective July 30, 2013, the Company (through its subsidiaries affiliated with China) entered into the China Agreement ("China Agreement"). Under the terms of the China Agreement, AstraZeneca agreed to pay upfront consideration and potential milestone payments, totaling $376.7 million. The China Agreement is structured as a 50/50 profit or loss share (as defined), which was amended under the China Amendment discussed below in 2020, and provides for joint development costs (including capital and equipment costs for construction of the manufacturing plant in China), to be shared equally during the development period.

The aggregate amount of such consideration received for milestone and upfront payments through March 31, 2022 totaled $77.2 million.

China Amendment

In July 2020, FibroGen China Anemia Holdings, Ltd., FibroGen (China) Medical Technology Development Co., Ltd. ("FibroGen Beijing"), and FibroGen International (Hong Kong) Limited (collectively “FibroGen China”) and AstraZeneca entered into the China Amendment, relating to the development and commercialization of roxadustat in China. Under the China Amendment, in September 2020, FibroGen Beijing and AstraZeneca completed the establishment of a jointly owned entity, Beijing Falikang Pharmaceutical Co., Ltd. ("Falikang"), which performs roxadustat distribution, as well as conduct sales and marketing through AstraZeneca.

Since Falikang became fully operational in January 2021, substantially all direct roxadustat product sales to distributors in China are made by Falikang, while FibroGen Beijing continues to sell roxadustat product directly in one province in China. FibroGen Beijing manufactures and supplies commercial product to Falikang based on a gross transfer price, which is adjusted for the estimated profit share.

Amounts recognized as revenue under the U.S./RoW Agreement and China Agreement with AstraZeneca were as follows for the three months ended March 31, 2022 and 2021 (in thousands):

		Three Months Ended March 31,	
Agreement	**Performance Obligation**	**2022**	**2021**
U.S. / RoW and China	License revenue	$ —	$ —
	Development revenue	5,819	10,976

The transaction price related to consideration received and accounts receivable has been allocated to each of the following performance obligations under the U.S./RoW Agreement and China Agreement with AstraZeneca, along with any associated deferred revenue as follows (in thousands):

U.S. / RoW and China Agreements	**Cumulative Revenue Through March 31, 2022**	**Deferred Revenue at March 31, 2022**		**Total Consideration Through March 31, 2022**
License	$ 341,844	$ —		$ 341,844
Co-development, information sharing & committee services	608,938	—		608,938
China performance obligation *	51,791	171,238		223,029
Total license and development revenue	$ 1,002,573	$ 171,238	**	$ 1,173,811

* China performance obligation revenue is recognized as product revenue, as described in details under *Product Revenue, Net* section below.

** Contract assets and liabilities related to rights and obligations in the same contract are recorded net on the consolidated balance sheets. As of March 31, 2022, deferred revenue included $160.0 million related to the U.S./RoW Agreement and China Agreement, which represents the net of $171.2 million of deferred revenue presented above and a $11.2 million unbilled co-development revenue under the China Amendment with AstraZeneca.

There was no revenue resulting from changes to estimated variable consideration in the current period relating to performance obligations satisfied or partially satisfied in previous periods for the three months ended March 31, 2022 under the U.S./RoW Agreement. The remainder of the transaction price related to the U.S./RoW Agreement and China Agreement includes $29.6 million of variable consideration from estimated future co-development billing and is expected to be recognized over the remaining development service period, except for amounts allocated to the China performance obligation. The amount allocated to the China performance obligation is expected to be recognized as the Company transfers control of the commercial drug product to Falikang.

During the three months ended March 31, 2022 and 2021, the Company recognized $16.2 million and $10.4 million, respectively, of net product revenue from the sales to Falikang, as described in details under *Product Revenue, Net* section below.

In addition to sales to Falikang, during the three months ended March 31, 2022 and 2021, the Company recognized $2.7 million and $5.0 million, respectively, of net product revenue from sales directly to distributors in one province in China, as described as direct sales under *Product Revenue, Net* section below.

Eluminex Agreement

In July 2021, FibroGen exclusively licensed to Eluminex Biosciences (Suzhou) Limited ("Eluminex") global rights to its investigational biosynthetic cornea derived from recombinant human collagen Type III.

Under the terms of the agreement with Eluminex, as amended and restated on January 21, 2022, Eluminex made an $8.0 million upfront payment to FibroGen during the first quarter of 2022, which was recorded as an unbilled contract asset as of December 31, 2021 in the prepaid expenses and other current assets in the condensed consolidated balance sheets. In addition, FibroGen may receive up to a total of $64.0 million in future manufacturing, clinical, regulatory, and commercial milestone payments for the biosynthetic cornea program, as well as $36.0 million in commercial milestones for the first recombinant collagen III product that is not the biosynthetic cornea. FibroGen will also be eligible to receive mid single-digit to low double-digit royalties based upon worldwide net sales of cornea products, and low single-digit to mid single-digit royalties based upon worldwide net sales of other recombinant human collagen type III products that are not cornea products.

During the first quarter of 2022, FibroGen and Eluminex entered into a separate contract manufacturing agreement, under which the Company is responsible for supplying the cornea product at 110% of its product manufacturing costs until its manufacturing technology is fully transferred to Eluminex. The related contract manufacturing revenue was recorded as other revenue and included in development and other revenue in the condensed consolidated statement of operations.

Amounts recognized as revenue under the Eluminex were as follows for the three months ended March 31, 2022 and 2021 (in thousands):

		Three Months Ended March 31,	
Agreement	**Performance Obligation**	**2022**	**2021**
Eluminex	Other revenue - contract manufacturing	$ 762	$ —

Product Revenue, Net

Product revenue, net from the sales of roxadustat commercial product in China was as follows for the three months ended March 31, 2022 and 2021 (in thousands):

	Three Months Ended March 31,	
	2022	**2021**
Direct Sales:		
Gross revenue	$ 2,830	$ 5,429
Discounts and rebates	(175)	(562)
Sales returns	3	89
Direct sales revenue, net	2,658	4,956
Sales to Falikang:		
Gross transaction price	22,726	24,401
Profit share	(8,849)	(10,064)
Net transaction price	13,877	14,337
Decrease (increase) in deferred revenue	2,346	(3,931)
Sales to Falikang revenue, net	16,223	10,406
Total product revenue, net	$ 18,881	$ 15,362

Direct Sales

Product revenue from direct roxadustat product sales to distributors in China is recognized in an amount that reflects the consideration that the Company expects to be entitled to in exchange for those products, net of various sales rebates and discounts. The total discounts and rebates were immaterial for the three months ended March 31, 2022 and 2021.

Due to the Company's legal right to offset, at each balance sheet date, the rebates and discounts are presented as reductions to gross accounts receivable from the distributor, or as a current liability to the distributor to the extent that the total amount exceeds the gross accounts receivable or when the Company expects to settle the discount in cash. The Company's legal right to offset is calculated at the individual distributor level. The following table includes a roll-forward of the contract liabilities (in thousands):

	Balance at December 31, 2021	Additions	Deduction	Currency Translation and Other	Balance at March 31, 2022
Product revenue - Direct sales - contract liabilities	$ (3,176)	$ (407)	$ 835	$ (11)	$ (2,759)

The above contract liabilities were included in accrued and other current liabilities in the condensed consolidated balance sheet. The rebates and discounts reflected as reductions to gross accounts receivable for direct sales were $0.6 million and $1.1 million as of March 31, 2022 and December 31, 2021, respectively.

Sales to Falikang – China Performance Obligation

Since Falikang became fully operational in January 2021, substantially all direct roxadustat product sales to distributors in China are made by Falikang. FibroGen Beijing manufactures and supplies commercial product to Falikang. The net transfer price for FibroGen Beijing's product sales to Falikang is based on a gross transfer price, which is adjusted to account for the 50/50 profit share for the period.

The roxadustat sales to Falikang marked the beginning of the Company's China performance obligation under the Company's agreements with AstraZeneca. Product revenue is based on the transaction price of the China performance obligation. Revenue is recognized when control of the product is transferred to Falikang, in an amount that reflects the allocation of the transaction price to the performance obligation satisfied during the reporting period. Any net transaction price in excess of the revenue recognized is added to the deferred balance to date, and will be recognized over future periods as the performance obligation is satisfied. Following updates to its estimates, the Company recognized $2.3 million from the previously deferred revenue of the China performance obligation during the three months ended March 31, 2022.

The following table includes a roll-forward of the related deferred revenue that is considered as a contract liability (in thousands):

	Balance at December 31, 2021	Additions	Recognized as Revenue	Balance at March 31, 2022
Product revenue - AstraZeneca China performance obligation - deferred revenue	$ (171,516)	$ (15,945)	$ 16,223	$ (171,238)

Deferred revenue includes amounts allocated to the China performance obligation under the AstraZeneca arrangement as revenue recognition associated with this unit of accounting is tied to the commercial launch of the products within China and to when the control of the manufactured commercial products is transferred to AstraZeneca. As of March 31, 2022, approximately $12.6 million of the above deferred revenue related to the China unit of accounting was included in short-term deferred revenue, which represents the amount of deferred revenue associated with the China unit of accounting that is expected to be recognized within the next 12 months, associated with the commercial sales in China.

Due to the Company's legal right to offset, at each balance sheet date, the rebates and discounts, mainly related to profit sharing, are presented as reductions to gross accounts receivable from Falikang, which was $8.2 million and $13.4 million as of March 31, 2022 and December 31, 2021, respectively.

Drug Product Revenue

Drug product revenue from commercial-grade active pharmaceutical ingredient ("API") or bulk drug product sales to AstraZeneca and Astellas was as follows for the three months ended March 31, 2022 and 2021 (in thousands):

	Three Months Ended March 31,	
	2022	2021
Astellas	$ 7,594	$ 4,030
AstraZeneca	—	4,450
Drug product revenue	$ 7,594	$ 8,480

During the three months ended March 31, 2022, the Company fulfilled a shipment obligation under the terms of Japan Amendment with Astellas, and recognized related drug product revenue of $9.8 million in the same period. In addition, the Company updated its estimate of variable consideration related to the API shipments fulfilled under the terms of Japan Amendment with Astellas, and recorded a reduction to the drug product revenue of $2.2 million during the three months ended March 31, 2022, and $4.0 million additional drug product revenue during the three months ended March 31, 2021. Specifically, the change in estimated variable consideration was based on the API held by Astellas at period end, adjusted to reflect the changes in the estimated bulk product strength mix intended to be manufactured by Astellas, estimated cost to convert the API to bulk product tablets, and estimated yield from the manufacture of bulk product tablets, among others.

During the three months ended March 31, 2022, the Company billed and received $49.2 million from Astellas related to the annual transfer price true up for bulk drug product transferred for commercial purposes under the terms of the Europe Agreement and the EU Supply Agreement with Astellas. This amount was recorded in deferred revenue and netted against an unbilled contract asset as of December 31, 2021. During the first quarter of 2022, the Company updated its estimate of variable consideration related to the bulk drug product transferred in prior years. Specifically, the change in estimated variable consideration was based on the bulk drug product held by Astellas at the period end, adjusted to reflect the changes in the estimated transfer price, forecast information, shelf-life estimates and other items. As a result, the Company reclassified $45.5 million from deferred revenue to accrued liabilities as of March 31, 2022, representing its best estimate that this amount will be paid in the first quarter of 2023.

During the three months ended March 31, 2022, the Company evaluated the current developments in the U.S. market, and updated its estimates of variable consideration associated with bulk drug product shipments to AstraZeneca in prior years as commercial supply under the terms of the Master Supply Agreement. As a result, the Company reclassified $11.2 million from the related deferred revenue to accrued liabilities as of March 31, 2022.

The following table includes a roll-forward of the above-mentioned deferred revenues that are considered as contract liabilities related to drug product (in thousands):

	Balance at December 31, 2021	Additions	Reclassified to Accrued Liability	Balance at March 31, 2022
Astellas - Japan Agreement	$ (1,974)	$ (2,226)	$ 4,200	$ —
Astellas - Europe Agreement	(25,891)	(49,160)	45,463	(29,588)
AstraZeneca - U.S. Agreement	(11,171)	—	11,171	—
Drug product revenue - deferred revenue	$ (39,036)	$ (51,386)	$ 60,834	$ (29,588)

3. Variable Interest Entity

Falikang is a distribution entity jointly owned by AstraZeneca and FibroGen Beijing. FibroGen Beijing owns 51.1% of the outstanding shares of Falikang.

Pursuant to the guidance under ASC 810, *Consolidation* ("ASC 810"), the Company concluded that Falikang qualifies as a VIE. As Falikang is a distribution entity and AstraZeneca is the final decision maker for all the roxadustat commercialization activities, the Company lacks the power criterion while AstraZeneca meets both the power and economic criteria under the ASC 810, to direct the activities of Falikang that most significantly impact its performance. Therefore, the Company is not the primary beneficiary of this VIE for accounting purposes. As a result, the Company accounts for its investment in Falikang under the equity method, and Falikang is not consolidated into the Company's condensed consolidated financial statements. Accordingly, the Company records its total investments in Falikang as an equity method investment in an unconsolidated VIE in the condensed consolidated balance sheet. In addition, the Company recognizes its proportionate share of the reported profits or losses of Falikang as investment gain or loss in unconsolidated VIE in the condensed consolidated statement of operations, and as an adjustment to its investment in Falikang in the condensed consolidated balance sheet. Falikang has not incurred material profit or loss to date. The Company may provide shareholder loans to Falikang to meet necessary financial obligations as part of its operations. To date, these loans have been immaterial.

The Company's equity method investment in Falikang was as follows (in thousands):

Entity	Ownership Percentage	Balance at December 31, 2021	Share of Net Income	Currency Translation	Balance at March 31, 2022
Falikang	51.1%	$ 3,825	$ 320	$ 10	$ 4,155

Falikang is considered a related party to the Company. See Note 7, *Related Party Transactions*, for related disclosures.

4. Fair Value Measurements

The fair values of the Company's financial assets that are measured on a recurring basis are as follows (in thousands):

	March 31, 2022			
	Level 1	Level 2	Level 3	Total
Money market funds	$ 16,466	$ —	$ —	$ 16,466
Corporate bonds	—	146,273	—	146,273
Commercial paper	—	54,351	—	54,351
U.S. government bonds	98,376	—	—	98,376
Agency bonds	—	23,018	—	23,018
Asset-backed securities	—	12,660	—	12,660
Foreign government bonds	—	4,983	—	4,983
Total	$ 114,842	$ 241,285	$ —	$ 356,127

	December 31, 2021			
	Level 1	Level 2	Level 3	Total
Money market funds	$ 58,801	$ —	$ —	$ 58,801
Corporate bonds	—	182,646	—	182,646
Commercial paper	—	69,079	—	69,079
U.S. government bonds	91,522	—	—	91,522
Agency bonds	—	23,275	—	23,275
Asset-backed securities	—	27,087	—	27,087
Foreign government bonds	—	9,154	—	9,154
Total	$ 150,323	$ 311,241	$ —	$ 461,564

The Company's Level 2 investments are valued using third-party pricing sources. The pricing services utilize industry standard valuation models, including both income and market-based approaches, for which all significant inputs are observable, either directly or indirectly, to estimate fair value. These inputs include reported trades of and broker/dealer quotes on the same or similar investments, issuer credit spreads, benchmark investments, prepayment/default projections based on historical data and other observable inputs. There were no transfers of assets between levels during the three months ended March 31, 2022.

5. Balance Sheet Components

Cash and Cash Equivalents

Cash and cash equivalents consisted of the following (in thousands):

	March 31, 2022	December 31, 2021
Cash	$ 165,436	$ 111,422
Commercial paper	3,994	1,000
Money market funds	16,466	58,801
Total cash and cash equivalents	$ 185,896	$ 171,223

At March 31, 2022 and December 31, 2021, a total of $95.2 million and $91.2 million, respectively, of the Company's cash and cash equivalents were held outside of the U.S. in its foreign subsidiaries to be used primarily for its China operations.

Investments

The Company's investments consist of available-for-sale debt investments and marketable equity investments. The amortized cost, gross unrealized holding gains or losses, and fair value of the Company's investments by major investments type are summarized in the tables below (in thousands):

	March 31, 2022			
	Amortized Cost	Gross Unrealized Holding Gains	Gross Unrealized Holding Losses	Fair Value
Corporate bonds	$ 148,022	$ —	$ (1,749)	$ 146,273
Commercial paper	50,357	—	—	50,357
U.S. government bonds	99,764	—	(1,388)	98,376
Agency bonds	23,279	—	(261)	23,018
Asset-backed securities	12,693	—	(33)	12,660
Foreign government bonds	5,044	—	(61)	4,983
Total investments	$ 339,159	$ —	$ (3,492)	$ 335,667

	December 31, 2021			
	Amortized Cost	Gross Unrealized Holding Gains	Gross Unrealized Holding Losses	Fair Value
Corporate bonds	$ 183,136	$ 2	$ (492)	$ 182,646
Commercial paper	68,079	—	—	68,079
U.S. government bonds	91,840	—	(318)	91,522
Agency bonds	23,339	—	(64)	23,275
Asset-backed securities	27,105	—	(18)	27,087
Foreign government bonds	9,165	—	(11)	9,154
Total investments	$ 402,664	$ 2	$ (903)	$ 401,763

At March 31, 2022, the available-for-sale investments had contractual maturities range from several months to two years. During the three months ended March 31, 2022, the Company did not recognize any other-than-temporary impairment loss.

Inventories

Inventories consisted of the following (in thousands):

	March 31, 2022	December 31, 2021
Raw materials	$ 1,359	$ 1,363
Work-in-progress	33,837	21,499
Finished goods	7,871	8,153
Total inventories	$ 43,067	$ 31,015

As of March 31, 2022 and December 31, 2021, inventory capitalized for the U.S. entity was 51% and 38% of the total inventory balance, respectively, which will be used for commercial launches in Europe and other territories where the Company has received regulatory approvals. The provision to write-down excess and obsolete inventory was immaterial as of March 31, 2022 and December 31, 2021.

Accrued and Other Current Liabilities

Accrued and other current liabilities consisted of the following (in thousands):

	March 31, 2022	December 31, 2021
Preclinical and clinical trial accruals	$ 65,112	$ 56,283
API and bulk drug product price true-up	60,834	—
Acquired in-process research and development asset	—	35,000
Payroll and related accruals	12,325	20,909
Contract liabilities to pharmaceutical distributors	2,759	3,176
Accrued co-promotion expenses - current	28,117	25,746
Roxadustat profit share to AstraZeneca	7,917	7,895
Property taxes and other taxes	13,928	12,610
Professional services	6,819	6,074
Other	5,488	4,906
Total accrued and other current liabilities	$ 203,299	$ 172,599

The accrued liabilities of $60.8 million for API and bulk drug product price true-up as of March 31, 2022 resulted from changes in estimated variable consideration associated with the API shipments fulfilled under the terms of the Japan Amendment with Astellas, the bulk drug product transferred under the terms of the Europe Agreement and the EU Supply Agreement with Astellas, and the bulk drug product shipments to AstraZeneca under the terms of the Master Supply Agreement. See Note 2, *Collaboration Agreements, License Agreement and Revenues*, for details.

The acquired in-process research and development asset of $35.0 million as of December 31, 2021 was related to the upfront payment under the exclusive license and option agreement with HiFiBiO Therapeutics, which was paid during the three months ended March 31, 2022.

6. Income Taxes

Provisions for income tax for the three months ended March 31, 2022 and 2021 were primarily due to foreign taxes.

Based upon the weight of available evidence, which includes its historical operating performance, reported cumulative net losses since inception, the Company has established and continues to maintain a full valuation allowance against its net deferred tax assets as it does not currently believe that realization of those assets is more likely than not.

7. Related Party Transactions

Astellas is an equity investor in the Company and is considered a related party. The Company recorded revenue related to collaboration agreements with Astellas of $27.8 million and $3.6 million for the three months ended March 31, 2022 and 2021, respectively. The Company also recorded drug product revenue from Astellas of $7.6 million and $4.0 million for the three months ended March 31, 2022 and 2021, respectively. See Note 2, *Collaboration Agreements, License Agreement and Revenues*, for details.

The Company's expense related to collaboration agreements with Astellas was immaterial for the three months ended March 31, 2022 and 2021.

As of March 31, 2022 and December 31, 2021, accounts receivable from Astellas were $37.6 million and $10.9 million, respectively.

As of March 31, 2022 and December 31, 2021, total deferred revenue from Astellas was $29.6 million and $27.9 million, respectively.

As of March 31, 2022, the amount due to Astellas was $49.7 million. As of December 31, 2021, amount due to Astellas was immaterial.

Falikang, an entity jointly owned by FibroGen Beijing and AstraZeneca is an unconsolidated VIE accounted for as an equity method investment, and considered as a related party to the Company. FibroGen Beijing owns 51.1% of Falikang's equity. See Note 3, *Variable Interest Entity*, for details.

For the three months ended March 31, 2022 and 2021, the net product revenue from Falikang was $16.2 million and $10.4 million, respectively. See Note 2, *Collaboration Agreements, License Agreement and Revenues*, for details.

For the three months ended March 31, 2022 and 2021, the investment income (loss) in Falikang was $0.3 million and ($0.2) million, respectively. As of March 31, 2022 and December 31, 2021, the Company's equity method investment in Falikang was $4.2 million and $3.8 million, respectively. See Note 3, *Variable Interest Entity*, for details.

As of March 31, 2022 , accounts receivable, net, from Falikang was of $1.2 million. As of December 31, 2021, accounts receivable, net, from Falikang was zero.

The total deferred revenue from Falikang was zero as of March 31, 2022. The total deferred revenue from Falikang was $1.2 million as of December 31, 2021.

8. Commitments and Contingencies

Contract Obligations

As of March 31, 2022, the Company had $96.9 million of operating lease liabilities.

As of March 31, 2022, the Company had outstanding total non-cancelable purchase obligations of $56.9 million, including $34.2 million for manufacture and supply of pamrevlumab, $12.2 million for manufacture and supply of roxadustat, and $10.5 million for other purchases. The Company expects to fulfill its commitments under these agreements in the normal course of business, and as such, no liability has been recorded.

Some of the Company's license agreements provide for periodic maintenance fees over specified time periods, as well as payments by the Company upon the achievement of development, regulatory and commercial milestones. As of March 31, 2022, future milestone payments for research and pre-clinical stage development programs consisted of up to approximately $704.1 million in total potential future milestone payments under the Company's license agreements with HiFiBiO (for Gal-9 and CCR8), Medarex, Inc. and others. These milestone payments generally become due and payable only upon the achievement of certain developmental, clinical, regulatory and/or commercial milestones. The event triggering such payment or obligation has not yet occurred.

Legal Proceedings and Other Matters

From time to time, the Company is a party to various legal actions, both inside and outside the U.S., arising in the ordinary course of its business or otherwise. The Company accrues amounts, to the extent they can be reasonably estimated, that the Company believes will result in a probable loss (including, among other things, probable settlement value), to adequately address any liabilities related to legal proceedings and other loss contingencies. A loss or a range of loss is disclosed when it is reasonably possible that a material loss will incur and can be estimated, or when it is reasonably possible that the amount of a loss, when material, will exceed the recorded provision. The Company did not have any material accruals for any active legal action in its condensed consolidated balance sheets as of March 31, 2022, as the Company could not predict the ultimate outcome of these matters, or reasonably estimate the potential exposure.

In April 2021, three putative securities class action complaints were filed against FibroGen and certain of its current and former executive officers (collectively, the "Defendants") in the U.S. District Court for the Northern District of California. The lawsuits allege that Defendants violated the Securities Exchange Act of 1934 by making materially false and misleading statements regarding FibroGen's Phase 3 clinical studies data and prospects for FDA approval between November 2019 and December 2020. Plaintiffs seek to represent a class of persons or entities that purchased FibroGen securities between November 8, 2019 and April 6, 2021. In May 2021, two additional putative securities class action complaints were filed against Defendants alleging the same claims. One of the lawsuits alleges that Defendants made materially false and misleading statements between October 2017 and December 2020 and seeks to represent a class of persons or entities that purchased FibroGen securities between October 18, 2017 and April 6, 2021. The other lawsuit alleges that Defendants made materially false and misleading statements between December 2018 and February 2020 and seeks to represent a class of persons or entities that purchased FibroGen securities between December 20, 2018 and April 6, 2021. All plaintiffs seek unspecified monetary damages and other relief. On August 30, 2021, the Court consolidated the actions and appointed a group of lead plaintiffs. Plaintiffs filed their consolidated amended complaint on October 29, 2021 and a corrected consolidated amended complaint on November 19, 2021 (the "Complaint"). The Complaint alleges false and misleading statements between December 2018 and June 2021 and seeks to represent a class of persons or entities that purchased FibroGen securities between December 20, 2018 and July 15, 2021. Defendants filed motions to dismiss the Complaint on January 14, 2021. Plaintiffs' opposition to Defendants' motions to dismiss is due March 4, 2022 and Defendants' reply briefs are due April 8, 2022. A hearing on Defendants' motions to dismiss was held on April 28, 2022. The Court has taken the motion under submission.

On July 30, 2021, a purported shareholder derivative complaint was filed in the U.S. District Court for the Northern District of California. The complaint names as defendants ten of FibroGen's current and former officers and directors, as well as FibroGen as nominal defendant, and asserts state and federal claims based on some of the same alleged misstatements as the securities class action complaint. The complaint seeks unspecified damages, attorneys' fees, and other costs. The parties have agreed to stay the action pending resolution of the motion to dismiss the securities class action. On December 27, 2021, a second purported shareholder derivative complaint was filed in the U.S. District Court for the District of Delaware. The complaint names seventeen of FibroGen's current and former officers and directors as defendants, as well as FibroGen as nominal defendant, and asserts state and federal claims based on some of the same alleged misstatements as the securities class action complaint, as well as allegations of insider trading against certain defendants. The complaint seeks unspecified damages, attorneys' fees, and other costs. The action has been stayed pending resolution of the motion to dismiss the securities class action. On April 14, 2022, a third purported shareholder derivative complaint was filed in the Delaware Chancery Court. It names the same defendants as the second purported shareholder derivative action and asserts similar claims based upon similar allegations. The complaint seeks unspecified damages, attorneys' fees, and other costs. Defendants have not been served.

The Company believes that the claims are without merit and it intends to vigorously defend against them. However, any litigation is inherently uncertain, and any judgment or injunctive relief entered against FibroGen or any adverse settlement could materially and adversely impact its business, results of operations, financial condition, and prospects.

In the fourth quarter of 2021, the Company received a subpoena from the SEC requesting documents related to roxadustat's pooled cardiovascular safety data. The Company is fully cooperating with the SEC. The Company cannot predict with any degree of certainty the outcome of the SEC's investigation or determine the extent of any potential liabilities. The Company also cannot predict whether there will be any loss as a result of the investigation nor can it provide an estimate of the possible loss or range of loss. Any adverse outcome in this matter or any related proceeding could expose the Company to substantial damages, penalties, or reputational harm that may have a material adverse impact on the Company's business, results of operations, financial condition, growth prospects, and price of its common stock.

Indemnification Agreements

The Company enters into standard indemnification arrangements in the ordinary course of business, including for example, service, manufacturing and collaboration agreements. Pursuant to these arrangements, the Company indemnifies, holds harmless, and agrees to reimburse the indemnified parties for losses suffered or incurred by the indemnified party, including in connection with intellectual property infringement claims by any third party with respect to its technology. The term of these indemnification agreements is generally perpetual any time after the execution of the agreement. The Company has entered into indemnification agreements with its directors and officers that may require the Company to indemnify its directors and officers against liabilities that may arise by reason of their status or service as directors or officers to the extent permissible under applicable law. The maximum potential amount of future payments the Company could be required to make under these arrangements is not determinable. The Company has never incurred costs to defend lawsuits or settle claims related to these indemnification agreements. As a result, the Company believes the estimated fair value of these arrangements is minimal.

ITEM 2. MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS.

You should read the following discussion and analysis of our financial condition and results of operations in conjunction with the condensed consolidated financial statements and the notes thereto included elsewhere in this Quarterly Report on Form 10-Q, and in our Securities and Exchange Commission ("SEC") filings, including our Annual Report on Form 10-K for the year ended December 31, 2021 filed with the SEC on February 28, 2022 and as amended on March 4, 2022("2021 Form 10-K").

FORWARD-LOOKING STATEMENTS

The following discussion and information contained elsewhere in this Quarterly Report on Form 10-Q contain "forward-looking statements" within the meaning of Section 21E of the Securities Exchange Act of 1934, as amended ("Exchange Act"), Section 27A of the Securities Act of 1933, as amended ("Securities Act") and within the meaning of the Private Securities Litigation Reform Act of 1995. These statements are often identified by the use of words such as "may," "will," "expect," "believe," "anticipate," "intend," "could," "should," "estimate," or "continue," and similar expressions or variations. Such forward-looking statements are subject to risks, uncertainties and other factors that could cause actual results and the timing of certain events to differ materially from future results expressed or implied by such forward-looking statements. Factors that could cause or contribute to such differences include, but are not limited to, those discussed in the section titled "Risk Factors," set forth in Part II, Item 1A of this Quarterly Report on Form 10-Q. The forward-looking statements in this Quarterly Report on Form 10-Q represent our views as of the date of this Quarterly Report on Form 10-Q. We anticipate that subsequent events and developments will cause our views to change. New risks emerge from time to time, and it is not possible for our management to predict all risks, nor can we assess the impact of all factors on our business or the extent to which any factor, or combination of factors, may cause actual results to differ materially from those contained in any forward-looking statements we may make. In light of these risks, uncertainties, and assumptions, the forward-looking events and circumstances discussed in this Quarterly Report on Form 10-Q may not occur, and actual results could differ materially and adversely from those anticipated or implied in the forward-looking statements. While we may elect to update these forward-looking statements at some point in the future, we have no current intention of doing so except to the extent required by applicable law. You should, therefore, not rely on these forward-looking statements as representing our views as of any date subsequent to the date of this Quarterly Report on Form 10-Q and are cautioned not to place undue reliance on such forward-looking statements.

BUSINESS OVERVIEW

We are headquartered in San Francisco, California, with subsidiary offices in Beijing and Shanghai, People's Republic of China ("China"). We are a leading biopharmaceutical company discovering, developing and commercializing a pipeline of first-in-class therapeutics. We apply our pioneering expertise in hypoxia-inducible factor ("HIF") biology, 2-oxoglutarate enzymology, and connective tissue growth factor biology to advance innovative medicines for the treatment of anemia, fibrotic disease, and cancer.

We have a pipeline of late-stage clinical programs as well as pre-clinical drug candidates at various stages of development that include both small molecules and biologics. We have leveraged our internally developed 2-oxoglutarate and connective tissue growth factor biology expertise as well as in-licensing of additional programs, such as antibodies targeting Galectin-9 protein ("Gal-9") and C-C Motif Chemokine Receptor 8 ("CCR8"), to further enhance our late-stage preclinical pipeline. Our goal is to build a diversified pipeline with novel drugs that will address unmet patient needs in oncology, immunology, and fibrosis.

Financial Highlights

	Three Months Ended March 31,	
	2022	2021
	(in thousands, except for per share data)	
Result of Operations		
Revenue	$ 60,827	$ 38,429
Operating costs and expenses	123,820	108,856
Net loss	(63,205)	(71,755)
Net loss per share - basic and diluted	$ (0.68)	$ (0.78)

	March 31, 2022	December 31, 2021
	(in thousands)	
Balance Sheet		
Cash and cash equivalents	$ 185,896	$ 171,223
Short-term and long-term investments	335,667	401,763
Accounts receivable	$ 43,883	$ 17,401

Our revenue for the three months ended March 31, 2022 included the revenue recognized related to the following:

- $25.0 million regulatory milestone recognized under our collaboration agreements with our partner Astellas Pharma Inc. (“Astellas”) associated with the approval of EVRENZO® (roxadustat) in Russia. Of this amount, $22.6 was recognized as license revenue and the remainder included as development revenue;
- $11.0 million development revenue recognized under our collaboration agreements with our partners Astellas and AstraZeneca AB (“AstraZeneca”);
- $18.9 million of net product revenue from roxadustat commercial sales in China; and
- $7.6 million of drug product revenue related to active pharmaceutical ingredient (“API”) deliveries to Astellas.

As a comparison, our revenue for the three months ended March 31, 2021 included the revenue recognized related to the following:

- $14.6 million of development revenue recognized under our collaboration agreements with our partners Astellas and AstraZeneca AB;
- $15.4 million of net product revenue from roxadustat commercial sales in China; and
- $8.5 million of drug product revenue related to roxadustat bulk drug or API deliveries to AstraZeneca and Astellas.

Operating costs and expenses for the three months ended March 31, 2022 increased compared to the same periods a year ago as a result of the net effect of the following:

- $15.9 million higher drug development expenses associated with drug substance and drug product manufacturing activities primarily related to pamrevlumab;
- $5.2 million higher clinical trial expenses associated with Phase 3 trials for pamrevlumab and roxadustat post-approval safety studies; and
- $2.8 million lower employee-related expenses and $2.2 million lower stock-based compensation expense primarily due to lower headcount as part of the cost reduction effort we started to implement in the second half of 2021 following the complete response letter (“CRL”) for roxadustat in the United States ("U.S.").

For the three months ended March 31, 2022, we had a net loss of $63.2 million or a net loss per basic and diluted share of $0.68, as compared to a net loss of $71.8 million for the same period a year ago, due to increases in revenue, partially offset by increases in operating costs and expenses as discussed above.

Cash and cash equivalents, investments and accounts receivable totaled $565.4 million at March 31, 2022, a decrease of $25.0 million from December 31, 2021, primarily due to the cash used in operations and investment in our pre-clinical pipeline.

Commercial and Development Programs

The following is an overview of our clinical and commercial programs.

Roxadustat for the Treatment of Anemia in Chronic Kidney Disease

Roxadustat is our most advanced product, an oral small molecule inhibitor of HIF prolyl hydroxylase ("HIF-PH") activity that acts by stimulating the body's natural pathway of erythropoiesis, or red blood cell production.

Astellas and FibroGen are collaborating on the development and commercialization of roxadustat for the potential treatment of anemia in territories including Japan, Europe, Turkey, Russia and the Commonwealth of Independent States, the Middle East, and South Africa. Astellas has launched EVRENZO® (roxadustat) for the treatment of adult patients with symptomatic anemia associated with CKD in Japan, Germany, the United Kingdom, the Netherlands, Austria, and the Nordic countries for the treatment of anemia associated with CKD in both non-dialysis and dialysis patients. Astellas also received approval for roxadustat in Russia, the United Arab Emirates, and Kuwait.

FibroGen and AstraZeneca AB ("AstraZeneca") are collaborating on the development and commercialization of roxadustat for the potential treatment of anemia in the U.S., China, other markets in the Americas, Australia/New Zealand, and Southeast Asia.

In China, roxadustat (tradename: 爱瑞卓®) has seen significant volume growth in the treatment of anemia caused by chronic kidney disease ("CKD") in non-dialysis and dialysis patients. In the first quarter of 2022, roxadustat achieved an over 70% increase in unit volume relative to the first quarter of 2021, with corresponding revenue offset by the reduced price associated with the 2021 National Reimbursement Drug List. As of February 2022, roxadustat was the top CKD anemia brand in China with a 33% value share within the segment of erythropoiesis stimulating agents ("ESAs") and HIF-PH inhibitors (roxadustat is the only HIF-PH inhibitor on the market in China).

Regarding the treatment of CKD anemia in the U.S., we continue to believe that roxadustat can address an unmet need for patients. However, despite agreement on a potential study with the FDA, and significant discussions with AstraZeneca, we have not been able to agree on a path forward for AstraZeneca to fund further roxadustat development in the U.S. for CKD anemia.

Roxadustat for the Treatment of Anemia in Myelodysplastic Syndromes

We continue to enroll MATTERHORN, our Phase 2/3 placebo controlled, double-blind clinical trial to evaluate the safety and efficacy of roxadustat for treatment of anemia in myelodysplastic syndromes ("MDS") in the U.S. and Europe. This trial is studying roxadustat in transfusion-dependent, lower-risk MDS patients, in which subjects are randomized 3:2 to receive roxadustat or placebo three-times-weekly. The primary endpoint is the proportion of patients who achieve transfusion independence by 28 weeks with secondary endpoints and safety evaluated at 52 weeks. We expect topline data from this study in the first half of 2023.

In China, we are enrolling the double-blind, placebo-controlled portion of our Phase 3 clinical trial to evaluate the safety and efficacy of roxadustat in non-transfusion dependent, lower-risk MDS patients with anemia. One hundred thirty-five subjects will be randomized 2:1 to receive roxadustat or placebo three-times weekly for 26 weeks. The primary endpoint is the percentage of patients achieving a hemoglobin response.

Roxadustat for the Treatment of Chemotherapy-Induced Anemia

We announced positive topline results from WHITNEY, our Phase 2 clinical trial of roxadustat in the U.S. in chemotherapy-induced anemia ("CIA"). It is a single-arm open label study investigating the efficacy and safety of roxadustat for the treatment of anemia in 92 patients receiving myelosuppressive chemotherapy for non-myeloid malignancies, with a treatment duration of 16 weeks. The primary efficacy endpoint of maximum change in hemoglobin within 16 weeks from baseline without red blood cell transfusion was met. We expect to release additional data from this study at the 2022 American Society of Clinical Oncology annual meeting.

We are currently enrolling a randomized, active controlled Phase 3 clinical trial in China of roxadustat in CIA for non-myeloid malignancies. The study will enroll approximately 146 subjects and the primary efficacy endpoint is the mean change in hemoglobin level from baseline to the level averaged over Weeks 9-13.

Monoclonal Antibody Targeting Connective Tissue Growth Factor

Pamrevlumab is our first-in-class antibody developed to inhibit the activity of connective tissue growth factor, a common factor in fibrotic and fibro-proliferative disorders characterized by persistent and excessive scarring that can lead to organ dysfunction and failure.

The FDA has granted Fast Track and Orphan Drug designations to pamrevlumab for the treatment of idiopathic pulmonary fibrosis ("IPF"), locally advanced unresectable pancreatic cancer, and Duchenne muscular dystrophy ("DMD") (with DMD receiving Rare Pediatric Disease designation).

Pamrevlumab for the Treatment of Idiopathic Pulmonary Fibrosis

We are conducting two randomized, double-blind, placebo-controlled, Phase 3 studies of pamrevlumab in IPF. Each study has a primary efficacy endpoint (for the U.S.) of change from baseline in forced vital capacity ("FVC"). For Europe, these trials have a primary efficacy endpoint of disease progression (defined by a decline in FVC percent predicted of greater than or equal to 10% or death). Secondary endpoints will include clinical outcomes of disease progression, acute IPF exacerbations, patient reported outcomes, and quantitative changes in lung fibrosis volume from baseline.

We completed enrollment of ZEPHYRUS-1, our first Phase 3 trial of pamrevlumab in 356 IPF patients, and we expect topline data from ZEPHYRUS-1 in mid-2023.

We continue to enroll patients in ZEPHYRUS-2, our second Phase 3 trial of pamrevlumab in approximately 340 IPF patients.

Pamrevlumab for the Treatment of Locally Advanced Unresectable Pancreatic Cancer

We completed enrollment of LAPIS, our double-blind placebo controlled Phase 3 clinical program for pamrevlumab as a neoadjuvant therapy for locally advanced unresectable pancreatic cancer. We enrolled 284 patients, randomized at a 1:1 ratio to receive either pamrevlumab or placebo, in each case in combination with chemotherapy (either FOLFIRINOX or gemcitabine plus nab-paclitaxel). We currently expect topline overall survival data, the primary endpoint, in the first half of 2024. An interim analysis of event-free survival will be conducted in the second quarter of 2022.

Pamrevlumab for the Treatment of Metastatic Pancreatic Cancer

In June 2021 the Pancreatic Cancer Action Network's (PanCAN) Precision PromiseSM adaptive trial platform included pamrevlumab, with standard of care chemotherapy treatments for pancreatic cancer (gemcitabine and Abraxane®), in its study for patients with metastatic pancreatic cancer. The combination therapy is offered to patients as either a first- or second-line treatment option (the first experimental treatment arm to be offered as a first-line treatment in PanCAN's innovative Precision Promise trial). The objective of Precision Promise is to expedite the study and approval of promising therapies for pancreatic cancer by bringing multiple stakeholders together, including academic, industry and regulatory entities.

Pamrevlumab for the Treatment of Duchenne Muscular Dystrophy

Non-Ambulatory Patients

We have completed enrollment of LELANTOS-1, our Phase 3 clinical trial evaluating pamrevlumab in combination with systemic corticosteroids as a treatment for DMD. LELANTOS-1 is a double-blind, placebo-controlled trial in 99 non-ambulatory DMD patients. Patients are randomized at a 1:1 ratio to pamrevlumab or placebo for a treatment period of 52 weeks. The primary endpoint will assess change in upper limb function from baseline to Week 52 and additional endpoints will include pulmonary, cardiac, performance, and fibrosis assessments. We expect topline data from this study in the first half of 2023.

Ambulatory Patients

In the second quarter of 2022, we expect to complete enrollment of our double-blind, placebo-controlled Phase 3 clinical trial, LELANTOS-2, evaluating pamrevlumab in combination with systemic corticosteroids in approximately 70 ambulatory DMD patients. Patients aged 6-12 will be randomized at a 1:1 ratio to pamrevlumab or placebo for a treatment period of 52 weeks. The primary efficacy endpoint will assess ambulatory function, measured by the change in North Star Ambulatory Assessment from baseline to Week 52.

Licensing Activities

Exclusive License with Eluminex Biosciences

In July 2021, we exclusively licensed to Eluminex Biosciences (Suzhou) Limited (“Eluminex”) global rights to our investigational biosynthetic cornea derived from recombinant human collagen type III.

Under the terms of the agreement with Eluminex, as amended and restated on January 21, 2022, Eluminex made an $8.0 million upfront payment to FibroGen during the first quarter of 2022. In addition, FibroGen may receive up to a total of $64.0 million in future manufacturing, clinical, regulatory, and commercial milestone payments for the biosynthetic cornea program, as well as $36.0 million in commercial milestones for the first recombinant collagen III product that is not the biosynthetic cornea. FibroGen will be eligible to receive mid single-digit to low double-digit royalties based upon worldwide net sales of cornea products, and low single-digit to mid single-digit royalties based on worldwide net sales of other recombinant human collagen type III products that are not cornea products.

See Note 2, *Collaboration Agreements, License Agreement and Revenues*, to the condensed consolidated financial statements for details.

Collaboration Partnerships for Roxadustat

Our current and future research, development, manufacturing and commercialization efforts with respect to roxadustat and our other product candidates currently in development depend on funds from our collaboration agreements with Astellas and AstraZeneca. See Note 2, *Collaboration Agreements, License Agreement and Revenues*, to the condensed consolidated financial statements for details.

Astellas

In June 2005, we entered into a collaboration agreement with Astellas for the development and commercialization (but not manufacture) of roxadustat for the treatment of anemia in Japan (“Japan Agreement”). In April 2006, we entered into the Europe Agreement with Astellas for roxadustat for the treatment of anemia in Europe, the Commonwealth of Independent States, the Middle East, and South Africa (“Europe Agreement”). Under these agreements, the aggregate amount of such consideration received through March 31, 2022 totaled $765.1 million.

On March 21, 2022, EVRENZO® (roxadustat) was registered with the Russian Ministry of Health. We evaluated the regulatory milestone payment associated with the approval in Russia under the Europe Agreement and concluded that this milestone was achieved in the first quarter of 2022. Accordingly, the consideration of $25.0 million associated with these milestones was included in the transaction price and allocated to performance obligations under the Europe Agreement, all of which was recognized as revenue during the first quarter of 2022 from performance obligations satisfied.

In 2018, FibroGen and Astellas entered into an amendment to the Japan Agreement that allows Astellas to manufacture roxadustat drug product for commercialization in Japan (the “Japan Amendment”). The related drug product revenue was $7.6 million and $4.0 million for the three months ended March 31, 2022 and 2021, respectively.

During the first quarter of 2021, we entered into an EU Supply Agreement under the Europe Agreement with Astellas to define general forecast, order, supply and payment terms for Astellas to purchase roxadustat bulk drug product from FibroGen in support of commercial supplies. There was no related drug product revenue for the three months ended March 31, 2022 and 2021.

AstraZeneca

In July 2013, we entered into a collaboration agreement with AstraZeneca for roxadustat for the treatment of anemia in the U.S. and all territories not previously licensed to Astellas, except China ("U.S./RoW Agreement"). In July 2013, through our China subsidiary and related affiliates, we entered into a collaboration agreement with AstraZeneca for roxadustat for the treatment of anemia in China (“China Agreement”). Under the AstraZeneca agreements, aggregate amount of such consideration received through March 31, 2022 totaled $516.2 million.

Under the China Agreement, which is conducted through FibroGen China Anemia Holdings, Ltd., FibroGen (China) Medical Technology Development Co., Ltd. ("FibroGen Beijing"), and FibroGen International (Hong Kong) Limited (collectively, (“FibroGen China”), the commercial collaboration was structured as a 50/50 profit share, which was amended by the China Amendment in the third quarter of 2020, as discussed and defined below in *China Amendment*.

In 2020, we entered into Master Supply Agreement under the U.S./RoW Agreement with AstraZeneca ("Master Supply Agreement") to define general forecast, order, supply and payment terms for AstraZeneca to purchase roxadustat bulk drug product from FibroGen in support of commercial supplies. There was no related drug product revenue for the three months ended March 31, 2022, and the related drug product revenue for the three months ended March 31, 2021 was $4.5 million.

China Amendment

In July 2020, FibroGen China and AstraZeneca entered into an amendment, effective July 1, 2020, to the China Agreement, relating to the development and commercialization of roxadustat in China (the "China Amendment"). Under the China Amendment, in September 2020, FibroGen Beijing and AstraZeneca completed the establishment of a jointly owned entity, Beijing Falikang Pharmaceutical Co., Ltd. ("Falikang"), which performs roxadustat distribution, as well as conduct sales and marketing through AstraZeneca.

FibroGen Beijing manufactures and supplies commercial product to Falikang based on an agreed upon transfer price, which includes gross transfer price, net of calculated profit share. Revenue is recognized upon the transfer of control of commercial products to Falikang in an amount that reflects the allocation of transaction price of the China manufacturing and supply obligation ("China performance obligation") to the performance obligation satisfied during the reporting period. During the three months ended March 31, 2022 and 2021, we recognized net product revenue of $18.9 million and $15.4 million, respectively.

Additional Information Related to Collaboration Agreements

Total cash consideration received through March 31, 2022 and potential cash consideration, for upfront payments and milestone payments under our collaboration agreements are as follows:

	Cash Received for Upfront Payments and Milestone Payments Through March 31, 2022	Additional Potential Cash Payment for Milestones		Total Potential Cash Payments for Upfront Payments and Milestones
		(in thousands)		
Astellas--related-party:				
Japan Agreement	$ 105,093	$ 67,500		$ 172,593
Europe Agreement	660,000	85,000	*	745,000
Total Astellas	765,093	152,500		917,593
AstraZeneca:				
U.S. / RoW Agreement	439,000	810,000		1,249,000
China Agreement	77,200	299,500		376,700
Total AstraZeneca	516,200	1,109,500		1,625,700
Total	$ 1,281,293	$ 1,262,000		$ 2,543,293

* The amount includes $25.0 million regulatory milestone receivable from Astellas as of March 31, 2022 associated with the approval of EVRENZO® (roxadustat) in Russia, which was received in April 2022.

The above table does not include development cost reimbursement, transfer price payments, and royalties and profit share under our existing collaboration agreements. While we continue to commercialize roxadustat in China with AstraZeneca, and develop roxadustat in the U.S. for the treatment of anemia in patients with MDS, we have not been able to agree on a path forward for AstraZeneca to fund further roxadustat development for CKD anemia in the U.S. Therefore, we do not expect to receive most or all of these potential U.S./RoW Agreement milestones from AstraZeneca.

RESULTS OF OPERATIONS

Revenue

	Three Months Ended March 31,		Change	
	2022	2021	$	%
	(dollars in thousands)			
Revenue:				
License revenue	$ 22,590	$ —	$ 22,590	100 %
Development and other revenue	11,762	14,587	(2,825)	(19)%
Product revenue, net	18,881	15,362	3,519	23 %
Drug product revenue	7,594	8,480	(886)	(10)%
Total revenue	$ 60,827	$ 38,429	$ 22,398	58 %

Under our revenue recognition policy, license revenue includes amounts from upfront, non-refundable license payments and amounts allocated pursuant to the standalone selling price method from other consideration received during the respective periods. This revenue is generally recognized as deliverables are met and services are performed.

Development revenue includes co-development and other development related services. Co-development services are recognized as revenue in the period in which they are billed to our partners, excluding China. For China co-development services, revenue is deferred until we begin to transfer control of the manufactured commercial product to AstraZeneca, which commenced in the first quarter of 2021 and is expected to continue through 2028. Other development related services are recognized as revenue over the non-contingent development period based on a proportional performance method. As of March 31, 2022, the estimated future non-contingent development periods range from 27 to 36 months. Other revenues consist of contract manufacturing revenue and sales of research and development material and have not been material for any of the periods presented.

Product revenue is recognized when our customer obtains control of promised goods or services in an amount that reflects the consideration we expect to receive in exchange for those goods or services.

Drug product revenue includes commercial-grade API or bulk drug product sales to AstraZeneca and Astellas in support of pre-commercial preparation prior to the NDA or Marketing Authorization Application approval, and to Astellas for ongoing commercial launch in Japan and Europe. Drug product revenue is recognized when we fulfill the inventory transfer obligations. The amount of variable consideration that is included in the transaction price may be constrained, and is included in the drug product revenue only to the extent that it is probable that a significant reversal in the amount of the cumulative revenue recognized will not occur in a future period when the uncertainty associated with the variable consideration is subsequently resolved. Actual amounts of consideration ultimately received in the future may differ from our estimates, for which we will adjust these estimates and affect the drug product revenue in the period such variances become known.

In the future, we will continue generating revenue from collaboration agreements in the form of license fees, milestone payments, reimbursements for collaboration services and royalties on drug product sales, and from product sales. We expect that any revenues we generate will fluctuate from quarter to quarter due to the uncertain timing and amount of such payments and sales.

Total revenue increased $22.4 million, or 58% for the three months ended March 31, 2022, compared to the same period a year ago for the reasons discussed in the sections below.

License Revenue

	Three Months Ended March 31,		Change	
	2022	2021	$	%
	(dollars in thousands)			
License revenue:				
Astellas	$ 22,590	$ —	$ 22,590	100 %
Total license revenue	$ 22,590	$ —	$ 22,590	100 %

License revenue recognized under our collaboration agreements with Astellas for the three months ended March 31, 2022 represented the allocated revenue of related to $25.0 million regulatory milestone associated with the approval of EVRENZO® (roxadustat) in Russia that was included in the transaction price during the first quarter of 2022 when such milestone was achieved. We did not have any license revenue for the three months ended March 31, 2021.

Development and Other Revenue

	Three Months Ended March 31,		Change	
	2022	2021	$	%
	(dollars in thousands)			
Development revenue:				
Astellas	$ 5,180	$ 3,611	$ 1,569	43 %
AstraZeneca	5,819	10,976	(5,157)	(47)%
Total development revenue	10,999	14,587	(3,588)	(25)%
Other revenue	763	—	763	100 %
Total development and other revenue	$ 11,762	$ 14,587	$ (2,825)	(19)%

Development and other revenue decreased $2.8 million, or 19% for the three months ended March 31, 2022, compared to the same period a year ago.

Development revenue recognized under our collaboration agreements with Astellas during the first quarter of 2022 included the allocated revenue of $2.4 million related to the above-mentioned $25.0 million regulatory milestone associated with the approval in Russia. The increase were partially offset by the decrease in co-development billings related to the development of roxadustat under our collaboration agreements with Astellas for the three months ended March 31, 2022 as a result of the substantial completion of Phase 3 trials for roxadustat.

Development revenue recognized under our collaboration agreements with AstraZeneca for the three months ended March 31, 2022 was impacted by the decrease in CKD related co-development billings in the U.S.

Product Revenue, Net

	Three Months Ended March 31,		Change	
	2022	2021	$	%
	(dollars in thousands)			
Direct Sales:				
Gross revenue	$ 2,830	$ 5,429	$ (2,599)	(48)%
Discounts and rebates	(175)	(562)	387	(69)%
Sales returns	3	89	(86)	(97)%
Direct sales revenue, net	2,658	4,956	(2,298)	(46)%
Sales to Falikang:				
Gross transaction price	22,726	24,401	(1,675)	(7)%
Profit share	(8,849)	(10,064)	1,215	(12)%
Net transaction price	13,877	14,337	(460)	(3)%
Decrease (increase) in deferred revenue	2,346	(3,931)	6,277	(160)%
Sales to Falikang revenue, net	16,223	10,406	5,817	56 %
Total product revenue, net	$ 18,881	$ 15,362	$ 3,519	23 %

In January 2021, Falikang became fully operational and substantially all direct product sales to distributors in China have been made by Falikang, while FibroGen Beijing continues to sell product directly in one province in China. Total product revenue, net increased $3.5 million, or 23% for the three months ended March 31, 2022, compared to the same period a year ago.

Product revenue from direct sales to distributors is recognized in an amount that reflects the consideration that we expect to be entitled to in exchange for those products, net of various sales rebates and discounts. Product revenue from direct sales, net decreased $2.3 million, or 46% for the three months ended March 31, 2022, compared to the same period a year ago. The gross product revenue from direct sales to distributors decreased $2.6 million for the three months ended March 31, 2022, compared to the same period a year ago, primarily due to the lower NRDL price effective in the first quarter of 2022. The discounts and rebates primarily consisted of the contractual sales rebate that were calculated based on the stated percentage of gross sales by each distributor in the distribution agreement, and non-key account hospital listing award that was calculated based on eligible non-key account hospital listing to date achieved by each distributor with certain requirements met during the period. The total discounts and rebates were immaterial for the three months ended March 31, 2022 and 2021, respectively.

FibroGen Beijing manufactures and supplies commercial product to Falikang based on an agreed upon transfer price, which includes gross transfer price, net of calculated profit share. Revenue is recognized upon the transfer of control of commercial products to Falikang in an amount that reflects the allocation of the China performance obligation transaction price to the performance obligation satisfied during the reporting period. The variable consideration components that are included in the transaction price may be constrained, and are included in the product revenue only to the extent that it is probable that a significant reversal in the amount of the cumulative revenue recognized will not occur in a future period when the uncertainty associated with the variable consideration is subsequently resolved. Sales to Falikang revenue, net increased $5.8 million, or 56% for the three months ended March 31, 2022, compared to the same period a year ago. During the three months ended March 31, 2022, the gross transfer price decreased $1.7 million and the calculated profit share decreased $1.2 million, primarily due to the lower NRDL price effective in the first quarter of 2022, offset by the increase in sales volume. Following updates to our estimates, we recognized $2.3 million from the previously deferred revenue of the China performance obligation during the three months ended March 31, 2022. Comparatively, for the three months ended March 31, 2021 we deferred $3.9 million from the net transfer price to Falikang, which was included in the related deferred revenue of the China performance obligation.

Drug Product Revenue

	Three Months Ended March 31,		Change	
	2022	2021	$	%
	(dollars in thousands)			
Drug product revenue:				
Astellas	$ 7,594	$ 4,030	$ 3,564	88 %
AstraZeneca	—	4,450	(4,450)	(100)%
Total drug product revenue:	$ 7,594	$ 8,480	$ (886)	(10)%

During the three months ended March 31, 2022, we fulfilled a shipment obligation under the terms of Japan Amendment with Astellas, and recognized related drug product revenue of $9.8 million in the same period. In addition, we updated our estimate of variable consideration related to the API shipments fulfilled under the terms of Japan Amendment with Astellas, and recorded a reduction to the drug product revenue of $2.2 million during the three months ended March 31, 2022, and $4.0 million additional drug product revenue during the three months ended March 31, 2021. Specifically, the change in estimated variable consideration was based on the API held by Astellas at period end, adjusted to reflect the changes in the estimated bulk product strength mix intended to be manufactured by Astellas, estimated cost to convert the API to bulk product tablets, and estimated yield from the manufacture of bulk product tablets, among others.

During the three months ended March 31, 2021, we shipped bulk drug product from process validation supplies for commercial purposes under the terms of the Europe Agreement with Astellas. We constrained the consideration of $11.8 million from this shipment due to a high degree of uncertainty associated to the final consideration, which was recorded as deferred revenue as of March 31, 2021, which will be recognized as and when uncertainty is resolved. During the three months ended March 31, 2022, we billed and received $49.2 million from Astellas related to the annual transfer price true up for bulk drug product transferred for commercial purposes under the terms of the Europe Agreement and the EU Supply Agreement with Astellas. This amount was recorded in deferred revenue and netted against an unbilled contract asset as of December 31, 2021. During the first quarter of 2022, we updated our estimate of variable consideration related to the bulk drug product transferred in prior years. Specifically, the change in estimated variable consideration was based on the bulk drug product held by Astellas at the period end, adjusted to reflect the changes in the estimated transfer price, forecast information, shelf-life estimates and other items. As a result, we reclassified $45.5 million from deferred revenue to accrued liabilities as of March 31, 2022, representing our best estimate that this amount will be paid in the first quarter of 2023.

During three months ended March 31, 2021, we shipped bulk drug product to AstraZeneca as commercial supply under the terms of the Master Supply Agreement and recognized drug product revenue of $4.5 million.

During the three months ended March 31, 2022, we evaluated the current developments in the U.S. market, and updated our estimates of variable consideration associated with bulk drug product shipments to AstraZeneca in prior years as commercial supply under the terms of the Master Supply Agreement. As a result, we reclassified $11.2 million from the related deferred revenue to accrued liabilities as of March 31, 2022.

Operating Costs and Expenses

	Three Months Ended March 31,		Change	
	2022	2021	$	%
	(dollars in thousands)			
Operating costs and expenses				
Cost of goods sold	$ 4,238	$ 3,401	$ 837	25 %
Research and development	89,018	74,676	14,342	19 %
Selling, general and administrative	30,564	30,779	(215)	(1)%
Total operating costs and expenses	$ 123,820	$ 108,856	$ 14,964	14 %

Total operating costs and expenses increased $15.0 million, or 14% for the three months ended March 31, 2022, compared to the same period a year ago, for the reason discussed in the sections below.

Cost of Goods Sold

Cost of goods sold increased $0.8 million, or 25%, for the three months ended March 31, 2022, compared to the same period a year ago, primarily due to the cost associated with the contract manufacturing revenue from Eluminex during the current year period.

Cost of goods sold, associated with the roxadustat commercial sales in China, consists of direct costs to manufacture commercial product, as well as indirect costs including factory overhead, storage, shipping, quality assurance, idle capacity charges, and inventory valuation adjustments. Cost of goods sold, associated with the roxadustat commercial sales in China, was $2.6 million and $2.7 million for the three months ended March 31, 2022 and 2021, respectively, and remained flat for the three months ended March 31, 2022, compared to the same period a year ago, resulting from improved unit cost efficiency due to higher production volume, offset by the increase in the sales volume.

Cost of goods sold associated with the roxadustat drug product revenue in the U.S. was $0.9 million and $0.7 million for the three months ended March 31, 2022 and 2021, respectively, associated with the costs of API or bulk drug product delivered to Astellas and AstraZeneca in the respective periods. We expect costs of goods sold to increase in relation to drug product revenue as we deplete inventories that we had expensed prior to receiving regulatory approvals.

Research and Development Expenses

Research and development expenses consist of third-party research and development costs and the fully-burdened amount of costs associated with work performed under collaboration agreements. Research and development expenses include employee-related expenses for research and development functions, expenses incurred under agreements with clinical research organizations, other clinical and preclinical costs and allocated direct and indirect overhead costs, such as facilities costs, information technology costs and other overhead. Research and development costs are expensed as incurred. Costs for certain development activities are recognized based on an evaluation of the progress to completion of specific tasks using information and data provided to us by our vendors and our clinical sites. Research and development expenses also include in-process research and development assets that have no alternative future use other than in a particular research and development project. Following the CRL for roxadustat in the U.S., we have implemented a cost reduction effort, and as a result, research and development expenses have decreased and may continue to decrease in certain areas over time.

The following table summarizes our research and development expenses incurred during the three months ended March 31, 2022 and 2021:

Product Candidate	Phase of Development	Three Months Ended March 31, 2022	2021
		(in thousands)	
Roxadustat	Phase 3	$ 16,530	$ 26,524
Pamrevlumab	Phase 2/3	61,013	35,370
Other research and development expenses		11,475	12,782
Total research and development expenses		$ 89,018	$ 74,676

The program-specific expenses summarized in the table above include costs we directly attribute to our product candidates. We allocate research and development salaries, benefits, stock-based compensation and other indirect costs to our product candidates on a program-specific basis, and we include these costs in the program-specific expenses.

Research and development expenses increased $14.3 million, or 19% for the three months ended March 31, 2022, compared to the same period a year ago, as a result of the net effect of the following:

- Increase of $15.9 million in drug development expenses associated with drug substance and drug product manufacturing activities primarily related to pamrevlumab;
- Increase of $5.2 million in clinical trials costs, primarily due to Phase 3 trials for pamrevlumab; and
- Decrease of $3.1 million in employee-related costs and decrease of $2.7 million in stock-based compensation expenses primarily due to lower headcount as part of the cost reduction effort we started to implement in the second half of 2021 following the CRL for roxadustat in the U.S.

Selling, General and Administrative Expenses

Selling, general and administrative ("SG&A") expenses consist primarily of employee-related expenses for executive, operational, finance, legal, compliance, and human resource functions. SG&A expenses also include facility-related costs, professional fees, accounting and legal services, other outside services including co-promotional expenses associated with our commercialization efforts in China, recruiting fees and expenses associated with obtaining and maintaining patents. Following the CRL for roxadustat in the U.S., we have implemented a cost reduction effort, and as a result, SG&A expenses have decreased and may continue to decrease in certain areas over time.

SG&A expenses remained relatively flat for the three months ended March 31, 2022, compared to the same period a year ago, without material offsetting impacts.

Interest and Other, Net

	Three Months Ended March 31,		Change	
	2022	2021	$	%
	(dollars in thousands)			
Interest and other, net:				
Interest expense	$ (97)	$ (501)	$ 404	(81)%
Interest income and other income (expenses), net	(322)	(453)	131	(29)%
Total interest and other, net	$ (419)	$ (954)	$ 535	(56)%

Interest Expense

Interest expense relates to our finance lease liabilities accretion primarily for our leased facilities in San Francisco and China. Interest expense also includes interest related to the Technology Development Center of the Republic of Finland product development obligations.

Interest expense decreased $0.4 million, or 81% for the three months ended March 31, 2022, compared to the same period a year ago, primarily related to the lease modification and renewal in 2021 being classified as operating leases, as compared to finance leases previously.

Interest Income and Other Income (Expenses), Net

Interest income and other income (expenses), net primarily include interest income earned on our cash, cash equivalents and investments, foreign currency transaction gains (losses), remeasurement of certain monetary assets and liabilities in non-functional currency of our subsidiaries into the functional currency, realized gains (losses) on sales of investments, and other non-operating income and expenses.

Interest income and other income (expenses), net was not material and remained relatively flat for the three months ended March 31, 2022 compared to the same period a year ago.

Income Taxes

	Three Months Ended March 31,	
	2022	2021
	(dollars in thousands)	
Loss before income taxes	$ (63,412)	$ (71,381)
Provision for income taxes	113	134
Effective tax rate	(0.2)%	(0.2)%

Provisions for income taxes for the three months ended March 31, 2022 were primarily due to foreign taxes.

Based upon the weight of available evidence, which includes our historical operating performance, reported cumulative net losses since inception and expected continuing net loss, we have established a full valuation allowance against our net deferred tax assets as we do not currently believe that realization of those assets is more likely than not. We intend to continue maintaining a full valuation allowance on our deferred tax assets until there is sufficient evidence to support the reversal of all or some portion of this allowance. However, given our anticipated future foreign earnings, we believe that there is a reasonable possibility that within the next 12 months, sufficient positive evidence may become available to allow us to reach a conclusion that a portion of the valuation allowance may no longer be needed. Release of the valuation allowance would result in the recognition of certain deferred tax assets and a decrease to income tax expense for the period the release is recorded. The exact timing and amount of the valuation allowance release are subject to change on the basis of the level of profitability that we are able to actually achieve.

Investment Income (Loss) in Unconsolidated Variable Interest Entity

Investment income (loss) in unconsolidated variable interest entity represented our proportionate share of the reported profits or losses of Falikang, an unconsolidated variable interest entity accounted for under the equity method, and was immaterial for the three months ended March 31, 2022 and 2021. See Note 3, *Variable Interest Entity*, to the condensed consolidated financial statements for details.

LIQUIDITY AND CAPITAL RESOURCES

Financial Conditions

We have historically funded our operations principally from the sale of common stock (including our public offering proceeds) and from the execution of collaboration agreements involving license payments, milestones and reimbursement for development services.

As of March 31, 2022, we had cash and cash equivalents of $185.9 million, short-term investments of $242.2 million and long-term investments of $93.5 million. Cash is invested in accordance with our investment policy, primarily with a view to liquidity and capital preservation. Investments, consisting of available-for-sale securities, and stated at fair value, are also available as a source of liquidity. As of March 31, 2022, a total of $95.2 million of our cash and cash equivalents was held outside of the U.S. in our foreign subsidiaries, including $73.9 million held in China, to be used primarily for our China operations.

Cash flows from Falikang, a distribution joint venture between FibroGen Beijing and AstraZeneca, and cash flows into FibroGen Beijing, are currently intended to remain onshore in China. Our long-term plans for distributing cash flows from FibroGen Beijing may involve any number of scenarios including keeping the money onshore to fund future expansion of our China operations or paying down certain debt obligations. To date, no such debt repayments have occurred, nor have there been any other payments or distributions from FibroGen Beijing to entities or investors outside of China. Our capital contributions to FibroGen Beijing and the liquidity position of FibroGen Beijing depend on many factors, including those set forth under Part II, Item 1A “*Risk Factors*” in this Quarterly Report.

Cash Sources and Uses

The following table sets forth the primary sources and uses of cash and cash equivalents for each of the periods set forth below (in thousands):

	Three Months Ended March 31,	
	2022	2021
Net cash provided by (used in):		
Operating activities	$ (8,476)	$ (44,984)
Investing activities	25,935	(196,719)
Financing activities	(2,893)	(2,080)
Effect of exchange rate changes on cash and cash equivalents	107	(1,102)
Net increase (decrease) in cash and cash equivalents	$ 14,673	$ (244,885)

Operating Activities

Net cash used in operating activities was $8.5 million for the three months ended March 31, 2022 and consisted primarily of net loss of $63.2 million adjusted for non-operating cash items of $20.4 million, offset by a net increase in operating assets and liabilities of $34.4 million. The significant non-operating cash items included stock-based compensation expense of $17.2 million, and depreciation expense of $2.5 million. The significant items in the changes in operating assets and liabilities included the increases resulting from the following:

- Accrued and other liabilities of $66.0 million, primarily related to the total of 60.8 million for API and bulk drug product price true-up as of March 31, 2022, resulting from changes in estimated variable consideration associated with the API shipments fulfilled under the terms of the Japan Amendment with Astellas, the bulk drug product transferred under the terms of the Europe Agreement and the EU Supply Agreement with Astellas, and the bulk drug product shipments to AstraZeneca under the terms of the Master Supply Agreement. See Note 2, *Collaboration Agreements, License Agreement and Revenues*, to the condensed consolidated financial statements for details. The accrued and other liabilities were also impacted by the timing of invoicing and payment;
- Prepaid expenses and other current assets of $11.4 million, primarily due to the collection of $8.0 million from Eluminex for upfront license payment during the quarter, and less prepayments made for roxadustat API manufacturing activities; and
- Accounts payable of $10.2 million, primarily driven by the timing of invoicing and payments.

The increases were partially offset by the decreases resulting from the following:

- Accounts receivable of $26.5 million, primarily due to the $25.0 million regulatory milestone payment receivable from Astellas under the Europe Agreement associated with the approval in Russia as of March 31, 2022.
- Deferred revenue of $13.0 million, primarily related to the above-mentioned reclassification to accrued liabilities, resulting from changes in estimated variable consideration associated with the API or bulk drug product deliveries fulfilled with Astellas and AstraZeneca. See Note 2, *Collaboration Agreements, License Agreement and Revenues*, to the condensed consolidated financial statements for details; and
- Inventories of $12.0 million, driven by the increased inventory level primarily related to pre-launch inventory cost capitalized for the U.S. entity, and FibroGen Beijing's productions of roxadustat for commercial sales purposes.

Net cash used in operating activities was $45.0 million for the three months ended March 31, 2021 and consisted primarily of net loss of $71.8 million adjusted for non-cash items of $25.1 million, offset by a net increase in operating assets and liabilities of $1.7 million. The significant non-cash items included stock-based compensation expense of $19.4 million, depreciation expense of $2.7 million and amortization of finance lease ROU of $2.6 million. The significant items in the changes in operating assets and liabilities included the increases resulting from the following:

- Deferred revenue of $17.2 million, primarily related to the above-mentioned $11.8 million of the constrained consideration of the bulk drug product shipped to Astellas due to a high degree of uncertainty associated to the final consideration, and $3.9 million of the constrained revenue from the sales to Falikang associated with China performance obligation. The change in deferred revenue was also driven by the extension of the estimated future non-contingent development period and recognition of revenues under our collaboration agreements with Astellas and AstraZeneca.

The increases were partially offset by the decreases resulting from the following:

- Prepaid expenses and other current assets of $5.5 million, primarily driven by the above-mentioned $4.0 million unbilled contract asset related to drug product revenue as a change in estimated variable consideration, based on the API held by Astellas at March 31, 2021; and
- Inventories of $4.3 million, driven by the increased inventory level primarily related to FibroGen Beijing's productions of roxadustat for commercial sales purposes and pre-launch inventory cost capitalized in the U.S.

Investing Activities

Investing activities primarily consist of purchases of property and equipment, purchases of investments, purchase of acquired in-process research and development asset and proceeds from the maturity and sale of investments.

Net cash provided by investing activities was $25.9 million for the three months ended March 31, 2022 and consisted primarily of $76.1 million of proceeds from maturities of investments and $7.4 million of proceeds from sales of available-for-sale securities, partially offset by $35.0 million of cash paid for the acquired in-process research and development asset, and $20.9 million of cash used in purchases of available-for-sale securities.

Net cash used in investing activities was $196.7 million for the three months ended March 31, 2021 and consisted primarily of $196.2 million of cash used in purchases of available-for-sale securities.

Financing Activities

Financing activities primarily reflect proceeds from the issuance of our common stock, cash paid for payroll taxes on restricted stock unit releases, repayments of our lease liabilities and obligations.

Net cash used in financing activities was $2.9 million for the three months ended March 31, 2022 and consisted primarily of $3.0 million of cash paid for payroll taxes on restricted stock unit releases.

Net cash used in financing activities was $2.1 million for the three months ended March 31, 2021 and consisted primarily of $4.8 million of cash paid for payroll taxes on restricted stock unit releases, $3.3 million of repayments of finance lease liabilities, partially offset by $6.1 million of proceeds from the issuance of common stock upon exercise of stock options.

Material Cash Requirements

In the third quarter of 2019, we started generating revenue from commercial sales of roxadustat product in China. Even with the expectation of increases in revenue from product sales, we anticipate that we will continue to generate losses for the foreseeable future. Following the CRL for roxadustat in the U.S., we have implemented a cost reduction effort, and as a result, operating expenses have decreased and may continue to decrease in certain areas over time compared to our previous internal plans. To date, we have funded certain portions of our research and development and manufacturing efforts globally through collaboration partners, government support, and capital investment. There is no guarantee that sufficient funds will be available to continue to fund these development efforts through commercialization or otherwise. Although AstraZeneca is currently funding all non-China collaboration expenses not reimbursed by Astellas, including development of MDS in the U.S., we expect our research and development expenses to continue to increase as we invest in our other programs. Additionally, we have not been able to agree on a path forward for AstraZeneca to fund further roxadustat development in the U.S. for CKD anemia. We are also subject to all the risks related to the development and commercialization of novel therapeutics, and we may encounter unforeseen expenses, difficulties, complications, delays and other unknown factors that may adversely affect our business, such as from the COVID-19 pandemic or other factors outlined under Part II, Item 1A "*Risk Factors*" in this Quarterly Report on Form 10-Q. We anticipate that we will need substantial additional funding in connection with our continuing operations.

We believe that our existing cash and cash equivalents, short-term and long-term investments and accounts receivable will be sufficient to meet our anticipated cash requirements for at least the next 12 months from the date of this Quarterly Report. However, we may need additional capital thereafter and our liquidity assumptions could turn out to be wrong, or may change over time, and we could utilize our available financial resources sooner than we currently expect. In addition, we may elect to raise additional funds at any time through equity, equity-linked, debt financing arrangements or from other sources. Our forecast of the period of time through which our financial resources will be adequate to support our operations is a forward-looking statement and involves risks and uncertainties, and actual results could vary as a result of a number of factors. Our future capital requirements and the adequacy of available funds will depend on many factors, including those set forth under Part II, Item 1A "*Risk Factors*" in this Quarterly Report on Form 10-Q. We may not be able to secure additional financing to meet our operating requirements on acceptable terms, or at all. If we raise additional funds by issuing equity or equity-linked securities, the ownership of our existing stockholders will be diluted. If we raise additional financing by the incurrence of indebtedness, we will be subject to increased fixed payment obligations and could also be subject to restrictive covenants, such as limitations on our ability to incur additional debt, and other operating restrictions that could adversely impact our ability to conduct our business. If we are unable to obtain needed additional funds, we will have to reduce our operating costs and expenses, which would impair our growth prospects and could otherwise negatively impact our business.

Commitments and Contingencies

Contractual Obligations

As of March 31, 2022, we had $96.9 million of operating lease liabilities. The material cash requirements related to our lease liabilities included $15.3 million expected to be paid within the next 12 months.

As of March 31, 2022, we had outstanding total non-cancelable purchase obligations of $56.9 million, including $34.2 million for manufacture and supply of pamrevlumab, $12.2 million for manufacture and supply of roxadustat, and $10.5 million for other purchases. The Company expects to fulfill its commitments under these agreements in the normal course of business, and as such, no liability has been recorded. The material cash requirements related to our non-cancelable purchase obligations included $33.7 million expected to be paid within the next 12 months.

Some of our license agreements provide for periodic maintenance fees over specified time periods, as well as payments by the Company upon the achievement of development, regulatory and commercial milestones. As of March 31, 2022, future milestone payments for research and pre-clinical stage development programs consisted of up to approximately $704.1 million in total potential future milestone payments under our license agreements with HiFiBiO (for Gal-9 and CCR8), Medarex, Inc. and others. These milestone payments generally become due and payable only upon the achievement of certain developmental, clinical, regulatory and/or commercial milestones. The event triggering such payment or obligation has not yet occurred.

Off-Balance Sheet Arrangements

During the three months ended March 31, 2022, we did not have any relationships with unconsolidated organizations or financial partnerships, such as structured finance or special purpose entities that would have been established for the purpose of facilitating off-balance sheet arrangements.

Recently Issued Accounting Guidance

For recently issued accounting guidance, see Note 1, *Significant Accounting Policies*, to the condensed consolidated financial statements.

CRITICAL ACCOUNTING POLICIES AND ESTIMATES

Our management's discussion and analysis of our financial condition and results of operations are based on our financial statements, which have been prepared in accordance with accounting principles generally accepted in the U.S. The preparation of these financial statements requires us to make estimates and judgments that affect the reported amounts of assets, liabilities, and expenses and the disclosure of contingent assets and liabilities in our financial statements. We evaluate our estimates and judgments on an ongoing basis. We base our estimates on historical experience, known trends and events, and various other factors that we believe to be reasonable under the circumstances, the results of which form the basis for making judgments about the carrying values of assets and liabilities that are not readily apparent from other sources. Actual results may differ from these estimates under different assumptions or conditions.

There have been no material changes in our critical accounting policies, estimates and judgments during the three months ended March 31, 2022 compared with the disclosures in Part II, Item 7 of our 2021 Form 10-K.

ITEM 3. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK.

During the three months ended March 31, 2022, we believe there were no material changes to our exposure to market risks as set forth in Part II, Item 7A *"Quantitative and Qualitative Disclosures About Market Risk"* in our 2021 Form 10-K.

ITEM 4. CONTROLS AND PROCEDURES.

Evaluation of Disclosure Controls and Procedures

Our management, with the participation of our Chief Executive Officer and our Chief Financial Officer, has evaluated the effectiveness of our disclosure controls and procedures as of March 31, 2022, the end of the period covered by this Quarterly Report on Form 10-Q. Disclosure controls and procedures (as defined in Rules 13a-15(e) and 15d-15(e) under the Exchange Act) are designed to provide reasonable assurance that information required to be disclosed by a company in the reports that it files or submits under the Exchange Act is recorded, processed, summarized and reported, within the time periods specified in the SEC's rules and forms and that such information is accumulated and communicated to the company's management, including its Chief Executive Officer and Chief Financial Officer, as appropriate to allow timely decisions regarding required disclosure.

Based on our evaluation, the Chief Executive Officer and Chief Financial Officer have concluded that our disclosure controls and procedures were effective at the reasonable assurance level as of March 31, 2022.

Changes in Internal Control over Financial Reporting

There were no changes in our internal control over financial reporting identified in connection with the evaluation required by Rule 13a-15(d) and 15d-15(d) of the Exchange Act that occurred during the three months ended March 31, 2022 that materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

Limitations on the Effectiveness of Controls

In designing and evaluating the disclosure controls and procedures, management recognizes that any controls and procedures, no matter how well designed and operated, can provide only reasonable assurance of achieving the desired control objectives. In addition, the design of disclosure controls and procedures must reflect the fact that there are resource constraints and that management is required to apply its judgment in evaluating the benefits of possible controls and procedures relative to their costs. Because of the inherent limitations in a cost-effective control system, misstatements due to error or fraud may occur and not be detected.

PART II—OTHER INFORMATION

ITEM 1. LEGAL PROCEEDINGS

We are a party to various legal actions that arose in the ordinary course of our business. We recognize accruals for any legal action when we conclude that a loss is probable and reasonably estimable. We did not have any material accruals for any active legal action in our consolidated balance sheets as of March 31, 2022, as we could not predict the ultimate outcome of these matters, or reasonably estimate the potential exposure. See Note 8, *Commitments and Contingencies*, to the condensed consolidated financial statements for details.

ITEM 1A. RISK FACTORS

Investing in our common stock involves a high degree of risk. You should carefully consider the risks described below in addition to the other information included or incorporated by reference in this Quarterly Report on Form 10-Q, including our condensed consolidated financial statements and the related notes and "Management's Discussion and Analysis of Financial Condition and Results of Operations," before deciding whether to invest in our common stock. The occurrence of any of the events or developments described below could harm our business, financial condition, results of operations and growth prospects. In such an event, the market price of our common stock could decline, and you may lose all or part of your investment. Although we have discussed all known material risks, the risks described below are not the only ones that we may face. Additional risks and uncertainties not presently known to us or that we deem immaterial may also impair our business operations.

We have marked with an asterisk (*) those risks described below that reflect substantive changes from the risks described under Part I, Item 1A *"Risk Factors"* included in our Annual Report on Form 10-K for the year ended December 31, 2021, filed on February 28, 2022 and as amended on March 4, 2022 ("2021 Form 10-K").

SUMMARY RISK FACTORS

The success of FibroGen will depend on a number of factors, many of which are beyond our control and involve risks, including but not limited to the following:

Risks Related to the Development and Commercialization of Our Product Candidates

- We are substantially dependent on the success of our lead products pamrevlumab and roxadustat.*
- As a company, we have limited commercialization experience, and the time and resources required to develop such experience are significant. If we fail to achieve and sustain commercial success for any of our products, our business would be harmed.
- Drug development and obtaining marketing authorization is a very difficult endeavor and we may ultimately be unable to obtain regulatory approval for our various product candidates in one or more jurisdictions and in one or more indications.
- The complete response letter we received from the FDA for roxadustat has decreased the likelihood of approval and successful commercialization of roxadustat in the U.S. and potentially other markets. There is a significant risk that our U.S./Rest of World Collaboration Agreement with AstraZeneca could be amended or terminated.*
- Preclinical, Phase 1 and Phase 2 clinical trial results may not be indicative of the results that may be obtained in larger clinical trials.
- We do not know whether our ongoing or planned clinical trials of roxadustat or pamrevlumab will need to be redesigned based on interim results or if we will be able to achieve sufficient patient enrollment or complete planned clinical trials on schedule.
- Our product candidates may cause or have attributed to them undesirable side effects or have other properties that delay or prevent their regulatory approval or limit their commercial potential.
- Clinical trials of our product candidates may not uncover all possible adverse effects that patients may experience.
- If our manufacturers or we cannot properly manufacture the appropriate volume of product, we may experience delays in development, regulatory approval, launch or successful commercialization.
- Regulatory authorities will do their own benefit risk analysis and may reach a different conclusion than we or our partners have, and these regulatory authorities may base their approval decision on different analyses, data, and statistical methods than ours.
- Even if we are able to obtain regulatory approval of our product candidates, the label we obtain may limit the indicated uses for which our product candidates may be marketed.
- We face substantial competition in the discovery, development and commercialization of product candidates.*

- Our product candidates may not achieve adequate market acceptance among physicians, patients, healthcare payors, and others in the medical community necessary for commercial success.
- No or limited reimbursement or insurance coverage of our approved products, if any, by third-party payors may render our products less attractive to patients and healthcare providers.

Risks Related to Our Reliance on Third Parties

- If our collaborations were terminated or if Astellas or AstraZeneca were to prioritize other initiatives over their collaborations with us, our ability to successfully develop and commercialize our product candidates would suffer.*
- If our preclinical and clinical trial contractors do not properly perform their agreed upon obligations, we may not be able to obtain or may be delayed in receiving regulatory approvals for our product candidates.
- We currently rely, and expect to continue to rely, on third parties to conduct many aspects of our product manufacturing and distribution, and these third parties may terminate these agreements or not perform satisfactorily.
- We may experience delays or technical problems associated with technology transfer, scale-up, or validation of our biologics manufacturing.
- Certain components of our products are acquired from single-source suppliers or without long-term supply agreements. The loss of these suppliers, or their failure to supply, would materially and adversely affect our business.

Risks Related to Our Intellectual Property

- If our efforts to protect our proprietary technologies are not adequate, we may not be able to compete effectively in our market.
- Intellectual property disputes may be costly, time consuming, and may negatively affect our competitive position.
- Our reliance on third parties and agreements with collaboration partners requires us to share our trade secrets, which increases the possibility that a competitor may discover them or that our trade secrets will be misappropriated or disclosed.
- The cost of maintaining our patent protection is high and requires continuous review and diligence. We may not be able to effectively maintain our intellectual property position throughout the major markets of the world.
- The laws of some foreign countries do not protect proprietary rights to the same extent as do the laws of the U.S., and we may encounter significant problems in securing and defending our intellectual property rights outside the U.S.
- Intellectual property rights do not address all potential threats to any competitive advantage we may have.
- The existence of counterfeit pharmaceutical products in pharmaceutical markets may compromise our brand and reputation and have a material adverse effect on our business, operations and prospects.

Risks Related to Government Regulation

- The regulatory approval process is highly uncertain and we may not obtain regulatory approval for our product candidates.
- Our current and future relationships with customers, physicians, and third-party payors are subject to healthcare fraud and abuse laws, false claims laws, transparency laws, privacy and security laws, and other regulations. If we are unable to comply with such laws, we could face substantial penalties.
- We are subject to laws and regulations governing corruption, which require us to maintain costly compliance programs.
- If we fail to maintain an effective system of internal control, it may result in material misstatements in our financial statements.*
- The impact of U.S. healthcare reform may adversely affect our business model.
- Roxadustat is considered a Class 2 substance on the 2019 World Anti-Doping Agency Prohibited List that could limit sales and increase security and distribution costs for our partners and us.
- Our employees may engage in misconduct or improper activities, which could result in significant liability or harm our reputation.
- If we fail to comply with environmental, health or safety laws and regulations, we could incur fines, penalties or other costs.

Risks Related to Our International Operations

- We have established operations in China and are seeking approval to commercialize our product candidates outside of the U.S., and a number of risks associated with international operations could materially and adversely affect our business.
- The pharmaceutical industry in China is highly regulated and such regulations are subject to change.
- The China-operations portion of our audit is conducted by an independent registered public accounting firm that is not subject to inspection by the Public Company Accounting Oversight Board, which may negatively impact investor sentiment towards FibroGen or our China operations, which could adversely affect the market price of our common stock.

- Changes in U.S. and China relations, as well as with other countries, and/or regulations may adversely impact our business.
- We use our own manufacturing facilities in China to produce roxadustat API and drug product for the market in China. There are risks inherent to operating commercial manufacturing facilities, and with these being our single source suppliers, we may not be able to continually meet market demand.
- Our collaboration partner in China, AstraZeneca, and we may experience difficulties in successfully growing and sustaining sales of roxadustat in China.
- The retail prices of any product candidates that we develop may be subject to pricing control in China and elsewhere.
- FibroGen Beijing would be subject to restrictions on paying dividends or making other payments to us, which may restrict our ability to satisfy our liquidity requirements.
- Any capital contributions from us to FibroGen Beijing must be approved by the Ministry of Commerce in China, and failure to obtain such approval may materially and adversely affect the liquidity position of FibroGen Beijing.
- We may be subject to currency exchange rate fluctuations and currency exchange restrictions with respect to our operations in China, which could adversely affect our financial performance.
- Because FibroGen Beijing's funds are held in banks that do not provide insurance, the failure of any bank in which FibroGen Beijing deposits its funds could adversely affect our business.
- We may be subject to tax inefficiencies associated with our offshore corporate structure.
- Our foreign operations, particularly those in China, are subject to significant risks involving the protection of intellectual property.
- Uncertainties with respect to the China legal system and regulations could have a material adverse effect on us.
- Changes in China's economic, governmental, or social conditions could have a material adverse effect on our business.
- We may be subject to additional Chinese requirements, approvals or permissions in the future.
- If the Chinese government determines that our corporate structure does not comply with Chinese regulations, or if Chinese regulations change or are interpreted differently in the future, the value of our common stock may decline.
- Our operations in China subject us to various Chinese labor and social insurance laws, and our failure to comply with such laws may materially and adversely affect our business, financial condition and results of operations.

Risks Related to COVID-19

- Our business could continue to be adversely affected by the ongoing COVID-19 global pandemic.*

Risks Related to Conflict in Ukraine

- Our business could continue to be adversely affected by the ongoing war in Ukraine and the global response to it.*

Risks Related to the Operation of Our Business

- Please see below for additional risk factors related to the operation of our Business.

Risks Related to Our Common Stock

- Please see below for additional risk factors related to our Common Stock.

RISK FACTORS

Risks Related to the Development and Commercialization of Our Product Candidates

We are substantially dependent on the success of our lead products pamrevlumab and roxadustat.*

To date, we have invested a substantial portion of our efforts and financial resources in the research and development of pamrevlumab and roxadustat.

Our near-term success depends in large part on pamrevlumab, which is in clinical development for idiopathic pulmonary fibrosis ("IPF"), locally advanced unresectable pancreatic cancer, metastatic pancreatic cancer, and Duchenne muscular dystrophy ("DMD"). Pamrevlumab requires substantial further development and investment and we do not have a collaboration partner for support of this compound. In addition, pamrevlumab is a monoclonal antibody, which may require greater financial resources than for our small molecule, roxadustat.

Our near-term prospects also depend in large part on our continued development and commercialization of roxadustat in the People's Republic of China ("China"), Japan, the United States ("U.S."), and elsewhere. Roxadustat has received approval in the European Union, Great Britain, China, Japan, South Korea, Chile, Russia, the United Arab Emirates, and Kuwait for chronic kidney disease ("CKD") anemia for patients on dialysis and not on dialysis. However, roxadustat received a complete response letter ("CRL") in the U.S. from the Food and Drug Administration ("FDA"). While we continue to commercialize roxadustat in China with AstraZeneca, and develop roxadustat in the U.S. for the treatment of anemia in patients with myelodysplastic syndromes (“MDS”), we have not been able to agree on a path forward for AstraZeneca to fund further roxadustat development in the U.S. for CKD anemia and there is a significant risk we will be unable to do so. There is also a significant risk that the U.S./RoW Agreement is amended or terminated.

With an eye toward the longer-term success of the Company, we are investing in the development of new drug programs to expand our early-stage clinical pipeline. While we see great potential value in our early-stage pipeline, these programs are years away from commercialization, and success of development programs are not guaranteed. Our near-term prospects and the price of our common stock most heavily rely on the success of our lead products pamrevlumab and roxadustat.

As a company, we have limited commercialization experience, and the time and resources required to develop such experience are significant. If we fail to achieve and sustain commercial success for any of our products, our business would be harmed.

We do not have a sales infrastructure and we have limited experience in the sales, marketing or distribution of pharmaceutical products in any country. To achieve commercial success for any product for which we obtain marketing approval, we will need to establish sales and marketing capabilities or make and maintain our existing arrangements with third parties to perform these services at a level sufficient to support our commercialization efforts.

To the extent that we would undertake sales and marketing of any of our products directly, there are risks involved with establishing our own sales, marketing and distribution capabilities. Factors that may inhibit our efforts to commercialize our products on our own include:

- our inability to recruit, train and retain adequate numbers of effective sales and marketing personnel;
- the inability of sales personnel to obtain access to physicians or persuade adequate numbers of physicians to prescribe any future products;
- our inability to effectively manage geographically dispersed commercial teams;
- the lack of complementary products to be offered by sales personnel, which may put us at a competitive disadvantage relative to companies with more extensive product lines; and
- unforeseen costs and expenses associated with creating an independent commercial organization.

With respect to roxadustat, we are dependent on the commercialization capabilities of our collaboration partners, AstraZeneca and Astellas Pharma Inc. (“Astellas”). If either such partner were to terminate its agreement with us, we would have to commercialize on our own or with another third party. We will have limited control over the commercialization efforts of such third parties, and any of them may fail to devote the necessary resources and attention to sell and market roxadustat effectively. If they are not successful in commercializing roxadustat, our business and financial condition would suffer.

Commercializing any of our products requires us to establish commercialization capabilities, including but not limited to, medical affairs, marketing, product reimbursement, sales, price reporting, pharmacovigilance, supply-chain, distribution, and other capabilities to successfully commercialize our products. These efforts require resources and time to either develop or acquire.

If we, along with any partners we may have, are not successful in our marketing, pricing and reimbursement strategies, facilitating adoption by health care facilities and professionals, recruiting sales and marketing personnel or in building a sales and marketing infrastructure, or if the market perception of our product's safety and efficacy profile is negative, we will have difficulty successfully commercializing such product, which would adversely affect our business and financial condition.

Drug development and obtaining marketing authorization is a very difficult endeavor and we may ultimately be unable to obtain regulatory approval for our various product candidates in one or more jurisdictions and in one or more indications.

The development, manufacturing, marketing, and selling of our products and product candidates are and will continue to be subject to extensive and rigorous review and regulation by numerous government authorities in the U.S. and in other countries where we intend to develop and, if approved, market any product candidates. Before obtaining regulatory approval for the commercial sale of any product candidate, we must demonstrate through extensive preclinical trials and clinical trials that the product candidate is safe and effective for use in each indication for which approval is sought. The drug development and approval process is expensive and requires substantial resources and time, and in general, very few product candidates that enter development ultimately receive regulatory approval. In addition, our collaboration partners for roxadustat have final control over development decisions in their respective territories and they may make decisions with respect to development or regulatory authorities that delay or limit the potential approval of roxadustat, or increase the cost of development or commercialization. Accordingly, we may be unable to successfully develop or commercialize any of our other product candidates in one or more indications and jurisdictions.

Moreover, for any clinical trial to support a New Drug Application ("NDA")/Biologics License Application submission for approval, the FDA and foreign regulatory authorities require compliance with regulations and standards (including good clinical practices ("GCP") requirements for designing, conducting, monitoring, recording, analyzing, and reporting the results of clinical trials) to ensure that (1) the data and results from trials are credible and accurate; and (2) that the rights, integrity and confidentiality of trial participants are protected. Although we rely on third parties to conduct our clinical trials, we as the sponsor remain responsible for ensuring that each of these clinical trials is conducted in accordance with its general investigational plan and protocol under legal and regulatory requirements, including GCP. Regulatory authorities enforce these GCP requirements through periodic inspections of trial sponsors, principal investigators and trial sites. If we or any of our clinical research organizations("CROs"), trial sites, principal investigators or other third parties fail to comply with applicable GCP requirements, the clinical data generated in our clinical trials may be deemed unreliable. Accordingly, the FDA or other regulatory authorities may require us to exclude the use of patient data from these unreliable clinical trials, or perform additional clinical trials before approving our marketing applications. The FDA or other regulatory authorities may even reject our application for approval, or refuse to accept our future applications.

Regulatory authorities may take actions or impose requirements that delay, limit or deny approval of our product candidates for many reasons, including, among others:

- our failure to adequately demonstrate to the satisfaction of regulatory authorities or an independent advisory committee that our product candidate is safe and effective in a particular indication, or that such product candidate's clinical and other benefits outweigh its safety risks;
- our failure of clinical trials to meet the level of statistical significance required for approval;
- the determination by regulatory authorities that additional clinical trials are necessary to demonstrate the safety and efficacy of a product candidate,
- disagreement over the design or implementation of our clinical trials;
- our product candidates may exhibit an unacceptable safety signal at any stage of development;
- the CROs or investigators that conduct clinical trials on our behalf may take actions outside of our control that do not comply with GCP, clinical trial protocols, or their agreement with us, or otherwise materially adversely impact our clinical trials;
- disagreement over whether to accept results from clinical trial sites in a country where the standard of care is potentially different from that in the U.S.;
- we or third-party contractors manufacturing our product candidates may not maintain current good manufacturing practices ("cGMP"), successfully pass inspection or meet other applicable manufacturing regulatory requirements;
- regulatory authorities may not agree with our interpretation of the data from our preclinical trials and clinical trials; or
- collaboration partners may not perform or complete their clinical programs in a timely manner, or at all.

Any of these factors, many of which are beyond our control, could jeopardize our or our collaboration partners' abilities to obtain regulatory approval for our product candidates in one or more indications.

The FDA or other regulatory authorities may require more information (including additional preclinical or clinical data to support approval), which may delay or prevent approval or cause us to abandon the development program altogether.

Even if we believe our clinical trials are successful, regulatory authorities may not agree that our completed clinical trials provide adequate data on safety or efficacy. Approval by one regulatory authority does not ensure approval by any other regulatory authority. For example, while we have received approval of our marketing authorization applications for roxadustat in the European Union, Great Britain, China, Japan, South Korea, Chile, Russia, the United Arab Emirates, and Kuwait for CKD anemia for patients on dialysis and not on dialysis, we received a CRL in the U.S. from the FDA regarding roxadustat's NDA for the treatment of anemia due to CKD, stating that it could not be approved in its present form. In addition, a failure or delay in obtaining regulatory approval in one country may have a negative effect on the regulatory process in others.

Even if we do obtain regulatory approval, our product candidates may be approved for fewer or more limited indications than we request, approval may be contingent on the performance of costly post-marketing clinical trials, or approval may require labeling that does not include the labeling claims necessary or desirable for the successful commercialization of that product candidate. In addition, if our product candidates produce undesirable side effects or safety issues, the FDA may require the establishment of Risk Evaluation and Mitigation Strategy (or other regulatory authorities may require the establishment of a similar strategy), that may restrict distribution of our approved products, if any, and impose burdensome implementation requirements on us.

Any of the foregoing scenarios could materially harm the commercial prospects for our product candidates.

The CRL we received from the FDA for roxadustat has decreased the likelihood of approval and successful commercialization of roxadustat in the U.S. and potentially other markets. There is a significant risk that our U.S./Rest of World Collaboration Agreement with AstraZeneca could be amended or terminated.*

In August 2021, the FDA issued a CRL regarding roxadustat's NDA for the treatment of anemia due to CKD in adult patients, stating that it could not be approved in its present form. The CRL has decreased the likelihood of approval and successful commercialization of roxadustat in the U.S. and therefore will decrease and/or delay expected revenue. While we continue to commercialize roxadustat in China with AstraZeneca, and develop roxadustat in the U.S. for the treatment of anemia in patients with MDS, we have not been able to agree on a path forward for AstraZeneca to fund further roxadustat development in the U.S. for CKD anemia and there is a significant risk we will be unable to do so. There is also a significant risk that the U.S./RoW Agreement is amended or terminated. Any of these risks could have a material impact on our business, operating results, and financial condition.

Preclinical, Phase 1 and Phase 2 clinical trial results may not be indicative of the results that may be obtained in larger clinical trials.

Clinical development is expensive and can take many years to complete, and its outcome is inherently uncertain. Failure can occur at any time during the clinical trial process. Success in preclinical and early clinical trials, which are often highly variable and use small sample sizes, may not be predictive of similar results in humans or in larger, controlled clinical trials, and successful results from clinical trials in one indication may not be replicated in other indications.

Many companies in the pharmaceutical and biotechnology industries have suffered significant setbacks in late-stage clinical trials after achieving positive results in early-stage development, and we may face similar setbacks.

We do not know whether our ongoing or planned clinical trials of roxadustat or pamrevlumab will need to be redesigned based on interim results or if we will be able to achieve sufficient patient enrollment or complete planned clinical trials on schedule.

Clinical trials can be delayed or terminated for a variety of reasons, including:

- delay or failure to address any physician or patient safety concerns that arise during the course of the trial;
- delay or failure to obtain required regulatory or institutional review board approval or guidance;
- delay or failure to reach timely agreement on acceptable terms with prospective CROs and clinical trial sites;
- delay or failure to recruit, enroll and retain patients through the completion of the trial;
- patient recruitment, enrollment, or retention, or clinical site initiation or retention problems associated with the Severe Acute Respiratory Syndrome Coronavirus 2 and the resulting Coronavirus Disease ("COVID-19") pandemic;
- patient recruitment, enrollment, or retention, clinical site initiation, or retention problems associated with civil unrest or military conflicts around the world, specifically the conflict in Ukraine which could affect our clinical trials enrolling in Ukraine (currently only ZEPHYRUS-2), or other sites or trials if the conflict spreads or has effects on countries outside of Ukraine;

- delay or failure to maintain clinical sites in compliance with clinical trial protocols;
- delay or failure to initiate or add a sufficient number of clinical trial sites; and
- delay or failure to manufacture sufficient quantities of product candidate for use in clinical trials.

In particular, identifying and qualifying patients to participate in clinical trials of our product candidates is critical to our success. The timing of our clinical trials depends on the rate at which we can recruit and enroll patients in testing our product candidates. Patients may be unwilling to participate in clinical trials of our product candidates for a variety of reasons, some of which may be beyond our control, including:

- severity of the disease under investigation;
- availability of alternative treatments;
- size and nature of the patient population;
- eligibility criteria for and design of the study in question;
- perceived risks and benefits of the product candidate under study;
- ability to enroll patients in clinical trials during the COVID-19 pandemic (particularly for IPF);
- ongoing clinical trials of competitive agents;
- physicians' and patients' perceptions of the potential advantages of our product candidates being studied in relation to available therapies or other products under development;
- our CRO's and our trial sites' efforts to facilitate timely enrollment in clinical trials;
- patient referral practices of physicians; and
- ability to monitor patients and collect patient data adequately during and after treatment.

If we have difficulty enrolling a sufficient number of patients to conduct our clinical trials as planned, we may need to delay, limit or terminate on-going or planned clinical trials.

In addition, we could encounter delays if a clinical trial is suspended or terminated by us, by the relevant institutional review boards at the sites at which such trials are being conducted, or by the FDA or other regulatory authorities. A suspension or termination of clinical trials may result from any number of factors, including failure to conduct the clinical trial in accordance with regulatory requirements or our clinical protocols, inspection of the clinical trial operations or trial site by the FDA or other regulatory authorities resulting in the imposition of a clinical hold, unforeseen safety issues or adverse side effects, changes in laws or regulations, or a principal investigator's determination that a serious adverse event could be related to our product candidates. Any delays in completing our clinical trials will increase the costs of the trial, delay the product candidate development and approval process and jeopardize our ability to commence marketing and generate revenues. Any of these occurrences may materially and adversely harm our business, operations, and prospects.

Our product candidates may cause or have attributed to them undesirable side effects or have other properties that delay or prevent their regulatory approval or limit their commercial potential.

Undesirable side effects caused by our product candidates or that may be identified as related to our product candidates by physician investigators conducting our clinical trials or even competing products in development that utilize a similar mechanism of action or act through a similar biological disease pathway could cause us or regulatory authorities to interrupt, delay or halt clinical trials and could result in the delay or denial of regulatory approval by the FDA or other regulatory authorities and potential product liability claims. If we determine that there is a likely causal relationship between a serious adverse event and our product candidate, and such safety event is material or significant enough, it may result in:

- our clinical trial development plan becoming longer and more expensive;
- terminating some of our clinical trials for the product candidates or specific indications affected;

- regulatory authorities increasing the data and information required to approve our product candidates and imposing other requirements; and
- our collaboration partners terminating our existing agreements.

The occurrence of any or all of these events may cause the development of our product candidates to be delayed or terminated, which could materially and adversely affect our business and prospects. Refer to "*Business Overview*" in this Quarterly Report for a discussion of the adverse events and serious adverse events that have emerged in clinical trials of roxadustat and pamrevlumab.

Clinical trials of our product candidates may not uncover all possible adverse effects that patients may experience.

Clinical trials are conducted in representative samples of the potential patient population, which may have significant variability. Clinical trials are by design based on a limited number of subjects and of limited duration for exposure to the product used to determine whether, on a potentially statistically significant basis, the planned safety and efficacy of any product candidate can be achieved. As with the results of any statistical sampling, we cannot be sure that all side effects of our product candidates may be uncovered, and it may be the case that only with a significantly larger number of patients exposed to the product candidate for a longer duration, that a more complete safety profile is identified. Further, even larger clinical trials may not identify rare serious adverse effects or the duration of such studies may not be sufficient to identify when those events may occur. There have been other products, including erythropoiesis stimulating agents ("ESAs"), for which safety concerns have been uncovered following approval by regulatory authorities. Such safety concerns have led to labeling changes or withdrawal of ESAs products from the market. While our most advanced product candidate is chemically unique from ESAs, it or any of our product candidates may be subject to known or unknown risks. Patients treated with our products, if approved, may experience adverse reactions and it is possible that the FDA or other regulatory authorities may ask for additional safety data as a condition of, or in connection with, our efforts to obtain approval of our product candidates. If safety problems occur or are identified after our product candidates reach the market, we may, or regulatory authorities may require us to amend the labeling of our products, recall our products or even withdraw approval for our products.

If our manufacturers or we cannot properly manufacture the appropriate volume of product, we may experience delays in development, regulatory approval, launch or successful commercialization.

Completion of our clinical trials and commercialization of our products require access to, or development of, facilities to manufacture and manage our product candidates at sufficient yields, quality and at commercial scale. Although we have entered into commercial supply agreements for roxadustat and pamrevlumab, we will need to enter into additional commercial supply agreements, including for backup or second source third-party manufacturers. We may not be able to enter into these agreements with satisfactory terms or on a timely manner. In addition, we may experience delays or technical problems associated with technology transfer of manufacturing processes to any new suppliers.

We have limited experience manufacturing or managing third parties in manufacturing any of our product candidates in the volumes that are expected to be necessary to support large-scale clinical trials and sales. In addition, we have limited experience forecasting supply requirements or coordinating supply chain (including export management) for launch or commercialization, which is a complex process involving our third-party manufacturers and logistics providers, and for roxadustat, our collaboration partners. We may not be able to accurately forecast supplies for commercial launch or do so in a timely manner and our efforts to establish these manufacturing and supply chain management capabilities may not meet our requirements as to quantities, scale-up, yield, cost, potency or quality in compliance with cGMP, particularly if the marketing authorization or market uptake is more rapid than anticipated or we have an unanticipated surge in demand.

We have a limited amount of roxadustat and pamrevlumab in storage, limited capacity reserved at our third-party manufacturers, and, even if we have or are able to put sufficient supply agreements in place for our development and commercialization plan, there are long lead times required to manufacture and scale-up the manufacture of additional supply, as required for both late-stage clinical trials, post-approval trials, and commercial supply. In addition, if we are not able to obtain regulatory approval of roxadustat in the U.S. in CKD anemia, we may have excess supply manufactured in anticipation of commercialization. Such roxadustat excess supply could be wasted, for example, if it expires prior to being used in other clinical trials or prior to being used in other territories where such roxadustat formulation is approved. If we are unable to forecast, order or manufacture sufficient quantities of roxadustat or pamrevlumab on a timely basis, it may delay our development, launch or commercialization in some or all indications we are currently pursuing. Insufficient supply could be a particular risk if we were to obtain regulatory approval of pamrevlumab in all indications being studied (IPF, locally advanced unresectable pancreatic cancer, metastatic pancreatic cancer, and DMD). Any delay or interruption in the supply of our product candidates or products could have a material adverse effect on our business and operations.

Our commercial drug product and the product we use for clinical trials must be produced under applicable cGMP regulations. Failure to comply with these regulations by us or our third-party manufacturers may require us to recall commercial product or repeat clinical trials, which would impact sales revenue and/or delay the regulatory approval process.

We may add or change manufacturers for our products. We, our partners, or regulatory authorities may also request or make changes to our manufacturing processes or to our product or packaging specifications, including in order to accommodate changes in regulations, manufacturing equipment or to account for different processes at new or second source suppliers. If any such changes are made with respect to roxadustat or pamrevlumab we may need to demonstrate comparability to the products and processes already approved or in approval by various regulatory authorities, including potentially through the conduct of additional clinical trials. Even if we do demonstrate comparability, a regulatory agency could challenge that result which could delay our development or commercialization progress. Any such changes could also lead to product having an earlier expiration date, shorter shelf life, or failing to meet specifications. Any of these occurrences may materially impact our operations and potential profitability.

We, and even an experienced third-party manufacturer, may encounter difficulties in production. Difficulties may include:

- costs and challenges associated with scale-up and attaining sufficient manufacturing yields, in particular for biologic products such as pamrevlumab, which is a monoclonal antibody;
- contracting with additional suppliers and validation/qualification of additional facilities to meet growing demand;
- supply chain issues, including coordination of multiple contractors in our supply chain and securing necessary licenses (such as export licenses);
- the timely availability and shelf life requirements of raw materials and supplies, including delays in availability due to the COVID-19 pandemic;
- limited stability and product shelf life;
- equipment maintenance issues or failure;
- quality control and quality assurance issues;
- shortages of qualified personnel and capital required to manufacture large quantities of product;
- compliance with regulatory requirements that vary in each country where a product might be sold;
- capacity or forecasting limitations and scheduling availability in contracted facilities;
- natural disasters, such as pandemics, including the COVID-19 pandemic, floods, storms, earthquakes, tsunamis, and droughts, or accidents such as fire, that affect facilities, possibly limit or postpone production, and increase costs; and
- failure to obtain license to proprietary starting materials.

Regulatory authorities will do their own benefit risk analysis and may reach a different conclusion than we or our partners have, and these regulatory authorities may base their approval decision on different analyses, data, and statistical methods than ours.

Even if we believe we have achieved positive clinical results, such as superiority or non-inferiority, in certain endpoints, populations or sub-populations, or using certain statistical methods of analysis, the FDA and European Medicines Agency ("EMA") will each conduct their own benefit-risk analysis and may reach different conclusions, using different statistical methods, different endpoints or definitions thereof, or different patient populations or sub-populations. Furthermore, while we may seek regulatory advice or agreement in key commercial markets prior to and after application for marketing authorization, regulatory authorities may change their approvability criteria based on the data, their internal analyses and external factors, including discussions with expert advisors. For example, while we have received approval of our marketing authorization applications for roxadustat in the European Union, Great Britain, China, Japan, South Korea, Chile, Russia, the United Arab Emirates, and Kuwait for CKD anemia for patients on dialysis and not on dialysis, we received a CRL in the U.S. from the FDA. Regulatory authorities may approve one of our product candidates for fewer or more limited indications than we request or may grant approval contingent on the performance of costly post-approval clinical trials. While we have and will present to regulatory authorities certain pre-specified and post hoc (not pre-specified) sub-populations, sub-group, and sensitivity analyses (for example, incident dialysis), multiple secondary endpoints, and multiple sets of stratification factors and analytical methods (such as long-term follow up analyses), including adjusted and censored data, regulatory authorities may reject these analyses, methods, or even parts of our trial design or certain data from our studies, the rationale for our pre-specified non-inferiority margins or other portions of our statistical analysis plans. In addition, even if we are able to provide positive data with respect to certain analyses, regulatory authorities may not include such claims on any approved labeling. The failure to obtain regulatory approval, or any label, population or other approval limitations in any jurisdiction, may significantly limit or delay our ability to generate revenues, and any failure to obtain such approval for all of the indications and labeling claims we deem desirable could reduce our potential revenue.

Even if we are able to obtain regulatory approval of our product candidates, the label we obtain may limit the indicated uses for which our product candidates may be marketed.

With respect to roxadustat, regulatory approvals obtained, could limit the approved indicated uses for which roxadustat may be marketed. For example, our label approved in Japan, includes the following warning: "Serious thromboembolism such as cerebral infarction, myocardial infarction, and pulmonary embolism may occur, possibly resulting in death, during treatment with roxadustat." Additionally, in the U.S., ESAs have been subject to significant safety warnings, including the boxed warnings on their labels. The safety concerns relating to ESAs may result in labeling for roxadustat containing similar warnings. Any label for roxadustat may contain other warnings or limit the market opportunity or approved indications for roxadustat. These warnings could include warnings against exceeding specified hemoglobin targets and other warnings that derive from the safety issues associated with ESAs, even if our Phase 3 clinical trials do not themselves raise safety concerns.

We face substantial competition in the discovery, development and commercialization of product candidates.*

The development and commercialization of new pharmaceutical products is highly competitive. Our future success depends on our ability and/or the ability of our collaboration partners to achieve and maintain a competitive advantage with respect to the development and commercialization of our product candidates. Our objective is to discover, develop and commercialize new products with superior efficacy, convenience, tolerability, and safety. We expect that in many cases, the products that we commercialize will compete with existing, market-leading products of companies that have large, established commercial organizations.

Where roxadustat is approved and launched commercially, competing drugs are expected to include ESAs, particularly in those patient segments where ESAs are used. Currently available ESAs include epoetin alfa (EPOGEN®, marketed by Amgen Inc. in the U.S., Procrit® and Erypo®/Eprex®, marketed by Johnson & Johnson Inc., and Espo® marketed by Kyowa Hakko Kirin in Japan and China), darbepoetin (Amgen/Kyowa Hakko Kirin's Aranesp® and NESP®) and Mircera® marketed by Hoffmann-La Roche ("Roche") outside of the U.S. and by Vifor Pharma, a Roche licensee, in the U.S. and Puerto Rico, as well as biosimilar versions of these currently marketed ESA products. ESAs have been used in the treatment of anemia in CKD for more than 30 years, serving a significant majority of dialysis CKD patients. While non-dialysis CKD patients who are not under the care of nephrologists, including those with diabetes and hypertension, do not typically receive ESAs and are often left untreated, some non-dialysis patients under nephrology or hematology care may be receiving ESA therapy. It may be difficult to encourage healthcare providers and patients to switch to roxadustat from products with which they have become familiar.

We may also face competition from potential new anemia therapies currently on the market or in clinical development, including in those patient segments not adequately addressed by ESAs. Companies that are currently developing hypoxia-inducible factor prolyl hydroxylase ("HIF-PH") inhibitors for anemia in CKD indications include: GlaxoSmithKline plc ("GSK"), Bayer Corporation ("Bayer"), Akebia Therapeutics, Inc. ("Akebia"), Otsuka Pharmaceutical, Akebia's partner in the U.S. and Europe, Japan Tobacco, and Zydus Cadila (India) ("Zydus"). In October 2021, Otsuka Pharmaceutical submitted an initial marketing authorization application to the EMA for vadadustat for the treatment of anemia associated with CKD in adults. Akebia received a CRL from the FDA for vadadustat in March 2022.

GSK has filed an NDA for daprodustat in the U.S., with a PDUFA date of February 1, 2023, and in March 2022 announced that the EMA accepted its Marketing Authorization Application for daprodustat.

In Japan, roxadustat faces the following competitive drugs being sold by the following companies for the treatment of anemia of CKD patients on and not on dialysis: vadadustat by Mitsubishi Tanabe Pharmaceutical Corporation, Akebia's collaboration partner, daprodustat by GSK and its partner Kyowa Hakko Kirin, molidustat by Bayer, and enarodustat by Japan Tobacco (to be sold by Torii Pharmaceuticals Ltd).

Reblozyl® (luspatercept) was approved by the FDA in April 2020 for the treatment of anemia in adults with MDS with ring sideroblasts or myelodysplastic/myeloproliferative neoplasms with ring sideroblasts and thrombocytosis who need regular red blood cell transfusions and have not responded well to or cannot receive an ESA. It is the first and only erythroid maturation agent approved in the U.S., Europe, and Canada and is part of a global collaboration between Acceleron Pharma, Inc. and Bristol Myers Squibb.

In addition, we will likely face competition from other companies developing biologic therapies for the treatment of other anemia indications that we may also seek to pursue in the future. We may face competition for patient recruitment, enrollment for clinical trials, and potentially in commercial sales. There may also be new therapies for renal-related diseases that could limit the market or level of reimbursement available for roxadustat.

In China, ESA is considered the standard of care for treatment of anemia of CKD, and locally manufactured epoetin alfa is offered by 15 local manufacturers including the market leader EPIAO that is marketed by 3SBio Inc. We may face potential competition from other HIF-PH inhibitors. Companies active in the US such as Akebia, Bayer, and GSK have been authorized by the National Medical Products Administration ("NMPA") to conduct trials in China to support its ex-China regulatory filings. A number of domestic companies, including Jiangsu Hengrui Medicine Co., Ltd., Guandong Sunshine Health Investment Co., Ltd., 3SBio Inc., and Hangzhou Andao Pharmaceutical Co. have been permitted by the NMPA to conduct clinical trials in their locally developed HIF-PH inhibitor investigational compounds for the treatment of anemia in CKD. Domestic companies are also in-licensing global compounds to be developed as domestic drugs, including China Medical System which in-licensed desidustat from Zydus, a compound that is in Phase 3 trials in India. In January 2021, China Medical System Holdings Ltd. was granted approval by the Chinese NMPA to begin trials for desidustat in patients with anemia of CKD, including dialysis and non-dialysis patients. Shenzhen Salubris Pharmaceutical Co., Ltd., a domestic company in China, has in-licensed enarodustat from Japan Tobacco and received NMPA approval in the third quarter of 2020 to initiate Phase 3 studies. We will also face competition from generics who could enter the market after expiry of our patents in China, and five potential market players have already started bioequivalence studies, including Chia Tai-Tiangqing Pharmaceutical Holdings and CSPA Pharmaceutical Group.

The first biosimilar ESA, Pfizer's Retacrit® (epoetin zeta), entered the U.S. market in November 2018. Market penetration of Retacrit and the potential addition of other biosimilar ESAs currently under development may alter the competitive and pricing landscape of anemia therapy in CKD patients on dialysis under the end-stage renal disease bundle. The patents for Amgen's EPOGEN® (epoetin alfa) expired in 2004 in Europe, and the final material patents in the U.S. expired in May 2015. Several biosimilar versions of currently marketed ESAs are available for sale in Europe, China and other territories. In the U.S., a few ESA biosimilars are currently under development. Sandoz, a division of Novartis, markets Binocrit® (epoetin alfa) in Europe and may file a biosimilar Biologics License Application in the U.S.

The majority of the current CKD anemia market focuses on dialysis patients, who visit dialysis centers on a regular basis, typically three times a week, and anemia therapies are administered as part of the visit. Two of the largest operators of dialysis clinics in the U.S., DaVita Healthcare Partners Inc. ("DaVita"), and Fresenius Medical Care AG & Co. KGaA ("Fresenius"), collectively provide dialysis care to more than 80% of U.S. dialysis patients, and therefore have historically executed long-term contracts including rebate terms with Amgen. Successful penetration in this market will likely require our partner AstraZeneca to enter into a definitive agreement with Fresenius, DaVita, or other dialysis organizations, on favorable pricing terms and on a timely basis.

If approved and launched commercially to treat IPF, pamrevlumab is expected to compete with Roche's Esbriet® (pirfenidone), and Boehringer Ingelheim Pharma GmbH & Co. KG's Ofev® (nintedanib). We believe that if pamrevlumab can be shown to safely stabilize or reverse lung fibrosis, and thus stabilize or improve lung function in IPF patients, it can compete with pirfenidone and nintedanib for market share in IPF. However, it may be difficult to encourage treatment providers and patients to switch to pamrevlumab from an oral product with which they are already familiar to a product delivered via in-office infusion. Furthermore, pirfenidone and nintedanib may be produced as generics in the near future. We may also face competition from potential new IPF therapies in recruitment and enrollment in our clinical trials and potentially in commercialization.

Pamrevlumab is a monoclonal antibody that may be more expensive and less convenient than oral small molecules such as nintedanib and pirfenidone. Other potential competitive product candidates in various stages of development for IPF include Kadmon Holdings, Inc.'s KD025, Galecto's GB0139, Liminal BioSciences' PBI-4050, and Roche/Promedior, Inc.'s PRM-151. Roche is enrolling patients in a Phase 3 trial evaluating the efficacy and safety of PRM-151, a recombinant human pentraxin-2 (rhPTX-2), compared to placebo in patients with IPF. United Therapeutics Corporation is enrolling patients in its Phase 3 trial of treprostinil in IPF.

If pamrevlumab is approved and launched commercially to treat locally advanced unresectable pancreatic cancer or metastatic pancreatic cancer, pamrevlumab may face competition from products currently used for pancreatic cancer. These include FOLFIRINOX, a combination chemotherapy regimen of folic acid, 5-fluouracil, oxaliplatin and irinotecan, and agents seeking approval in combination with gemcitibine and nab-paclitaxel from companies such as Rafael Pharma's defactinib/CPI-613 and Merrimack Pharmaceuticals Inc.'s istiratumab. Gemcitabine and/or nab-paclitaxel are the current standard of care in the first-line treatment of metastatic pancreatic cancer.

If approved and launched commercially to treat DMD, pamrevlumab is expected to face competition from drugs that have been approved in major markets such as the U.S., European Union, and Japan. On September 19, 2016, the FDA approved Sarepta Therapeutics Inc.'s ("Sarepta") Exondys 51™ (eteplirsen). Exondys 51 is approved to treat patients who have a mutation of the dystrophin gene amenable to exon 51 skipping, representing approximately 13% of patients with DMD. In Europe, Sarepta received a negative opinion for its marketing application for eteplirsen from the EMA in September 2018. Sarepta's Vyondys 53™ (golodirsen) was approved by the FDA in December 2019 for patients with a confirmed genetic mutation that is amenable to exon 53 skipping, which accounts for approximately 8% of the DMD population. Sarepta's Amondys 45™ (casimersen) was approved by the FDA in February 2021 for patients with a confirmed genetic mutation that is amenable to exon 45 skipping, which accounts for approximately 8% of the DMD population.

PTC Therapeutics' product Translarna™ received a conditional approval in Europe in 2014, which was renewed in November 2016 with a request for a new randomized placebo-controlled 18-month study by the Committee for Medicinal Products for Human Use of the EMA; however, the FDA informed the sponsor in a CRL in October 2017, as well as in its response to PTC Therapeutics' appeal, that the FDA is unable to approve the application in its current form. An additional Phase 3 study is currently ongoing. While Translarna ™ targets a different set of DMD patients from those targeted by Sarepta's Exondys 51®, it is also limited to a subset of patients who carry a specific mutation. Conversely, pamrevlumab is intended to treat DMD patients without limitation to type of mutation.

Pamrevlumab may also face competition from other drugs currently in clinical development in patient recruiting and enrollment in clinical trials, and, if approved, in commercialization. Examples of those compounds currently under clinical development are the drug candidates from Pfizer, Pliant, Galecto, and Sarepta. Pfizer initiated a Phase 3 study with PF-06939926, its AAV9 mini-dystrophin gene therapy for DMD in 2020.

The success of any or all of these potential competitive products may negatively impact the development and potential for success of pamrevlumab. In addition, any competitive products that are on the market or in development may compete with pamrevlumab for patient recruitment and enrollment for clinical trials or may force us to change our clinical trial design, including, in order to compare pamrevlumab against another drug, which may be the new standard of care.

Moreover, many of our competitors have significantly greater resources than we do. Large pharmaceutical companies, in particular, have extensive experience in clinical testing, obtaining regulatory approvals, recruiting patients, manufacturing pharmaceutical products, and commercialization. In the potential anemia market for roxadustat, for example, large and established companies such as Amgen and Roche, among others, compete aggressively to maintain their market shares. In particular, the currently marketed ESA products are supported by large pharmaceutical companies that have greater experience and expertise in commercialization in the anemia market, including in securing reimbursement, government contracts and relationships with key opinion leaders; conducting testing and clinical trials; obtaining and maintaining regulatory approvals and distribution relationships to market products; and marketing approved products. These companies also have significantly greater scale, research and marketing capabilities than we do and may also have products that have been approved or are in later stages of development and have collaboration agreements in our target markets with leading dialysis companies and research institutions. If our collaboration partners and we are not able to compete effectively against existing and potential competitors, our business and financial condition may be materially and adversely affected.

Our product candidates may not achieve adequate market acceptance among physicians, patients, healthcare payors, and others in the medical community necessary for commercial success.

Even if our product candidates receive regulatory approval, they may not gain adequate market acceptance among physicians, patients, healthcare payors, and others in the medical community. Demonstrating safety and efficacy of our product candidates and obtaining regulatory approvals will not guarantee future revenue. The degree of market acceptance of any of our approved product candidates will depend on several factors, including:

- the efficacy of the product candidate as demonstrated in clinical trials;
- the safety profile and perceptions of safety of our product candidates relative to competitive products;
- acceptance of the product candidate as a safe and effective treatment by healthcare providers and patients;
- the clinical indications for which the product candidate is approved;
- the potential and perceived advantages of the product candidate over alternative treatments, including any similar generic treatments;
- the inclusion or exclusion of the product candidate from treatment guidelines established by various physician groups and the viewpoints of influential physicians with respect to the product candidate;
- the cost of the product candidate relative to alternative treatments;
- adequate pricing and reimbursement by third parties and government authorities as described below;
- the relative convenience and ease of administration;
- the frequency and severity of adverse events;
- the effectiveness of sales and marketing efforts; and
- any unfavorable publicity relating to the product candidate.

In addition, see the risk factor titled “Our product candidates may cause or have attributed to them undesirable side effects or have other properties that delay or prevent their regulatory approval or limit their commercial potential” above. If any product candidate is approved but does not achieve an adequate level of acceptance by such parties, we may not generate or derive sufficient revenue from that product candidate and may not become or remain profitable.

No or limited reimbursement or insurance coverage of our approved products, if any, by third-party payors may render our products less attractive to patients and healthcare providers.

Market acceptance and sales of any approved products will depend significantly on reimbursement or coverage of our products by government or third-party payors and may be affected by existing and future healthcare reform measures or prices of related products for which the government or third-party reimbursement applies. Coverage and reimbursement by the government or a third-party payor may depend upon a number of factors, including the payor’s determination that use of a product is:

- a covered benefit under applicable health plan;
- safe, effective and medically necessary;
- appropriate for the specific patient;

- cost-effective; and
- neither experimental nor investigational.

Obtaining coverage and reimbursement approval for a product from a government or other third-party payor is a time consuming and costly process that could require us to provide supporting scientific, clinical and cost-effectiveness data for the use of our products to the payor, which we may not be able to provide. Furthermore, the reimbursement policies of governments and third-party payors may significantly change in a manner that renders our clinical data insufficient for adequate reimbursement or otherwise limits the successful marketing of our products. Even if we obtain coverage for our product candidates, the pricing may be subject to re-negotiations or third-party payors may not establish adequate reimbursement amounts, which may reduce the demand for, or the price of, our products. For example, our current National Reimbursement Drug List reimbursement pricing for China is effective for a standard two-year period (between January 1, 2022 to December 31, 2023), after which time we will have to renegotiate a new price for roxadustat.

Reference pricing is used by various Europe member states and parallel distribution, or arbitrage between low-priced and high-priced member states, can further reduce prices. In some countries, our partner or we may be required to conduct a clinical trial or other studies that compare the cost-effectiveness of our product candidates to other available products in order to obtain or maintain reimbursement or pricing approval. Publication of discounts by third-party payors or authorities may lead to further pressure on the prices or reimbursement levels within the country of publication and other countries. If reimbursement of our products is unavailable or limited in scope or amount, or if pricing is set at unacceptable levels, our partner or we may elect not to commercialize our products in such countries, and our business and financial condition could be adversely affected.

Risks Related to Our Reliance on Third Parties

If our collaborations were terminated or if Astellas or AstraZeneca were to prioritize other initiatives over their collaborations with us, our ability to successfully develop and commercialize our product candidates would suffer.*

We have entered into collaboration agreements with respect to the development and commercialization of our lead product candidate, roxadustat, with Astellas and AstraZeneca. These agreements provide for reimbursement of our development costs by our collaboration partners and also provide for commercialization of roxadustat throughout the major territories of the world.

Our agreements with Astellas and AstraZeneca provide each of them with the right to terminate their respective agreements with us, upon the occurrence of negative clinical results, delays in the development and commercialization of our product candidates or adverse regulatory requirements or guidance. In addition, each of those agreements provides our respective partners the right to terminate any of those agreements upon written notice for convenience. The termination of any of our collaboration agreements would require us to fund and perform the further development and commercialization of roxadustat in the affected territory, or pursue another collaboration, which we may be unable to do, either of which could have an adverse effect on our business and operations. Moreover, if Astellas or AstraZeneca, or any successor entity, were to determine that their collaborations with us are no longer a strategic priority, or if either of them or a successor were to reduce their level of commitment to their collaborations with us, our ability to develop and commercialize roxadustat could suffer.

In 2021, we received a CRL for roxadustat for the treatment of anemia due to CKD in adult patients in the U.S. While we continue to commercialize roxadustat in China with AstraZeneca, and develop roxadustat in the U.S. for the treatment of anemia in patients with MDS, we have not been able to agree on a path forward for AstraZeneca to fund further roxadustat development in the U.S. for CKD anemia and there is a significant risk we will be unable to do so. There is also a significant risk that the U.S./RoW Agreement is amended or terminated. In addition, our collaborations are exclusive and preclude us from entering into additional collaboration agreements with other parties in the area or field of exclusivity.

If we do not establish and maintain strategic collaborations related to our product candidates, we will bear all of the risk and costs related to the development and commercialization of any such product candidate, and we may need to seek additional financing, hire additional employees and otherwise develop expertise at significant cost. This in turn may negatively affect the development of our other product candidates as we direct resources to our most advanced product candidates.

Our collaboration partners also have certain rights to control decisions regarding the development and commercialization of our product candidates with respect to which they are providing funding. If we have a disagreement over strategy and activities with our collaboration partners, our plans for obtaining regulatory approval may be revised and negatively affect the anticipated timing and potential for success of our product candidates. Even if a product under a collaboration agreement receives regulatory approval, we will remain substantially dependent on the commercialization strategy and efforts of our collaboration partners, and our collaboration

partners have limited or no experience in commercialization of an anemia drug. If our collaboration partners are unsuccessful in their commercialization efforts, our results will be negatively affected.

With respect to our collaboration agreements for roxadustat, there are additional complexities in that our collaboration partners, Astellas and AstraZeneca, and we must reach consensus on certain portions of our development programs and regulatory activities. In addition, there are aspects of commercial operations that require cooperation among the collaboration partners, including safety data reporting. Multi-party decision-making is complex and involves significant time and effort, and there can be no assurance that the parties will cooperate or reach consensus, or that one or both of our partners will not ask to proceed independently in some or all of their respective territories or functional areas of responsibility in which the applicable collaboration partner would otherwise be obligated to cooperate with us. Any disputes or lack of cooperation with us by either Astellas or AstraZeneca, or both, may negatively impact the timing or success of our regulatory approval applications.

We may conduct proprietary research programs in specific disease areas that are not covered by our collaboration agreements. Our pursuit of such opportunities could, however, result in conflicts with our collaboration partners in the event that any of our collaboration partners takes the position that our internal activities overlap with those areas that are exclusive to our collaboration agreements. Moreover, disagreements with our collaboration partners could develop over rights to our intellectual property, including the enforcement of those rights. In addition, our collaboration agreements may have provisions that give rise to disputes regarding the rights and obligations of the parties. Any conflict with our collaboration partners could lead to the termination of our collaboration agreements, delay collaborative activities, reduce our ability to renew agreements or obtain future collaboration agreements or result in litigation or arbitration and would negatively impact our relationship with existing collaboration partners, and could impact our commercial results.

Certain of our collaboration partners could also become our competitors in the future. If our collaboration partners develop competing products, fail to obtain necessary regulatory approvals, terminate their agreements with us prematurely or fail to devote sufficient resources to the development and commercialization of our product candidates, the development and commercialization of our product candidates and products could be delayed.

If our preclinical and clinical trial contractors do not properly perform their agreed upon obligations, we may not be able to obtain or may be delayed in receiving regulatory approvals for our product candidates.

We rely heavily on university, hospital, dialysis centers and other institutions and third parties, including the principal investigators and their staff, to carry out our clinical trials in accordance with our clinical protocols and designs. We also rely on a number of third-party CROs to assist in undertaking, managing, monitoring and executing our ongoing clinical trials. We expect to continue to rely on CROs, clinical data management organizations, medical institutions and clinical investigators to conduct our development efforts in the future. We compete with many other companies for the resources of these third parties, and large pharmaceutical companies often have significantly more extensive agreements and relationships with such third-party providers, and such third-party providers may prioritize the requirements of such large pharmaceutical companies over ours. The third parties on whom we rely may terminate their engagements with us at any time, which may cause delay in the development and commercialization of our product candidates. If any such third party terminates its engagement with us or fails to perform as agreed, we may be required to enter into alternative arrangements, which would result in significant cost and delay to our product development program. Moreover, our agreements with such third parties generally do not provide assurances regarding employee turnover and availability, which may cause interruptions in the research on our product candidates by such third parties.

Moreover, while our reliance on these third parties for certain development and management activities will reduce our control over these activities, it will not relieve us of our responsibilities. For example, the FDA and foreign regulatory authorities require compliance with regulations and standards, including GCP requirements for designing, conducting, monitoring, recording, analyzing and reporting the results of clinical trials to ensure that the data and results from trials are credible and accurate and that the rights, integrity and confidentiality of trial participants are protected. Although we rely on third parties to conduct our clinical trials, we, as the sponsor, remain responsible for ensuring that each of these clinical trials is conducted in accordance with its general investigational plan and protocol under legal and regulatory requirements, including GCP. Regulatory authorities enforce these GCP requirements through periodic inspections of trial sponsors, principal investigators and trial sites.

If any of our CROs, trial sites, principal investigators or other third parties fail to comply with applicable GCP requirements, other regulations, trial protocol or other requirements under their agreements with us, the quality or accuracy of the data they obtain may be compromised or unreliable, and the trials of our product candidates may not meet regulatory requirements. If trials do not meet regulatory requirements or if these third parties need to be replaced, the development of our product candidates may be delayed, suspended or terminated, regulatory authorities may require us to exclude the use of patient data from our approval applications or perform additional clinical trials before approving our marketing applications. Regulatory authorities may even reject our application for approval or refuse to accept our future applications for an extended period of time. We cannot assure that upon inspection by a regulatory authority, such regulatory authority will determine that any of our clinical trials comply with GCP requirements or that our results may be used in support of our regulatory submissions. If any of these events occur, we may not be able to obtain regulatory approval for our product candidates on a timely basis, at a reasonable cost, or at all.

We currently rely, and expect to continue to rely, on third parties to conduct many aspects of our product manufacturing and distribution, and these third parties may terminate these agreements or not perform satisfactorily.

We do not have operating manufacturing facilities at this time other than our roxadustat manufacturing facilities in China, and our current commercial manufacturing plants in China are not expected to satisfy the requirements necessary to support development and commercialization outside of China. Other than in and for China specifically, we do not expect to independently manufacture our products. We currently rely, and expect to continue to rely, on third parties to scale-up, manufacture and supply roxadustat and our other product candidates outside of China. We rely on third parties for distribution, including our collaboration partners and their vendors, except in China where we have established a jointly owned entity with AstraZeneca to manage most of the distribution in China. Risks arising from our reliance on third-party manufacturers include:

- reduced control and additional burdens of oversight as a result of using third-party manufacturers and distributors for all aspects of manufacturing activities, including regulatory compliance and quality control and quality assurance;
- termination of manufacturing agreements, termination fees associated with such termination, or nonrenewal of manufacturing agreements with third parties may negatively impact our planned development and commercialization activities;
- the possible misappropriation of our proprietary technology, including our trade secrets and know-how; and
- disruptions to the operations of our third-party manufacturers, distributors or suppliers unrelated to our product, including the merger, acquisition, or bankruptcy of a manufacturer or supplier or a catastrophic event, including disruption resulting from the COVID-19 pandemic, affecting our manufacturers, distributors or suppliers.

Any of these events could lead to development delays or failure to obtain regulatory approval or affect our ability to successfully commercialize our product candidates. Some of these events could be the basis for action by the FDA or another regulatory authority, including injunction, recall, seizure or total or partial suspension of production.

The facilities used by our contract manufacturers to manufacture our product candidates must pass inspections by the FDA and other regulatory authorities. Although, except for China, we do not control the manufacturing operations of, and expect to remain completely dependent on, our contract manufacturers for manufacture of drug substance and finished drug product, we are ultimately responsible for ensuring that our product candidates are manufactured in compliance with cGMP requirements. If our contract manufacturers cannot successfully manufacture material that conforms to our or our collaboration partners' specifications, or the regulatory requirements of the FDA or other regulatory authorities, we may not be able to secure and/or maintain regulatory approval for our product candidates and our development or commercialization plans may be delayed. In addition, we have limited control over the ability of our contract manufacturers to maintain adequate quality control, quality assurance and qualified personnel. In addition, although our longer-term agreements are expected to provide for requirements to meet our quantity and quality requirements to manufacture our products candidates for clinical studies and commercial sale, we will have minimal direct control over the ability of our contract manufacturers to maintain adequate quality control, quality assurance and qualified personnel and we expect to rely on our audit rights to ensure that those qualifications are maintained to meet our requirements. If our contract manufacturers' facilities do not pass inspection by regulatory authorities, or if regulatory authorities do not approve these facilities for the manufacture of our products, or withdraw any such approval in the future, we would need to identify and qualify alternative manufacturing facilities, which would significantly impact our ability to develop, obtain regulatory approval for or market our products, if approved. Moreover, any failure of our third-party manufacturers, to comply with applicable regulations could result in sanctions being imposed on us or adverse regulatory consequences, including clinical holds, warnings or untitled letters, fines, injunctions, civil penalties, delays, suspension or withdrawal of approvals, license revocation, seizures or recalls of product candidates or products, operating restrictions and criminal prosecutions, any of which would be expected to significantly and adversely affect supplies of our products to us and our collaboration partners.

We have a letter agreement with IRIX Pharmaceuticals, Inc. (“IRIX”), a third-party manufacturer that we have used in the past, pursuant to which we agreed to negotiate a single source manufacturing agreement that included a right of first negotiation for the cGMP manufacture of HIF-PH inhibitors, including roxadustat, provided that IRIX is able to match any third-party bids within 5%. The exclusive right to manufacture extends for five years after approval of an NDA for those compounds, and any agreement would provide that no minimum amounts would be specified until appropriate by forecast and that we and a commercialization partner would have the rights to contract with independent third parties that exceed IRIX’s internal manufacturing capabilities or in the event that we or our commercialization partner determines for reasons of continuity of supply and security that such a need exists, provided that IRIX would supply no less than 65% of the product if it is able to provide this level of supply. Subsequent to the letter agreement, IRIX and we have entered into several additional service agreements. IRIX has requested in writing that we honor the letter agreement with respect to the single source manufacturing agreement, and if we were to enter into any such exclusive manufacturing agreement, there can be no assurance that IRIX will not assert a claim for right to manufacture roxadustat or that IRIX could manufacture roxadustat successfully and in accordance with applicable regulations for a commercial product and the specifications of our collaboration partners. In 2015, Patheon Pharmaceuticals Inc., a business unit of DPx Holdings B.V., acquired IRIX, and in 2017, ThermoFisher Scientific Inc. acquired Patheon Pharmaceuticals Inc.

If any third-party manufacturer terminates its engagement with us or fails to perform as agreed, we may be required to find replacement manufacturers, which would result in significant cost and delay to our development programs. Although we believe that there are several potential alternative manufacturers who could manufacture our product candidates, we may incur significant delays and added costs in identifying, qualifying and contracting with any such third party or potential second source manufacturer. In any event, with any third-party manufacturer we expect to enter into technical transfer agreements and share our know-how with the third-party manufacturer, which can be time-consuming and may result in delays. These delays could result in a suspension or delay of marketing roxadustat.

We may experience delays or technical problems associated with technology transfer, scale-up, or validation of our biologics manufacturing.

We have entered into an initial commercial supply agreement for the manufacture of pamrevlumab with Samsung Biologics Co., Ltd. (“Samsung”) and are transitioning our manufacturing of pamrevlumab from Boehringer Ingelheim Pharma GmbH & Co. KG to Samsung. However, we may experience delays or technical problems associated with:

- technology transfer of the manufacturing process to Samsung;
- scale-up and production of cGMP batches;
- analytical method validation and transfer to Samsung;
- process validation, including process characterization and process performance qualification batches; and
- set up and execution of appropriate stability studies.

We have made certain manufacturing commitments to Samsung, and there is a contractual risk we will not require the quantities of pamrevlumab we have committed to, particularly if we cease some of our pamrevlumab clinical trials. In addition, our product candidates and any products that we may develop may compete with other product candidates and products for access and prioritization to manufacture. Certain third-party manufacturers may be contractually prohibited from manufacturing our product due to non-compete agreements with our competitors or a commitment to grant another party priority relative to our products. There are a limited number of third-party manufacturers that operate under cGMP and that might be capable of manufacturing to meet our requirements. Due to the limited number of third-party manufacturers with the contractual freedom, expertise, required regulatory approvals and facilities to manufacture our products on a commercial scale, identifying and qualifying a replacement third-party manufacturer would be expensive and time-consuming and may cause delay or interruptions in the production of our product candidates or products, which in turn may delay, prevent or impair our development and commercialization efforts.

We also carry the risk that if all three indications are successful, the commercial demand may exceed planned production supply at Samsung. In this event, it may be necessary to find third party manufacturers who have the capacity and capability to produce the required quantities of pamrevlumab. This may be subject to availability of such manufacturers since there are only a limited number of suppliers who have the larger scale bioreactors that are needed for commercial pamrevlumab supply. If we need to find a supplier in China, there may be additional delays in importing custom raw materials and supplements into China.

Certain components of our products are acquired from single-source suppliers or without long-term supply agreements. The loss of these suppliers, or their failure to supply, would materially and adversely affect our business.

We do not have an alternative supplier of certain components of our product candidates. We may be unable to enter into long-term commercial supply arrangements for some of our products, or do so on commercially reasonable terms, which could have a material adverse impact upon our business. In addition, we currently rely on our contract manufacturers to purchase from third-party suppliers some of the materials necessary to produce our product candidates. We do not have direct control over the acquisition of those materials by our contract manufacturers.

The logistics of our supply chain, which include shipment of materials and intermediates from countries such as China and India add additional time and risk (including risk of loss) to the manufacture of our product candidates. While we have in the past maintained sufficient inventory of materials, active pharmaceutical ingredients ("API"), and drug product to meet our and our collaboration partners' needs to date, the lead-time and regulatory approvals required to source from and into countries outside of the U.S. increase the risk of delay and potential shortages of supply.

Risks Related to Our Intellectual Property

If our efforts to protect our proprietary technologies are not adequate, we may not be able to compete effectively in our market.

We rely upon a combination of patents, trade secret protection, and contractual arrangements to protect the intellectual property related to our technologies. We will only be able to protect our products and proprietary information and technology to the extent that our patents, trade secrets, contractual position, and governmental regulations and laws allow us to do so. Any unauthorized use or disclosure of proprietary information or technology could compromise our competitive position. Moreover, we are, have been, and may in the future be involved in legal proceedings involving our intellectual property and initiated by third parties, which proceedings can be associated with significant costs and commitment of management time and attention.

We have in the past been involved in, and may in the future be involved in initiating legal or administrative proceedings involving the product candidates and intellectual property of our competitors. These proceedings can result in significant costs and commitment of management time and attention, and there can be no assurance that our efforts would be successful in preventing or limiting the ability of our competitors to market competing products.

Composition-of-matter patents are generally considered the strongest form of intellectual property protection for pharmaceutical products, as such, patents provide protection not limited to any one method of use. Method-of-use patents protect the use of a product for the specified method(s), and do not prevent a competitor from making and marketing a product that is identical to our product for an indication that is outside the scope of the patented method. We rely on a combination of these and other types of patents to protect our product candidates, and there can be no assurance that our intellectual property will create and sustain the competitive position of our product candidates.

Biotechnology and pharmaceutical product patents involve highly complex legal and scientific questions and can be uncertain. Any patent applications that we own or license may fail to result in issued patents. Even if patents do successfully issue from our applications, third parties may challenge their validity or enforceability, which may result in such patents being narrowed, invalidated, or held unenforceable. Even if our patents and patent applications are not challenged by third parties, those patents and patent applications may not prevent others from designing around our claims and may not otherwise adequately protect our product candidates. If the breadth or strength of protection provided by the patents and patent applications we hold with respect to our product candidates is threatened, competitors with significantly greater resources could threaten our ability to commercialize our product candidates. Discoveries are generally published in the scientific literature well after their actual development, and patent applications in the U.S. and other countries are typically not published until 18 months after their filing, and in some cases are never published. Therefore, we cannot be certain that our licensors or we were the first to make the inventions claimed in our owned and licensed patents or patent applications, or that our licensors or we were the first to file for patent protection covering such inventions. Subject to meeting other requirements for patentability, for U.S. patent applications filed prior to March 16, 2013, the first to invent the claimed invention is entitled to receive patent protection for that invention while, outside the U.S., the first to file a patent application encompassing the invention is entitled to patent protection for the invention. The U.S. moved to a “first to file” system under the Leahy-Smith America Invents Act, effective March 16, 2013. This system also includes procedures for challenging issued patents and pending patent applications, which creates additional uncertainty. We have, are, and may again become involved in opposition or interference proceedings challenging our patents and patent applications or the patents and patent applications of others, and the outcome of any such proceedings are highly uncertain. An unfavorable outcome in any such proceedings could reduce the scope of or invalidate our patent rights, allow third parties to commercialize our technology and compete directly with us, or result in our inability to manufacture, develop or commercialize our product candidates without infringing the patent rights of others.

In addition to the protection afforded by patents, we seek to rely on trade secret protection and confidentiality agreements to protect proprietary know-how, information, or technology that is not covered by our patents. Although our agreements require all of our employees to acknowledge ownership by us of inventions conceived as a result of employment from the point of conception and, to the extent necessary, perfect such ownership by assignment, and we require all of our employees, consultants, advisors and any third parties who have access to our trade secrets, proprietary know-how and other confidential information and technology to enter into appropriate confidentiality agreements, we cannot be certain that our trade secrets, proprietary know-how and other confidential information and technology will not be subject to unauthorized disclosure, use, or misappropriation or that our competitors will not otherwise gain access to or independently develop substantially equivalent trade secrets, proprietary know-how and other information and technology. Furthermore, the laws of some foreign countries, in particular, China, where we have operations, do not protect proprietary rights to the same extent or in the same manner as the laws of the U.S. As a result, we may encounter significant problems in protecting and defending our intellectual property globally. If we are unable to prevent unauthorized disclosure of our intellectual property related to our product candidates and technology to third parties, we may not be able to establish or maintain a competitive advantage in our market, which could materially and adversely affect our business and operations.

Intellectual property disputes may be costly, time consuming, and may negatively affect our competitive position.

Our commercial success may depend on our avoiding infringement of the patents and other proprietary rights of third parties as well as on enforcing our patents and other proprietary rights against third parties. Pharmaceutical and biotechnology intellectual property disputes are characterized by complex, lengthy and expensive litigation over patents and other intellectual property rights. We have initiated and may again initiate or become party to or be threatened with future litigation or other proceedings regarding intellectual property rights with respect to our product candidates and competing products.

As our product candidates progress toward commercialization, our collaboration partners or we may be subject to patent infringement claims from third parties. We attempt to ensure that our product candidates do not infringe third-party patents and other proprietary rights. However, the patent landscape in competitive product areas is highly complex, and there may be patents of third parties of which we are unaware that may result in claims of infringement. Accordingly, there can be no assurance that our product candidates do not infringe proprietary rights of third parties, and parties making claims against us may seek and obtain injunctive or other equitable relief, which could potentially block further efforts to develop and commercialize our product candidates including roxadustat or pamrevlumab. Any litigation involving defense against claims of infringement, regardless of the merit of such claims, would involve substantial litigation expense and would be a substantial diversion of management time.

We may consider administrative proceedings and other means for challenging third-party patents and patent applications. An unfavorable outcome in any such challenge could require us to cease using the related technology and to attempt to license rights to it from the prevailing third party, which may not be available on commercially reasonable terms, if at all, in which case our business could be harmed.

We intend, if necessary, to vigorously enforce our intellectual property in order to protect the proprietary position of our product candidates, including roxadustat and pamrevlumab. In addition, our collaboration partners who have been granted licenses to our patents may also have rights related to enforcement of those patents. Active efforts to enforce our patents by us or by our partners may include litigation, administrative proceedings, or both, depending on the potential benefits that might be available from those actions and the costs associated with undertaking those efforts against third parties. We carefully review and monitor publicly available information regarding products that may be competitive with our product candidates and assert our intellectual property rights where appropriate.

Third parties have challenged and may again challenge our patents and patent applications. For example, various challenges against our HIF anemia-related technologies patent portfolio are ongoing in several territories including the U.S., Europe, the United Kingdom, and Japan. Regardless of final outcome, the potential narrowing or revocation of any of the HIF anemia-related technology patents does not affect our exclusivity for roxadustat or our freedom-to-operate with respect to use of roxadustat for the treatment of anemia in these or other territories.

Oppositions were filed against our European Patent No. 2872488 (the "`488 Patent"), which claims a crystalline form of roxadustat, and against our European Patent No. 3003284 (the "`284 Patent"), which claims photostable formulations of roxadustat. In its Written Decision of November 2021, the Opposition Division of the European Patent Office found that the claims of the '488 patent did not meet the grounds for novelty. FibroGen has appealed this decision. Final resolution of the opposition proceedings will take time, and we cannot be assured that the `488 Patent or `284 Patents will ultimately survive such proceedings as originally granted or at all.

Furthermore, there is a risk that any public announcements concerning the status or outcomes of intellectual property litigation or administrative proceedings may adversely affect the price of our stock. If securities analysts or our investors interpret such status or outcomes as negative or otherwise creating uncertainty, our common stock price may be adversely affected.

Our reliance on third parties and agreements with collaboration partners requires us to share our trade secrets, which increases the possibility that a competitor may discover them or that our trade secrets will be misappropriated or disclosed.

Our reliance on third-party contractors to develop and manufacture our product candidates is based upon agreements that limit the rights of the third parties to use or disclose our confidential information, including our trade secrets and know-how. Despite the contractual provisions, the need to share trade secrets and other confidential information increases the risk that such trade secrets and information are disclosed or used, even if unintentionally, in violation of these agreements. In the highly competitive markets in which our product candidates are expected to compete, protecting our trade secrets, including our strategies for addressing competing products, is imperative, and any unauthorized use or disclosure could impair our competitive position and may have a material adverse effect on our business and operations.

In addition, our collaboration partners are larger, more complex organizations than ours, and the risk of inadvertent disclosure of our proprietary information may be increased despite their internal procedures and contractual obligations that we have in place with them. Despite our efforts to protect our trade secrets and other confidential information, a competitor's discovery of such trade secrets and information could impair our competitive position and have an adverse impact on our business.

The cost of maintaining our patent protection is high and requires continuous review and diligence. We may not be able to effectively maintain our intellectual property position throughout the major markets of the world.

The U.S. Patent and Trademark Office and foreign patent authorities require maintenance fees and payments as well as continued compliance with a number of procedural and documentary requirements. Noncompliance may result in abandonment or lapse of the subject patent or patent application, resulting in partial or complete loss of patent rights in the relevant jurisdiction. Non-compliance may result in reduced royalty payments for lack of patent coverage in a particular jurisdiction from our collaboration partners or may result in competition, either of which could have a material adverse effect on our business.

We have made, and will continue to make, certain strategic decisions in balancing costs and the potential protection afforded by the patent laws of certain countries. As a result, we may not be able to prevent third parties from practicing our inventions in all countries throughout the world, or from selling or importing products made using our inventions in and into the U.S. or other countries. Third parties may use our technologies in territories in which we have not obtained patent protection to develop their own products and, further, may infringe our patents in territories which provide inadequate enforcement mechanisms, even if we have patent protection. Such third-party products may compete with our product candidates, and our patents or other intellectual property rights may not be effective or sufficient to prevent them from competing.

The laws of some foreign countries do not protect proprietary rights to the same extent as do the laws of the U.S., and we may encounter significant problems in securing and defending our intellectual property rights outside the U.S.

Many companies have encountered significant problems in protecting and defending intellectual property rights in certain countries. The legal systems of certain countries do not always favor the enforcement of patents, trade secrets, and other intellectual property rights, particularly those relating to pharmaceutical and biotechnology products, which could make it difficult for us to stop infringement of our patents, misappropriation of our trade secrets, or marketing of competing products in violation of our proprietary rights. In China, our intended establishment of significant operations will depend in substantial part on our ability to effectively enforce our intellectual property rights in that country. Proceedings to enforce our intellectual property rights in foreign countries could result in substantial costs and divert our efforts and attention from other aspects of our business, and could put our patents in these territories at risk of being invalidated or interpreted narrowly, or our patent applications at risk of not being granted, and could provoke third parties to assert claims against us. We may not prevail in all legal or other proceedings that we may initiate and, if we were to prevail, the damages or other remedies awarded, if any, may not be commercially meaningful. Accordingly, our efforts to enforce our intellectual property rights around the world may be inadequate to obtain a significant commercial advantage from the intellectual property that we develop or license.

Intellectual property rights do not address all potential threats to any competitive advantage we may have.

The degree of future protection afforded by our intellectual property rights is uncertain because intellectual property rights have limitations, and intellectual property rights may not adequately protect our business or permit us to maintain our competitive advantage. The following examples are illustrative:

- Others may be able to make compounds that are the same as or similar to our current or future product candidates but that are not covered by the claims of the patents that we own or have exclusively licensed.
- We or any of our licensors or strategic partners might not have been the first to make the inventions covered by the issued patent or pending patent application that we own or have exclusively licensed.
- We or any of our licensors or strategic partners might not have been the first to file patent applications covering certain of our inventions.
- Others may independently develop similar or alternative technologies or duplicate any of our technologies without infringing our intellectual property rights.
- The prosecution of our pending patent applications may not result in granted patents.
- Granted patents that we own or have exclusively licensed may not provide us with any competitive advantages, or may be held invalid or unenforceable, as a result of legal challenges by our competitors.
- Patent protection on our product candidates may expire before we are able to develop and commercialize the product, or before we are able to recover our investment in the product.
- Our competitors might conduct research and development activities in the U.S. and other countries that provide a safe harbor from patent infringement claims for such activities, as well as in countries in which we do not have patent rights, and may then use the information learned from such activities to develop competitive products for sale in markets where we intend to market our product candidates.

The existence of counterfeit pharmaceutical products in pharmaceutical markets may compromise our brand and reputation and have a material adverse effect on our business, operations and prospects.

Counterfeit products, including counterfeit pharmaceutical products, are a significant problem, particularly in China. Counterfeit pharmaceuticals are products sold or used for research under the same or similar names, or similar mechanism of action or product class, but which are sold without proper licenses or approvals, and are often lower cost, lower quality, different potency, or have different ingredients or formulations, and have the potential to damage the reputation for quality and effectiveness of the genuine product. Such products may be used for indications or purposes that are not recommended or approved or for which there is no data or inadequate data with regard to safety or efficacy. Such products divert sales from genuine products. If counterfeit pharmaceuticals illegally sold or used for research result in adverse events or side effects to consumers, we may be associated with any negative publicity resulting from such incidents. Consumers may buy counterfeit pharmaceuticals that are in direct competition with our pharmaceuticals, which could have an adverse impact on our revenues, business and results of operations. In addition, the use of counterfeit products could be used in non-clinical or clinical studies, or could otherwise produce undesirable side effects or adverse events that may be attributed to our products as well, which could cause us or regulatory authorities to interrupt, delay or halt clinical trials and could result in the delay or denial of regulatory approval by the FDA or other regulatory authorities and potential product liability claims. With respect to China, although the government has recently been increasingly active in policing counterfeit pharmaceuticals, there is not yet an effective counterfeit pharmaceutical regulation control and enforcement system in China. As a result, we may not be able to prevent third parties from selling or purporting to sell our products in China. The proliferation of counterfeit pharmaceuticals has grown in recent years and may continue to grow in the future. The existence of and any increase in the sales and production of counterfeit pharmaceuticals, or the technological capabilities of counterfeiters, could negatively impact our revenues, brand reputation, business and results of operations.

Risks Related to Government Regulation

The regulatory approval process is highly uncertain and we may not obtain regulatory approval for our product candidates.

The time required to obtain approval by the FDA and comparable foreign regulatory authorities is unpredictable, but typically takes many years following the commencement of preclinical studies and clinical trials and depends upon numerous factors, including the substantial discretion of the regulatory authorities. In addition, approval policies, regulations, or the type and amount of clinical data necessary to gain approval may change during the course of a product candidate's clinical development and may vary among jurisdictions. For example, while we have received approval of our marketing authorization applications for roxadustat in the European Union, Great Britain, China, Japan, South Korea, Chile, Russia, the United Arab Emirates, and Kuwait for CKD anemia for patients on dialysis and not on dialysis, we received a CRL in the U.S. from the FDA. It is possible that roxadustat will not obtain regulatory approval in additional countries or indications. It is possible that our other product candidates we may discover, in-license or acquire and seek to develop in the future, will not obtain regulatory approval in any particular jurisdiction.

Our current and future relationships with customers, physicians, and third-party payors are subject to healthcare fraud and abuse laws, false claims laws, transparency laws, privacy and security laws, and other regulations. If we are unable to comply with such laws, we could face substantial penalties.

Our current and future relationships with customers, physicians, and third-party payors are subject to health care laws and regulations, which may constrain the business or financial arrangements and relationships through which we research, as well as, sell, market and distribute any products for which we obtain marketing approval. If we obtain approval in the U.S. for any of our product candidates, the regulatory requirements applicable to our operations, in particular our sales and marketing efforts, will increase significantly with respect to our operations and the potential for administrative, civil and criminal enforcement by the federal government and the states and foreign governments will increase with respect to the conduct of our business. The laws that may affect our operations in the U.S. include:

- the federal Anti-Kickback Statute, which prohibits, among other things, persons and entities from knowingly and willfully soliciting, receiving, offering or paying remuneration, directly or indirectly, to induce, or in return for, the purchase or recommendation of an item or service reimbursable under a federal healthcare program, such as the Medicare and Medicaid programs;
- federal civil and criminal false claims laws and civil monetary penalty laws, which prohibit, among other things, individuals or entities from knowingly presenting, or causing to be presented, claims for payment from Medicare, Medicaid, or other third-party payors that are false or fraudulent;
- the Health Insurance Portability and Accountability Act of 1996, which created new federal criminal statutes that prohibit, among other things, executing a scheme to defraud any healthcare benefit program and making false statements relating to healthcare matters;
- the Health Insurance Portability and Accountability Act of 1996, as amended by Health Information Technology and Clinical Health Act, and its implementing regulations, which imposes certain requirements on certain covered healthcare

providers, health plans, and healthcare clearinghouses as well as their respective business associates that perform services for them that involve the use, or disclosure of, individually identifiable health information as well as their covered subcontractors relating to the privacy, security, and transmission of individually identifiable health information;

- the federal physician sunshine requirements under the Patient Protection and Affordable Care Act, as amended by the Health Care and Education Reconciliation Act of 2010, which requires manufacturers of drugs, devices, biologics, and medical supplies to report annually to the Centers for Medicare & Medicaid Services, information related to payments and other transfers of value to physicians (defined to include doctors, dentists, optometrists, podiatrists and chiropractors), other healthcare providers (such as physician assistants and nurse practitioners), and teaching hospitals, and ownership and investment interests held by physicians and other healthcare providers and their immediate family members;
- foreign and state law equivalents of each of the above federal laws that may apply to items or services reimbursed by any third-party payor, including commercial insurers; state laws that require pharmaceutical companies to comply with the pharmaceutical industry's voluntary compliance guidelines and the applicable compliance guidance promulgated by the federal government, or otherwise restrict payments that may be made to healthcare providers and other potential referral sources; state laws that require drug manufacturers to report information related to payments and other transfers of value to physicians and other healthcare providers or marketing expenditures; and state laws governing the privacy and security of health information in certain circumstances, many of which differ from each other in significant ways, thus complicating compliance efforts; and
- the Trade Agreements Act ("TAA"), which requires that drugs sold to the U.S. Government must be manufactured in the U.S. or in TAA approved and designated countries. Drugs manufactured in countries not approved under the TAA, may not be sold to the U.S. without specific regulatory approval. We have little experience with this regulation and there is a risk that drugs made from Chinese-made API may not be sold to an entity of the U.S. such as the Veterans Health Administration due to our inability to obtain regulatory approval. While there have been recent Veterans Health Administration policy changes that appear to allow for sale of drugs from non-TAA approved countries, this policy may change or there may be additional policies or legislation that affect our ability to sell drug to the U.S. Government.

If our operations are found to be in violation of any of such laws or any other governmental regulations that apply to us, we may be subject to significant penalties, including administrative, civil and criminal penalties, damages, fines, disgorgement, the curtailment or restructuring of our operations, the exclusion from participation in federal and state healthcare programs and imprisonment, any of which could materially adversely affect our ability to operate our business and our financial results.

Even if resolved in our favor, litigation or other legal proceedings relating to healthcare laws and regulations may cause us to incur significant expenses and could distract our technical and management personnel from their normal responsibilities. In addition, there could be public announcements of the results of hearings, motions or other interim proceedings or developments. Such actions could have a substantial adverse effect on the price of our common shares and could have a material adverse effect on our operations.

We are subject to laws and regulations governing corruption, which require us to maintain costly compliance programs.

We must comply with a wide range of laws and regulations to prevent corruption, bribery, and other unethical business practices, including the U.S. Foreign Corrupt Practices Act ("FCPA"), anti-bribery and anti-corruption laws in other countries, particularly China. The implementation and maintenance of compliance programs is costly and such programs may be difficult to enforce, particularly where reliance on third parties is required.

Anti-bribery laws prohibit us, our employees, and some of our agents or representatives from offering or providing any personal benefit to covered government officials to influence their performance of their duties or induce them to serve interests other than the missions of the public organizations in which they serve. Certain commercial bribery rules also prohibit offering or providing any personal benefit to employees and representatives of commercial companies to influence their performance of their duties or induce them to serve interests other than their employers. The FCPA also obligates companies whose securities are listed in the U.S. to comply with certain accounting provisions requiring us to maintain books and records that accurately and fairly reflect all transactions of the corporation, including international subsidiaries, and devise and maintain an adequate system of internal accounting controls for international operations. The anti-bribery provisions of the FCPA are enforced primarily by the Department of Justice. The U.S. Securities and Exchange Commission ("SEC") is involved with enforcement of the books and records provisions of the FCPA.

Compliance with these anti-bribery laws is expensive and difficult, particularly in countries in which corruption is a recognized problem. In addition, the anti-bribery laws present particular challenges in the pharmaceutical industry because in many countries including China, hospitals are state-owned or operated by the government, and doctors and other hospital employees are considered foreign government officials. Furthermore, in certain countries (China in particular), hospitals and clinics are permitted to sell pharmaceuticals to their patients and are primary or significant distributors of pharmaceuticals. Certain payments to hospitals in connection with clinical studies, procurement of pharmaceuticals and other work have been deemed to be improper payments to government officials that have led to vigorous anti-bribery law enforcement actions and heavy fines in multiple jurisdictions, particularly in the U.S. and China.

It is not always possible to identify and deter violations, and the precautions we take to detect and prevent this activity may not be effective in controlling unknown or unmanaged risks or losses or in protecting us from governmental investigations or other actions or lawsuits stemming from a failure to be in compliance with such laws or regulations.

In the pharmaceutical industry, corrupt practices include, among others, acceptance of kickbacks, bribes or other illegal gains or benefits by the hospitals and medical practitioners from pharmaceutical manufacturers, distributors or their third-party agents in connection with the prescription of certain pharmaceuticals. If our employees, partners, affiliates, subcontractors, distributors or third-party marketing firms violate these laws or otherwise engage in illegal practices with respect to their sales or marketing of our products or other activities involving our products, we could be required to pay damages or heavy fines by multiple jurisdictions where we operate, which could materially and adversely affect our financial condition and results of operations. The Chinese government has also sponsored anti-corruption campaigns from time to time, which could have a chilling effect on any future marketing efforts by us to new hospital customers. There have been recent occurrences in which certain hospitals have denied access to sales representatives from pharmaceutical companies because the hospitals wanted to avoid the perception of corruption. If this attitude becomes widespread among our potential customers, our ability to promote our products to hospitals may be adversely affected.

As we expand our operations in China and other jurisdictions internationally, we will need to increase the scope of our compliance programs to address the risks relating to the potential for violations of the FCPA and other anti-bribery and anti-corruption laws. Our compliance programs will need to include policies addressing not only the FCPA, but also the provisions of a variety of anti-bribery and anti-corruption laws in multiple foreign jurisdictions, including China, provisions relating to books and records that apply to us as a public company, and include effective training for our personnel throughout our organization. The creation and implementation of anti-corruption compliance programs is costly and such programs are difficult to enforce, particularly where reliance on third parties is required. Violation of the FCPA and other anti-corruption laws can result in significant administrative and criminal penalties for us and our employees, including substantial fines, suspension or debarment from government contracting, prison sentences, or even the death penalty in extremely serious cases in certain countries. The SEC also may suspend or bar us from trading securities on U.S. exchanges for violation of the FCPA's accounting provisions. Even if we are not ultimately punished by government authorities, the costs of investigation and review, distraction of our personnel, legal defense costs, and harm to our reputation could be substantial and could limit our profitability or our ability to develop or commercialize our product candidates. In addition, if any of our competitors are not subject to the FCPA, they may engage in practices that will lead to their receipt of preferential treatment from foreign hospitals and enable them to secure business from foreign hospitals in ways that are unavailable to us.

If we fail to maintain an effective system of internal control, it may result in material misstatements in our financial statements.*

Our management is responsible for establishing and maintaining adequate internal control over financial reporting and for evaluating and reporting on the effectiveness of our system of internal control. Our internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of our financial reporting and the preparation of financial statements for external reporting purposes in accordance with generally accepted accounting principles. As a public company, we are required to comply with the Sarbanes-Oxley Act and other rules that govern public companies.

Internal controls and remediation efforts place a significant burden on management and add increased pressure on our financial resources and processes. If we experience material weaknesses or otherwise fail to maintain an effective system of internal control over financial reporting, the accuracy and timing of our financial reporting may be adversely affected, our liquidity, our access to capital markets may be adversely affected, we may be unable to maintain or regain compliance with applicable securities laws, and the Nasdaq Stock Market LLC listing requirements, we may be subject to regulatory investigations and penalties, investors may lose confidence in our financial reporting, and our stock price may decline.

The impact of U.S. healthcare reform may adversely affect our business model.

In the U.S. and some foreign jurisdictions, there have been, and continue to be, several legislative and regulatory changes and proposed changes regarding the healthcare system that could affect our operations. In particular, the commercial potential for our approved products could be affected by changes in healthcare spending and policy in the U.S. and abroad. We operate in a highly regulated industry and new laws, regulations or judicial decisions, or new interpretations of existing laws, regulations or decisions, related to healthcare availability, the method of delivery or payment for healthcare products and services could negatively impact our business, operations and financial condition.

Further, in the U.S. there has been heightened governmental scrutiny over the manner in which manufacturers set prices for their marketed products, which has resulted in several presidential executive orders, Congressional inquiries and proposed and enacted federal and state legislation designed to, among other things, bring more transparency to drug pricing, reduce the cost of prescription drugs under government payor programs, and review the relationship between pricing and manufacturer patient programs. For example, in July 2021, the Biden administration released an executive order that included multiple provisions aimed at prescription drugs. In response to Biden's executive order, on September 9, 2021, the U.S. Department of Health and Human Services released a Comprehensive Plan for Addressing High Drug Prices that outlines principles for drug pricing reform. The plan sets out a variety of potential legislative policies that Congress could pursue as well as potential administrative actions the U.S. Department of Health and Human Services can take to advance these principles. No legislation or administrative actions have been finalized to implement these principles. In addition, Congress is considering additional health reform measures. At the state level, individual states are increasingly aggressive in passing legislation and implementing regulations designed to control pharmaceutical and biological product pricing, including price or patient reimbursement constraints, discounts, restrictions on certain product access and marketing cost disclosure and transparency measures, and, in some cases, designed to encourage importation from other countries and bulk purchasing.

We expect that additional state and federal healthcare reform measures will be adopted in the future, any of which could limit the amounts that federal and state governments will pay for healthcare products and services, which could result in reduced demand for our products if approved or additional pricing pressures. Further, it is possible that additional government action is taken in response to the COVID-19 pandemic.

Roxadustat is considered a Class 2 substance on the 2019 World Anti-Doping Agency Prohibited List that could limit sales and increase security and distribution costs for our partners and us.

Roxadustat is considered a Class 2 substance on the World Anti-Doping Agency Prohibited List. There are enhanced security and distribution procedures we and our collaboration partners and third-party contractors will have to take to limit the risk of loss of product in the supply chain. As a result, our distribution, manufacturing and sales costs for roxadustat, as well as for our partners, will be increased which will reduce profitability. In addition, there is a risk of reduced sales due to patient access to this drug.

Our employees may engage in misconduct or improper activities, which could result in significant liability or harm our reputation.

We are exposed to the risk of employee fraud or other misconduct, including intentional failure to:

- comply with FDA regulations or similar regulations of comparable foreign regulatory authorities;
- provide accurate information to the FDA or comparable foreign regulatory authorities;
- comply with manufacturing standards we have established;
- comply with privacy laws protecting personal information;
- comply with federal and state healthcare fraud and abuse laws and regulations and similar laws and regulations established and enforced by comparable foreign regulatory authorities;

- comply with the FCPA and other anti-bribery laws;
- report financial information or data accurately; or
- disclose unauthorized activities to us.

Employee misconduct could also involve the improper use of information obtained in the course of clinical trials, which could result in regulatory sanctions, delays in clinical trials, or serious harm to our reputation. We have adopted a code of conduct for our directors, officers and employees, but it is not always possible to identify and deter employee misconduct. The precautions we take to detect and prevent this activity may not be effective in protecting us from the negative impacts of governmental investigations or other actions or lawsuits stemming from a failure to be in compliance with such laws or regulations. An unfavorable outcome or settlement in connection with a governmental investigation or other action or lawsuit may result in a material adverse impact on our business, results of operations, financial condition, prospects, and stock price. Regardless of the outcome, litigation and governmental investigations can be costly, time-consuming, and disruptive to our business, results of operations, financial condition, reputation, and prospects.

If we fail to comply with environmental, health or safety laws and regulations, we could incur fines, penalties or other costs.

We are subject to numerous environmental, health and safety laws and regulations, including those governing laboratory procedures and the handling, use, storage, treatment and disposal of hazardous materials and wastes. Our operations involve the use of hazardous and flammable materials, including chemicals and biological materials. Our operations also produce hazardous waste products. We contract with third parties for the disposal of these materials and wastes. We cannot eliminate the risk of contamination or injury from these materials. In the event of contamination or injury resulting from our use of hazardous materials, we could be held liable for any resulting damages, and any liability could exceed our resources. We also could incur significant costs associated with civil or criminal fines and penalties for failure to comply with such laws and regulations. We do not maintain insurance for environmental liability or toxic tort claims that may be asserted against us in connection with our storage or disposal of biological, hazardous or radioactive materials.

In addition, we may incur substantial costs in order to comply with current or future environmental, health and safety laws and regulations applicable to our operations in the U.S. and foreign countries. These current or future laws and regulations may impair our research, development or manufacturing efforts. Our failure to comply with these laws and regulations also may result in substantial fines, penalties or other sanctions.

Risks Related to Our International Operations

We have established operations in China and are seeking approval to commercialize our product candidates outside of the U.S., and a number of risks associated with international operations could materially and adversely affect our business.

We expect to be subject to a number of risks related to our international operations, many of which may be beyond our control. These risks include:

- different regulatory requirements for drug approvals in different countries;
- different standards of care in various countries that could complicate the evaluation of our product candidates;
- different U.S. and foreign drug import and export rules;
- reduced protection for intellectual property rights in certain countries;
- changes in tariffs, trade barriers and regulatory requirements;
- different reimbursement systems and different competitive drugs indicated to treat the indications for which our product candidates are being developed;
- economic weakness, including inflation, or political instability in particular foreign economies and markets;
- compliance with tax, employment, immigration and labor laws for employees living or traveling abroad;
- compliance with the FCPA, and other anti-corruption and anti-bribery laws;
- U.S. and foreign taxes, including income, excise, customs, consumption, withholding, and payroll taxes;
- foreign currency fluctuations, which could result in increased operating costs and expenses and reduced revenues, and other obligations incident to doing business in another country;

- workforce uncertainty in countries where labor unrest is more common than in the U.S.;
- production shortages resulting from any events affecting raw material supply or manufacturing capabilities abroad;
- a reliance on CROs, clinical trial sites, principal investigators and other third parties that may be less experienced with clinical trials or have different methods of performing such clinical trials than we are used to in the U.S.;
- potential liability resulting from development work conducted by foreign distributors; and
- business interruptions resulting from geopolitical actions specific to an international region, including war and terrorism, or natural disasters, including the differing impact of the COVID-19 pandemic on each region.

The pharmaceutical industry in China is highly regulated and such regulations are subject to change.

The pharmaceutical industry in China is subject to comprehensive government regulation and supervision, encompassing the approval, registration, manufacturing, packaging, licensing and marketing of new drugs. In recent years, many aspects of pharmaceutical industry regulation have undergone significant reform, and reform may continue. For example, the Chinese government implemented regulations that impact distribution of pharmaceutical products in China, where at most two invoices may be issued throughout the distribution chain, a change that required us to change our distribution paradigm. Any regulatory changes or amendments may result in increased compliance costs to our business or cause delays in or prevent the successful development or commercialization of our product candidates in China. Any failure by us or our partners to maintain compliance with applicable laws and regulations or obtain and maintain required licenses and permits may result in the suspension or termination of our business activities in China.

The China-operations portion of our audit is conducted by an independent registered public accounting firm that is not subject to inspection by the Public Company Accounting Oversight Board ("PCAOB"), which may negatively impact investor sentiment towards FibroGen or our China operations, which could adversely affect the market price of our common stock.

The majority of audit work incurred for the audit report included in the 2021 Form 10-K was performed by the U.S.-based independent registered public accounting firm we have retained, PricewaterhouseCoopers LLP, which is headquartered in the U.S. and was not identified in the report issued by the PCAOB on December 16, 2021 as a firm that the PCAOB was unable to inspect.

However, we estimate that between 20% and 30% of the total audit hours for our December 31, 2021 audit were provided by PricewaterhouseCoopers Zhong Tian LLP, which is headquartered in China. PricewaterhouseCoopers Zhong Tian LLP was identified in the report issued by the PCAOB on December 16, 2021 as a firm the PCAOB was unable to inspect.

On December 18, 2020, the Holding Foreign Companies Accountable Act (the "HFCAA") was signed into law. The HFCAA requires that the SEC identify issuers that retain an auditor that has a branch or office that is located in a foreign jurisdiction and that the PCAOB determines it is unable to inspect or investigate completely because of a position taken by an authority in that foreign jurisdiction. As PricewaterhouseCoopers Zhong Tian LLP is located in China, a jurisdiction where the PCAOB has been unable to conduct inspections without the approval of the Chinese authorities, they are not currently subject to inspection. Amongst other things, the HFCAA requires the SEC to prohibit the securities of any issuer from being traded on any of the U.S. national securities exchanges, such as The Nasdaq Global Select Market ("Nasdaq"), or on the U.S. "over-the-counter" markets, if the auditor of the issuer's financial statements is not subject to PCAOB inspections for three consecutive "non-inspection" years after the law became effective.

On June 22, 2021, the U.S. Senate passed the Accelerating Holding Foreign Companies Accountable Act (the "AHFCAA"), which, if enacted, would amend the HFCAA and require the SEC to prohibit an issuer's securities from trading on any U.S. stock exchange if its auditor is not subject to PCAOB inspections for two consecutive "non-inspection" years instead of three, thus reducing the time period before our securities may be prohibited from trading or delisted. On February 4, 2022, the U.S. House of Representatives passed the America COMPETES Act of 2022, which includes the exact same amendment as the bill passed by the Senate. The America COMPETES Act of 2022, however, includes a broader range of legislation than the AHFCAA in response to the U.S. Innovation and Competition Act passed by the U.S. Senate in 2021. The U.S. House of Representatives and the U.S. Senate will need to agree on amendments to these respective bills to allow the legislature to pass their amended bills before the President can sign into law. It is unclear when the U.S. Senate and the U.S. House of Representatives will resolve the differences or if and when the President will sign the bill to make the amendments into law.

On December 16, 2021, the PCAOB issued a report on its determination that it is unable to inspect or investigate completely PCAOB-registered accounting firms headquartered in China and in Hong Kong. PricewaterhouseCoopers Zhong Tian LLP was named in this report.

On December 2, 2021, the SEC adopted final amendments to its rules implementing the HFCAA and established procedures to identify issuers and prohibit the trading of the securities of certain registrants as required by the HFCAA. This rule stated that only the principal accountant, as defined by Rule 2-05 of Regulation S-X and PCAOB AS 1205, is "deemed 'retained' for purposes of Section 104(i) of the Sarbanes-Oxley Act and the Commission's determination of whether the registrant should be a Commission Identified Issuer." The principal accountant, as defined, that we have retained is PricewaterhouseCoopers LLP. The HFCAA does not apply to registrants that retain a principal accountant that is headquartered in the U.S. and subject to PCAOB inspection. Accordingly, the HFCAA does not currently apply to us.

If our operations fundamentally change in a way that requires our independent registered public accounting firm be located in China or Hong Kong in order to comply with the standards of the PCAOB regarding principal auditor then the HFCAA would apply to us, including the potential delisting from Nasdaq and prohibition from trading in the over-the counter market in the U.S. Such a restriction would negatively impact our ability to raise capital. We view the likelihood to be remote that our operations will fundamentally change so as to require our principal auditor to be located in China or Hong Kong. Additionally, it is possible that in the future Congress could amend the HFCAA or the SEC could modify its regulations to apply the restrictions, including trading prohibitions and delisting, under the HFCAA in situations in which an independent registered public accounting firm in China or Hong Kong performs part of the audit such as in our current situation. There are currently no such proposals.

Inspections of auditors conducted by the PCAOB in territories outside of China have at times identified deficiencies in those auditors' audit procedures and quality control procedures, which may be addressed as part of the inspection process to improve future audit quality. The lack of PCAOB inspections of audit work undertaken in China prevents the PCAOB from evaluating the effectiveness of such audits and such auditors' quality control procedures. The component of our audit that was performed by PricewaterhouseCoopers Zhong Tian LLP and the work papers associated with such audit work is not currently subject to inspection by the PCAOB. As a result, investors are deprived of the potential benefits of such PCAOB inspections for this portion of our audit, which could cause investors and potential investors in our common stock to lose confidence in the audit procedures conducted by our U.S. auditor's China-based subsidiary, which may negatively impact investor sentiment towards us or our China operations, which in turn could adversely affect the market price of our common stock.

Changes in U.S. and China relations, as well as relations with other countries, and/or regulations may adversely impact our business.

The U.S. government, including the SEC, has made statements and taken certain actions that have led to changes to U.S. and international relations, and will impact companies with connections to the U.S. or China, including imposing several rounds of tariffs affecting certain products manufactured in China, imposing certain sanctions and restrictions in relation to China, and issuing statements indicating enhanced review of companies with significant China-based operations. It is unknown whether and to what extent new legislation, executive orders, tariffs, laws or regulations will be adopted, or the effect that any such actions would have on companies with significant connections to the U.S. or to China, our industry or on us. We conduct manufacturing and development activities and have business operations both in the U.S. and China. Any unfavorable government policies on cross-border relations and/or international trade, including increased scrutiny on companies with significant China-based operations, capital controls or tariffs, may affect the competitive position of our drug products, the hiring of scientists and other research and development personnel, the demand for our drug products, the import or export of products and product components, our ability to raise capital, the market price of our common stock, or prevent us from commercializing and selling our drug products in certain countries.

While we do not operate in an industry that is currently subject to foreign ownership limitations in China, China could decide to limit foreign ownership in our industry, in which case there could be a risk that we would be unable to do business in China as we are currently structured. In addition, our periodic reports and other filings with the SEC may be subject to enhanced review by the SEC and this additional scrutiny could affect our ability to effectively raise capital in the U.S.

If any new legislation, executive orders, tariffs, laws and/or regulations are implemented, if existing trade agreements are renegotiated or if the U.S. or Chinese governments take retaliatory actions due to the recent U.S.-China tension, such changes could have an adverse effect on our business, financial condition and results of operations, our ability to raise capital and the market price of our common stock.

We use our own manufacturing facilities in China to produce roxadustat API and drug product for the market in China. There are risks inherent to operating commercial manufacturing facilities, and with these being our single source suppliers, we may not be able to continually meet market demand.

We have two manufacturing facilities in China, with one located in Beijing and the other in Cangzhou, Hebei.

We will be obligated to comply with continuing cGMP requirements and there can be no assurance that we will maintain all of the appropriate licenses required to manufacture our product candidates for clinical and commercial use in China. In addition, our product suppliers and we must continually spend time, money and effort in production, record-keeping and quality assurance and appropriate controls in order to ensure that any products manufactured in our facilities meet applicable specifications and other requirements for product safety, efficacy and quality and there can be no assurance that our efforts will continue to be successful in meeting these requirements.

Manufacturing facilities in China are subject to periodic unannounced inspections by the NMPA and other regulatory authorities. We expect to depend on these facilities for our product candidates and business operations in China, and we do not yet have a secondary source supplier for either roxadustat API or drug product in China. Natural disasters or other unanticipated catastrophic events, including power interruptions, water shortages, storms, fires, pandemics (including the COVID-19 pandemic), earthquakes, terrorist attacks, government appropriation of our facilities, and wars, could significantly impair our ability to operate our manufacturing facilities. Certain equipment, records and other materials located in these facilities would be difficult to replace or would require substantial replacement lead-time that would impact our ability to successfully commercialize our product candidates in China. The occurrence of any such event could materially and adversely affect our business, financial condition, results of operations, cash flows and prospects.

Our collaboration partner in China, AstraZeneca, and we may experience difficulties in successfully growing and sustaining sales of roxadustat in China.

AstraZeneca and we have a profit sharing arrangement with respect to roxadustat in China and any difficulties we may experience in growing and sustaining sales will affect our bottom line. Difficulties may be related to our ability to maintain reasonable pricing and reimbursement, obtain and maintain hospital listing, or other difficulties related to distribution, marketing, and sales efforts in China. Our current National Reimbursement Drug List reimbursement pricing is effective for a standard two-year period (between January 1, 2022 to December 31, 2023), after which time we will have to negotiate a new price for roxadustat. Sales of roxadustat in China may ultimately be limited due to the complex nature of the healthcare system, low average personal income, pricing controls, still developing infrastructure and potentially rapid competition from other products.

The retail prices of any product candidates that we develop may be subject to pricing control in China and elsewhere.

The price for pharmaceutical products is highly regulated in China, both at the national and provincial level. Price controls may reduce prices to levels significantly below those that would prevail in less regulated markets or limit the volume of products that may be sold, either of which may have a material and adverse effect on potential revenues from sales of roxadustat in China. Moreover, the process and timing for the implementation of price restrictions is unpredictable, which may cause potential revenues from the sales of roxadustat to fluctuate from period to period.

FibroGen (China) Medical Technology Development Co., Ltd. ("FibroGen Beijing") would be subject to restrictions on paying dividends or making other payments to us, which may restrict our ability to satisfy our liquidity requirements.

We plan to conduct all of our business in China through FibroGen China Anemia Holdings, Ltd., FibroGen Beijing and its branch offices, and our joint venture distribution entity, Beijing Falikang Pharmaceutical Co., Ltd. ("Falikang"). We do not currently rely on revenue from China to fund our operations outside of China. However, we may in the future rely on dividends and royalties paid by FibroGen Beijing for a portion of our cash needs, including the funds necessary to service any debt we may incur and to pay our operating costs and expenses. The payment of dividends by FibroGen Beijing is subject to limitations. Regulations in China currently permit payment of dividends only out of accumulated profits as determined in accordance with accounting standards and regulations in China. FibroGen Beijing is not permitted to distribute any profits until losses from prior fiscal years have been recouped and in any event must maintain certain minimum capital requirements. FibroGen Beijing is also required to set aside at least 10.0% of its after-tax profit based on Chinese accounting standards each year to its statutory reserve fund until the cumulative amount of such reserves reaches 50.0% of its registered capital. Statutory reserves are not distributable as cash dividends. In addition, if FibroGen Beijing incurs debt on its own behalf in the future, the agreements governing such debt may restrict its ability to pay dividends or make other distributions to us. As of March 31, 2022, approximately $73.9 million of our cash and cash equivalents is held in China.

Any capital contributions from us to FibroGen Beijing must be approved by the Ministry of Commerce in China, and failure to obtain such approval may materially and adversely affect the liquidity position of FibroGen Beijing.

The Ministry of Commerce in China or its local counterpart must approve the amount and use of any capital contributions from us to FibroGen Beijing, and there can be no assurance that we will be able to complete the necessary government registrations and obtain the necessary government approvals on a timely basis, or at all. If we fail to do so, we may not be able to contribute additional capital or find suitable financing alternatives within China to fund our Chinese operations, and the liquidity and financial position of FibroGen Beijing may be materially and adversely affected.

We may be subject to currency exchange rate fluctuations and currency exchange restrictions with respect to our operations in China, which could adversely affect our financial performance.

Most of our product sales will occur in local Chinese currency and our operating results will be subject to volatility from currency exchange rate fluctuations. To date, we have not hedged against the risks associated with fluctuations in exchange rates and, therefore, exchange rate fluctuations could have an adverse impact on our future operating results. Changes in the value of the Renminbi against the U.S. dollar, Euro and other currencies are affected by, among other things, changes in China's political and economic conditions. Currently, the Renminbi is permitted to fluctuate within a narrow and managed band against a basket of certain foreign currencies. Any significant currency exchange rate fluctuations may have a material adverse effect on our business and financial condition.

In addition, the Chinese government imposes controls on the convertibility of the Renminbi into foreign currencies and the remittance of foreign currency out of China for certain transactions. Shortages in the availability of foreign currency may restrict the ability of FibroGen Beijing to remit sufficient foreign currency to pay dividends or other payments to us, or otherwise satisfy their foreign currency-denominated obligations. Under existing Chinese foreign exchange regulations, payments of current account items, including profit distributions, interest payments and balance of trade, can be made in foreign currencies without prior approval from the State Administration of Foreign Exchange by complying with certain procedural requirements. However, approval from the State Administration of Foreign Exchange or its local branch is required where Renminbi is to be converted into foreign currency and remitted out of China to pay capital expenses such as the repayment of loans denominated in foreign currencies. The Chinese government may also at its discretion restrict access in the future to foreign currencies for current account transactions. If the foreign exchange control system prevents us from obtaining sufficient foreign currency to satisfy our operational requirements, our liquidity and financial position may be materially and adversely affected.

Because FibroGen Beijing's funds are held in banks that do not provide insurance, the failure of any bank in which FibroGen Beijing deposits its funds could adversely affect our business.

Banks and other financial institutions in China do not provide insurance for funds held on deposit. As a result, in the event of a bank failure, FibroGen Beijing may not have access to funds on deposit. Depending upon the amount of money FibroGen Beijing maintains in a bank that fails, its inability to have access to cash could materially impair its operations.

We may be subject to tax inefficiencies associated with our offshore corporate structure.

The tax regulations of the U.S. and other jurisdictions in which we operate are extremely complex and subject to change. New laws, new interpretations of existing laws, such as the Base Erosion Profit Shifting project initiated by the Organization for Economic Co-operation and Development, and any legislation proposed by the relevant taxing authorities, or limitations on our ability to structure our operations and intercompany transactions may lead to inefficient tax treatment of our revenue, profits, royalties, and distributions, if any are achieved. For example, the Biden administration has proposed to increase the U.S. corporate income tax rate from 21%, increase the U.S. taxation of our international business operations and impose a global minimum tax. Such proposed changes, as well as regulations and legal decisions interpreting and applying these changes, may adversely impact our effective tax rate.

In addition, our foreign subsidiaries and we have various intercompany transactions. We may not be able to obtain certain benefits under relevant tax treaties to avoid double taxation on certain transactions among our subsidiaries. If we are not able to avail ourselves to the tax treaties, we could be subject to additional taxes, which could adversely affect our financial condition and results of operations.

On December 22, 2017, the Tax Cuts and Jobs Act (Tax Act) was enacted which instituted various changes to the taxation of multinational corporations. Since inception, various regulations and interpretations have been issued by governing authorities and we continue to examine the impacts to our business, which could potentially have a material adverse effect on our business, results of operations or financial conditions.

Our foreign operations, particularly those in China, are subject to significant risks involving the protection of intellectual property.

We seek to protect the products and technology that we consider important to our business by pursuing patent applications in China and other countries, relying on trade secrets or pharmaceutical regulatory protection or employing a combination of these methods. We note that the filing of a patent application does not mean that we will be granted a patent, or that any patent eventually granted will be as broad as requested in the patent application or will be sufficient to protect our technology. There are a number of factors that could cause our patents, if granted, to become invalid or unenforceable or that could cause our patent applications not to be granted, including known or unknown prior art, deficiencies in the patent application, or lack of originality of the technology. Furthermore, the terms of our patents are limited. The patents we hold and the patents that may be granted from our currently pending patent applications have, absent any patent term adjustment or extension, a twenty-year protection period starting from the date of application.

Intellectual property rights and confidentiality protections in China may not be as effective as those in the U.S. or other countries for many reasons, including lack of procedural rules for discovery and evidence, low damage awards, and lack of judicial independence. Implementation and enforcement of China intellectual property laws have historically been deficient and ineffective and may be hampered by corruption and local protectionism. Policing unauthorized use of proprietary technology is difficult and expensive, and we may need to resort to litigation to enforce or defend patents issued to us or to determine the enforceability and validity of our proprietary rights or those of others. The experience and capabilities of China courts in handling intellectual property litigation varies and outcomes are unpredictable. An adverse determination in any such litigation could materially impair our intellectual property rights and may harm our business.

Uncertainties with respect to the China legal system and regulations could have a material adverse effect on us.

The legal system of China is a civil law system primarily based on written statutes. Our financial condition and results of operations may be adversely affected by government control, perceived government interference and/or changes in tax, cyber and data security, capital investments, cross-border transactions and other regulations that are currently or may in the future be applicable to us. Recently, Chinese regulators announced regulatory actions aimed at providing China's government with greater oversight over certain sectors of China's economy, including the for-profit education sector and technology platforms that have a quantitatively significant number of users located in China. Although the biotech industry is already highly regulated in China and while there has been no indication to date that such actions or oversight would apply to companies that are similarly situated as us and that are pursuing similar portfolios of drug products and therapies as us, China's government may in the future take regulatory actions that may materially adversely affect the business environment and financial markets in China as they relate to us, our ability to operate our business, our liquidity and our access to capital.

Unlike in a common law system, prior court decisions may be cited for reference but are not binding. Because the China legal system continues to rapidly evolve, the interpretations of many laws, regulations and rules are not always uniform and enforcement of these laws, regulations and rules involve uncertainties, which may limit legal protections available to us. Moreover, decision makers in the China judicial system have significant discretion in interpreting and implementing statutory and contractual terms, which may render it difficult for FibroGen Beijing to enforce the contracts it has entered into with our business partners, customers and suppliers. Different government departments may have different interpretations of certain laws and regulations, and licenses and permits issued or granted by one government authority may be revoked by a higher government authority at a later time. Furthermore, new laws or regulations may be passed, in some cases with little advance notice, that affect the way we or our collaboration partner do business in China (including the manufacture, sale, or distribution of roxadustat in China). Our business may be affected if we rely on laws and regulations that are subsequently adopted or interpreted in a manner different from our understanding of these laws and regulations. Navigating the uncertainty and change in the China legal and regulatory systems will require the devotion of significant resources and time, and there can be no assurance that our contractual and other rights will ultimately be maintained or enforced.

Changes in China's economic, governmental, or social conditions could have a material adverse effect on our business.

Chinese society and the Chinese economy continue to undergo significant change. Changes in the regulatory structure, regulations, and economic policies of the Chinese government could have a material adverse effect on the overall economic growth of China, which could adversely affect our ability to conduct business in China. The Chinese government continues to adjust economic policies to promote economic growth. Some of these measures benefit the overall Chinese economy, but may also have a negative effect on us. For example, our financial condition and results of operations in China may be adversely affected by government control over capital investments or changes in tax regulations. Recently, Chinese regulators announced regulatory actions aimed at providing China's government with greater oversight over certain sectors of China's economy, including the for-profit education sector and technology platforms that have a quantitatively significant number of users located in China. Although the biotech industry is already highly regulated in China and while there has been no indication to date that such actions or oversight would apply to companies that are similarly situated as us and that are pursuing similar portfolios of drug products and therapies as us, China's government may in the future take regulatory actions that may materially adversely affect the business environment and financial markets in China as they relate to us. As the Chinese pharmaceutical industry grows and evolves, the Chinese government may also implement measures to change the regulatory structure and structure of foreign investment in this industry. We are unable to predict the frequency and scope of such policy changes and structural changes, any of which could materially and adversely affect FibroGen Beijing's development and commercialization timelines, liquidity, access to capital, and its ability to conduct business in China. Any failure on our part to comply with changing government regulations and policies could result in the loss of our ability to develop and commercialize our product candidates in China. In addition, the changing government regulations and policies could result in delays and cost increases to our development, manufacturing, approval, and commercialization timelines in China.

We may be subject to additional Chinese requirements, approvals or permissions in the future.

We are incorporated in the state of Delaware. To operate our general business activities currently conducted in China, each of our Chinese subsidiaries (and our joint venture with AstraZeneca, Falikang) is required to and does obtain a business license from the local counterpart of the State Administration for Market Regulation. Such business licenses list the business activities we are authorized to carry out and we would be noncompliant if we act outside of the scope of business activities set forth under the relevant business license.

Due to China's regulatory framework in general and for the pharmaceutical industry specifically, we are required to apply for and maintain many approvals or permits specific to many of our business activities, including but not limited to manufacturing, distribution, environment protection, workplace safety, cybersecurity, from both national and local government agencies. For example, FibroGen Beijing is required to maintain a Drug Product Production Permit that allows it to manufacture API and roxadustat capsules. Falikang, our joint venture with AstraZeneca, is required to maintain a Drug Product Distribution Permit in order to be able to distribute our drug product roxadustat in China. For certain of our clinical trials conducted in China, we need to obtain, through the clinical sites, permits from the Human Genetic Resources Administration of China to collect samples that include human genetic resources, such as blood samples.

We may also be required to obtain certain approvals from Chinese authorities before transferring certain scientific data abroad or to foreign parties or entities established or actually controlled by them.

None of our subsidiaries or our joint venture in China are required to obtain approval or prior permission from the China Securities Regulatory Commission, Cyberspace Administration of China, or any other Chinese regulatory authority under the Chinese laws and regulations currently in effect to issue securities to our investors. However, the approvals and permits we do have to comply with are numerous and there are uncertainties with respect to the Chinese legal system and changes in laws, regulations and policies, including how those laws and regulations will be interpreted or implemented. For further information, see the risk factor titled "*Uncertainties with respect to the China legal system and regulations could have a material adverse effect on us.*" There can be no assurance that we will not be subject to new or changing requirements, approvals or permissions in the future in order to operate in China.

If we are unable to obtain the necessary approvals or permissions in order to operate our business in China, if we inadvertently conclude that such approvals or permissions are not required, or if we are subject to additional requirements, approvals, or permissions, it could have an adverse effect on our business, financial condition and results of operations, our ability to raise capital and the market price of our common stock.

If the Chinese government determines that our corporate structure does not comply with Chinese regulations, or if Chinese regulations change or are interpreted differently in the future, the value of our common stock may decline.

In July 2021, the Chinese government provided new guidance on China-based companies raising capital outside of China, including through arrangements called variable interest entities. We do not employ a variable interest entity structure for purposes of replicating foreign investment in Chinese-based companies where Chinese law prohibits direct foreign investment. We do not operate in an industry that is currently subject to foreign ownership limitations in China. However, there are uncertainties with respect to the Chinese legal system and there may be changes in laws, regulations and policies, including how those laws and regulations will be interpreted or implemented. For further information, see the risk factor titled "*Uncertainties with respect to the China legal system and regulations could have a material adverse effect on us.*" If in the future the Chinese government determines that our corporate structure does not comply with Chinese regulations, or if Chinese laws or regulations change or are interpreted differently from our understanding of these laws and regulations, the value of our common stock may decline.

Our operations in China subject us to various Chinese labor and social insurance laws, and our failure to comply with such laws may materially and adversely affect our business, financial condition and results of operations.

We are subject to China Labor Contract Law, which provides strong protections for employees and imposes many obligations on employers. The Labor Contract Law places certain restrictions on the circumstances under which employers may terminate labor contracts and require economic compensation to employees upon termination of employment, among other things. In addition, companies operating in China are generally required to contribute to labor union funds and the mandatory social insurance and housing funds. Any failure by us to comply with Chinese labor and social insurance laws may subject us to late fees, fines and penalties, or cause the suspension or termination of our ability to conduct business in China, any of which could have a material and adverse effect on business, results of operations and prospects.

Risks Related to COVID-19

Our business could continue to be adversely affected by the ongoing COVID-19 global pandemic.*

The COVID-19 pandemic may continue to negatively impact our and our partners' sales of roxadustat, clinical programs and timelines, and general productivity, the magnitude of which will depend, in part, on the progression of the disease and the efficacy of various mitigation efforts, including vaccines and other therapeutics in preventing and treating current and future COVID-19 variants.

We have seen impacts from COVID-19 on various parts of our operations at times. Currently, the greatest risks from COVID-19 are regarding enrollment of our ZEPHYRUS-2 Phase 3 IPF trial and potentially limiting our sales and manufacturing operations in China due to varying degrees of lockdowns there. There is a risk that our sales, manufacturing, clinical trials and operations could be further affected by additional or continued COVID-19 outbreaks or lockdowns, which could slow or pause enrollment, site initiation, manufacturing or sales. In addition, while we are trying to mitigate the effect of COVID-19 on existing patients, it is possible that some patients may not be able to continue to comply with protocols, which could further delay our clinical trial progress.

We believe we have sufficient stores of roxadustat and pamrevlumab supplies for our near-term expected commercial and clinical requirements. However, we only have a limited stockpile of these products, and therefore, further outbreaks of COVID-19, lockdowns like the ones in China, disruptions in shipping, or product expiration due to slowed clinical trials, could create supply shortages in our global supply chains. COVID-19 has also created increased demand for the limited global biologics manufacturing capacity, and for manufacturing supplies, including for vials, reagents, supplements and media. Any such supply disruptions could adversely impact our clinical development and ability to generate revenues from our approved products and our business, financial condition, results of operations and growth prospects could be materially adversely affected.

Due to these and potentially additional business disruptions, there may be delays to any of our business areas including those outlined above, as well as in regulatory, distribution, warehousing and other development, commercialization and launch efforts. In addition, COVID-19 presents an ongoing health risk to our employees, including members of senior management, thus limiting productivity. The full extent of these potential effects is unknown, but any of which could have a material impact on our business, operating results, and financial condition.

To the extent the ongoing COVID-19 pandemic adversely affects our business and results of operations, it may also have the effect of heightening many of the other risks and uncertainties described in this "*Risk Factors*" section.

Risks Related to Conflict in Ukraine

Our business could continue to be adversely affected by the ongoing war in Ukraine and the global response to it.*

The ongoing military conflict and war in Ukraine has significantly affected clinical trial sites in Ukraine where patients are enrolled in our IPF ZEPHYRUS-2 Phase 3 clinical trial. There is a risk that our ZEPHYRUS-2 clinical trial could be delayed by the ongoing conflict due to reduced enrollment and participation by patients in Ukraine. In addition, the U.S. and other governments have taken actions, including imposed sanctions, export and import controls and trade restrictions with respect to Russian and Belarusian governments, government-related entities and other entities and individuals, which may cause significant volatility and disruptions to the global markets. It is not possible to predict the short- and long- term implications of this conflict, which could include but are not limited to further sanctions, uncertainty about economic and political stability, increases in inflation rate, supply chain challenges and adverse effects on currency exchange rates and financial markets. There is also a risk that the conflict could escalate and affect clinical trial sites and product sales outside of Ukraine. The full extent of these potential effects are unknown, but they could have a material impact on our business, operating results, and financial condition.

Risks Related to the Operation of Our Business

We have incurred significant losses since our inception and anticipate that we will continue to incur losses for the foreseeable future and may never achieve or sustain profitability. We may require additional financings in order to fund our operations.*

We are a biopharmaceutical company with two lead product candidates in clinical development, roxadustat for anemia in CKD, MDS, and chemotherapy-induced anemia, and pamrevlumab for IPF, pancreatic cancer, and DMD. Most of our revenue generated to date has been based on our collaboration agreements and we have limited commercial drug product sales to date. We continue to incur significant research and development and other expenses related to our ongoing operations. Our net loss for the years ended December 31, 2021, 2020 and 2019 were $290.0 million, $189.3 million and $77.0 million, respectively. As of March 31, 2022, we had an accumulated deficit of $1.3 billion. As of March 31, 2022, we had capital resources consisting of cash, cash equivalents and short-term investments of $428.1 million plus $93.5 million of long-term investments classified as available for sale securities. In addition, as of March 31, 2022, we had $43.9 million accounts receivable in our current assets. Despite contractual development and cost coverage commitments from our collaboration partners, AstraZeneca and Astellas, and the potential to receive milestone and other payments from these partners, and despite commercialization efforts for roxadustat for the treatment of anemia caused by CKD, we anticipate we will continue to incur losses on an annual basis for the foreseeable future. If we do not successfully develop and continue to obtain regulatory approval for our existing or any future product candidates and effectively manufacture, market and sell the product candidates that are approved, we may never achieve or sustain profitability on a quarterly or annual basis. Our prior losses, combined with expected future losses, have had and will continue to have an adverse effect on our stockholders' equity and working capital. Our failure to become and remain profitable would depress the market price of our common stock and could impair our ability to raise capital, expand our business, diversify our product offerings or continue our operations.

We believe that we will continue to expend substantial resources for the foreseeable future as we continue to grow our operations in China, expand our clinical development efforts on pamrevlumab, continue to seek regulatory approval, establish commercialization capabilities of our product candidates, and pursue additional indications. These expenditures will include costs associated with research and development, conducting preclinical trials and clinical trials, obtaining regulatory approvals in various jurisdictions, and manufacturing and supplying products and product candidates for our partners and ourselves. The outcome of any clinical trial and/or regulatory approval process is highly uncertain and we are unable to fully estimate the actual costs necessary to successfully complete the development and regulatory approval process for our compounds in development and any future product candidates. We believe that the net proceeds from our 2017 public offerings, our existing cash and cash equivalents, short-term and long-term investments and accounts receivable, cash flows from commercial sales and sales of drug product, and expected third-party collaboration revenues will allow us to fund our operating plans through at least the next 12 months. Our operating plans or third-party collaborations may change as a result of many factors, including the success of our development and commercialization efforts, operations costs (including manufacturing and regulatory), competition, and other factors that may not currently be known to us, and we therefore may need to seek additional funds sooner than planned, through offerings of public or private securities, debt financings or other sources, such as royalty monetization or other structured financings. Such financings may result in dilution to stockholders, imposition of debt covenants and repayment obligations, or other restrictions that may adversely affect our business. We may also seek additional capital due to favorable market conditions or strategic considerations even if we currently believe that we have sufficient funds for our current or future operating plans.

Additional funds may not be available when we require them, or on terms that are acceptable to us. If adequate funds are not available to us on a timely basis, we may be required to delay, limit, reduce or terminate our research and development efforts or other operations or activities that may be necessary to commercialize our product candidates.

Most of our recent revenue has been earned from collaboration partners for our product candidates under development.*

If either or both of our Astellas and AstraZeneca collaborations were to be terminated, we could require significant additional capital in order to proceed with development and commercialization of our product candidates, including with respect to our potential commercialization of roxadustat for the treatment of anemia caused by CKD, or we may require additional partnering in order to help fund such development and commercialization. While we continue to commercialize roxadustat in China with AstraZeneca, and develop roxadustat in the U.S. for the treatment of anemia in patients with MDS, we have not been able to agree on a path forward for AstraZeneca to fund further roxadustat development in the U.S. for CKD anemia and there is a significant risk we will be unable to do so. There is also a significant risk that the U.S./RoW Agreement is amended or terminated. If adequate funds or partners are not available to us on a timely basis or on favorable terms, we may be required to delay, limit, reduce or terminate our development or commercialization efforts or other operations.

We may encounter difficulties in managing our growth and expanding our operations successfully.

As we seek to advance our product candidates through clinical trials and commercialization, we will need to expand our development, regulatory, manufacturing, commercialization and administration capabilities or contract with third parties to provide these capabilities for us. As our operations expand, we expect that we will need to increase the responsibilities of management. Our failure to accomplish any of these steps could prevent us from successfully implementing our strategy and maintaining the confidence of investors in us.

Loss of senior management and key personnel could adversely affect our business.

We are highly dependent on members of our senior management team, including Enrique Conterno, our Chief Executive Officer. The loss of the services of Mr. Conterno or any of our senior management could significantly impact the development and commercialization of our products and product candidates and our ability to successfully implement our business strategy.

Recruiting and retaining qualified commercial, development, scientific, clinical, and manufacturing personnel are and will continue to be critical to our success, particularly as we expand our commercialization operations. Furthermore, replacing executive officers and key employees may be difficult and may take an extended period of time because of the limited number of individuals in our industry with the breadth of skills and experience required to successfully develop, gain regulatory approval of and commercialize product candidates. We may be unable to hire, train, retain or motivate these key personnel on acceptable terms given the intense competition among numerous biopharmaceutical companies for similar personnel.

There is also significant competition, in particular in the San Francisco Bay Area, for the hiring of experienced and qualified personnel, which increases the importance of retention of our existing personnel. If we are unable to continue to attract and retain personnel with the quality and experience applicable to our product candidates, our ability to pursue our strategy will be limited and our business and operations would be adversely affected.

We are exposed to the risks associated with litigation, investigations, regulatory proceedings, and other legal matters, any of which could have a material adverse effect on us.

We are currently and may in the future face legal, administrative and regulatory proceedings, claims, demands, investigations and/or other dispute-related matters involving, among other things, our products, product candidates, or other issues relating to our business as well as allegations of violation of U.S. and foreign laws and regulations relating to intellectual property, competition, securities, consumer protection, and the environment.

For example, we and certain of our current and former executive officers have been named as defendants in a consolidated putative class action lawsuit (“Securities Class Action Litigation”) and certain of our current and former executive officers and directors have been named as defendants in several derivative lawsuits (“Derivative Litigation”). The complaint filed in the Securities Class Action Litigation alleges violations of the securities laws, including, among other things, that the defendants made certain materially false and misleading statements about our Phase 3 clinical studies data and prospects for FDA approval. The complaints filed in the Derivative Litigation asserts claims based on some of the same alleged misstatements and omissions as the Securities Class Action Litigation and seeks, among other things, unspecified damages. We intend to vigorously defend the claims made in the Securities Class Action Litigation and Derivative Litigation; however, the outcome of these matters cannot be predicted, and the claims raised in these lawsuits may result in further legal matters or actions against us, including, but not limited to, government enforcement actions or additional private litigation. In the fourth quarter of 2021, FibroGen received a subpoena from the SEC requesting documents related to roxadustat’s pooled cardiovascular safety data. We have been fully cooperating with the SEC’s investigation.

We cannot predict whether any particular legal matter will be resolved favorably or ultimately result in charges or material damages, fines or other penalties, government enforcement actions, bars against serving as an officer or director, or civil or criminal proceedings against us or certain members of our senior management. For additional information regarding our pending litigation and SEC investigation, refer to Note 8, *Commitments and Contingencies*, to the condensed consolidated financial statements.

Legal proceedings in general, and securities and class action litigation and regulatory investigations in particular, regardless of their merits or their ultimate outcomes, are costly, divert management's attention and may materially adversely affect our business, results of operations, financial condition, prospects, and stock price. In addition, such legal matters could negatively impact our reputation among our customers, collaboration partners or our shareholders. Furthermore, publicity surrounding legal proceedings, including regulatory investigations, even if resolved favorably for us, could result in additional legal proceedings or regulatory investigations, as well as damage to our reputation.

If product liability lawsuits are brought against us, we may incur substantial liabilities and may have to limit commercial operations.

We face an inherent risk of product liability as a result of the clinical testing, manufacturing and commercialization of our product candidates. Any such product liability claims may include allegations of defects in manufacturing, defects in design, a failure to warn of dangers inherent in a product, negligence, strict liability or breach of warranty. Claims could also be asserted under state consumer protection acts. If we are unable to obtain insurance coverage at levels that are appropriate to maintain our business and operations, or if we are unable to successfully defend ourselves against product liability claims, we may incur substantial liabilities or otherwise cease operations. Product liability claims may result in:

- termination of further development of unapproved product candidates or significantly reduced demand for any approved products;
- material costs and expenses to defend the related litigation;
- a diversion of time and resources across the entire organization, including our executive management;
- product recalls, product withdrawals or labeling restrictions;
- termination of our collaboration relationships or disputes with our collaboration partners; and
- reputational damage negatively impacting our other product candidates in development.

If we fail to obtain and retain sufficient product liability insurance at an acceptable cost to protect against potential product liability claims, we may not be able to continue to develop our product candidates. We maintain product liability insurance in a customary amount for the stage of development of our product candidates. Although we believe that we have sufficient coverage based on the advice of our third-party advisors, there can be no assurance that such levels will be sufficient for our needs. Moreover, our insurance policies have various exclusions, and we may be in a dispute with our carrier as to the extent and nature of our coverage, including whether we are covered under the applicable product liability policy. If we are not able to ensure coverage or are required to pay substantial amounts to settle or otherwise contest the claims for product liability, our business and operations would be negatively affected.

Our business and operations would suffer in the event of computer system failures.

Despite the implementation of security measures, our internal computer systems, and those of our CROs, collaboration partners, and other third parties on which we rely, are vulnerable to damage from computer viruses, unauthorized access, natural disasters, fire, terrorism, war and telecommunication and electrical failures. We upgraded our disaster and data recovery capabilities in 2019, and have continued to upgrade these capabilities. However, to the extent that any disruption or security breach, in particular with our partners' operations, results in a loss of, or damage to, our data or applications, or inappropriate disclosure of confidential or proprietary information, we could incur liability and it could result in a material disruption and delay of our drug development programs. For example, the loss of clinical trial data from completed, ongoing or planned clinical trials could result in delays in our regulatory approval efforts and significantly increase our costs to recover or reproduce the data.

We depend on sophisticated information technology systems and could face a cyber-attack or other breach of these systems.

We rely on information technology systems to process, transmit and store electronic information in our day-to-day operations. The size and complexity of our information technology systems makes them vulnerable to a cyber-attack, malicious intrusion, breakdown, destruction, loss of data privacy or other significant disruption. While we upgraded our disaster data recovery program in March 2019, a successful attack could result in the theft or destruction of intellectual property, data, or other misappropriation of assets, or otherwise compromise our confidential or proprietary information and disrupt our operations. Cyber-attacks are becoming more sophisticated and frequent. We have invested in our systems and the protection and recoverability of our data to reduce the risk of an intrusion or interruption, and we monitor and test our systems on an ongoing basis for any current or potential threats. There can be no assurance that these measures and efforts will prevent future interruptions or breakdowns. If we fail to maintain or protect our information technology systems and data integrity effectively or fail to anticipate, plan for or manage significant disruptions to these systems, we could have difficulty preventing, detecting and controlling such cyber-attacks and any such attacks could result in losses described above as well as disputes with physicians, patients and our partners, regulatory sanctions or penalties, increases in operating costs and expenses, expenses or lost revenues or other adverse consequences, any of which could have a material adverse effect on our business, results of operations, financial condition, prospects and cash flows.

Our headquarters are located near known earthquake fault zones.

We and some of the third-party service providers on which we depend for various support functions are vulnerable to damage from catastrophic events, such as power loss, natural disasters, terrorism and similar unforeseen events beyond our control. Our corporate headquarters and other facilities are located in the San Francisco Bay Area, which in the past has experienced severe earthquakes and fires, and has been affected by the COVID-19 pandemic, including economic disruption resulting from the related shelter-in-place and stay-at-home governmental orders.

After a comprehensive earthquake risk analysis conducted by Marsh Risk, we decided not to purchase earthquake or flood insurance. Based upon (among other factors) the Marsh Risk analysis, the design and construction of our building, the expected potential loss, and the costs and deductibles associated with earthquake and flood insurance, we chose to self-insure. However, earthquakes or other natural disasters could severely disrupt our operations, or have a larger cost than expected, and have a material adverse effect on our business, results of operations, financial condition and prospects.

If a natural disaster, power outage or other event occurred that prevented us from using all or a significant portion of our headquarters, damaged critical infrastructure, or otherwise disrupted operations, it may be difficult or, in certain cases, impossible for us to continue our business for a substantial period of time. The disaster recovery and business continuity plans we have in place are unlikely to provide adequate protection in the event of a serious disaster or similar event. We may incur substantial expenses as a result of the limited nature of our disaster recovery and business continuity plans, which, particularly when taken together with our lack of earthquake insurance, could have a material adverse effect on our business.

Furthermore, integral parties in our supply chain are operating from single sites, increasing their vulnerability to natural disasters or other sudden, unforeseen and severe adverse events, such as the COVID-19 pandemic. If such an event were to affect our supply chain, it could have a material adverse effect on our business.

Risks Related to Our Common Stock

The market price of our common stock may be highly volatile, and you may not be able to resell your shares at or above your purchase price.

In general, pharmaceutical, biotechnology and other life sciences company stocks have been highly volatile in the current market. The volatility of pharmaceutical, biotechnology and other life sciences company stocks is sometimes unrelated to the operating performance of particular companies and biotechnology and life science companies stocks often respond to trends and perceptions rather than financial performance. In particular, the market price of shares of our common stock could be subject to wide fluctuations in response to the following factors:

- results of clinical trials of our product candidates, including roxadustat and pamrevlumab;
- the timing of the release of results of and regulatory updates regarding our clinical trials;
- the level of expenses related to any of our product candidates or clinical development programs;
- results of clinical trials of our competitors' products;
- safety issues with respect to our product candidates or our competitors' products;

- regulatory actions with respect to our product candidates and any approved products or our competitors' products;
- fluctuations in our financial condition and operating results, which will be significantly affected by the manner in which we recognize revenue from the achievement of milestones under our collaboration agreements;
- adverse developments concerning our collaborations and our manufacturers;
- the termination of a collaboration or the inability to establish additional collaborations;
- the inability to obtain adequate product supply for any approved drug product or inability to do so at acceptable prices;
- disputes or other developments relating to proprietary rights, including patents, litigation matters and our ability to obtain patent protection for our technologies;
- changes in legislation or other regulatory developments affecting our product candidates or our industry;
- fluctuations in the valuation of the biotechnology industry and particular companies perceived by investors to be comparable to us;
- speculation in the press or investment community;
- announcements of investigations or regulatory scrutiny of our operations or lawsuits filed against us;
- activities of the government of China, including those related to the pharmaceutical industry as well as industrial policy generally;
- performance of other U.S. publicly traded companies with significant operations in China;
- changes in market conditions for biopharmaceutical stocks; and
- the other factors described in this "*Risk Factors*" section.

As a result of fluctuations caused by these and other factors, comparisons of our operating results across different periods may not be accurate indicators of our future performance. Any fluctuations that we report in the future may differ from the expectations of market analysts and investors, which could cause the price of our common stock to fluctuate significantly. Moreover, securities class action litigation has often been initiated against companies following periods of volatility in their stock price. We are currently subject to such litigation and it has diverted, and could continue to result in diversions of, our management's attention and resources and it could result in significant expense, monetary damages, penalties or injunctive relief against us. For a description of our pending litigation and SEC investigation, refer to Note 8, *Commitments and Contingencies*, to the condensed consolidated financial statements.

Our principal stockholders own a significant percentage of our stock and will be able to exercise influence over stockholder approvals.*

As of April 30, 2022, our executive officers, directors and principal stockholders, together with their respective affiliates, owned approximately 56.40% of our common stock, including shares subject to outstanding options that are exercisable within 60 days after such date and shares issuable upon settlement of restricted stock units that will vest within 60 days after such date. This percentage is based upon information supplied by officers, directors and principal stockholders and Schedules 13D and 13G, if any, filed with the SEC, which information may not be accurate as of the date of this filing. Accordingly, these stockholders will be able to exert a significant degree of influence over our management and affairs and over matters requiring stockholder approval, including the election of our board of directors and approval of significant corporate transactions. The interests of this group may differ from those of other stockholders and they may vote their shares in a way that is contrary to the way other stockholders vote their shares. This concentration of ownership could have the effect of entrenching our management and/or the board of directors, delaying or preventing a change in our control or otherwise discouraging a potential acquirer from attempting to obtain control of us, which in turn could have a material and adverse effect on the fair market value of our common stock.

We may engage in acquisitions that could dilute stockholders and harm our business.

We may, in the future, make acquisitions of or investments in companies that we believe have products or capabilities that are a strategic or commercial fit with our present or future product candidates and business or otherwise offer opportunities for us. In connection with these acquisitions or investments, we may:

- issue stock that would dilute our existing stockholders' percentage of ownership;
- incur debt and assume liabilities; and
- incur amortization expenses related to intangible assets or incur large and immediate write-offs.

We may not be able to complete acquisitions on favorable terms, if at all. If we do complete an acquisition, we cannot assure you that it will ultimately strengthen our competitive position or that it will be viewed positively by customers, financial markets or investors. Furthermore, future acquisitions could pose numerous additional risks to our operations, including:

- problems integrating the purchased business, products or technologies, or employees or other assets of the acquisition target;
- increases to our expenses;
- disclosed or undisclosed liabilities of the acquired asset or company;
- diversion of management's attention from their day-to-day responsibilities;
- reprioritization of our development programs and even cessation of development and commercialization of our current product candidates;
- harm to our operating results or financial condition;
- entrance into markets in which we have limited or no prior experience; and
- potential loss of key employees, particularly those of the acquired entity.

We may not be able to complete any acquisitions or effectively integrate the operations, products or personnel gained through any such acquisition.

Provisions in our charter documents and Delaware law may have anti-takeover effects that could discourage an acquisition of us by others, and may prevent attempts by our stockholders to replace or remove our current directors or management.

Provisions in our amended and restated certificate of incorporation and amended and restated bylaws contain provisions that may have the effect of discouraging, delaying or preventing a change in control of us or changes in our management. These provisions could also limit the price that investors might be willing to pay in the future for shares of our common stock, thereby depressing the market price of our common stock. In addition, because our board of directors is responsible for appointing the members of our management team, these provisions may frustrate or prevent any attempts by our stockholders to replace or remove our current management by making it more difficult for stockholders to replace members of our board of directors. Among other things, these provisions:

- authorize "blank check" preferred stock, which could be issued by our board of directors without stockholder approval and may contain voting, liquidation, dividend and other rights superior to our common stock;
- create a classified board of directors whose members serve staggered three-year terms;
- specify that special meetings of our stockholders can be called only by our board of directors pursuant to a resolution adopted by a majority of the total number of directors;
- prohibit stockholder action by written consent;
- establish an advance notice procedure for stockholder approvals to be brought before an annual meeting of our stockholders, including proposed nominations of persons for election to our board of directors;
- provide that our directors may be removed prior to the end of their term only for cause;

- provide that vacancies on our board of directors may be filled only by a majority of directors then in office, even though less than a quorum;
- require a supermajority vote of the holders of our common stock or the majority vote of our board of directors to amend our bylaws; and
- require a supermajority vote of the holders of our common stock to amend the classification of our board of directors into three classes and to amend certain other provisions of our certificate of incorporation.

These provisions, alone or together, could delay or prevent hostile takeovers and changes in control or changes in our management by making it more difficult for stockholders to replace members of our board of directors, which is responsible for appointing the members of our management.

Moreover, because we are incorporated in Delaware, we are governed by certain anti-takeover provisions under Delaware law which may discourage, delay or prevent someone from acquiring us or merging with us whether or not it is desired by or beneficial to our stockholders. We are subject to the provisions of Section 203 of the Delaware General Corporation Law, which prohibits a person who owns in excess of 15% of our outstanding voting stock from merging or combining with us for a period of three years after the date of the transaction in which the person acquired in excess of 15% of our outstanding voting stock, unless the merger or combination is approved in a prescribed manner.

Any provision of our amended and restated certificate of incorporation, our amended and restated bylaws or Delaware law that has the effect of delaying or deterring a change in control could limit the opportunity for our stockholders to receive a premium for their shares of our common stock, and could also affect the price that some investors are willing to pay for our common stock.

Changes in our tax provision or exposure to additional tax liabilities could adversely affect our earnings and financial condition.

As a multinational corporation, we are subject to income taxes in the U.S. and various foreign jurisdictions. Significant judgment is required in determining our global provision for income taxes and other tax liabilities. In the ordinary course of a global business, there are intercompany transactions and calculations where the ultimate tax determination is uncertain. Our income tax returns are subject to audits by tax authorities. Although we regularly assess the likelihood of adverse outcomes resulting from these examinations to determine our tax estimates, a final determination of tax audits or tax disputes could have an adverse effect on our results of operations and financial condition.

We are also subject to non-income taxes, such as payroll, excise, customs and duties, sales, use, value-added, net worth, property, gross receipts, and goods and services taxes in the U.S., state and local, and various foreign jurisdictions. We are subject to audit and assessments by tax authorities with respect to these non-income taxes and the determination of these non-income taxes is subject to varying interpretations arising from the complex nature of tax laws and regulations. Therefore, we may have exposure to additional non-income tax liabilities, which could have an adverse effect on our results of operations and financial condition.

The tax regulations in the U.S. and other jurisdictions in which we operate are extremely complex and subject to change. Changes in tax regulations could have an adverse effect on our results of operations and financial condition.

Tariffs imposed by the U.S. and those imposed in response by other countries could have a material adverse effect on our business.

Changes in U.S. and foreign governments' trade policies have resulted in, and may continue to result in, tariffs on imports into and exports from the U.S. Throughout 2018 and 2019, the U.S. imposed tariffs on imports from several countries, including China. In response, China has proposed and implemented their own tariffs on certain products, which may impact our supply chain and our costs of doing business. If we are impacted by the changing trade relations between the U.S. and China, our business and results of operations may be negatively impacted. Continued diminished trade relations between the U.S. and other countries, including potential reductions in trade with China and others, as well as the continued escalation of tariffs, could have a material adverse effect on our financial performance and results of operations.

Our certificate of incorporation designates courts located in Delaware as the sole forum for certain proceedings, which could limit our stockholders' ability to obtain a favorable judicial forum for disputes with us or our directors, officers or employees.

Our amended and restated certificate of incorporation provides that, subject to limited exceptions, the state and federal courts located in the State of Delaware will be the sole and exclusive forum for the following types of actions or proceedings under Delaware statutory or common law: (1) any derivative action or proceeding brought on our behalf, (2) any action asserting a claim of breach of a fiduciary duty owed by any of our directors, officers or other employees to us or our stockholders, (3) any action asserting a claim against us arising pursuant to any provision of the Delaware General Corporation Law, our amended and restated certificate of incorporation or our amended and restated by-laws, or (4) any other action asserting a claim against us that is governed by the internal affairs doctrine. This provision would not apply to suits brought to enforce a duty or liability created by the Exchange Act. Furthermore, Section 22 of the Securities Act creates concurrent jurisdiction for federal and state courts over all such Securities Act actions. Accordingly, both state and federal courts have jurisdiction to entertain such claims. To prevent having to litigate claims in multiple jurisdictions and the threat of inconsistent or contrary rulings by different courts, among other considerations, our amended and restated certificate of incorporation further provides that the U.S. federal district courts will be the exclusive forum for resolving any complaint asserting a cause of action arising under the Securities Act. While the Delaware courts have determined that such choice of forum provisions are facially valid, a stockholder may nevertheless seek to bring a claim in a venue other than those designated in the exclusive forum provisions. For example, the Derivative Litigation has been brought in federal court in California, despite the exclusive forum provision. In such an instance, we would expect to vigorously assert the validity and enforceability of the exclusive forum provisions of our amended and restated certificate of incorporation. This may require significant additional costs associated with resolving such action in other jurisdictions and there can be no assurance that the provisions will be enforced by a court in those other jurisdictions.

This choice of forum provision may limit a stockholder's ability to bring a claim in a judicial forum that it finds favorable for disputes with us or our directors, officers or other employees, which may discourage such lawsuits against us and our directors, officers and employees. If a court were to find these provisions of our amended and restated certificate of incorporation inapplicable to, or unenforceable in respect of, one or more of the specified types of actions or proceedings, we may incur additional costs associated with resolving such matters in other jurisdictions, which could adversely affect our business and financial condition.

We do not plan to pay dividends. Capital appreciation will be your sole possible source of gain, which may never occur.

You should not rely on an investment in our common stock to provide dividend income. We do not anticipate that we will pay any cash dividends to holders of our common stock in the foreseeable future and investors seeking cash dividends should not purchase our common stock. We plan to retain any earnings to invest in our product candidates and maintain and expand our operations. Therefore, capital appreciation, or an increase in your stock price, which may never occur, may be the only way to realize any return on your investment.

Our business or our share price could be negatively affected as a result of shareholder proposals or actions.

Public companies are facing increasing attention from stakeholders relating to environmental, social and governance matters, including corporate governance, executive compensation, environmental stewardship, social responsibility, and diversity and inclusion. Key stakeholders may advocate for enhanced environmental, social and governance disclosures or policies or may request that we make corporate governance changes or engage in certain corporate actions that we believe are not currently in the best interest of FibroGen or our stockholders. Responding to challenges from stockholders, such as proxy contests or media campaigns, could be costly and time consuming and could have an adverse effect on our reputation, which could have an adverse effect on our business and operational results, and could cause the market price of our common stock to decline or experience volatility.

ITEM 2. UNREGISTERED SALES OF EQUITY SECURITIES AND USE OF PROCEEDS.

Not applicable.

ITEM 3. DEFAULTS UPON SENIOR SECURITIES.

Not applicable.

ITEM 4. MINE SAFETY DISCLOSURES.

Not applicable.

ITEM 5. OTHER INFORMATION.

None.

ITEM 6. EXHIBITS

Exhibit Number	Exhibit Description	Incorporation By Reference			
		Form	SEC File No.	Exhibit	Filing Date
3.1	Amended and Restated Certificate of Incorporation of FibroGen, Inc.	8-K	001-36740	3.1	11/21/2014
3.2	Amended and Restated Bylaws of FibroGen, Inc.	S-1/A	333-199069	3.4	10/23/2014
4.1	Form of Common Stock Certificate.	8-K	001-36740	4.1	11/21/2014
4.2	Shareholders' Agreement by and among FibroGen International (Cayman) Limited and certain of its shareholders, dated as of September 8, 2017.	10-Q	001-36740	4.6	11/8/2017
4.3	Common Stock Purchase Agreement by and between FibroGen, Inc. and AstraZeneca AB, dated as of October 20, 2014.	S-1/A	333-199069	4.17	10/24/2014
10.1*†	Amended and Restated Exclusive License Agreement by and between FibroGen, Inc. and Eluminex Biosciences (Suzhou) Limited as of January 21, 2022.	—	—	—	—
31.1*	Certification of Chief Executive Officer, as required by Rule 13a-14(a) or Rule 15d-14(a).	—	—	—	—
31.2*	Certification of Chief Financial Officer, as required by Rule 13a-14(a) or Rule 15d-14(a).	—	—	—	—
32.1*	Certification of Principal Executive Officer and Principal Financial Officer, as required by Rule 13a-14(b) or Rule 15d-14(b) and Section 1350 of Chapter 63 of Title 18 of the United States Code (18 U.S.C. §1350)(1)).	—	—	—	—
101.INS	Inline XBRL Instance Document: the instance document does not appear in the Interactive Data File because its XBRL tags are embedded within the Inline XBRL document	—	—	—	—
101.SCH	Inline XBRL Taxonomy Extension Schema Document	—	—	—	—
101.CAL	Inline XBRL Taxonomy Extension Calculation Linkbase Document	—	—	—	—
101.DEF	Inline XBRL Taxonomy Extension Definition Linkbase Document	—	—	—	—
101.LAB	Inline XBRL Taxonomy Extension Label Linkbase Document	—	—	—	—
101.PRE	Inline XBRL Taxonomy Extension Presentation Linkbase Document	—	—	—	—
104	Cover Page Interactive Data File (formatted as inline XBRL with applicable taxonomy extension information contained in Exhibits 101.)	—	—	—	—

* Filed herewith

† Portions of this exhibit (indicated by asterisks) have been omitted as the Company has determined that the omitted information is both (i) not material and (ii) the type of information that the Company treats as private or confidential

SIGNATURES

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

FibroGen, Inc.

Dated: May 9, 2022

By: /s/ Enrique Conterno
Enrique Conterno
Chief Executive Officer
(Principal Executive Officer)

Dated: May 9, 2022

By: /s/ Juan Graham
Juan Graham
Senior Vice President and Chief Financial Officer
(Principal Financial and Accounting Officer)

Exhibit 10.1

Execution Version

[*] = Certain confidential information contained in this document, marked by brackets, has been omitted because it is both (i) not material and (ii) would likely cause competitive harm to the company if publicly disclosed.

AMENDED AND RESTATED

EXCLUSIVE LICENSE AGREEMENT

by and among

FIBROGEN, INC. and its AFFILIATES

and

ELUMINEX BIOSCIENCES (SUZHOU) LIMITED

AMENDED AND RESTATED

EXCLUSIVE LICENSE AGREEMENT

This **AMENDED AND RESTATED EXCLUSIVE LICENSE AGREEMENT** (this "**Agreement**") is entered into January 21, 2022 (the "**Execution Date**") and effective as of the Effective Date (as defined in Section 1.35), by and among: **FIBROGEN**, **INC**., a company organized under the laws of Delaware with a business address at 409 Illinois Street, San Francisco, CA 94158, United States and its Affiliates, including **FIBROGEN (CHINA) MEDICAL TECHNOLOGY DEVELOPMENT CO., LTD. 珐博进（中国）医药技术开发有限公司**, a wholly foreign owned limited liability company having its principal place of business at 101-601, Unit 2, Building 7, No. 88, 6th Ke Chuang Street, Beijing Economic Technological Development Area, Beijing, China ("**FibroGen China**") (FIBROGEN, INC. and its Affiliates along with FibroGen China are collectively referred to herein as "**FIBROGEN**"), and **ELUMINEX BIOSCIENCES (SUZHOU) LIMITED 典晶生物医药科技（苏州）有限公司**, a company organized under the laws of People's Republic of China with registered address at Unit 401, Building B7, Suzhou BioBAY, No. 218, Xinghu Street, Suzhou Industrial Park, Suzhou, Jiangsu Province 215123, People's Republic of China ("**ELUMINEX**"). ELUMINEX and FIBROGEN are sometimes referred to herein individually as a "**Party**" and collectively as the "**Parties**."

RECITALS

WHEREAS, FIBROGEN owns or controls certain rights to patents, know-how, and other intellectual property and assets related to the Products (as hereinafter defined);

WHEREAS, ELUMINEX and its Affiliates desire to license these intellectual property rights from FIBROGEN, in order to commercially develop, manufacture, use and distribute the Product(s) throughout the Territory (as hereinafter defined), and FIBROGEN desires to grant such license to ELUMINEX and its Affiliates, in accordance with the terms and conditions of this Agreement.

NOW, THEREFORE, in consideration of the premises and the mutual promises and covenants contained in this Agreement, and for other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the Parties agree as follows:

ARTICLE 1
DEFINITIONS

All references to particular Exhibits, Articles or Sections shall mean the Exhibits to, and Articles and Sections of this Agreement, unless otherwise specified. For the purposes of this Agreement and the Exhibits hereto, the following words and phrases shall have the following meanings:

1.1 "**Abandoned Patent Right**" has the meaning set forth in Section 4.3.

1.2 "**Accounting Standards**" means U.S. Generally Accepted Accounting Principles (GAAP) with respect to FIBROGEN and ELUMINEX, and GAAP or International Financial Reports Standards (IFRS), as applicable, with respect to any Sublicensee, in each case, as generally and consistently applied through the Sublicensee's organization. Each Party shall promptly notify the other in the event that it changes the Accounting Standards pursuant to which its records are maintained; *provided*, *however* that each Party may only use internationally recognized accounting principles (*e.g.* IFRS, GAAP, etc.).

1.3 "**Active Ingredient**" means the clinically active material(s) that provide pharmacological activity in a pharmaceutical product (excluding, for the avoidance of doubt, formulation components such as coatings, stabilizers, excipients or solvents, adjuvants or controlled release technologies).

1.4 "**Affiliate**" means, with respect to any Person, any other Person that, directly or indirectly through one or more intermediaries, controls, is controlled by or is under common control with such Person, for as long as such control exists. For purposes of the definition of "Affiliate," "control" means the direct or indirect ownership of more than fifty percent (50%) of the voting or economic interest of a Person, or the power, whether pursuant to contract, ownership of securities or otherwise, to direct the management and policies of a Person. For clarity, once a Person ceases to be an Affiliate of a Party, then, without any further action, such Person shall cease to have any rights, including license and sublicense rights, obtained by such Person directly under this Agreement solely by reason of being an Affiliate of such Party.

1.5 "**Agreement**" has the meaning set forth in the Preamble.

1.6 "**Annual Report**" has the meaning set forth in Section 6.2.

1.7 "**Anti-Corruption Laws**" means Laws, regulations, or orders prohibiting the provision of a financial or other advantage for a corrupt purpose or otherwise in connection with the improper performance of a relevant function, including without limitation, the U.S. Foreign Corrupt Practices Act and similar laws governing corruption and bribery, whether public, commercial or both, to the extent applicable.

1.8 "**Arbitration Date**" has the meaning set forth in Section 11.4.

1.9 "**Audited Party**" has the meaning set forth in Section 3.7.

1.10 "**Calendar Quarter**" means the respective periods of three consecutive calendar months ending on March 31, June 30, September 30 and December 31.

1.11 "**Calendar Year**" means each successive period of twelve (12) months commencing on January 1 and ending on December 31.

1.12 "**CEO Delegate**" means the Chief Executive Officer of each Party or their respective delegate.

1.13 "**cGMP**" means all applicable current Good Manufacturing Practices, including, as applicable, (a) the principles detailed in the U.S. Current Good Manufacturing Practices, 21 C.F.R. Parts 4, 210, 211, 601, 610 and 820, (b) European Directive 2003/94/EC and Eudralex 4, (c) the principles detailed in the International Conference on Harmonization's Q7 guidelines, and (d) the equivalent applicable Laws in any relevant country or region, each as may be amended and applicable from time to time.

1.14 "**Clinical Trial**" means any human clinical trial of a Product.

1.15 "**China**" means People's Republic of China, for purposes of this Agreement, excluding Hong Kong, Macao, and Taiwan, which, for purposes of this Agreement, shall each be deemed a "region."

1.16 "**China CPI**" means, the consumer price index as published by the National Bureau of Statistics of People's Republic of China, or any replacement index if applicable.

1.17 "**Combination Product**" means a Product that, in addition to containing [*] as an active ingredient or component, also contains at least one other Active Ingredient that is not [*] (the "**Other Component**").

1.18 "**Commercially Reasonable Efforts**" means, with respect to a Party's obligations or activities under this Agreement for a Product, the application of such efforts and resources as are commensurate with those commonly used by a similarly situated biotechnology company for a product at a similar stage in its development or product life cycle and of similar market potential and intellectual property protection as the Product, taking into account all relevant factors, including the competitiveness of the marketplace and the proprietary position, regulatory

status, and relative safety and efficacy of such Product, and any other relevant scientific, technical, regulatory or commercial factors.

1.19 "**Commercial Milestone Events**" has the meaning set forth in Section 3.3.

1.20 "**Commercial Milestone Payments**" has the meaning set forth in Section 3.3.

1.21 "**Competitive Product**" means [*].

1.22 "**Confidential Information**" has the meaning set forth in Section 10.1.1.

1.23 "**[*] Agreement**" means the [*] agreement to be agreed and entered into by and between the Parties.

1.24 "**Control**" or "**Controlled**" means, with respect to any Know-How, material, Patent Right, or other intellectual property right, the possession (whether by ownership or license) by a Party or its Affiliates, other than pursuant to this Agreement, of the ability to grant to the other Party a license, sublicense or access as provided herein to such Know-How, material, Patent Right, or other intellectual property right, without violating the terms of any agreement or other arrangement with any Third Party, or with respect to any Know-How, material, Patent Right, or other intellectual property right that comes into the Control of such Party or its Affiliates during the Term, if obligated to pay any royalties or other consideration therefor, if the other Party agrees to pay such royalties or other consideration, in existence as of the time such Party or its Affiliates would first be required hereunder to grant the other Party such license, sublicense or access.

1.25 "**Cornea Product**" means any Product that consists of, comprises or incorporates [*].

1.26 "**[*] Product Manufacture Technology Transfer Completion Date**" shall have the meaning set forth in Section 5.4.

1.27 "**[*] Product Royalty Term**" has the meaning set forth in Section 3.4.1.

1.28 "**Covered**" means, with respect to a claim of a Patent Right and a Product, that such claim, absent a license thereunder or ownership thereof, would be infringed by the Exploitation of such Product; for clarity, with respect to any claims that are pending, such pending claim shall be treated as if it were issued for purposes of determining infringement at the time coverage is assessed. "**Cover**" when used as a verb shall have the corresponding meaning.

1.29 "**Defending Party**" has the meaning set forth in Section 4.4.4.

1.30 "**Development Milestone Events**" has the meaning set forth in Section 3.2.

1.31 "**Development Milestone Payments**" has the meaning set forth in Section 3.2.

1.32 "**Development Report**" has the meaning set forth in Section 6.2.

1.33 "**Disclosing Party**" has the meaning set forth in Section 10.1.1.

1.34 "**Dispute**" has the meaning set forth in Section 12.5.

1.35 "**Effective Date**" means July 16, 2021 (Pacific Time). This Agreement is effective as of the Effective Date.

1.36 "**ELUMINEX**" has the meaning set forth in the Preamble.

1.37 "**ELUMINEX Indemnified Parties**" has the meaning set forth in Section 9.1.2.

1.38 "**ELUMINEX IP**" has the meaning set forth in Section 4.1.1.

1.39 "**Enforcing Party**" has the meaning set forth in Section 4.4.3.

1.40 "**Equipment**" has the meaning set forth in Section 5.3.

1.41 "**Exploit**" means to research, develop, make, have made, use, offer for sale, sell, import, export, distribute, commercialize, or otherwise exploit a product. "**Exploitation**" has a corresponding meaning.

1.42 "**FDA**" means the United States Food and Drug Administration or its successor.

1.43 "**FDCA**" means the Federal Food Drug and Cosmetic Act, as amended from time to time.

1.44 "**FIBROGEN**" has the meaning set forth in the Preamble.

1.45 "**FIBROGEN Know-How**" means all Know-How that is owned or otherwise Controlled by FIBROGEN as of the Effective Date and is necessary or reasonably useful for the Exploitation of the Products in the Field in the Territory, including, without limitation, the Know-How as outlined in Exhibit A.

1.46 "**FIBROGEN Indemnified Parties**" has the meaning set forth in Section 9.1.1.

1.47 "**FIBROGEN Patents**" means any and all Patent Rights that are owned or otherwise Controlled by FIBROGEN as of the Effective Date or become owned or otherwise Controlled by FIBROGEN during the Term that Cover the Exploitation of the Products in the Field in the Territory. For clarity, FIBROGEN Patents shall include, without limitation, [*] ("**Know-How Product Patents**"), and [*]. Currently existing FIBROGEN Patents are set forth in Exhibit B.

1.48 "**Field**" means all indications and uses, including the prevention, detection, diagnosis, treatment and monitoring of all diseases, states or conditions in humans or animals.

1.49 "**First Commercial Sale**" means, with respect to a Product in any country or region, the first sale for end use or consumption of such Product in such country or region after Regulatory Approval has been granted in such country or region.

1.50 "**FTE**" means a qualified full time person, or more than one person working the equivalent of a full-time person, where "full time" is based upon a total of 2,080 working hours per Calendar Year of scientific or technical work carried out by one or more duly qualified employees of FIBROGEN. Overtime and work on weekends, holidays, and the like will not be counted with any multiplier (*e.g.* time-and-a-half or double time) toward the number of hours that are used to calculate the FTE contribution. In the event that any person who works full-time during a given Calendar Year works partially on the Initial Technology Transfer or the Manufacture Technology Transfer and partially on other work outside the Initial Technology Transfer or the Manufacture Technology Transfer in the Calendar Year, then the full-time equivalent to be attributed to such person's work hereunder for such Calendar Year will be equal to the percentage of such person's total work time in such Calendar Year that such person spent working on the Initial Technology Transfer or the Manufacture Technology Transfer as recorded monthly in an appropriate time-sheet system. For clarity, FTE efforts will not include the work of general corporate or administrative personnel or Third Party consultants or contractors.

1.51 "**FTE Rate**" means [*] per FTE per hour for FIBROGEN's employees in the U.S., which amount shall be increased in proportion to any applicable increase in the U.S. CPI once per year at the first and each subsequent anniversary of the Effective Date, and [*] per FTE per hour for FIBROGEN's employees in China, which amount shall be increased in proportion to any applicable increase in the China CPI once per year at the first and each subsequent anniversary of the Effective Date.

1.52 "**Government Official**" means (a) any official or employee of any Governmental Authority, or any department, agency, or instrumentality thereof (including without limitation commercial entities owned or controlled, directly or indirectly, by a Governmental Authority), (b) any political party or official thereof, or any candidate for political office, in the Territory, (c) any official or employee of any public international organization, or (d) any family members of any of the foregoing.

1.53 "**Governmental Authority**" means any multi-national, national, federal, state, local, municipal or other government authority, instrumentality or body of any nature (including any governmental division, subdivision, department, ministry, agency, bureau, branch, office, commission, council, court or other tribunal).

1.54 "**Initial Technology Transfer**" has the meaning set forth in Section 5.1.

1.55 "**Initiation**" means, with respect to a Clinical Trial, the first dosing of the first subject in such Clinical Trial. "**Initiated**" shall have a corresponding meaning.

1.56 "**Issuing Party**" has the meaning set forth in Section 10.2.2.

1.57 "**JCC**" has the meaning set forth in Section 6.3.

1.58 "**Joint IP**" has the meaning set forth in Section 4.1.3.

1.59 "**Joint Patents**" has the meaning set forth in Section 4.1.3.

1.60 "**Joint Press Release**" has the meaning set forth in Section 10.2.1.

1.61 "**Know-How**" means non-public techniques, technology, trade secrets, inventions (whether patentable or not), methods, know-how, data and results (including pharmacological, toxicological and clinical data and results), analytical and quality control data and results, regulatory documents, and other information, compositions of matter, cells, cell lines, assays, animal models and other physical, biological, or chemical material.

1.62 "**Know-How Product IP**" means any new and registerable intellectual property rights directed to any FIBROGEN Know-How.

1.63 "**Know-How Product Patents**" has the meaning set forth in Section 1.47.

1.64 "**Law**" means laws, statutes, rules, regulations, and other pronouncements having the effect of law of any Governmental Authority that may be in effect from time to time, including disclosure obligations required by any stock exchange or securities commission having authority over a Party and any rules, regulations, guidances, or other requirements of any Regulatory Authority that may be in effect from time to time.

1.65 "**License**" has the meaning set forth in Section 2.1.

1.66 "**Licensed Technology**" means the FIBROGEN Patents and the FIBROGEN Know-How.

1.67 "**Losses**" has the meaning set forth in Section 9.1.1.

1.68 "**Manufacture Technology Transfer**" has the meaning set forth in Section 5.4.

1.69 "**Net Sales**" means, with respect to a Product, the gross amount invoiced for such Product sold by ELUMINEX, its Affiliates or Sublicensee(s) (the "**Selling Party**") to Third Parties, less the following deductions with respect to such sales that are either included in the billing as a line item as part of the gross amount invoiced, or otherwise documented as a deduction in accordance with the applicable Accounting Standards (without duplication):

(a) sales taxes, excise taxes, use taxes, inventory taxes, VAT and duties paid by the Selling Party in relation to the Product and any other equivalent governmental charges imposed upon the importation, delivery, use or sale of the Product [*];

(b) credits and allowances for defective or returned Product, including allowances for spoiled, damaged, outdated, rejected, returned, withdrawn or recalled Product;

(c) governmental and other rebates, refunds, and chargebacks (or equivalents thereof) granted to managed health care organizations, pharmacy benefit managers (or equivalents thereof), federal, state, provincial, local and other governments, their agencies and purchasers and reimbursers or to trade customers, in each case with respect to the Product;

(d) reasonable fees paid to or rebates granted to wholesalers, distributors, selling agents (excluding any sales representatives of a Selling Party), hospitals, group purchasing organizations, Third Party payors (including health insurance carriers), other contractees and managed care entities, in each case with respect to the Product;

(e) amounts written off by reason of uncollectible debt if and when actually written off or allowed; *provided, however*, [*];

(f) reasonable transportation charges relating to the Product, including handling charges and insurance premiums relating thereto; and

(g) trade, cash, prompt payment and/or quantity discounts, allowed and taken directly by the Third Party.

Net Sales shall be determined from books and records maintained in accordance with the applicable Accounting Standards, consistently applied throughout the organization and across all products of the Selling Party whose sales of the Product are giving rise to Net Sales.

Net Sales for any Combination Product will be calculated on a country-by-country (or region-by-region) basis by multiplying actual Net Sales of such Combination Product by the fraction (A-B)/A, where A is the gross invoice price for such Combination Product in such country (or region) and B is the gross invoice price for the Other Component contained in such Combination Product if such Other Component is sold separately in finished form in such country (or region). If such Other Component is not sold separately in finished form in such country (or region), the Parties will determine Net Sales for such Combination Product by mutual agreement [*], and will take into account in good faith any applicable allocations and calculations [*].

[*].

For the avoidance of doubt, disposition of Product for, or use of Product in, Clinical Trials or other scientific testing, as free samples, or under compassionate use, patient assistance, or test marketing programs or other similar programs or studies, [*], shall not be considered Net Sales under this Agreement.

Sales of a Product between or among ELUMINEX and its Affiliates or Sublicensees shall be excluded from the computation of Net Sales and no payments shall be payable on such sales except where such Affiliates or Sublicensees are end users.

1.70 "**NMPA**" means the National Medical Products Administration of People's Republic of China, or its successor.

1.71 "**Other Component**" has the meaning set forth in Section 1.17.

1.72 "**Other Product**" means any Product [*].

1.73 "**[*] Product Royalty Term**" has the meaning set forth in Section 3.4.2.

1.74 "**Party**" has the meaning set forth in the Preamble.

1.75 "**Patent Rights**" means the rights and interests in and to all national, regional and international (a) patent applications, including, without limitation, provisional, converted provisional, and non-provisional, and continued prosecution application, continuation, divisional or continuation-in-part thereof, and (b) patents (including any patents issuing from any patent applications in (a)), including, without limitation, certificates of invention, registrations, reissues, extensions, substitutions, confirmations, renewals, re-registrations, re-examinations, revalidations, patents of additions or like filing thereof.

1.76 "**Person**" means any corporation, limited or general partnership, limited liability company, joint venture, trust, unincorporated association, governmental body, authority, bureau or agency, any other entity or body, or an individual.

1.77 "**Pivotal Trial**" means a Clinical Trial of a Product in human subjects which is designed (or subsequently achieves the following): (a) to establish that the Product is safe and efficacious for its intended use; (b) to define warnings, precautions and adverse reactions that are associated with the Product in the dosage range to be prescribed; and (c) to be, either by itself or together with one or more other Clinical Trials having a comparable design and size, the final human Clinical Trial in support of Regulatory Approval of the Product.

1.78 "**Product**" means any product or device that (a) consists of, comprises or incorporates any [*], (b) is manufactured by or on behalf of ELUMINEX or its Affiliates, and (c) is Covered by FIBROGEN Patents or constitutes, incorporates, comprises or contains FIBROGEN Know-How, in any and all current and future forms, presentations, strengths, and delivery modes.

1.79 "**Proper Conduct Practices**" means all applicable Laws prohibiting a Person (and/or its Representatives) from (a) making, offering, authorizing, providing or paying anything of value in any form, whether in money, property, services or otherwise to any Governmental Authority, Government Official, or other Person charged with similar public or quasi-public duties, or to any customer, supplier, or any other Person, or to any employee thereof, or failing to disclose fully any such payments in violation of the laws of any relevant jurisdiction to (i) obtain favorable treatment in obtaining or retaining business for it or any of its Affiliates, (ii) pay for favorable treatment for business secured, (iii) obtain special concessions (or to pay for special concessions already obtained), for or in respect of it or any of its Affiliates, in each case which would have been in violation of any applicable Law, (iv) influence an act or decision of the recipient (including a decision not to act) in connection with the Person's or its Affiliate's business, (v) induce the recipient to use his or her influence to affect any government act or decision in connection with the Person's or its Affiliate's business or (vi) induce the recipient to violate his or her duty of loyalty to his or her organization, or as a reward for having done so; (b) engaging in any transactions, establishing or maintaining any fund or assets in which it or any of its Affiliates shall have proprietary rights that have not been recorded in the books and records of it or any of its Affiliates; (c) making any unlawful payment to any agent, employee, officer or director of any Person with which it or any of its Affiliates does business for the purpose of influencing such agent, employee, officer or director to do business with it or any of its Affiliates; (d) violating any provision of applicable Anti-Corruption Laws; (e) making any payment in the nature of bribery, fraud, or any other unlawful payment under the Law of any jurisdiction where it or any of its Affiliates conducts business or is registered; or (f) if such Person or any of its Representatives is a Government Official, improperly using his or her position as a Government Official to influence the award of business or regulatory approvals to or for the benefit of such Person, its Representatives or any of their business operations, or failing to recuse himself or herself from any participation as a Government Official in decisions relating to such Person, its Representatives or any of their business operations.

1.80 "**Prosecute**" means, with respect to any Patent Rights or other registrable intellectual property rights, to prepare, file, prosecute, and defend (but, for clarity, not enforce) such Patent Rights or other registrable intellectual property rights. "**Prosecution**" has a corresponding meaning.

1.81 "**Receiving Party**" has the meaning set forth in Section 10.1.1.

1.82 "**Regulatory Approval**" means, with respect to a Product in a country or region in the Territory, all approvals granted by a Regulatory Authority or other regulatory agency in such country or region that are necessary for the commercial sale of such Product for use in such country or region in the Territory, excluding any pricing and reimbursement approvals except to the extent required by applicable Law to sell the Product in such country or region.

1.83 "**Regulatory Authority**" means any applicable Governmental Authority responsible for granting Regulatory Approvals for a Product, including FDA, NMPA, and any corresponding national or regional regulatory authorities.

1.84 "**Regulatory Exclusivity**" means, with respect to a Product, any exclusive marketing rights or data exclusivity rights conferred by the applicable Regulatory Authority with respect to such Product (that would satisfy the requirements of Sections 505(b)(1) or 505(b)(2) of the FDCA or its non-U.S. equivalents) other than a Patent Right.

1.85 "**Regulatory Filing**" means all (a) submissions, non-administrative correspondence, notifications, registrations, licenses, authorizations, applications and other filings with any Governmental Authority with respect to the research, clinical investigation, development, manufacture, distribution, pricing, reimbursement, marketing or sale of a Product, (b) Regulatory Approvals for a Product, and (c) approvals granted by a Regulatory Authority or other regulatory agency in a country or region in the Territory that are necessary for the manufacture, storage, import, marketing and distribution of a Product for use in such country or region in the Territory.

1.86 "**Release**" has the meaning set forth in Section 10.2.2.

1.87 "**Representatives**" means, as to any Person, such Person's Affiliates and its and their successors, controlling Persons, directors, officers and employees.

1.88 "**Reviewing Party**" has the meaning set forth in Section 10.2.2.

1.89 "**rhCIII**" means the recombinant type 3 human collagen.

1.90 [*]

1.91 "**Royalty Term**" means the [*] Product Royalty Term or the [*] Product Royalty Term, as applicable.

1.92 "**Selling Party**" has the meaning set forth in Section 1.69.

1.93 "**Sublicensee(s)**" means any Person other than an Affiliate of ELUMINEX to whom ELUMINEX has granted a sublicense under the rights granted to ELUMINEX under Section 2.2.

1.94 "**Tax**" or "**Taxes**" means any form of tax or taxation, levy, duty, charge, social security charge, contribution or withholding of whatever nature (including any related fine, penalty, surcharge or interest) imposed by, or payable to, any government, state or municipality, or any local, state, federal or other fiscal, revenue, customs, or excise authority, body or official in the Territory.

1.95 "**Term**" has the meaning set forth in Section 11.1.

1.96 "**Territory**" means the entire world.

1.97 "**Third Party**" means a Person other than (a) FIBROGEN and (b) ELUMINEX and its Affiliates.

1.98 "**U.S.**" or "**United States**" means the United States of America and its possessions and territories, including Puerto Rico.

1.99 "**U.S. CPI**" means, the consumer price index as published by the Bureau of Labor Statistics, U.S. Department of Labor, or any replacement index if applicable.

1.100 "**Valid Claim**" means a claim of any issued and unexpired patent or patent application pending in good faith within the FIBROGEN Patents which has not been (a) revoked or held invalid or unenforceable by a final decision of a court or governmental agency of competent jurisdiction (and which decision can no longer be appealed or was not appealed within the time allowed), (b) held to be invalid or unenforceable through reissue, re-examination or disclaimer or otherwise, or (c) dedicated to the public, disclaimed (whether explicitly or otherwise), abandoned, or admitted in writing to be invalid or unenforceable or of a scope not Covering a particular Product; *provided*, *however*, that if a claim of a pending patent application within the FIBROGEN Patents shall not have issued within [*], such claim shall not constitute a Valid Claim for the purposes of this Agreement unless and until such claim is included in an issued or granted patent (from and after which time the same would be deemed a Valid Claim).

1.101 "**VAT**" means the value added tax or any form of consumption tax levied by a relevant tax authority, as well as all other forms of consumption taxes levied by the relevant tax authority on the purchase of a good or a service, including but not limited to sales tax and good and service tax.

ARTICLE 2
LICENSE GRANTS; RESTRICTIONS

Section 2.1 Exclusive License Grant to ELUMINEX. Subject to the terms and conditions of this Agreement, FIBROGEN hereby grants to ELUMINEX an exclusive (even as to FIBROGEN but subject to Section 2.3), transferrable (subject to Section 12.9), royalty-bearing, sublicensable (through multiple tiers of sublicensees in accordance with Section 2.2), license under the Licensed Technology to Exploit the Products in the Field in the Territory during the Term (the "**License**").

Section 2.2 Sublicenses. ELUMINEX shall have the right to sublicense the License (a) to [*], or (b) to [*], in each case of (a) and (b), without FIBROGEN's prior written consent, provided that ELUMINEX shall provide written notice of the granting of a sublicense to FIBROGEN within [*] after entering into any such sublicense and each sublicense shall be consistent with the terms and conditions of the License.

ELUMINEX shall be and remain responsible for ensuring each of its Affiliates, Sublicensees or subcontractors utilized by ELUMINEX to perform certain of ELUMINEX's obligations under this Agreement [*] and the [*] Agreement will comply with the provisions of this Agreement and the [*] Agreement applicable to such Person's performance and shall be and remain liable for any breaches hereof or thereof by any such Affiliate, Sublicensee or subcontractor as though the same were a breach by ELUMINEX, [*].

Section 2.3 Retained Rights. Notwithstanding anything herein to the contrary, but subject to the last paragraph of this Section 2.3, any rights not expressly granted to ELUMINEX by FIBROGEN under this Agreement are hereby retained by FIBROGEN, including the right:

(a) to exercise its rights, and perform its obligations, under this Agreement, whether directly or through one or more Affiliates, licensees or subcontractors; and

(b) to make and have made (itself or through its Affiliates and licensees) the Product in accordance with Article 7 and the [*] Agreement.

FIBROGEN shall be and remain responsible for ensuring each of its licensees (other than ELUMINEX) or subcontractors utilized by FIBROGEN to perform certain of FIBROGEN's obligations under this Agreement [*] and the [*] Agreement will comply with the provisions of this Agreement and the [*] Agreement applicable to such Person's performance and shall be and remain liable for any breaches hereof or thereof by any such licensee or subcontractor as though the same were a breach by FIBROGEN, and ELUMINEX shall have the right to proceed directly against FIBROGEN without any obligation to first proceed against FIBROGEN's licensee or subcontractor.

Section 2.4 Limited Grant. ELUMINEX acknowledges that the rights and licenses granted under this Article 2 and elsewhere in this Agreement are limited to the scope expressly granted.

Section 2.5 Non-Compete. [*], neither Party would, directly or indirectly (by itself or with or through an Affiliate or a Third Party) Exploit any Competitive Product in the Territory, other than, in the case of ELUMINEX, the Products, or, in the case of FIBROGEN, the Products for the sole purpose of assisting ELUMINEX's Exploitation of the Products as contemplated under this Agreement or the [*] Agreement.

Section 2.6 [*] Agreement. The Parties shall enter into the [*] Agreement on mutually agreeable terms as soon as practicable, but in no event later than [*]. ELUMINEX shall send a complete initial draft of the [*] Agreement by [*] and the Parties will work diligently and in good faith to negotiate and enter into the such agreement as soon as practicable.

ARTICLE 3
FEES, ROYALTIES AND PAYMENTS

Section 3.1 Upfront Payment. In partial consideration of the rights granted herein to ELUMINEX, ELUMINEX shall pay to FIBROGEN a one-time, non-refundable, non-creditable payment of [*] eight million U.S. Dollars ($8,000,000), in accordance with Section 3.6.1, [*], [*]. [*].

Section 3.2 Development Milestones. In partial consideration of the rights granted herein to ELUMINEX, ELUMINEX shall pay to FIBROGEN certain development milestone payments ("**Development Milestone Payments**") related to the Cornea Product in accordance with this Section 3.2. Following the first occurrence by or on behalf of ELUMINEX, its Affiliates or Sublicensee(s) of each milestone event with respect to the Cornea Product set forth in the table below (the "**Development Milestone Events**"), ELUMINEX shall provide notice to FIBROGEN [*], and [*] shall invoice ELUMINEX for the applicable Development Milestone Payment in accordance with the notice, [*]. Within [*] following ELUMINEX's receipt of such invoice, ELUMINEX shall pay such Development Milestone Payment to FIBROGEN in accordance with Section 3.6.1. For clarity, (a) each Development Milestone Payment is payable only once, (b) no Development Milestone Payment shall be payable for subsequent or repeated achievements of a Development Milestone Event with respect to one or more of the same or different Cornea Products. Each of the Development Milestone Payments shall be non-refundable and non-creditable. The Development Milestone Events and Development Milestone Payments shall be as follows (all amounts in U.S. Dollars):

	Milestone	Payment
1	[*]	[*]
2	[*]	[*]
3	[*]	[*]
4	[*]	[*]

Section 3.3 Commercial Milestones. ELUMINEX shall pay to FIBROGEN certain commercial milestone payments (each, a "**Commercial Milestone Payment**") in relation to the Cornea Products and Other Products respectively, following the first occurrence of certain commercial milestone events, as set forth in this Section 3.3 (the "**Commercial Milestone Events**"). ELUMINEX shall provide notice to FIBROGEN within [*] during which a Commercial Milestone Event is achieved. [*] shall invoice ELUMINEX for the applicable Commercial Milestone Payment in accordance with the notice, [*]. Within [*] following ELUMINEX's receipt of such invoice, ELUMINEX shall pay such Commercial Milestone Payment to FIBROGEN in accordance with Section 3.6.1. For clarity, each Commercial Milestone Payment shall be payable by ELUMINEX only once, regardless of the number of times each such Commercial Milestone Event is achieved, and Net Sales of any Product outside its Royalty Term shall not count towards the [*] for determining Commercial Milestone Events. The Commercial Milestone Events and Commercial Milestone Payments shall be as follows (all amounts in U.S. Dollars):

3.3.1 Cornea Product.

Cornea Product Commercial Milestone Event [*]	Commercial Milestone Payment
[*]	[*]
[*]	[*]
[*]	[*]
[*]	[*]
[*]	[*]
[*]	[*]

3.3.2 Other Product.

Other Product Commercial Milestone Event [*]	Commercial Milestone Payment
[*]	[*]
[*]	[*]
[*]	[*]
[*]	[*]
[*]	[*]
[*]	[*]

For clarity, recitations of [*] in the table immediately above refers to [*].

Section 3.4 Royalties.

3.4.1 [*] Product Royalty Payments to FIBROGEN. Subject to the remainder of this Section 3.4.1 and Section 3.5 ELUMINEX shall pay to FIBROGEN a royalty on annual aggregate Net Sales of all [*] Products sold by any Selling Party during each year (or partial year) of the applicable [*] Product Royalty Term, as calculated by multiplying the applicable royalty rate set forth below by the corresponding amount of incremental, aggregated Net Sales of all [*] Products sold in the Territory in the applicable Calendar Year.

Aggregate Annual Net Sales of [*] Products	Royalty Rate
[*]	[*]
[*]	[*]
[*]	[*]
[*]	[*]

ELUMINEX's obligation to pay royalties with respect to a [*] Product sold in a particular country (or region) shall commence upon the First Commercial Sale of such [*] Product in such country (or region) and shall expire on a country-by-country (or region-by-region) basis on the latest of: [*] (the "**[*] Product Royalty Term**"). For clarity, Net Sales of any [*] Product outside its [*] Product Royalty Term shall not count towards the aggregate annual Net Sales of [*] Products for purposes of this Section 3.4.1.

3.4.2 [*] Product Royalty Payments to FIBROGEN. Subject to the remainder of this Section 3.4.2 and Section 3.5, ELUMINEX shall pay to FIBROGEN a royalty on annual aggregate Net Sales of all [*] Products sold by any Selling Party during each year (or partial year) of the applicable [*] Product Royalty Term, as calculated by multiplying the applicable royalty rate set forth below by the corresponding amount of incremental, aggregated Net Sales of all [*] Products sold in the Territory in the applicable Calendar Year.

Aggregate Annual Net Sales of [*] Products	Royalty Rate
[*]	[*]
[*]	[*]
[*]	[*]
[*]	[*]

ELUMINEX's obligation to pay royalties with respect to an [*] Product sold in a particular country (or region) shall commence upon the First Commercial Sale of such [*] Product in such country (or region) and shall expire on a country-by-country (or region-by-region) basis on the latest of: [*] (the "**[*] Product Royalty Term**"). For clarity, Net Sales of any [*] Product outside its [*] Product Royalty Term shall not count towards the aggregate annual Net Sales of [*] Products for purposes of this Section 3.4.2.

3.4.3 Reports and Payments. During the applicable Royalty Term, ELUMINEX shall prepare and deliver to FIBROGEN, based on its best knowledge and in good faith, estimated royalty reports for the sale of Product(s) by the Selling Parties for each Calendar Quarter within [*] after the end of each such Calendar Quarter specifying, in each of the following instances (a) through (d) or (f), as applicable to or having occurred in such Calendar Quarter: (a) total gross sales for the Product(s) sold or otherwise disposed of by a Selling Party; (b) amounts deducted in accordance with Section 1.69 from gross sales to calculate Net Sales; (c) Net Sales; (d) the amount of royalties payable for such Calendar Quarter, (e) [*] up until the end of such Calendar Quarter and (f) [*]. Promptly following receipt of each such estimated royalty report, [*] shall issue an invoice to ELUMINEX for the amount of royalties due for such Calendar Quarter in accordance with such estimated royalty report, [*], and ELUMINEX shall make each royalty payment to FIBROGEN within [*], in accordance with Section 3.6.1. Notwithstanding the foregoing, in the event there are any updates to such estimated royalty reports after the delivery of such reports to FIBROGEN after the end of any Calendar Quarter, ELUMINEX shall deliver the updated amounts of instances (a) through (d) or (f) as described in this Section 3.4.3 to FIBROGEN, at the same time with the royalty report due for the immediately following Calendar Quarter and (x) if there was an underpayment of the amount of royalties due for such Calendar Quarter based on the updated amounts for such Calendar Quarter, then [*] shall issue an invoice for (or add to its invoice for the immediately following Calendar Quarter) such shortfall amount, [*], and ELUMINEX shall pay the amount of such invoice within [*], in accordance with Section 3.6.1, and (y) if ELUMINEX overestimated the amount of royalties due for such Calendar Quarter in the estimated royalty reports and as a result overpaid the amount of royalties due for such Calendar Quarter, the amount of such excess shall be applied as a credit towards the royalty payments for the immediately following Calendar Quarter [*].

Section 3.5 Royalty Reductions.

3.5.1 No FIBROGEN Patent. On a country-by-country (or region-by-region) and Product-by-Product basis, at any time during the applicable Royalty Term, in the event the manufacture, use or sale of a Product in any country (or region) in the Territory is not Covered by a Valid Claim of any FIBROGEN Patent in such country (or region), the royalty rates applicable to such Product in such country (or region) shall immediately be reduced by [*].

3.5.2 Competition. On a country-by-country (or region-by-region) and Product-by-Product basis, at any time during the applicable Royalty Term, (a) in the event one or more Competitive Products enter the market in such country (or region), the royalty rates applicable to such particular [*] Product in such country (or region) [*], and (b) in the event one or more products competitive with an [*] Product enter the market in such country (or region), the royalty rates applicable to such particular [*] Product in such country (or region) [*].

3.5.3 Third-Party Intellectual Property. In the event that Patent Rights or Know-How of a Third Party are, based on the reasonable opinion of ELUMINEX's IP counsel, necessary for the Exploitation of a [*] Product in the Territory, ELUMINEX may deduct from the royalty payment that would otherwise have been due with respect to Net Sales of such [*] Product in the Territory in a particular Calendar Quarter an amount equal to [*] of the royalties paid by ELUMINEX to such Third Party. In the event that FIBROGEN disagrees in good faith with the opinion of ELUMINEX's IP counsel, then the Parties shall mutually agree on an independent IP counsel to provide a legal opinion to both Parties, [*], as to the necessity of such Third Party Patent Rights or Know-How. Such independent counsel shall have extensive experience with respect to patent and intellectual property matters with respect to medical device, and must not be a current or former employee, contractor, agent or consultant of, or counsel to either Party or its Affiliates. If such independent IP counsel provides a legal opinion to the Parties that the Third Party Patent Rights or Know-How is necessary for the Exploitation of the [*] Product, then ELUMINEX shall be entitled to make the deduction as provided in this Section 3.5.3.

3.5.4 Maximum Reduction. Notwithstanding Sections 3.5.1, 3.5.2 and 3.5.3, in no event shall any royalty deduction or royalty rate reduction, individually or in combination, decrease the aggregate royalties paid to FIBROGEN with respect to the Net Sales of any Product in any country or region in any Calendar Quarter [*] that would have been payable in such Calendar Quarter under Section 3.4.

Section 3.6 Payments.

3.6.1 Method of Payment. Unless otherwise agreed by the Parties, for all payments due from ELUMINEX to FIBROGEN and all payment terms in this Article 3 under this Agreement, ELUMINEX shall mean ELUMINEX BIOSCIENCES (SUZHOU) LIMITED. All payments due from ELUMINEX to FIBROGEN under this Agreement shall be paid in [*] by wire transfer or electronic funds transfer of immediately available funds to the following account:

[*]

provided, however, in the event of payment for [*] by wire transfer or electronic funds transfer of immediately available funds to the following account:

[*]

[*].

3.6.2 Currency Conversion. In the case of sales outside the United States, royalty payments by ELUMINEX under Section 3.4 shall be expressed in the applicable royalty reports under Section 3.4.3 in [*], except as directed by FIBROGEN in a different currency by reasonable advance written notice, and shall be calculated on a quarterly basis in the currency of the country of the sales and converted to [*]. All currency conversion will use the rate of exchange for such currency as reported in [*], (i) on the last day of the applicable reporting period (or, if unavailable on such date, the first date thereafter on which such rate is available), [*]. ELUMINEX shall cause any Sublicensees to comply with the terms of this Section 3.6.2.

3.6.3 Late Payments. In the event that any payment due hereunder that is not being disputed in good faith is not paid when due, such payment shall accrue interest beginning on the day following the due date thereof, calculated at the annual rate of the sum of [*] that in no event shall said annual interest rate exceed the maximum rate permitted by applicable Law.

Section 3.7 Records and Audits. ELUMINEX shall keep complete and accurate records of the underlying revenue and expense data relating to the calculations of Net Sales generated in the then current Calendar Year and payments required under this Agreement, and during the preceding [*]. FIBROGEN shall have the right, [*], to have a internationally recognized, independent, certified public accounting firm, selected by it and subject to ELUMINEX's prior written consent [*], review any such records of ELUMINEX, its Affiliates and Sublicensees (the "**Audited Party**") in the location(s) where such records are maintained by the Audited Party upon reasonable written notice (which shall be [*] prior written notice) and during regular business hours and under obligations of strict confidence, for the sole purpose of verifying the basis and accuracy of payments made under this Article 3 within the [*] preceding the date of the request for review. No Calendar Year shall be subject to audit under this Section 3.7 [*]. ELUMINEX shall receive a copy of the portions of each such report necessary to verify the accuracy of any purported discrepancy. Should such inspection lead to the discovery of a discrepancy to FIBROGEN's detriment, ELUMINEX shall, within [*] after receipt of such report from the accounting firm, pay any undisputed amount of the discrepancy together with interest at the rate set forth in Section 3.6.3. [*]. Should the audit lead to the discovery of a discrepancy to the Audited Party's detriment, [*], and if there are no such payments payable, [*].

Section 3.8 Taxes.

3.8.1 Cooperation. The Parties agree to, to the extent permitted by applicable Law, cooperate with one another and [*] avoid or reduce Tax withholding or similar obligations in respect of royalties, milestone payments, and other payments made by ELUMINEX to FIBROGEN under this Agreement. FIBROGEN shall provide ELUMINEX with any tax forms that may be reasonably necessary in order for ELUMINEX to not withhold Taxes or to withhold Taxes at a reduced rate under an applicable bilateral income tax treaty, and FIBROGEN shall use reasonable efforts to provide any such tax forms to ELUMINEX in advance of the due date. FIBROGEN shall [*] recover, as permitted by applicable Law, withholding taxes resulting from payments made to it under this Agreement. Each Party shall provide the other Party with reasonable assistance to enable the recovery, as permitted by applicable Law, of withholding taxes resulting from payments made under this Agreement, such recovery to be for the benefit of the Party bearing such withholding tax.

3.8.2 VAT. All payments due to FIBROGEN from ELUMINEX pursuant to this Agreement shall be paid without any deduction for VAT that ELUMINEX may be required by applicable Law in the Territory to withhold or pay to any tax authorities in the Territory. If any VAT is required by applicable Law to be paid to any Governmental Authority from any payment from ELUMINEX to FIBROGEN under this Agreement, ELUMINEX shall [*].

3.8.3 Withholding Tax. If any deductions or tax withholdings for income tax are required by applicable Law to be paid to any Governmental Authority in the Territory from any payment from ELUMINEX to FIBROGEN under this Agreement, ELUMINEX shall [*].

ARTICLE 4
PATENT PROSECUTION, MAINTENANCE AND INFRINGEMENT

Section 4.1 Ownership of Inventions.

4.1.1 ELUMINEX IP. As between the Parties, all rights, title and interest in and to any intellectual property (including its improvements), including but not limited to inventions, know-how, data, results, procedures, process, formula, etc., and any other tangible objects to be created or developed in connection with the Product solely by, for or on behalf of ELUMINEX (whether alone or through or together with its Affiliates or a Third Party) ("**ELUMINEX IP**") shall be solely owned by ELUMINEX. For the avoidance of doubt, ELUMINEX IP may include any improvements, enhancements or other modifications of FIBROGEN Know-How created or developed in connection with the Product solely by, for or on behalf of ELUMINEX (whether alone or through or together with its Affiliates or a Third Party).

4.1.2 Know-How Product IP. Subject to the License, all rights, title and interest in and to any Know-How Product IP (including any Know-How Product IP that is applied for or registered) shall be solely owned by FIBROGEN. Any Know-How Product Patents should be included as FIBROGEN Patents.

4.1.3 Joint IP. Subject to the License, all rights, title and interest in and to any Patent Rights claiming inventions that constitute any combination of (a) ELUMINEX IP and (b) FIBROGEN Know-How (such inventions, "**Joint IP**" and such Patent Rights, "**Joint Patents**"), shall be jointly owned by ELUMINEX and FIBROGEN. Joint Patents should be included as FIBROGEN Patents. Each Party agrees to assign and hereby assigns to the other Party a joint and undivided interest in and to all Joint IP and Joint Patents.

4.1.4 Assistance. Each Party shall take all actions and provide the other Party with all reasonably requested assistance to effect the ownership rights set forth in this Section 4.1 and shall execute (or cause to be executed) any and all documents necessary to perfect such ownership as between the Parties. Promptly following ELUMINEX's or any of its Affiliates' receipt of any invention disclosure disclosing an invention that constitutes Joint IP, ELUMINEX shall disclose, or shall cause its applicable Affiliate to disclose, the invention to FIBROGEN in writing.

Section 4.2 Prosecution and Maintenance.

4.2.1 FIBROGEN Patents. For purposes of this Section 4.2.1, "FIBROGEN Patents" do not include Know-How Product Patents or Joint Patents. ELUMINEX shall have [*] to Prosecute all FIBROGEN Patents in the Territory, [*]. ELUMINEX shall [*] Prosecute all FIBROGEN Patents, *provided*, *however*, that neither Party represents nor warrants that any patent shall issue or be granted based on patent applications contained in the FIBROGEN Patents. FIBROGEN shall reasonably cooperate with ELUMINEX's requests for data, affidavits, and other information and assistance to support the Prosecution of the FIBROGEN Patents; [*]. ELUMINEX shall keep FIBROGEN [*] informed, in person or by telephone or email, regarding the status of such prosecution and maintenance activities, and ELUMINEX shall promptly, following receipt, forward to FIBROGEN copies of any material office actions, communications, and correspondence relating to the FIBROGEN Patents. FIBROGEN shall have the right to comment on and to discuss prosecution and maintenance activities with ELUMINEX, and ELUMINEX shall consider the same in good faith and shall provide FIBROGEN with copies of all proposed filings and correspondence [*] to give FIBROGEN the opportunity to review and comment.

4.2.2 Joint Patents. ELUMINEX shall have the [*] to Prosecute all Joint Patents in the Territory, [*]. ELUMINEX shall [*] Prosecute all Joint Patents it elects to Prosecute, provided, however, that neither Party represents nor warrants that any patent will issue or be granted based on patent applications contained in the Joint Patents. FIBROGEN shall reasonably cooperate with ELUMINEX's requests for data, affidavits, and other information and assistance to support the Prosecution of the Joint IP; [*]. ELUMINEX shall keep FIBROGEN [*] informed, in person or by telephone or email, regarding the status of such prosecution and maintenance activities, and ELUMINEX shall promptly, following receipt, forward to FIBROGEN copies of any material office actions, communications, and correspondence relating to the Joint Patents. FIBROGEN shall have the right to comment on and to discuss prosecution and maintenance activities with ELUMINEX, and ELUMINEX shall consider the same in good faith and shall provide FIBROGEN with copies of all proposed filings and correspondence [*] to give FIBROGEN the opportunity to review and comment.

4.2.3 Know-How Product IP. ELUMINEX shall have the [*] to Prosecute all Know-How Product IP in the Territory, [*]. [*]. ELUMINEX shall [*] Prosecute all Know-How Product IP it elects to Prosecute, provided, however, that neither Party represents nor warrants that any patent or other intellectual property registration will issue or be granted based on patent or other registrable intellectual property applications contained in the Know-How Product IP. FIBROGEN shall discuss the filing strategy for Know-How Product IP with ELUMINEX in good faith, and shall reasonably cooperate with ELUMINEX's requests for data, affidavits, and other information and assistance to support the Prosecution of the Know-How Product IP; [*]. ELUMINEX shall keep FIBROGEN [*] informed, in person or by telephone or email, regarding the status of such prosecution and maintenance activities, and ELUMINEX shall promptly, following receipt, forward to FIBROGEN copies of any material office actions, communications, and correspondence relating to the Know-How Product IP. FIBROGEN shall have the right to comment on and to discuss prosecution and maintenance activities with ELUMINEX, and ELUMINEX shall consider the same in good faith and shall provide FIBROGEN with copies of all proposed filings and correspondence [*] to give FIBROGEN the opportunity to review and comment.

4.2.4 ELUMINEX IP. As between the Parties, ELUMINEX shall have the sole right but not the obligation to Prosecute all Patent Rights directed to ELUMINEX IP in the Territory, [*] using counsel of its own choice. ELUMINEX does not represent or warrant that any patent will issue or be granted based on patent applications directed to any ELUMINEX IP.

Section 4.3FIBROGEN Step-In Right. Notwithstanding the foregoing, if ELUMINEX declines to Prosecute any FIBROGEN Patents set forth in Exhibit B, any Know-How Product Patents, or any Joint Patents, elects to allow any such Patent Rights to lapse in any country, or elects to abandon any such Patent Rights which a Product is Covered by before all appeals within the respective patent office have been exhausted (each, an "**Abandoned Patent Right**"), then:

4.3.1 [*]

4.3.2 [*]

4.3.3 [*]

4.3.4 [*]

4.3.5 [*]

Section 4.4Enforcement.

4.4.1 ELUMINEX Enforcement. Each Party shall notify the other promptly in writing when any infringement of a FIBROGEN Patent by a Third Party is uncovered or reasonably suspected. ELUMINEX shall have the [*], to enforce any FIBROGEN Patents against any infringement or alleged infringement thereof in the Territory, and shall at all times keep FIBROGEN [*] informed as to the status thereof. ELUMINEX may, [*], institute suit against any such infringer or alleged infringer and control and defend and settle such suit in a manner consistent with the terms and provisions hereof and recover any damages, awards or settlements resulting therefrom, [*]. FIBROGEN shall [*] cooperate in any such action [*]. ELUMINEX shall not [*].

4.4.2 FIBROGEN Enforcement. If ELUMINEX elects not to enforce any patent within the FIBROGEN Patents in the Territory, then it shall so notify FIBROGEN in writing [*], and FIBROGEN may, in its sole judgment, [*], take steps to enforce any such Patent Right by initiating suit against the infringer or alleged infringer and control, settle, and defend such suit in a manner consistent with the terms and provisions hereof, and recover any damages, awards or settlements resulting therefrom, [*]. ELUMINEX shall [*] cooperate in any such action [*]. FIBROGEN shall not [*].

4.4.3 Cooperation with Respect to Enforcement. Irrespective of which Party controls an action pursuant to this Section 4.4 (the "**Enforcing Party**"), the Parties shall collaborate in the choice of counsel with respect to such enforcement action and the Enforcing Party shall consider in good faith the comments of the other Party with respect to strategic decisions and their implementation with respect to such action. In furtherance of the foregoing, the Enforcing Party shall keep the other Party reasonably informed of the progress of any such enforcement action, and such other Party shall have the individual right to participate with counsel of its own choice [*].

4.4.4 Defense of Third Party Claims. If either (a) any Product Exploited by or on behalf of ELUMINEX becomes the subject of a Third Party's claim or assertion of infringement of a Patent Right relating to the Exploitation of such Product in the Field in the Territory, or (b) a declaratory judgment action is brought naming either Party as a defendant or alleging invalidity or unenforceability of any of the FIBROGEN Patents, the Party first having notice of the claim or assertion shall promptly notify the other Party, and the Parties shall promptly confer to consider the claim or assertion and the appropriate course of action. Subject to Article 9, unless the Parties otherwise agree in writing, each Party shall have the right to defend itself against a suit that names it as a defendant (the "**Defending Party**"). [*]. Neither Party shall [*]. Subject to Article 9, the other Party shall reasonably assist the Defending Party and cooperate in any such litigation at the Defending Party's request and the Defending Party shall [*].

Section 4.5 Recovery. Except as otherwise provided herein, [*], and any damages, settlements or other monetary awards recovered shall be shared as follows: [*]

(i) [*]

(i) [*]

Section 4.6 Patent Marking. ELUMINEX shall mark, and shall cause all other Selling Parties to mark, the Product(s) in accordance with applicable patent marking Laws, [*].

ARTICLE 5
TECHNOLOGY TRANSFER AND COLLABORATION

Section 5.1 Initial Technology Transfer. [*], FIBROGEN shall transfer to ELUMINEX the FIBROGEN Know-How (including all items listed in Exhibit A, which shall include the FIBROGEN Know-How related to the manufacture of [*]) (the "**Initial Technology Transfer**"). The FIBROGEN Know-How shall be transferred in a customary electronic format to the extent available, or otherwise in the original paper format, and FIBROGEN shall provide ELUMINEX with a reasonable level of technical assistance and consultation in connection with the Initial Technology Transfer, including access to appropriate personnel from FIBROGEN by teleconference.

Section 5.2 Existing Materials Transfer. FIBROGEN shall transfer to ELUMINEX [*] for use consistent with this Agreement [*] and the [*] Agreement, provided, further, that [*]. Except as expressly set forth herein, any existing materials provided, are provided on an "as is" basis. FIBROGEN shall [*] assign the [*] to ELUMINEX and provide reasonable assistance to ELUMINEX [*]. As of [*], any new charges by [*], and any such charges FIBROGEN is invoiced for after [*], provided that [*] have actually performed the services in accordance with such agreements [*].

Section 5.3 Existing Equipment Transfer. FIBROGEN agrees to assign and hereby assigns to ELUMINEX all rights, title and interest in and to the equipment designated to manufacture and quality control the Products as set forth in Exhibit C (the "**Equipment**"). During the Term, FIBROGEN shall maintain and hold the Equipment in trust for, on behalf of, and for the benefit of ELUMINEX, and retain possession of the Equipment for use consistent with this Agreement [*] or the [*] Agreement, until the Equipment is transferred to ELUMINEX or its designee pursuant to the remainder of this Section 5.3. At any time during the Term, promptly upon written notice by ELUMINEX, FIBROGEN shall use its reasonable efforts to deliver, or have delivered, the Equipment to ELUMINEX or its designee [*]. Upon acceptance of the Equipment, [*]. Subject to the foregoing provisions of this Section 5.3, the Equipment will be delivered on an "as is" basis.

Section 5.4 Manufacturing Technology Transfer. At any time during the Term, FIBROGEN shall, at the written request of ELUMINEX, transfer technology related to the manufacture of [*] and the [*] Product to ELUMINEX or its designated manufacturer (the "**Manufacture Technology Transfer**"). The Manufacture Technology Transfer shall be conducted in accordance with the [*]. With respect to the [*] Product, the Manufacture Technology Transfer shall be deemed to be completed by the earlier to occur of (a) ELUMINEX or its designated manufacturer [*], (b) ELUMINEX or its designated manufacturer [*], or (c) [*] (the "[*****] **Product Manufacture Technology Transfer Completion Date**"). With respect to [*], the Manufacture Technology Transfer shall be deemed to be completed on the earliest of (a) the date on which ELUMINEX or its designated manufacturer [*], (b) the date on which ELUMINEX or its designated manufacturer [*], or (c) [*]. FIBROGEN shall [*] assist ELUMINEX to complete the Manufacture Technology Transfer within [*] after receiving the written request from ELUMINEX.

Section 5.5 Transition Assistance. During the Term and with respect to the Initial Technology Transfer and the Manufacturing Technology Transfer, FIBROGEN shall (a) at the reasonable request of ELUMINEX, provide up to [*] assistance, including general engineering and technical advice relating to the methods and processes of Exploiting Products and any and all other collaborative and assistance activities, and (b) at the reasonable request of ELUMINEX, provide further assistance in [*] at FIBROGEN's applicable FTE Rate.

ARTICLE 6
DEVELOPMENT AND COMMERCIALIZATION

Section 6.1 Responsibility for Development and Commercialization.

6.1.1 Responsibility. Following the Effective Date and at all times during the Term (except as expressly stated otherwise herein), ELUMINEX shall be responsible, [*], for the research, development, seeking, obtaining and maintaining Regulatory Approvals, commercialization and other Exploitation of all Products in the Field in the Territory, including regulatory, manufacturing, distribution, marketing and sales activities.

6.1.2 Level of Efforts. ELUMINEX shall [*] develop and commercialize the Products, including, but not limited to, clinical development, regulatory affairs, manufacturing and commercialization of the Products in the Field in the Territory, [*], to [*].

6.1.3 Regulatory Assistance. During the Term, ELUMINEX shall be the owner and the holder on record of all Regulatory Filings in the Territory in ELUMINEX's or its Affiliate's name. FIBROGEN agrees to assign and hereby assigns to ELUMINEX all Regulatory Filings with respect to the Products which are owned or controlled by FIBROGEN as of the Effective Date in the Territory, and shall transfer all such Regulatory Filings to ELUMINEX [*]. Except as set forth in the preceding sentence or as provided by FIBROGEN pursuant to Section 5.5, ELUMINEX shall be solely responsible for preparing, obtaining and maintaining all Regulatory Filings for the Products in the Territory, and for conducting all communications with Regulatory Authorities in the Territory, [*]. ELUMINEX shall provide summaries of all material Regulatory Filings as part of the progress reports provided to FIBROGEN in accordance with Section 6.2.

Section 6.2Reports. On [*] basis from the Execution Date, ELUMINEX shall provide to FIBROGEN, [*], a report that includes a high-level summary of the status of ELUMINEX's and its Affiliates' and Sublicensees' development activities related to the Product(s) since the immediately preceding report, including [*] (the "**Development Reports**"). From and after the First Commercial Sale of a Product, ELUMINEX shall also provide annual reports (the "**Annual Reports**") to FIBROGEN within [*] following the end of each Calendar Year summarizing ELUMINEX's commercialization efforts during the prior Calendar Year with respect to such Product. Within [*] after FIBROGEN receives such Development Report or Annual Report from ELUMINEX, the Parties shall convene for meetings by teleconference, videoconference or some other electronic means (unless the Parties agree to meet in-person) to discuss such reports and the associated activities at such times and places as the Parties mutually agree. Each Party [*] associated with attending such meetings. Each Party may from time to time invite a reasonable number of participants, in addition to its representatives, to attend such meetings. Each individual invited by a Party and attending any such meeting hereunder shall be bound by written non-use, non-disclosure terms and conditions at least as restrictive as those set forth in this Agreement with respect to the Confidential Information of the other Party.

Section 6.3Joint Collaboration Committee. The Parties may, by mutual agreement at any time, establish a joint collaboration committee (the "**JCC**") to provide a forum for the Parties to exchange information with respect to the exercise of their rights and performance of their obligations in accordance with this Agreement. The responsibilities of the JCC shall be decided by the Parties if and when such JCC is formed, and may include:

(a) providing a forum for sharing information with respect to development and commercialization efforts,

(b) sharing pertinent information with respect to the Products, such as safety data, Regulatory Filings and Clinical Trial results,

(c) coordinating development and commercialization efforts where and as appropriate and providing subject matter expertise, and

(d) providing an initial forum for the discussion of any dispute between the Parties.

The JCC, if established, shall be comprised of [*] from each Party and shall meet when, where and as determined by the Parties. The JCC shall not have any decision-making authority but shall serve solely to facilitate the exchange of information by the Parties. The JCC may be disbanded at any time after its formation upon the request of either Party. The JCC shall have no authority or ability to amend, modify, or waive compliance by either Party with this Agreement.

ARTICLE 7
MANUFACTURE AND SUPPLY

Section 7.1Supply by FIBROGEN. [*], FIBROGEN shall be responsible for supplying ELUMINEX's requirement for the [*] Product [*] in the [*] Agreement) in accordance with the [*] Agreement. Notwithstanding the foregoing, FIBROGEN's obligations to supply [*] Product to ELUMINEX shall terminate in all circumstances [*].

ARTICLE 8
REPRESENTATIONS

Section 8.1Mutual Warranties. Each of FIBROGEN and ELUMINEX represent and warrant as of the Effective Date that:

(a) it is duly organized and validly existing under the Law of the jurisdiction of its incorporation, and has full corporate power and authority to enter into this Agreement and to carry out the provisions hereof, including the right to grant the licenses granted by it hereunder;

(b) it is duly authorized to execute and deliver this Agreement and to perform its obligations hereunder, and the individual executing this Agreement on its behalf has been duly authorized to do so by all requisite corporate action;

(c) this Agreement is legally binding upon it and enforceable in accordance with its terms. The execution, delivery and performance of this Agreement by it does not conflict with any agreement, instrument or understanding, oral or written, to which it is a party or by which it may be bound, nor violate any material applicable Law;

(d) it has not been debarred, excluded or the subject of debarment or exclusion proceedings by any Governmental Authority and

(e) it has established and maintains reasonable internal policies and controls, including codes of conduct and ethics and reasonable reporting requirements, intended to ensure compliance with Anti-Corruption Laws and other applicable Laws, to the extent applicable to it under the laws of the jurisdiction of its incorporation, including healthcare compliance, privacy laws and data protection laws.

Section 8.2 Mutual Covenants. Each Party shall comply in all material respects with all applicable Laws (including applicable Law relating to data protection and privacy) and Proper Conduct Practices in connection with the performance of its rights, duties and obligations under this Agreement.

Section 8.3 Additional FIBROGEN Representations and Warranties. FIBROGEN represents and warrants that, as of the Effective Date:

(a) FIBROGEN Controls the Licensed Technology, has sufficient rights, title, and interests thereunder to grant the License. Without limiting the generality of the foregoing, FIBROGEN exclusively owns all Licensed Technology. FIBROGEN has not granted to a Third Party, and FIBROGEN is not under any obligation to grant a Third Party, any rights under the Licensed Technology in the Territory or otherwise assign or license to any Third Party any rights to Patents Rights or Know-How that would otherwise constitute the Licensed Technology;

(b) The FIBROGEN Patents listed on Exhibit B constitute all of the Patent Rights Controlled by FIBROGEN as of the Effective Date that are necessary or reasonably useful for the Exploitation of the Product(s) in the Field in the Territory, and to FIBROGEN's knowledge, the Know-How set forth in Exhibit A constitutes all of the Know-How Controlled by FIBROGEN as of the Effective Date necessary or reasonably useful for the Exploitation of the Product(s) in the Field in the Territory;

(c) The inventors named in each FIBROGEN Patent have each assigned to FIBROGEN their respective entire right, title and interest in and to such FIBROGEN Patent. The Patent Rights listed on Exhibit B are not subject to any liens or encumbrances. None of the FIBROGEN Patents are in-licensed by FIBROGEN. No patent application or registration within the FIBROGEN Patents is the subject of any pending interference, opposition, cancellation or patent protest pursuant to 37 C.F.R. §1.291 (or any non-U.S. equivalent) unless otherwise noted on Exhibit B. To FIBROGEN's knowledge, the FIBROGEN Patents are, or, upon issuance, will be, valid and enforceable;

(d) To FIBROGEN's knowledge, except in relation to the patent listed on Exhibit E, the Exploitation of the Licensed Technology as contemplated under this Agreement, (i) does not and will not infringe any issued patent of any Third Party or misappropriate any Know-How or other intellectual property of any Third Party and (ii) will not infringe the claims of any Third Party patent application when and if such claims were to issue in their current form. FIBROGEN has no knowledge of any claim or litigation that has been brought or threatened in writing by any Third Party alleging that the FIBROGEN Patents are invalid or unenforceable or that the Exploitation of the Products in the Field infringes or misappropriates or would infringe or misappropriate any right of any Third Party;

(e) FIBROGEN has complied with all Laws applicable to the prosecution and maintenance of the FIBROGEN Patents and FIBROGEN and its subcontractors have complied with all Laws applicable to the research, development and manufacture of the Products;

(f) All information with respect to this Agreement provided by or on behalf of FIBROGEN to ELUMINEX, its Affiliates, or its or their respective agents or representatives prior to the Effective Date was and is true, accurate and complete in all material respects;

(g) No funding, facilities, or personnel of any Governmental Authority or any public or private educational or research institutions were used to develop or create any Licensed Technology and neither FIBROGEN nor any of its Affiliates has entered into a government funding relationship that would result in rights to any Products residing in the U.S. Government, the National Institutes of Health, or other government agency, and the licenses granted hereunder are not subject to overriding obligations to the U.S. Government as set forth in 35 U.S.C. §§ 200 et seq., or any similar obligations under the Laws of any other country in the Territory.

Section 8.4 Disclaimer. EXCEPT AS OTHERWISE EXPRESSLY SET FORTH IN THIS ARTICLE 8, NEITHER PARTY MAKES ANY REPRESENTATIONS OR EXTENDS ANY WARRANTIES OF ANY KIND UNDER THIS AGREEMENT, EITHER EXPRESS OR IMPLIED, INCLUDING WARRANTIES OF MERCHANTABILITY, QUALITY, FITNESS FOR A PARTICULAR PURPOSE, NONINFRINGEMENT, OR VALIDITY OF PATENT CLAIMS. NOTHING IN THIS AGREEMENT SHALL BE CONSTRUED AS A REPRESENTATION MADE OR WARRANTY GIVEN BY EITHER PARTY THAT EITHER PARTY WILL BE SUCCESSFUL IN OBTAINING ANY PATENT RIGHTS, OR THAT ANY PATENTS WILL ISSUE BASED ON A PENDING APPLICATION. WITHOUT LIMITING THE RESPECTIVE RIGHTS AND OBLIGATIONS OF THE PARTIES EXPRESSLY SET FORTH HEREIN, EACH PARTY SPECIFICALLY DISCLAIMS ANY GUARANTEE THAT ANY PRODUCTS WILL BE SUCCESSFUL, IN WHOLE OR IN PART. EXCEPT AS EXPRESSLY PROVIDED HEREIN, FIBROGEN DISCLAIMS ANY WARRANTY WITH RESPECT TO THE LICENSED TECHNOLOGY, THE INVENTION(S) CLAIMED IN THE FIBROGEN PATENTS OR WITH RESPECT TO THE FIBROGEN PATENTS THEMSELVES, INCLUDING BUT NOT LIMITED TO, ANY REPRESENTATIONS OR WARRANTIES ABOUT (I) THE VALIDITY, SCOPE OR ENFORCEABILITY OF ANY OF THE FIBROGEN PATENTS; (II) THE ACCURACY, SAFETY OR USEFULNESS FOR ANY PURPOSE OF ANY INFORMATION PROVIDED BY FIBROGEN TO ELUMINEX WITH RESPECT TO THE INVENTION(S) CLAIMED IN THE FIBROGEN PATENTS OR WITH RESPECT TO THE FIBROGEN PATENTS THEMSELVES AND ANY PRODUCTS DEVELOPED FROM OR COVERED BY THEM; (III) WHETHER THE PRACTICE OF ANY CLAIM CONTAINED IN ANY OF THE FIBROGEN PATENTS WILL OR MIGHT INFRINGE A PATENT OR OTHER INTELLECTUAL PROPERTY RIGHT OWNED OR LICENSED BY A THIRD PARTY; (IV) THE PATENTABILITY OF ANY INVENTION CLAIMED IN THE FIBROGEN PATENTS; OR (V) THE SAFETY OR USEFULNESS FOR ANY PURPOSE OF THE LICENSED TECHNOLOGY OR ANY PRODUCT OR PROCESS MADE OR CARRIED OUT IN ACCORDANCE WITH OR THROUGH THE USE OF THE FIBROGEN PATENTS.

ARTICLE 9
INDEMNIFICATION

Section 9.1 Indemnity.

9.1.1 By ELUMINEX. ELUMINEX agrees to defend FIBROGEN and its directors, officers, employees and agents (the "**FIBROGEN Indemnified Parties**") [*], and shall indemnify and hold FIBROGEN and the other FIBROGEN Indemnified Parties harmless from and against any claims, losses, costs, damages, fees or expenses (including legal fees and expenses) (collectively, "**Losses**") to the extent resulting from any Third Party claim (including product liability claims) arising out of or otherwise relating to [*], except to the extent such Losses arise out of any claim for which FIBROGEN has an obligation to indemnify ELUMINEX under Section 9.1.2.

9.1.2 By FIBROGEN. FIBROGEN agrees to defend ELUMINEX and its Affiliates and its and their respective directors, officers, employees and agents (the "**ELUMINEX Indemnified Parties**") [*], and shall indemnify and hold ELUMINEX and the other ELUMINEX Indemnified Parties harmless from and against any Losses, to the extent resulting from any Third Party claim (including product liability claims) arising out of or otherwise relating to [*], except to the extent such Losses arise out of any claim for which ELUMINEX has an obligation to indemnify FIBROGEN under Section 9.1.1.

9.1.3 Indemnification Procedures. In the event of any claim against the FIBROGEN Indemnified Parties or the ELUMINEX Indemnified Parties (as applicable) by a Third Party, the indemnity obligations set forth in Sections 9.1.1 and 9.1.2 shall be conditioned upon (x) the indemnified Party promptly notifying the indemnifying Party in writing of the claim [*] and (y) the indemnified Party granting the indemnifying Party sole management and control, [*], over the defense of the claim and its settlement [*], and (z) the FIBROGEN Indemnified Parties or ELUMINEX Indemnified Parties, as applicable, cooperating with indemnifying Party [*]. If, based on the reasonable advice of counsel to the FIBROGEN Indemnified Parties or ELUMINEX Indemnified Parties (as applicable), the FIBROGEN Indemnified Parties or ELUMINEX Indemnified Parties have separate defenses from indemnifying Party or there is a conflict of interest between the FIBROGEN Indemnified Parties or ELUMINEX Indemnified Parties (as applicable) and indemnifying Party, then the FIBROGEN Indemnified Parties or ELUMINEX Indemnified Parties, as applicable, shall be permitted, [*], to retain counsel of its choosing to represent them in such action or proceeding.

Section 9.2 LIMITATION OF DAMAGES. IN NO EVENT SHALL EITHER PARTY BE LIABLE HEREUNDER TO THE OTHER PARTY FOR ANY PUNITIVE, INDIRECT, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES (INCLUDING LOST REVENUE, LOST PROFITS, OR LOST SAVINGS) HOWEVER CAUSED AND UNDER ANY THEORY, EVEN IF IT HAS NOTICE OF THE POSSIBILITY OF SUCH DAMAGES. THE LIMITATIONS SET FORTH IN THIS SECTION 9.2 SHALL NOT APPLY WITH RESPECT TO (A) ANY BREACH OF ARTICLE 10, (B) THE INTENTIONAL MISCONDUCT, FRAUD OR GROSS NEGLIGENCE OF A PARTY, OR (C) THE INDEMNIFICATION OBLIGATIONS OF THE PARTIES UNDER THIS ARTICLE 9.

Section 9.3 Insurance. At least [*] prior to the Initiation of any Clinical Trial by or on behalf of ELUMINEX or its Affiliates, ELUMINEX shall [*] procure and maintain, during the Term and [*] thereafter, [*] insurance coverage [*]. Additionally, at least [*] prior to the First Commercial Sale of a Product, ELUMINEX shall [*] procure and maintain [*] product liability insurance coverage [*]. Such insurance shall not be construed to create a limit of ELUMINEX's liability with respect to its indemnification obligations under this Article 9. ELUMINEX shall provide FIBROGEN with a certificate of insurance or other evidence of such insurance, upon request. ELUMINEX shall provide FIBROGEN with written notice at least [*] prior to the cancellation, non-renewal or a material change in such insurance which materially adversely affects the rights of FIBROGEN hereunder.

ARTICLE 10
CONFIDENTIALITY

Section 10.1 Confidential Information.

10.1.1 Confidential Information. Each Party (the "**Disclosing Party**") may disclose to the other Party (the "**Receiving Party**"), and Receiving Party may acquire during the course and conduct of activities under this Agreement, certain proprietary or confidential information of Disclosing Party in connection with this Agreement. The term "**Confidential Information**" shall mean [*].

[*] = Certain confidential information contained in this document, marked by brackets, has been omitted because it is both (i) not material and (ii) would likely cause competitive harm to the company if publicly disclosed.

10.1.2 Restrictions. During the Term and for [*] thereafter, the Receiving Party shall keep all of the Disclosing Party's Confidential Information in confidence with the same degree of care with which the Receiving Party holds its own confidential information (but in no event less than a commercially reasonable degree of care). The Receiving Party shall not use the Disclosing Party's Confidential Information except in connection with the performance of its obligations and exercise of its rights under this Agreement. Notwithstanding the foregoing, the Receiving Party has the right to disclose the Disclosing Party's Confidential Information without the Disclosing Party's prior written consent, solely to the extent reasonably necessary, to the Receiving Party's Affiliates and its and their respective employees, subcontractors, consultants or agents who have a need to know such Confidential Information in order to perform its obligations and exercise its rights under this Agreement and who are bound by written obligations of non-disclosure and non-use at least as stringent as those set forth in this Article 10. The Receiving Party shall use diligent efforts to cause those entities and persons to comply with such restrictions on use and disclosure. The Receiving Party assumes responsibility for those entities and persons maintaining the Disclosing Party's Confidential Information in confidence and using same only for the purposes described herein.

10.1.3 Exceptions. The Receiving Party's obligation of nondisclosure and the limitations upon the right to use the Disclosing Party's Confidential Information shall not apply to the extent that the Receiving Party can demonstrate that the Disclosing Party's Confidential Information: (a) was known to the Receiving Party or any of its Affiliates prior to the time of disclosure; (b) is or becomes public knowledge through no fault or omission of the Receiving Party or any of its Affiliates or Persons to whom the Receiving Party has provided the information in accordance with Section 10.1.2; (c) is obtained by the Receiving Party or any of its Affiliates from a Third Party under no obligation of confidentiality to the Disclosing Party; or (d) has been independently developed by employees, subcontractors, consultants or agents of the Receiving Party or any of its Affiliates without the use of the Disclosing Party's Confidential Information, as evidenced by contemporaneous written records.

10.1.4 Permitted Disclosures. The Receiving Party may disclose the Disclosing Party's Confidential Information to the extent (and only to the extent) such disclosure is reasonably necessary in the following instances:

(a) in order to comply with applicable Laws (including any securities law or regulation or the rules of a securities exchange) or with a legal or administrative proceeding;

(b) in connection with prosecuting or defending litigation, Regulatory Approvals and other Regulatory Filings and communications, and filing, prosecuting and enforcing Patent Rights in connection with the Receiving Party's rights and obligations pursuant to this Agreement; and

(c) in connection with exercising its rights hereunder, to its Affiliates; potential and future collaborators (including Sublicensees where ELUMINEX is the Receiving Party); potential and permitted acquirers or assignees; potential investment bankers, investors and lenders; and the professional advisors of the foregoing;

provided, *however*, [*].

Section 10.2 Terms of this Agreement; Publicity.

10.2.1 Restrictions. The Parties agree that the terms of this Agreement shall be treated as Confidential Information of both Parties, and thus may be disclosed only as permitted by Section 10.1.4. Notwithstanding the foregoing, the Parties shall issue a joint press release in form and substance materially similar to Exhibit F at a time mutually agreed (the "**Joint Press Release**"). Except as required by Law or as mutually agreed upon by the Parties, each Party agrees not to issue any Release (other than the Joint Press Release) disclosing information relating to this Agreement or the transactions contemplated hereby or the terms hereof without the prior written consent of the other Party [*]. Either Party may subsequently publicly disclose any information previously contained in any Release, *provided* that the other Party initially provided its written consent thereto as stated in Section 10.2.1.

10.2.2 Review. Notwithstanding Section 10.2.1, in the event either Party (the "**Issuing Party**") desires to issue a press release or other public statement disclosing information relating to this Agreement or the transactions contemplated hereby or the terms hereof other than the Joint Press Release, the Issuing Party shall provide the other Party (the "**Reviewing Party**") with a copy of the proposed press release or public statement (the "**Release**"). The Issuing Party shall specify with each such Release, taking into account the urgency of the matter being disclosed, a reasonable period of time within which the Reviewing Party may provide any comments on such Release ([*]). If the Reviewing Party provides any comments, the Parties shall consult on such Release and work in good faith to prepare a mutually acceptable Release. For the avoidance of doubt (and notwithstanding anything contained in this Agreement to the contrary), ELUMINEX, in its sole discretion, may make disclosures relating to the development or commercialization of the Product(s) conducted by or on behalf of ELUMINEX, including the results of research and any Clinical Trial conducted by or on behalf of ELUMINEX or any health or safety matter related to the Product(s).

Section 10.3 Publications.

10.3.1 Right to Publish. Subject to the provisions of Sections 10.1, 10.2 and 10.3.2, ELUMINEX shall have the right to publish with respect to Products research results achieved by or on behalf of ELUMINEX in scientific publications, and to make scientific presentations for such research results on Products.

10.3.2 Review. Except as required by Law or court order, for any proposed publication or presentation regarding a Product, ELUMINEX: (a) shall transmit a copy of the proposed publication for review and comment to FIBROGEN at least [*] prior to the submission of such publication to a Third Party if such publication includes, incorporates or is related to any Licensed Technology or Know-How Product IP; and (b) upon request of FIBROGEN, shall [*].

Section 10.4 Attorney-Client Privilege. Neither Party is waiving, nor will be deemed to have waived or diminished, any of its attorney work product protections, attorney-client privileges or similar protections and privileges recognized under the applicable Laws of any jurisdiction as a result of disclosing information pursuant to this Agreement, or any of its Confidential Information (including Confidential Information related to pending or threatened litigation) to the Receiving Party, regardless of whether the Disclosing Party has asserted, or is or may be entitled to assert, such privileges and protections. The Parties may become joint defendants in proceedings to which the information covered by such protections and privileges relates and may determine that they share a common legal interest in disclosure between them that is subject to such privileges and protections, and in such event, may enter into a joint defense agreement setting forth, among other things, the foregoing principles but are not obligated to do so.

ARTICLE 11
TERM AND TERMINATION

Section 11.1 Term. This Agreement shall be effective, unless earlier terminated pursuant to this Article 11, until it expires as follows (the "**Term**"): (a) on a Product-by-Product and country-by-country (or region-by-region) basis on the date of the expiration of the Royalty Term for such Product in such country or region, and (b) [*]. On a Product-by-Product and country-by-country (or region-by-region) basis, upon the expiration (but not earlier termination) of this Agreement, the License shall become exclusive, transferable, sublicensable (through multiple tiers of Sublicensees), fully paid-up, royalty-free, irrevocable and perpetual.

Section 11.2 Termination.

11.2.1 Breach.

(a) Each Party shall have the right to terminate this Agreement in full in the event that the other Party materially breaches a material term of this Agreement, and such breach is not cured by the date that is [*] after written notice thereof is provided to the breaching Party by the non-breaching Party, such notice describing the alleged material breach in sufficient detail to put the breaching Party on notice. The foregoing [*] cure period shall be

shortened to [*] for breaches that consist of a failure to pay undisputed amounts as and when due hereunder; *provided* that, if the applicable breach is not reasonably capable of cure within such [*] period, but is capable of cure within [*] from such notice, the breaching Party may submit, within [*] of such notice, a reasonable cure plan to remedy such breach as soon as possible and in any event prior to the end of such [*] period, and, upon such submission, the [*] cure period shall be automatically extended for so long as the breaching Party continues to use diligent efforts to cure such breach in accordance with the cure plan (but in no event, for longer than [*]. Any termination of this Agreement under this Section 11.2.1 shall become effective at the end of the applicable cure period, unless the breaching Party has cured such breach prior to the expiration of such cure period.

(b) If a Party disputes in good faith the existence or materiality of a breach specified in a notice provided by the other Party pursuant to Section 11.2.1(a), and the breaching Party provides notice to the other Party of such dispute within the applicable cure period, the breaching Party may require the CEO Delegates to meet and confer in good faith to resolve such breach condition. The CEO Delegates of the Parties shall, as soon as reasonably practicable, after a notice of such dispute, meet and confer in good faith regarding such dispute at such time and place as mutually agreed upon by the Parties. If the CEO Delegates are unable to resolve such dispute within [*] from the date on which such delegates initially considered such issue, then either Party may elect to initiate formal dispute resolution proceedings in accordance with Section 12.5. It is understood and acknowledged that during the pendency of such a dispute, [*].

11.2.2 Termination Upon Bankruptcy. Subject to applicable Law and Section 12.2, either Party may terminate this Agreement if, at any time, the other Party shall (a) file in any court or agency pursuant to any statute or regulation of any state, country or jurisdiction, a petition in bankruptcy or insolvency or for reorganization or for an arrangement or for the appointment of a receiver or trustee of that Party or of its assets, (b) propose a written agreement of composition or extension of its debts, (c) be served with an involuntary petition against it, filed in any insolvency proceeding, and such petition has not been dismissed within [*] after the filing thereof, (d) propose or be a party to any dissolution or liquidation, (e) make an assignment for the benefit of its creditors or (f) admit in writing its inability generally to meet its obligations as they fall due in the general course.

Section 11.3 Effects of Termination. Upon termination of this Agreement by either Party under Section 11.2, the following effects of termination shall occur with respect to the entire Agreement, the costs and expenses in relation to the effects listed in Section 11.3(c) and Section 11.3(e) shall be borne [*]:

(a) all rights and licenses granted by the Parties in Article 2 shall terminate, and [*];

(b) at FIBROGEN's election, ELUMINEX shall [*] in accordance with the [*] Agreement;

(c) ELUMINEX shall, to the extent permitted by applicable Law, [*];

(d) upon the reasonable request by any Sublicensee of ELUMINEX under Section 2.2, FIBROGEN shall enter into a new license agreement pursuant to which FIBROGEN would grant a license directly to such Sublicensee, [*]; *provided* that, [*];

(e) Notwithstanding the foregoing, if a Clinical Trial of a Product has been Initiated by ELUMINEX, its Affiliates, or its or their Sublicensees at the time of termination, the terms of this Agreement shall continue to apply as necessary to accomplish a safe and orderly wind-down of the Clinical Trial.

Section 11.4 Material Breach by FIBROGEN. In the event ELUMINEX provides a written notice of FIBROGEN's alleged material breach of this Agreement pursuant to Section 11.2.1(a), FIBROGEN disputes in good faith the existence or materiality of the breach specified in such notice, and either Party elects to initiate formal dispute resolution proceedings in accordance with Section 12.5 with respect to such Dispute pursuant to Section 11.2.1(b), ELUMINEX may, notwithstanding the last sentence of Section 11.2.1(b), from and after the date on which the formal dispute resolution proceedings are initiated (the "**Arbitration Date**"), [*] until resolution of such Dispute through arbitration pursuant to Section 12.5. [*] shall each be decided by the arbitral tribunal in accordance with Section 12.5.

Section 11.5Survival.

In addition to the termination consequences set forth in Section 11.3, the following provisions shall survive termination or expiration of this Agreement: [*]. Termination or expiration of this Agreement are neither Party's exclusive remedy and shall not relieve the Parties of any liability or obligation which accrued hereunder prior to the effective date of such termination or expiration nor preclude either Party from pursuing all rights and remedies it may have hereunder or at law or in equity with respect to any breach of this Agreement nor prejudice either Party's right to obtain performance of any obligation. All other rights and obligations shall terminate upon expiration of this Agreement.

ARTICLE 12
MISCELLANEOUS

Section 12.1Entire Agreement; Amendment. This Agreement and all Exhibits attached to this Agreement constitute the entire agreement between the Parties as to the subject matter hereof. All prior and contemporaneous negotiations, representations, warranties, agreements, statements, promises and understandings with respect to the subject matter of this Agreement are hereby superseded and merged into, extinguished by and completely expressed by this Agreement. Neither of the Parties shall be bound by or charged with any written or oral agreements, representations, warranties, statements, promises or understandings not specifically set forth in this Agreement. No amendment, supplement or other modification to any provision of this Agreement shall be binding unless in writing and signed by both Parties specifically referencing this Agreement.

Section 12.2Section 365(n) of the Bankruptcy Code. All rights and licenses granted under or pursuant to any section of this Agreement are, and shall otherwise be deemed to be, for purposes of Section 365(n) of the U.S. Bankruptcy Code, licenses of rights to "intellectual property" as defined under Section 101(35A) of the U.S. Bankruptcy Code to the extent permitted thereunder. The Parties shall retain and may fully exercise all of their respective rights and elections under the U.S. Bankruptcy Code. Upon the bankruptcy of any Party, the non-bankrupt Party shall further be entitled to a complete duplicate of (or complete access to, as appropriate) any such intellectual property, and such, if not already in its possession, shall be promptly delivered to the non-bankrupt Party, unless the bankrupt Party elects to continue, and continues, to perform all of its obligations under this Agreement.

Section 12.3Independent Contractors. The relationship between ELUMINEX and FIBROGEN created by this Agreement is solely that of independent contractors. This Agreement does not create any agency, distributorship, employee-employer, partnership, joint venture or similar business relationship between the Parties, including for tax purposes. Neither Party is a legal representative of the other Party, and neither Party can assume or create any obligation, representation, warranty or guarantee, express or implied, on behalf of the other Party for any purpose whatsoever. Each Party shall use its own discretion and shall have complete and authoritative control over its employees and the details of performing its obligations under this Agreement.

Section 12.4Governing Law; Jurisdiction. This Agreement and its effect are subject to and shall be construed and enforced in accordance with the law of the State of New York, without regard to its conflicts of laws principles, except as to any issue which depends upon the validity, scope or enforceability of any FIBROGEN Patent, which issue shall be determined in accordance with the laws of the country in which such patent was issued or such patent application sought for patent protection.

[*] = Certain confidential information contained in this document, marked by brackets, has been omitted because it is both (i) not material and (ii) would likely cause competitive harm to the company if publicly disclosed.

Section 12.5Dispute Resolution. The Parties recognize that a dispute may arise relating to this Agreement (a "**Dispute**"). Any Dispute, including Disputes that may involve the Affiliates of any Party, shall be resolved in accordance with this Section 12.5.

12.5.1 Any claim, Dispute, or controversy as to the breach, enforcement, interpretation or validity of this Agreement shall first be referred to the CEO Delegates for attempted resolution. In the event the CEO Delegates are unable to resolve such Dispute within [*] of such Dispute being referred to them, then, upon the written request of either Party to the other Party, the Dispute shall be submitted by either Party for resolution in arbitration under the Rules of Arbitration of the International Chamber of Commerce. There shall be [*]. The seat of arbitration shall be in [*], and the language of the proceedings shall be [*].

12.5.2 The Parties agree that any award or decision made by the arbitral tribunal shall be final and binding upon them and may be enforced in the same manner as a judgment or order of a court of competent jurisdiction. The arbitral tribunal shall render its final award within [*] from the date on which the request for arbitration by one of the Parties wishing to have recourse to arbitration is received by the ICC Secretariat. The arbitral tribunal shall determine the dispute by applying the provisions of this Agreement and the governing law set forth in Section 12.4.

12.5.3 By agreeing to arbitration, the Parties do not intend to deprive any court located in [*] of its jurisdiction to issue, at the request of a Party, a pre-arbitral injunction, pre-arbitral attachment or other order to avoid irreparable harm, maintain the status quo, preserve the subject matter of the Dispute, or aid the arbitration proceedings and the enforcement of any award. Without prejudice to such provisional or interim remedies in aid of arbitration as may be available under the jurisdiction of a competent court located in [*], the arbitral tribunal shall have full authority to grant provisional or interim remedies and to award damages for the failure of any Party to the Dispute to respect the arbitral tribunal's order to that effect.

12.5.4 [*].

12.5.5 Each Party shall [*] arising out of the arbitration, and shall pay [*]; provided, however, [*].

12.5.6 Nothing in this Section 12.5 shall affect either Party's ability to pursue equitable relief pursuant to Section 12.15.

Section 12.6Notice. All notices or communication required or permitted to be given by either Party hereunder shall be deemed sufficiently given if (i) mailed by registered mail or certified mail, return receipt requested, (ii) sent by overnight courier, such as Federal Express, or (iii) sent by electronic mail, in each case to the other Party at its address set forth below or to such other address as one Party shall give notice of to the other Party from time to time pursuant to this Section 12.6. Mailed notices shall be deemed to be received on [*] following the date of mailing. Notices sent by overnight courier shall be deemed to be received [*] after sending. Electronic mail notices shall be deemed to be received upon [*].

If to ELUMINEX:
[*]

With a copy, which shall not constitute notice to:
[*]

If to FIBROGEN:
[*]

[*] = Certain confidential information contained in this document, marked by brackets, has been omitted because it is both (i) not material and (ii) would likely cause competitive harm to the company if publicly disclosed.

With a copy to:
[*]

With a copy, which shall not constitute notice to:
[*]

Section 12.7 Compliance with Law; Severability. Nothing in this Agreement shall be construed to require the commission of any act contrary to applicable Law. If any one or more provisions of this Agreement is held to be invalid, illegal or unenforceable, the affected provisions of this Agreement shall be curtailed and limited only to the extent necessary to bring it within the applicable legal requirements and the validity, legality and enforceability of the remaining provisions of this Agreement shall not in any way be affected or impaired thereby.

Section 12.8 Non-Use of Names. FIBROGEN shall not use the name, trademark, logo, or physical likeness of ELUMINEX or any of its officers, directors or employees, or any adaptation of any of them, in any advertising, promotional or sales literature, without ELUMINEX's prior written consent. FIBROGEN shall require its Affiliates to comply with the foregoing. ELUMINEX shall not use the name, trademark, logo, or physical likeness of FIBROGEN or any of its officers, directors or employees, or any adaptation of any of them, in any advertising, promotional or sales literature, without FIBROGEN's prior written consent. ELUMINEX shall require its Affiliates to comply with the foregoing.

Section 12.9 Successors and Assigns. Neither this Agreement nor any of the rights or obligations created herein may be assigned by either Party, in whole or in part, without the prior written consent of the other Party, [*] except that either Party shall be free to assign this Agreement, in whole or in part, (a) to an Affiliate of such Party (for so long as such Affiliate remains an Affiliate) *provided* that [*], or (b) in connection with any merger, consolidation or sale of such Party or sale of all or substantially all of the assets of the Party that relate to this Agreement, without the prior consent of the non-assigning Party; provided, however, any permitted assignment of its obligations or this Agreement in its entirety by FIBROGEN shall not become effective unless and until the Licensed Technology is also assigned in its entirety to the permitted assignee, which will expressly assume performance of FIBROGEN's obligations hereunder. This Agreement shall bind and inure to the benefit of the successors and permitted assigns of the Parties. Any assignment of this Agreement in contravention of this Section 12.9 shall be null and void.

Section 12.10 Performance by Affiliates. Notwithstanding Section 12.9, each Party may discharge any obligations and exercise any right hereunder through any of its Affiliates without assigning its rights or obligations or this Agreement to its Affiliates. Each Party will cause its Affiliates to comply with the provisions of this Agreement in connection with such performance. Any breach by a Party's Affiliate of any of such Party's obligations under this Agreement shall be deemed a breach by such Party, [*]. Without limiting the generality of the foregoing, this Agreement is executed by FIBROGEN, INC. for and on behalf of itself and all of its Affiliates, each of which is also a party to this Agreement. FIBROGEN, INC. shall cause its Affiliates to comply with the provisions of this Agreement in connection with such performance. Any breach by an Affiliate of any of FIBROGEN, INC.'s obligations under this Agreement shall be deemed a breach by FIBROGEN, INC., and ELUMINEX may proceed directly against FIBROGEN, INC. without any obligation to first proceed against FIBROGEN, INC.'s Affiliate.

Section 12.11 Waivers. A Party's consent to or waiver, express or implied, of any other Party's breach of its obligations hereunder shall not be deemed to be or construed as a consent to or waiver of any other breach of the same or any other obligations of such breaching Party. A Party's failure to complain of any act, or failure to act, by the other Party, to declare the other Party in default, to insist upon the strict performance of any obligation or condition of this Agreement or to exercise any right or remedy consequent upon a breach thereof, no matter how long such failure continues, shall not constitute a waiver by such Party of its rights hereunder, of any such breach, or of any other obligation or condition. A Party's consent in any one instance shall not limit or waive the necessity to obtain such Party's consent in any future instance and in any event no consent or waiver shall be effective for any purpose hereunder unless such consent or waiver is in writing and signed by the Party granting such consent or waiver.

Section 12.12 No Third Party Beneficiaries. Except as expressly provided with respect to FIBROGEN Indemnified Parties and ELUMINEX Indemnified Parties in Article 9, nothing in this Agreement shall be construed as giving any Person, other than the Parties and their respective Affiliates, successors and permitted assigns, any right, remedy or claim under or in respect of this Agreement or any provision hereof.

Section 12.13 Headings; Exhibits. Article and Section headings used herein are for convenient reference only, and are not a part of this Agreement. All Exhibits are incorporated herein by reference.

Section 12.14 Interpretation. Except where the context otherwise requires, wherever used, the singular shall include the plural, the plural the singular, the use of any gender shall be applicable to all genders and the word "or" is used in the inclusive sense (and/or). The term "including" (or cognates thereof) as used herein shall mean including (or the cognate thereof), without limiting the generality of any description preceding such term. The term "will" as used herein means "shall." All references to a "business day" or "business days" in this Agreement means any day other than a day which is a Saturday, a Sunday or any day banks are authorized or required to be closed in Suzhou or San Francisco. The language in all parts of this Agreement shall be deemed to be the language mutually chosen by the Parties. The Parties and their counsel have cooperated in the drafting and preparation of this Agreement, and this Agreement therefore shall not be construed against any Party by virtue of its role as the drafter thereof.

Section 12.15 Equitable Relief. Each Party acknowledges that a breach by it of the provisions of Article 10 may not reasonably or adequately be compensated in damages in an action at law and that such a breach may cause the other Party irreparable injury and damage. By reason thereof, each Party agrees that the other Party is entitled to seek, in addition to any other remedies it may have under this Agreement or otherwise, preliminary and permanent injunctive and other equitable relief to prevent or curtail any breach of Article 10 by the other Party; *provided*, *however*, that no specification in this Agreement of a specific legal or equitable remedy will be construed as a waiver or prohibition against the pursuing of other legal or equitable remedies in the event of such a breach.

Section 12.16 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 to the extent, and for so long as, such failure or delay is caused by or results from causes beyond the reasonable control of the affected Party, including fire, floods, embargoes, power shortage or failure, acts of war (whether war be declared or not), epidemic or pandemic (including Covid-19), insurrections, riots, terrorism, civil commotions, strikes, lockouts or other labor disturbances, acts of God, or any acts, omissions, or delays in acting by any Governmental Authority or the other Party; *provided*, *however*, that the affected Party promptly notifies the other Party in writing (and continues to provide monthly status updates to the other Party for the duration of the effect); and *provided further*, however, that the affected Party shall [*] avoid or remove such causes of non-performance and to mitigate the effect of such occurrence, and shall continue performance with reasonable dispatch whenever such causes are removed.

Section 12.17 Further Assurances. Each Party shall execute, acknowledge, and deliver such further instructions, and to do all such other acts, as may be necessary or appropriate in order to carry out the purposes and intent of this Agreement. Without limiting the generality of the foregoing, [*].

Section 12.18 Counterparts. This Agreement may be executed in counterparts by a single Party, each of which when taken together shall constitute one and the same agreement, and may be executed through the use of facsimiles or .pdf or other electronically transmitted documents.

[Signature page follows]

[*] = Certain confidential information contained in this document, marked by brackets, has been omitted because it is both (i) not material and (ii) would likely cause competitive harm to the company if publicly disclosed.

IN WITNESS WHEREOF, the Parties have executed this Agreement as of the Execution Date.

ELUMINEX BIOSCIENCES (SUZHOU) LIMITED

典晶生物医药科技（苏州）有限公司

By: /s/ Jinzhong Zhang

Name: Jinzhong Zhang Ph.D.

Title: Chief Executive Officer

FIBROGEN, INC.

By: /s/ Enrique Conterno

Name: Enrique Conterno

Title: Chief Executive Officer

FIBROGEN (CHINA) MEDICAL TECHNOLOGY DEVELOPMENT CO., LTD.

珐博进（中国）医药技术开发有限公司

Chop:

[*] = Certain confidential information contained in this document, marked by brackets, has been omitted because it is both (i) not material and (ii) would likely cause competitive harm to the company if publicly disclosed.

EXHIBIT A

FIBROGEN KNOW-HOW

[*]

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EXHIBIT B

EXISTING FIBROGEN PATENTS

[*]

[*] = Certain confidential information contained in this document, marked by brackets, has been omitted because it is both (i) not material and (ii) would likely cause competitive harm to the company if publicly disclosed.

EXHIBIT C

EQUIPMENT
[*]

[*] = Certain confidential information contained in this document, marked by brackets, has been omitted because it is both (i) not material and (ii) would likely cause competitive harm to the company if publicly disclosed.

EXHIBIT D

MANUFACTURE TECHNOLOGY TRANSFER PLAN & INVENTORY
[*]

[*] = Certain confidential information contained in this document, marked by brackets, has been omitted because it is both (i) not material and (ii) would likely cause competitive harm to the company if publicly disclosed.

EXHIBIT D

MANUFACTURE TECHNOLOGY TRANSFER PLAN & INVENTORY (CONTINUED)
[*]

[*] = Certain confidential information contained in this document, marked by brackets, has been omitted because it is both (i) not material and (ii) would likely cause competitive harm to the company if publicly disclosed.

EXHIBIT D

MANUFACTURE TECHNOLOGY TRANSFER PLAN & INVENTORY (CONTINUED)
[*]

[*] = Certain confidential information contained in this document, marked by brackets, has been omitted because it is both (i) not material and (ii) would likely cause competitive harm to the company if publicly disclosed.

EXHIBIT D

MANUFACTURE TECHNOLOGY TRANSFER PLAN & INVENTORY (CONTINUED)
[*]

[*] = Certain confidential information contained in this document, marked by brackets, has been omitted because it is both (i) not material and (ii) would likely cause competitive harm to the company if publicly disclosed.

EXHIBIT E

THIRD PARTY PATENT

[*]

[*] = Certain confidential information contained in this document, marked by brackets, has been omitted because it is both (i) not material and (ii) would likely cause competitive harm to the company if publicly disclosed.

EXHIBIT F

JOINT PRESS RELEASE

Eluminex Biosciences Exclusively Licenses FibroGen's Biosynthetic Cornea Technology and Recombinant Collagen III Platform

- *Exclusive Global Development and Commercialization Rights for Recombinant Human Collagen-Based Biosynthetic Cornea*
- *Clinical Stage Asset Has Potential for First Approved Biosynthetic Human Cornea*
- *Biosynthetic Cornea Designed to Address Significant Unmet Need in Global Demand for Corneal Grafts for the Treatment of Corneal Blindness*
- *Edward Holland, MD, Joins Eluminex's Scientific Advisory Board*

SUZHOU, China and SAN FRANCISCO, CA, July 19, 2021 / PRNewswire/-- Eluminex Biosciences (Suzhou) Limited (Eluminex), an ophthalmology-focused biotechnology company headquartered in Suzhou, China with a US-subsidiary office in San Francisco Bay Area, California, announced today that it has exclusively licensed global rights for the development and commercialization of an investigational biosynthetic cornea derived from recombinant human collagen Type III intended to treat patients with corneal blindness, from FibroGen, Inc. (FibroGen; NASDAQ: FGEN).

"We are extremely excited to bring this novel technology initially to the China market to help meet a large unmet medical need for an alternative to human donor cornea tissue," commented Dr. Jinzhong ("JZ") Zhang, Chairman and CEO of Eluminex. "Over 100,000 cases of corneal blindness occur each year in China due to scarring from traumatic injury or infection that could be treated with a surgically implanted bioengineered cornea. Typical treatments in China include human donor corneal transplantation or use of corneal tissue harvested from genetically modified pigs. There is a significant shortage of human donor tissue and porcine corneas have issues with a lack of optical clarity and durability, however, and both methods require the need for additional immunosuppressive medications to prevent graft rejection. The biosynthetic cornea, that is optically clear, offers an alternative using human Type III collagen, a key structural protein that is found in normal human corneas and therefore does not require immunosuppressive medications."

Under the terms of the agreement, Eluminex will make an $8 million upfront payment to FibroGen. In addition, FibroGen may receive up to a total of $64 million in future manufacturing, clinical, regulatory, and commercial milestone payments for the biosynthetic cornea program, as well as $36 million in commercial milestones for the first recombinant collagen III product that is not the biosynthetic cornea. FibroGen will also be eligible to receive royalties based upon worldwide net sales.

Eluminex also announced that Edward Holland, M.D., has joined the company's Scientific Advisory Board (SAB). Charles Semba, M.D. and Chief Medical Officer of Eluminex commented, "We are excited to introduce Dr. Edward Holland, Professor of Ophthalmology at the University of Cincinnati and Director of the Cornea Service at the Cincinnati Eye Institute and past Chairman of the Eye Bank Association of America, as the newest member of our SAB. He is an internationally recognized expert in corneal allograft surgery and ocular surface disease. Additionally, over the past three decades, he has taught and lectured in China regarding corneal transplant techniques and will provide us critical insights into our biosynthetic cornea program."

"The possibility for an abundant global supply of a biosynthetic human corneal tissue substitute has real potential to transform the lives of the hundreds of thousands of patients around the world in regions where corneal donations are scarce and who otherwise are unlikely to receive a sight-saving corneal transplant," said Dr. Holland.

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“We are pleased to enter into this agreement with Eluminex and license this technology to a seasoned ophthalmology team,” said Enrique Conterno, CEO of FibroGen. “This transaction enables FibroGen to focus on development of next generation biopharmaceutical therapies in our core areas of cancer, autoimmune and fibrotic diseases, and anemia.”

About the Eluminex Biosynthetic Cornea Program
The Eluminex biosynthetic cornea (EB-301) is a clinical stage corneal stromal substitute that will be initially developed for the China market. EB-301 is regulated as a Class III medical device and is anticipated to enter a clinical market authorization registration study in China in 2H 2022 to confirm its safety and effectiveness. The corneal device has been implanted in 10 patients in Europe with 4 years of follow-up and has demonstrated excellent biocompatibility, maintenance of optical clarity, and significantly improved visual acuity without immunosuppression. (Fagerholm et al, Biomaterials, 35 (2014): 2420-2427).

About Corneal Blindness in China
According to the World Health Organization, corneal diseases are one of the leading causes of blindness globally. Approximately 180,000 sight-restoring corneal transplantations are performed worldwide in which nearly a quarter are conducted in the United States. China is the largest most populous developing country in the world and corneal diseases are the second leading cause of blindness with an estimated 2-3 million patients with corneal blindness in at least one eye. However, due to the scarcity of donor corneas, only approximately 5000 to 9000 corneal transplants are conducted in China each year. Corneal porcine xenografts have been available in China since 2015 but technical issues remain with the lack of optical clarity and secondary immunologic complications (eg, graft dissolution and graft rejection). An unmet need exists for a suitable corneal stromal tissue replacement as an alternative to the shortage of donated human cornea and an alternative to porcine xenografts.

About Eluminex Biosciences
Eluminex Biosciences is a privately-held clinical-stage biotechnology company focused on both global and regional development and commercialization of innovative therapeutics to fulfill unmet medical needs in the treatment and management of ophthalmic diseases. Eluminex is devoted towards innovating the next generation of first-in-class or best-in-class ocular therapeutics for vision-threatening or lifestyle-limiting ocular diseases. In addition to the biosynthetic cornea (EB-301), Eluminex has developed a pipeline of next generation protein therapeutics for retinal diseases (EB-101, EB-102, EB-105, and EB-107) including age-related macular degeneration, macular edema, and diabetic retinopathy; these assets are wholly owned and developed by Eluminex. The Eluminex global headquarters and research and development center are located in Suzhou BioBay Industrial Park, China with a US-subsidiary located in the San Francisco Bay Area. Eluminex is supported by three premiere global life science venture funds: Lilly Asia Ventures, Hill House Capital, and Quan Capital. For more information, please visit www.eluminexbio.com.

About FibroGen
FibroGen, Inc. is a biopharmaceutical company committed to discovering, developing, and commercializing a pipeline of first-in-class therapeutics. The Company applies its pioneering expertise in hypoxia-inducible factor (HIF) and connective tissue growth factor (CTGF) biology to advance innovative medicines for the treatment of unmet needs. The Company is currently developing and commercializing roxadustat, an oral small molecule inhibitor of HIF prolyl hydroxylase activity, for anemia associated with chronic kidney disease (CKD). Roxadustat is also in clinical development for anemia associated with myelodysplastic syndromes (MDS) and for chemotherapy-induced anemia (CIA). Pamrevlumab, an anti-CTGF human monoclonal antibody, is in clinical development for the treatment of locally advanced unresectable pancreatic cancer (LAPC), Duchenne muscular dystrophy (DMD), and idiopathic pulmonary fibrosis (IPF). For more information, please visit www.fibrogen.com.

Forward-Looking Statements of FibroGen
This release contains forward-looking statements regarding our strategy, future plans and prospects, including statements regarding the company’s product candidates subject to the transaction described above, the potential safety and efficacy profile of the product candidates, their commercial prospects and the incidence and prevalence of possible indications of use for such products and existing treatments. These forward-looking statements include, but are not limited to, statements about our plans, objectives, representations and contentions and are not historical facts and typically are identified by use of terms such as “may,” “will”, “should,” “on track,” “could,” “expect,” “plan,” “anticipate,” “believe,” “estimate,” “predict,” “potential,” “continue” and similar, although some forward-looking statements are expressed differently. Our actual results may differ materially from those indicated in these forward-looking statements due to risks and uncertainties related to the continued progress and timing of our various programs,

[*] = Certain confidential information contained in this document, marked by brackets, has been omitted because it is both (i) not material and (ii) would likely cause competitive harm to the company if publicly disclosed.

including the enrollment and results from ongoing and potential future clinical trials, and other matters that are described in our Annual Report on Form 10-K for the fiscal year ended December 31, 2020 and our Quarterly Report on Form 10-Q for quarter ended March 31, 2021 filed with the Securities and Exchange Commission (SEC), including the risk factors set forth therein. Investors are cautioned not to place undue reliance on these forward-looking statements, which speak only as of the date of this release, and we undertake no obligation to update any forward-looking statement in this press release, except as required by law.

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Exhibit 31.1

CERTIFICATION

I, Enrique Conterno, certify that:

1. I have reviewed this Quarterly Report on Form 10-Q of FibroGen, Inc.;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

(a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

(b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

(c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

(d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

(a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

(b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: May 9, 2022

/s/ Enrique Conterno
Enrique Conterno
Chief Executive Officer
(Principal Executive Officer)

Exhibit 31.2

CERTIFICATION

I, Juan Graham, certify that:

1. I have reviewed this Quarterly Report on Form 10-Q of FibroGen, Inc.;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

(a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

(b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

(c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

(d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

(a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

(b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: May 9, 2022

/s/ Juan Graham

Juan Graham
Senior Vice President and Chief Financial Officer
(Principal Financial Officer)

Exhibit 32.1

CERTIFICATION

Pursuant to the requirement set forth in Rule 13a-14(b) of the Securities Exchange Act of 1934, as amended (the “Exchange Act”), and Section 1350 of Chapter 63 of Title 18 of the United States Code (18 U.S.C. §1350), Enrique Conterno, Chief Executive Officer of FibroGen, Inc. (the "Company”), and Juan Graham, Chief Financial Officer of the Company, each hereby certifies that, to the best of his knowledge:

1. The Company’s Quarterly Report on Form 10-Q for the period ended March 31, 2022, to which this Certification is attached as Exhibit 32.1 (the “Periodic Report”), fully complies with the requirements of Section 13(a) or Section 15(d) of the Exchange Act; and

2. The information contained in the Periodic Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Dated: May 9, 2022

In Witness Whereof, the undersigned have set their hands hereto as of the 9th day of May, 2022.

/s/ Enrique Conterno
Enrique Conterno
Chief Executive Officer

/s/ Juan Graham
Juan Graham
Senior Vice President and
Chief Financial Officer

This certification accompanies the Form 10-Q to which it relates, is not deemed filed with the Securities and Exchange Commission and is not to be incorporated by reference into any filing of FibroGen, Inc. under the Securities Act of 1933, as amended, or the Securities Exchange Act of 1934, as amended (whether made before or after the date of the Form 10-Q), irrespective of any general incorporation language contained in such filing.