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

Form 10-K/A

(Amendment No. 1)

(Mark One)

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

For the fiscal year ended December 31, 2021

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)**

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

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

Securities registered pursuant to Section 12(g) of the Act:
None

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. Yes ☑ No ☐

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Act. Yes ☐ No ☑

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 has filed a report on and attestation to its management's assessment of the effectiveness of its internal control over financial reporting under Section 404(b) of the Sarbanes-Oxley Act (15 U.S.C. 7262(b)) by the registered public accounting firm that prepared or issued its audit report. ☑

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

The aggregate market value of the voting and non-voting common equity held by non-affiliates of the registrant, computed by reference to the closing price as of the last business day of the registrant's most recently completed second fiscal quarter, June 30, 2021, was approximately $1,446.8 million. Shares of Common Stock held by each executive officer and director and stockholders known by the registrant to own 10% or more of the outstanding stock based on public filings and other information known to the registrant have been excluded since such persons may be deemed affiliates. This determination of affiliate status is not necessarily a conclusive determination for other purposes.

The number of shares of common stock outstanding as of January 31, 2022 was 93,001,968.

DOCUMENTS INCORPORATED BY REFERENCE

Items 10, 11, 12, 13 and 14 of Part III of this Annual Report on Form 10-K for the year ended December 31, 2021 (the "Annual Report") incorporate information by reference from the definitive proxy statement for the registrant's 2022 Annual Meeting of Stockholders to be filed with the Securities and Exchange Commission pursuant to Regulation 14A not later than after 120 days after the end of the fiscal year covered by this Annual Report

EXPLANATORY NOTE

This Amendment No. 1 to the Annual Report on Form 10-K (this "Amendment") amends FibroGen, Inc.'s Annual Report on Form 10-K for the fiscal year ended December 31, 2021 (the "Form 10-K"), as filed with the Securities and Exchange Commission on February 28, 2022, and is being filed solely to amend the report titled "Report of Independent Registered Public Accounting Firm" contained in Part II, Item 8 "Consolidated Financial Statements and Supplementary Data" of the Form 10-K (the "Audit Report") to correct typographical formatting errors which occurred upon conversion of the Form 10-K into the appropriate EDGAR-filing format. The Audit Report in the Form 10-K inadvertently contained strikethrough formatting of the words "Internal Control – Integrated Framework" in the first and second paragraph of the Audit Report and the subheading "Change in Accounting Principle" inadvertently set in bold text.

Pursuant to Rule 12b-15 promulgated under the Securities Exchange Act of 1934, as amended (the "Exchange Act"), we have included the entire text of Item 8 of the Form 10-K in this Amendment. However, there have been no changes made to the text of such item other than the changes stated in the immediately preceding paragraph. As required by Rule 12b-15 under the Exchange Act, new certifications by our principal executive officer and principal financial officer are being filed as Exhibits 31.1, 31.2 and 32.1 to this Amendment.

Except as expressly set forth above, this Amendment does not, and does not purport to, amend, update, or restate the information in the remainder of the Form 10-K or reflect any events that have occurred after the filing of the Form 10-K. Accordingly, this Amendment should be read in conjunction with the Form 10-K.

ITEM 8. CONSOLIDATED FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA

Report of Independent Registered Public Accounting Firm

To the Board of Directors and Stockholders of FibroGen, Inc.

Opinions on the Financial Statements and Internal Control over Financial Reporting

We have audited the accompanying consolidated balance sheets of FibroGen, Inc. and its subsidiaries (the "Company") as of December 31, 2021 and 2020, and the related consolidated statements of operations, of comprehensive loss, of changes in stockholders' equity and of cash flows for each of the three years in the period ended December 31, 2021, including the related notes and financial statement schedule listed in the accompanying index (collectively referred to as the "consolidated financial statements"). We also have audited the Company's internal control over financial reporting as of December 31, 2021, based on criteria established in *Internal Control - Integrated Framework* (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO).

In our opinion, the consolidated financial statements referred to above present fairly, in all material respects, the financial position of the Company as of December 31, 2021 and 2020, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2021 in conformity with accounting principles generally accepted in the United States of America. Also in our opinion, the Company maintained, in all material respects, effective internal control over financial reporting as of December 31, 2021, based on criteria established in *Internal Control - Integrated Framework* (2013) issued by the COSO.

Change in Accounting Principle

As discussed in Note 2 to the consolidated financial statements, the Company changed the manner in which it accounts for leases in 2019.

Basis for Opinions

The Company's management is responsible for these consolidated financial statements, for maintaining effective internal control over financial reporting, and for its assessment of the effectiveness of internal control over financial reporting, included in Management's Annual Report on Internal Control over Financial Reporting appearing under Item 9A. Our responsibility is to express opinions on the Company's consolidated financial statements and on the Company's internal control over financial reporting based on our audits. We are a public accounting firm registered with the Public Company Accounting Oversight Board (United States) (PCAOB) and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audits to obtain reasonable assurance about whether the consolidated financial statements are free of material misstatement, whether due to error or fraud, and whether effective internal control over financial reporting was maintained in all material respects.

Our audits of the consolidated financial statements included performing procedures to assess the risks of material misstatement of the consolidated financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the consolidated financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the consolidated financial statements. Our audit of internal control over financial reporting included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, and testing and evaluating the design and operating effectiveness of internal control based on the assessed risk. Our audits also included performing such other procedures as we considered necessary in the circumstances. We believe that our audits provide a reasonable basis for our opinions.

Definition and Limitations of Internal Control over Financial Reporting

A company's internal control over financial reporting is a process designed 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. A company's internal control over financial reporting includes those policies and procedures that (i) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (ii) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (iii) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company's assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

Critical Audit Matters

The critical audit matter communicated below is a matter arising from the current period audit of the consolidated financial statements that was communicated or required to be communicated to the audit committee and that (i) relates to accounts or disclosures that are material to the consolidated financial statements and (ii) involved our especially challenging, subjective, or complex judgments. The communication of critical audit matters does not alter in any way our opinion on the consolidated financial statements, taken as a whole, and we are not, by communicating the critical audit matter below, providing a separate opinion on the critical audit matter or on the accounts or disclosures to which it relates.

Determining the Transaction Price for Product Revenue Recognition for Sales to Beijing Falikang Pharmaceutical Co., Ltd. ("Falikang")

As described in Notes 2 and 3 to the consolidated financial statements, with respect to the roxadustat commercial product, revenue is recognized at a point in time when control of the product is transferred to Falikang. Total product revenue, net recognized related to sales to Falikang was $35.6 million for the year ended December 31, 2021. Revenue is recognized based on the estimated transaction price per unit and the actual quantity of product delivered to Falikang during the reporting period. The estimated transaction price per unit is determined based on the overall transaction price over the total estimated sales quantity for the estimated performance period in which management determined it is likely those sales would occur. Management applied significant judgment in determining the transaction price per unit, which involved the use of significant assumptions such as (i) the estimated total gross transaction price and profit share, (ii) the estimated total sales quantity, and (iii) the estimated performance period in which the Company determined it is likely those sales would occur.

The principal considerations for our determination that performing procedures relating to determining the transaction price for product revenue recognition for sales to Falikang is a critical audit matter are the significant judgment by management when determining the transaction price per unit, which in turn led to a high degree of auditor judgment, subjectivity, and effort in performing procedures and in evaluating management's significant assumptions related to the estimated total gross transaction price, estimated total sales quantity, and estimated performance period over which the Company determined it is likely those sales would occur.

Addressing the matter involved performing procedures and evaluating audit evidence in connection with forming our overall opinion on the consolidated financial statements. These procedures included testing the effectiveness of controls relating to revenue recognition, including controls over the determination of the transaction price per unit for sales to Falikang. These procedures also included, among others, testing management's process for determining the transaction price per unit, which included evaluating the appropriateness of the method, testing the completeness and accuracy of the data used in the method, and evaluating the reasonableness of significant assumptions related to the estimated total gross transaction price, estimated total sales quantity, and estimated performance period over which the Company determined it is likely those sales would occur. Evaluating the reasonableness of the significant assumptions used by management involved evaluating whether the assumptions were reasonable considering (i) the current and historical transaction price and quantity, (ii) the consistency with external market, industry and regulatory data, (iii) whether these assumptions were consistent with evidence obtained in other areas of the audit, and (iv) patent expiration and market exclusivity.

/s/ PricewaterhouseCoopers LLP
San Jose, California
February 28, 2022

We have served as the Company's auditor since 2000.

FIBROGEN, INC.
CONSOLIDATED BALANCE SHEETS
(In thousands, except per share amounts)

	December 31, 2021	December 31, 2020
Assets		
Current assets:		
Cash and cash equivalents	$ 171,223	$ 678,393
Short-term investments	233,967	8,144
Accounts receivable, net ($10,930 and $4,127 from related parties)	17,401	41,883
Inventories	31,015	16,530
Prepaid expenses and other current assets ($0 and $889 from a related party)	20,453	10,160
Total current assets	474,059	755,110
Restricted time deposits	2,072	2,072
Long-term investments	167,796	244
Property and equipment, net	28,277	33,647
Finance lease right-of-use assets	761	29,606
Equity method investment in unconsolidated variable interest entity	3,825	2,728
Operating lease right-of-use assets	91,112	2,043
Other assets	5,919	1,390
Total assets	$ 773,821	$ 826,840
Liabilities, stockholders' equity and non-controlling interests		
Current liabilities:		
Accounts payable ($0 and $1,118 to a related party)	$ 26,097	$ 24,789
Accrued and other current liabilities ($4 and $24 to a related party)	172,588	118,333
Deferred revenue ($3,201 and $2,907 to related parties)	15,857	6,547
Finance lease liabilities, current	11	12,330
Operating lease liabilities, current	10,944	1,188
Total current liabilities	225,497	163,187
Product development obligations	17,613	18,697
Deferred revenue, net of current ($25,891 and $4,636 to a related party)	186,801	138,474
Finance lease liabilities, non-current	3	25,391
Operating lease liabilities, non-current	88,776	853
Other long-term liabilities	26,018	38,789
Total liabilities	544,708	385,391
Commitments and Contingencies (Note 9)		
Stockholders' equity:		
Preferred stock, $0.01 par value; 125,000 shares authorized; no shares issued and outstanding at December 31, 2021 and 2020	—	—
Common stock, $0.01 par value; 225,000 shares authorized at December 31, 2021 and 2020; 92,881 and 91,441 shares issued and outstanding at December 31, 2021 and 2020	929	914
Additional paid-in capital	1,476,414	1,399,774
Accumulated other comprehensive loss	(4,163)	(4,499)
Accumulated deficit	(1,264,034)	(974,011)
Total stockholders' equity	209,146	422,178
Non-controlling interests	19,967	19,271
Total equity	229,113	441,449
Total liabilities, stockholders' equity and non-controlling interests	$ 773,821	$ 826,840

The accompanying notes are an integral part of these Consolidated Financial Statements.

FIBROGEN, INC.
CONSOLIDATED STATEMENTS OF OPERATIONS
(In thousands, except per share amounts)

	Years Ended December 31,		
	2021	**2020**	**2019**
Revenue:			
License revenue (includes $108,434, $14,323 and $129,405 from a related party)	$ 116,434	$ 14,323	$ 177,086
Development and other revenue (includes $21,928, $19,174 and $29,393 from a related party)	70,275	80,592	114,115
Product revenue, net (includes $35,568, $0 and $0 from a related party)	47,638	72,498	1,700
Drug product revenue (includes $3,186, $4,281 and $(36,324) from a related party)	962	8,906	(36,324)
Total revenue	235,309	176,319	256,577
Operating costs and expenses:			
Cost of goods sold	12,871	8,869	1,147
Research and development	387,043	252,924	209,265
Selling, general and administrative	123,925	106,406	135,479
Total operating costs and expenses	523,839	368,199	345,891
Loss from operations	(288,530)	(191,880)	(89,314)
Interest and other, net			
Interest expense	(1,075)	(2,402)	(2,876)
Interest income and other income (expenses), net	(1,078)	5,553	15,548
Total interest and other, net	(2,153)	3,151	12,672
Loss before income taxes	(290,683)	(188,729)	(76,642)
Provision for income taxes	347	360	328
Investment income (loss) in unconsolidated variable interest entity	1,007	(202)	—
Net loss	$ (290,023)	$ (189,291)	$ (76,970)
Net loss per share - basic and diluted	$ (3.14)	$ (2.11)	$ (0.89)
Weighted average number of common shares used to calculate net loss per share - basic and diluted	92,349	89,854	86,633

The accompanying notes are an integral part of these Consolidated Financial Statements.

FIBROGEN, INC.
CONSOLIDATED STATEMENTS OF COMPREHENSIVE LOSS
(In thousands)

	Years Ended December 31,		
	2021	**2020**	**2019**
Net loss	$ (290,023)	$ (189,291)	$ (76,970)
Other comprehensive income (loss):			
Foreign currency translation adjustments	1,235	(3,207)	331
Available-for-sale investments:			
Unrealized gain (loss) on investments, net of tax effect	(899)	(545)	592
Other comprehensive income (loss), net of taxes	336	(3,752)	923
Comprehensive loss	$ (289,687)	$ (193,043)	$ (76,047)

The accompanying notes are an integral part of these Consolidated Financial Statements.

FIBROGEN, INC.
CONSOLIDATED STATEMENTS OF CHANGES IN STOCKHOLDERS' EQUITY
(In thousands, except share data)

	Common Stock		Additional Paid-in	Accumulated Other Comprehensive	Accumulated	Non Controlling	
	Shares	Amount	Capital	Loss	Deficit	Interests	Total
Balance at December 31, 2018	85,432,102	$ 854	$ 1,226,453	$ (2,281)	$ (715,827)	$ 19,271	$ 528,470
Impact of adoption of ASC 842 (Note 2)	—	—	—	—	8,688	—	8,688
Impact of change in accounting principle upon adoption of ASU 2018-02 (Note 2)	—	—	—	611	(611)	—	—
Net loss	—	—	—	—	(76,970)	—	(76,970)
Change in unrealized gain or loss on investments	—	—	—	592	—	—	592
Foreign currency translation adjustments	—	—	—	331	—	—	331
Shares issued from stock plans, net of payroll taxes paid	2,220,957	23	7,939	—	—	—	7,962
Stock-based compensation	—	—	66,267	—	—	—	66,267
Warrants exercised	4,430	—	66	—	—	—	66
Balance at December 31, 2019	87,657,489	877	1,300,725	(747)	(784,720)	19,271	535,406
Net loss	—	—	—	—	(189,291)	—	(189,291)
Change in unrealized gain or loss on investments	—	—	—	(545)	—	—	(545)
Foreign currency translation adjustments	—	—	—	(3,207)	—	—	(3,207)
Shares issued from stock plans, net of payroll taxes paid	3,783,144	37	26,329	—	—	—	26,366
Stock-based compensation	—	—	72,720	—	—	—	72,720
Balance at December 31, 2020	91,440,633	914	1,399,774	(4,499)	(974,011)	19,271	441,449
Net loss	—	—	—	—	(290,023)	—	(290,023)
Change in unrealized gain or loss on investments	—	—	—	(899)	—	—	(899)
Foreign currency translation adjustments	—	—	—	1,235	—	—	1,235
Shares issued from stock plans, net of payroll taxes paid	1,439,900	15	5,479	—	—	—	5,494
Stock-based compensation	—	—	71,161	—	—	—	71,161
Conversion of subsidiary's convertible note payable (Note 10)	—	—	—	—	—	696	696
Balance at December 31, 2021	92,880,533	$ 929	$ 1,476,414	$ (4,163)	$ (1,264,034)	$ 19,967	$ 229,113

The accompanying notes are an integral part of these Consolidated Financial Statements.

FIBROGEN, INC.
CONSOLIDATED STATEMENTS OF CASH FLOWS
(In thousands)

	Years Ended December 31,		
	2021	**2020**	**2019**
Operating activities			
Net loss	$ (290,023)	$ (189,291)	$ (76,970)
Adjustments to reconcile net loss to net cash provided by (used in) operating activities:			
Depreciation	10,170	11,678	11,147
Amortization of finance lease right-of-use assets	4,639	10,369	10,307
Net accretion of premium and discount on investments	2,482	103	(3,667)
Unrealized loss on equity investments	30	—	(88)
Investment (gain) loss in unconsolidated variable interest entity	(1,007)	202	—
Loss (gain) on disposal of property and equipment	233	933	(42)
Stock-based compensation	71,161	72,720	66,267
Expense for acquired in-process research and development asset	60,000	—	—
Realized loss on sales of available-for-sale securities	—	258	—
Changes in operating assets and liabilities:			
Accounts receivable, net ($(6,803), $718 and $42,365 from related parties)	25,180	(11,973)	35,229
Inventories	(14,158)	(9,175)	(6,887)
Prepaid expenses and other current assets ($889, $124,321 and $(125,210) from a related party)	(9,854)	123,492	(128,598)
Operating lease right-of-use assets	4,209	(24)	(1,201)
Other assets	(4,412)	5,843	(4,058)
Accounts payable ($(1,118), $1,118 and $0 from a related party)	805	17,731	(3,051)
Accrued and other liabilities ($(20), $(36,859) and $36,439 from a related party)	16,380	30,914	17,707
Operating lease liabilities, current	503	134	580
Deferred revenue ($21,549, $7,169 and $(3,137) from related parties)	57,637	45,077	(49,941)
Accrued interest for finance lease liabilities	(75)	(177)	194
Operating lease liabilities, non-current	(4,043)	(143)	692
Other long-term liabilities	(12,089)	(27,069)	53,675
Net cash provided by (used in) operating activities	(82,232)	81,602	(78,705)
Investing activities			
Purchases of property and equipment	(5,186)	(3,994)	(5,762)
Payment made for acquired in-process research and development asset	(25,000)	—	—
Payment made for investment in unconsolidated variable interest entity	—	(3,896)	—
Proceeds from equity transfer of unconsolidated variable interest entity	—	1,063	—
Proceeds from sale of property and equipment	—	—	7
Purchases of available-for-sale securities	(484,144)	(8,192)	(411,299)
Proceeds from sales of available-for-sale securities	4,214	10,606	—
Proceeds from maturities of investments	83,144	456,900	537,072
Net cash provided by (used in) investing activities	(426,972)	452,487	120,018
Financing activities			
Repayments of finance lease liabilities	(5,489)	(12,620)	(11,925)
Repayments of lease obligations	(403)	(403)	(403)
Cash paid for payroll taxes on restricted stock unit releases	(7,372)	(11,463)	(12,750)
Proceeds from issuance of common stock	12,701	37,829	20,778
Net cash provided by (used in) financing activities	(563)	13,343	(4,300)
Effect of exchange rate change on cash and cash equivalents	2,597	4,695	(5)
Net increase (decrease) in cash and cash equivalents	(507,170)	552,127	37,008
Total cash and cash equivalents at beginning of period	678,393	126,266	89,258
Total cash and cash equivalents at end of period	$ 171,223	$ 678,393	$ 126,266
Supplemental cash flow information:			
Interest payments	$ 94	$ 135	$ 174
Balance in accounts payable and accrued liabilities related to purchases of property and equipment	1,009	884	460
Balance in accrued liabilities related to acquired in-process research and development asset	35,000	—	—
Balance in other receivables related to stock option exercise	165	—	—
Conversion of subsidiary's convertible note payable to non-controlling interests	$ 696	$ —	$ —

The accompanying notes are an integral part of these Consolidated Financial Statements.

1. The Company

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. FibroGen applies its pioneering expertise in hypoxia-inducible factor biology, 2-oxoglutarate enzymology, and connective tissue growth factor biology to advance innovative medicines for the treatment of anemia, fibrotic disease, and cancer.

Roxadustat is FibroGen's most advanced product, an oral small molecule inhibitor of hypoxia-inducible factor prolyl hydroxylase activity. Roxadustat is currently approved for use in patients with anemia associated with chronic kidney disease ("CKD") in China (2019), Japan (2020) and Europe (2021), under the tradename EVRENZO®. Roxadustat is also 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 and Phase 2 clinical development for chemotherapy-induced anemia.

Pamrevlumab is FibroGen's 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.

In the second quarter of 2021, the Food and Drug Administration ("FDA") granted both Rare Pediatric Disease designation and Fast Track designation for pamrevlumab for the treatment of patients with Duchenne Muscular Dystrophy. In addition, the FDA has granted Orphan Drug Designation to pamrevlumab for the treatment of idiopathic pulmonary fibrosis, locally advanced unresectable pancreatic cancer, and Duchenne Muscular Dystrophy. Pamrevlumab has also received Fast Track designation from the FDA for the treatment of both idiopathic pulmonary fibrosis and locally advanced unresectable pancreatic cancer.

FibroGen has 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.

2. Summary of Significant Accounting Policies

Basis of Presentation

The consolidated financial statements have been prepared in accordance with accounting principles generally accepted in the United States ("U.S. GAAP"). The consolidated financial statements include the accounts of the Company, its wholly owned subsidiaries and its majority-owned subsidiaries, FibroGen Europe and FibroGen China Anemia Holdings, Ltd. ("FibroGen Cayman"). 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 in one reportable segment — the discovery, development and commercialization of novel therapeutics to treat serious unmet medical needs.

Certain prior year amounts have been reclassified for consistency with the current year presentation. These reclassifications and recalculations had no impact on previously reported financial position, results of operations, or cash flows.

Foreign Currency Translation

The reporting currency of the Company and its subsidiaries is the U.S. dollar.

The functional currency of FibroGen Europe is the Euro. The assets and liabilities of FibroGen Europe are translated to U.S. dollars at exchange rates in effect at the balance sheet date. All income statement accounts are translated at monthly average exchange rates. Resulting foreign currency translation adjustments are recorded directly in accumulated other comprehensive income (loss) as a separate component of stockholders' equity.

Prior to April 1, 2020, the functional currency of the Company's subsidiary, FibroGen (China) Medical Technology Development Co., Ltd. ("FibroGen Beijing"), was the U.S. dollar. On April 1, 2020, FibroGen Beijing adopted CNY as its functional currency based on reassessment of the primary economic operational environment of FibroGen Beijing that is mainly associated with its growing manufacturing and product sales activities conducted in CNY. As such, monetary assets and liabilities of FibroGen Beijing in currencies other than CNY are remeasured using exchange rates in effect at the end of the period. The assets and liabilities of FibroGen Beijing are translated to U.S. dollars at exchange rates in effect at the balance sheet date. All income statement accounts are translated at monthly average exchange rates. Resulting foreign currency translation adjustments are recorded directly in accumulated other comprehensive income (loss) as a separate component of stockholders' equity. This change in FibroGen Beijing's functional currency was accounted for prospectively from April 1, 2020, and the prior consolidated financial statements were not restated. The related currency translation adjustment was $1.3 million at April 1, 2020 upon adoption.

The functional currency of FibroGen, Inc. and all other subsidiaries is the U.S. dollar. Accordingly, monetary assets and liabilities in the non-functional currency of these subsidiaries are remeasured using exchange rates in effect at the end of the period. Revenues and costs in local currency are remeasured using average exchange rates for the period, except for costs related to those balance sheet items that are remeasured using historical exchange rates. The resulting remeasurement gains and losses are included within interest income and other, net in the consolidated statements of operations as incurred and have not been material for all periods presented.

Use of Estimates

The preparation of the 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 *Revenue Recognition* 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.

Concentration of Credit Risk

The Company is subject to risks associated with concentration of credit for cash and cash equivalents. Outside of short-term operating needs, the majority of cash on hand is invested in U.S. treasuries and money market funds. Any remaining cash is deposited with major financial institutions in the U.S., Finland, China and the Cayman Islands. At times, such deposits may be in excess of insured limits. The Company has not experienced any loss on its deposits of cash and cash equivalents. Included in current assets are significant balances of accounts receivable as follows:

	December 31,	
	2021	**2020**
Astellas Pharma Inc. ("Astellas")—Related party	63%	10%
AstraZeneca AB ("AstraZeneca")	34%	26%

As of December 31, 2021, the accounts receivable related to roxadustat sales in China from Beijing Falikang Pharmaceutical Co., Ltd. ("Falikang") and direct sales to distributors were not material. As of December 31, 2020, the aggregate accounts receivable related to roxadustat sales in China from distributors represented 64% of the consolidated accounts receivable, with no material balance from any individual distributor.

Other 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 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.

Cash, Cash Equivalents and Restricted Time Deposits

The Company considers all highly liquid investments with maturities of three months or less and that are used in the Company's cash management activities at the date of purchase to be cash equivalents. Cash and cash equivalents also include money market accounts and various deposit accounts. Restricted time deposits include an irrevocable standby letter of credit as security deposit for a long-term property lease with the Company's landlord. Restricted time deposits as of December 31, 2021 and 2020 totaled $2.1 million and $2.1 million, respectively. As of December 31, 2021 and 2020, a total of $91.2 million and $66.0 million, respectively, of the Company's cash and cash equivalents was held outside of the U.S. in the Company's foreign subsidiaries to be used primarily for the Company's China operations.

Investments

As of December 31, 2021, the Company's investments consist primarily of diversified bonds, commercial paper, and asset-backed securities. Those investments with original maturities of greater than three months and remaining maturities of less than 12 months (365 days) are considered short-term investments. Those investments with maturities greater than 12 months (365 days) from the balance sheet date are considered long-term investments. When such investments are held, the Company's investments classified as available-for-sale are recorded at fair value based upon quoted market prices at period end. Unrealized gains and losses for available-for-sale debt investments that are deemed temporary in nature are recorded in accumulated other comprehensive income (loss) as a separate component of stockholder' equity. Marketable equity securities are equity securities with readily determinable fair value, and are measured and recorded at fair value. Realized and unrealized gains or losses resulting from changes in value and sale of the Company's marketable equity investments are recorded in other income (expenses) in the consolidated statement of operations.

A decline in the fair value of any security below cost that is deemed other than temporary results in a charge to earnings and the corresponding establishment of a new cost basis for the security. Premiums and discounts are amortized (accreted) over the life of the related security as an adjustment to its yield. Dividend and interest income are recognized when earned. Realized gains and losses are included in earnings and are derived using the specific identification method for determining the cost of investments sold.

Fair Value of Financial Instruments

Carrying amounts of certain of the Company's financial instruments including cash equivalents, investments, receivables, accounts payable and accrued liabilities approximate fair value (See Note 5, *Fair Value Measurements*).

Trade accounts receivable

The allowance for doubtful accounts is based on the Company's assessment of the collectability of customer accounts. The Company makes estimates of expected credit losses for the allowance for doubtful accounts by considering factors such as historical experience, credit quality, the age of the accounts receivable balances, current economic and regulatory conditions that may affect a customer's ability to pay, and estimates of expected future losses. The Company's bad debt expense for the years ended December 31, 2021, 2020 and 2019 and the allowance for doubtful accounts as of December 31, 2021 and 2020 were immaterial.

Credit losses – Available-for-sale debt securities

The Company periodically assesses its available-for-sale investments for other-than-temporary impairment. For debt securities in an unrealized loss position, the Company first considers its intent to sell, or whether it is more likely than not that the Company will be required to sell the debt securities before recovery of their amortized cost basis. If either of these criteria are met, the amortized cost basis of such debt securities is written down to fair value through interest and other, net.

For debt securities in an unrealized loss position that do not meet the aforementioned criteria, the Company assesses whether the decline in the fair value of such debt securities has resulted from credit losses or other factors. The Company considers the extent to which fair value is less than amortized cost, any changes to the rating of the security by a rating agency, and any adverse conditions specifically related to the securities, among other factors. If this assessment indicates that a credit loss may exist, the Company then compares the present value of cash flows expected to be collected from such securities to their amortized cost basis. If the present value of cash flows expected to be collected is less than the amortized cost basis, a credit loss exists and an allowance for credit losses is recorded through interest and other, net, limited by the amount that the fair value is less than the amortized cost basis. Any additional impairment not recorded through an allowance for credit losses is recognized in other comprehensive income.

Changes in the allowance for credit losses are recorded as provision for, or reversal of, credit loss expense. Losses are charged against the allowance when the Company believes that an available-for-sale security is confirmed uncollectable or when either of the criteria regarding intent or requirement to sell is met.

Inventories

Inventories are stated at the lower of cost or net realizable value, on a first-in, first-out, or FIFO, basis. The cost of the Company's inventories in China is determined using full absorption and standard costing method. The Company reviews the standard cost of raw materials, work-in-process and finished goods annually and more often as appropriate to ensure that its inventories approximate current actual cost. The cost of the Company's inventories in the U.S. uses actual costs to determine its cost basis. The cost of inventories includes direct material cost, direct labor and manufacturing overhead.

When the technical feasibility of the Company's future commercialization is considered probable and the future economic benefit is expected to be realized, based on management's judgment, the Company capitalizes pre-launch inventory costs prior to regulatory approval. A number of factors are considered, including the status in the validation process in significant jurisdictions, regulatory application and approval process, and terms and condition for future sale of such inventory or future alternative use. The pre-launch inventory cost includes purchase cost of raw materials, cost paid to contract manufacturers for inventory manufacturing, freight and custom charges, and certain direct internal labor and overhead expenses.

The Company periodically reviews its inventories to identify obsolete, slow-moving, excess or otherwise unsaleable items. If obsolete, excess or unsaleable items are observed and there are no alternate uses for the inventory, an inventory valuation adjustment is recorded through a charge to cost of goods sold on the Company's consolidated statements of operations. The establishment of inventory valuation reserves, together with the calculation of the amount of such reserves, requires judgment including consideration of many factors, such as estimates of future product demand and product expiration period, among others.

Property and Equipment

Property and equipment are recorded at cost and depreciated over their estimated useful lives using the straight-line method. Computer equipment, laboratory equipment, machinery and furniture and fixtures are depreciated over three to five years. Leasehold improvements are recorded at cost and amortized over the term of the lease or their useful life, whichever is shorter.

Equity method investment - Variable Interest Entity

Under the Accounting Standards Codification ("ASC") 810, *Consolidation* ("ASC 810"), when the Company obtains an economic interest in an entity, it evaluates the entity to determine if it should be deemed a VIE, and, if so, whether the Company is the primary beneficiary and is therefore required to consolidate the VIE, based on significant judgment whether the Company (i) has the power to direct the activities that most significantly impact the economic performance of the VIE and (ii) has the obligation to absorb losses or the right to receive benefits of the VIE that could potentially be significant to the VIE.

On an ongoing basis, the Company re-evaluates the VIE assessment based on potential changes in facts and circumstances, including but not limited to, the shareholder loans to the entity and the execution of any future significant agreements between the entity and its shareholders and/or other third parties.

Leases

The Company determines if an arrangement is or contains a lease at inception date when it is given control of the underlying assets. The Company elected the practical expedient not to apply the lease recognition and measurement requirements to short-term leases, which is any lease with a term of 12 months or less as of the commencement date that does not include an option to purchase the underlying asset that the lessee is reasonably certain to exercise.

Lease right-of-use ("ROU") assets and lease liabilities are recognized based on the present value of the future minimum lease payments over the lease term at commencement date. As its leases do not typically provide an implicit rate, the Company uses its incremental borrowing rate based on the information available at commencement date in determining the present value of future payments. The Company reassesses the incremental borrowing rate periodically for application to any new leases or lease modifications, which approximates the rate at which the Company would borrow, on a secured basis, in the country where the lease was executed. For any lease modification, the Company reassesses the lease classification, remeasures the related lease liability using an updated discount rate, and adjusts the related ROU asset under the lease modification guidance under the ASC 842.

Lease ROU assets include any lease payments made and initial direct costs incurred. The Company has lease agreements with lease and non-lease components. The Company generally accounts for each lease component separately from the non-lease components, and excludes all non-lease components from the calculation of minimum lease payments in measuring the ROU asset and lease liability.

The Company's lease terms may include options to extend or terminate the lease when it is reasonably certain that the Company will exercise that option. Lease expense for minimum lease payments is recognized on a straight-line basis over the lease terms.

Regarding leases denominated in a foreign currency, the related ROU assets and the corresponding ROU asset amortization costs are remeasured using the exchange rate in effect at the date of initial recognition; the related lease liabilities are remeasured using the exchange rate in effect at the end of the reporting period; the lease costs and interest expenses related to lease liability accretion are remeasured using average exchange rates for the reporting period.

Finance leases are included in finance lease ROU assets, finance lease liabilities, current and non-current on the Company's consolidated balance sheets. Operating leases are included in operating lease ROU assets, operating lease liabilities, current and non-current on the Company's consolidated balance sheets.

Impairment of Long-Lived Assets

The Company continually evaluates whether events or circumstances have occurred that indicate that the estimated remaining useful life of its long-lived assets may warrant revision or that the carrying value of these assets may be impaired. If the Company determines that an impairment trigger has been met, the Company evaluates the realizability of its long-lived assets (asset group) based on a comparison of projected undiscounted cash flows from use and eventual disposition with the carrying value of the related asset. Any write-downs (which are measured based on the difference between the fair value and the carrying value of the asset) are treated as permanent reductions in the carrying amount of the assets (asset group). Based on this evaluation, the Company believes that, as of each of the balance sheet dates presented, none of the Company's long-lived assets were impaired. The Company's impairment of long-lived assets for the years ended December 31, 2021, 2020 and 2019 were immaterial.

Revenue Recognition

Revenues under collaboration agreements

The Company's collaboration agreements include multiple performance obligations comprised of promised services, or bundles of services, that are distinct. Services that are not distinct are combined with other services in the agreement until they form a distinct bundle of services. The Company's process for identifying performance obligations and an enumeration of each obligation for each agreement is outlined in Note 3, *Collaboration Agreements, License Agreement and Revenues*. Determining the performance obligations within a collaboration agreement often involves significant judgment and is specific to the facts and circumstances contained in each agreement.

The Company has identified the following material promises under its collaboration agreements: (1) license of FibroGen technology, (2) the performance of co-development services, including manufacturing of clinical supplies and other services during the development period, and (3) manufacture of commercial supply. The evaluation as to whether these promises are distinct, and therefore represent separate performance obligations, is described in more detail in Note 3, *Collaboration Agreements, License Agreement and Revenues*.

For revenue recognition purposes, the Company determines that the terms of its collaboration agreements begin on the effective date and end upon the completion of all performance obligations contained in the agreements. In each agreement, the contract term is defined as the period in which parties to the contract have present and enforceable rights and obligations. The Company believes that the existence of what it considers to be substantive termination penalties on the part of the counterparty create sufficient incentive for the counterparty to avoid exercising its right to terminate the agreement unless in exceptionally rare situations.

The transaction price for each collaboration agreement is determined based on the amount of consideration the Company expects to be entitled for satisfying all performance obligations within the agreement. The Company's collaboration agreements include payments to the Company of one or more of the following: non-refundable upfront license fees; co-development billings; development, regulatory, and commercial milestone payments; payments from sales of active pharmaceutical ingredient ("API"); payments from sales of bulk drug product and royalties on net sales of licensed products.

Upfront license fees are non-contingent and non-refundable in nature and are included in the transaction price at the point when the license fees become due to the Company. The Company does not assess whether a contract has a significant financing component if the expectation at contract inception is such that the period between payment by the customer and the transfer of the promised goods or services to the customer will be one year or less.

Co-development billings resulting from the Company's research and development efforts, which are reimbursable under its collaboration agreements, are considered variable consideration. Determining the reimbursable amount of research and development efforts requires detailed analysis of the terms of the collaboration agreements and the nature of the research and development efforts incurred. Determining the amount of variable consideration from co-development billings requires the Company to make estimates of future research and development efforts, which involves significant judgment. Co-development billings are allocated entirely to the co-development services performance obligation when amounts are related specifically to research and development efforts necessary to satisfy the performance obligation, and such an allocation is consistent with the allocation objective.

Milestone payments are also considered variable consideration, which requires the Company to make estimates of when achievement of a particular milestone becomes probable. Similar to other forms of variable consideration, milestone payments are included in the transaction price when it becomes probable that such inclusion would not result in a significant revenue reversal. Milestone payments are therefore included in the transaction price when achievement of the milestone becomes probable.

For arrangements that include sales-based royalties and for which the license is deemed to be the predominant item to which the royalties relate, the Company recognizes revenue at the later of (i) when the related sales occur, or (ii) when the performance obligation to which some or all of the royalty has been allocated has been satisfied (or partially satisfied). To date, royalty revenue resulting from its collaboration arrangements was immaterial.

The transaction price is allocated to performance obligations based on their relative standalone selling price ("SSP"), with the exception of co-development billings allocated entirely to co-development services performance obligations. The SSP is determined based on observable prices at which the Company separately sells the products and services. If an SSP is not directly observable, then the Company will estimate the SSP considering marketing conditions, entity-specific factors, and information about the customer or class of customer that is reasonably available. The process for determining SSP involves significant judgment and includes consideration of multiple factors, including assumptions related to the market opportunity and the time needed to commercialize a product candidate pursuant to the relevant license, estimated direct expenses and other costs, which include the rates normally charged by contract research and contract manufacturing organizations for development and manufacturing obligations, and rates that would be charged by qualified outsiders for committee services.

Significant judgment may be required in determining whether a performance obligation is distinct, determining the amount of variable consideration to be included in the transaction price, and estimating the SSP of each performance obligation. An enumeration of the Company's significant judgments is outlined in Note 3, *Collaboration Agreements, License Agreement and Revenues*.

For each performance obligation identified within an arrangement, the Company determines the period over which the promised services are transferred and the performance obligation is satisfied. Service revenue is recognized over time based on progress toward complete satisfaction of the performance obligation. For each performance obligation satisfied over time, the Company assesses the proper method to be used for revenue recognition, either an input method to measure progress toward the satisfaction of services or an output method of determining the progress of completion of performance obligation.

License revenue

Under a license agreement, if the license to the Company's intellectual property is determined to be distinct from the other performance obligations identified in the arrangement, the Company recognizes revenues from upfront license fees allocated to the license when the license is transferred to the licensee and the licensee is able to use and benefit from the license. For licenses that are bundled with other promises, the Company determines whether the combined performance obligation is satisfied over time or at a point in time. If the combined performance obligation is satisfied over time, the Company uses judgment in determining the appropriate method of measuring progress for purposes of recognizing revenue from the up-front license fees. The Company evaluates the measure of progress each reporting period and, if necessary, adjusts the measure of performance and related revenue recognition.

Product revenue, net

Product revenue, net consists of revenues from sales of roxadustat commercial product to Falikang, and directly to pharmaceutical distributors located in a few provinces in China that are not covered by Falikang. Falikang is jointly owned by AstraZeneca and FibroGen Beijing. The Company is not the primary beneficiary of Falikang for accounting purposes, as AstraZeneca is the final decision maker for all the roxadustat commercialization activities, and the Company lacks the power criterion to direct the activities of Falikang (see Note 4, *Equity method investment - Variable Interest Entity*).

Sales to Falikang

Falikang became fully operational in January 2021, at which time FibroGen Beijing began selling roxadustat commercial product to Falikang. Falikang is FibroGen Beijing's primary customer in China and substantially all roxadustat product sales to distributors in China are made by Falikang. Falikang bears inventory risk once it receives and accepts the product from FibroGen Beijing, and is responsible for delivering product to its distributors.

The promises identified under the AstraZeneca China Agreement (as defined in Note 3, *Collaboration Agreements, License Agreement and Revenues*), including the license, co-development services and manufacturing of commercial supplies have been bundled into a single performance obligation ("China performance obligation"). Amounts of the transaction price allocable to this performance obligation under the Company's agreements with AstraZeneca as outlined in Note 3, *Collaboration Agreements, License Agreement and Revenues*, are deferred until control of the manufactured commercial product is transferred to AstraZeneca.

The initiation of roxadustat sales to Falikang marked the beginning of the China performance obligation. Revenue is recognized at a point in time when control of roxadustat commercial product is transferred to Falikang. Revenue is recognized based on the estimated transaction price per unit and actual quantity of product delivered during the reporting period. Specifically, the transaction price per unit is determined based on the overall transaction price over the total estimated sales quantity for the estimated performance period in which the Company determined it is likely those sales would occur. The price per unit is subject to reassessment on a quarterly basis, which may result in cumulative catch up adjustments due to changes in estimates.

The overall transaction price for FibroGen Beijing's product sales to Falikang includes the following elements of consideration:

- Non-refundable upfront license fees; development, regulatory, and commercial milestone payments based on the China Agreement allocated to the China performance obligation;
- Co-development billings resulting from the Company's research and development efforts, which are reimbursable under the China Agreement;
- Interim profit/loss share between FibroGen Beijing and AstraZeneca from April 1, 2020 through December 31, 2020; and
- Net transaction price from product sales to Falikang from January 1, 2021 onwards. The net transaction price includes the following elements:
    - Gross transaction price: The gross transaction price is based on a percentage of Falikang's net sales to its distributors, which takes into account Falikang's operating expenses and its payments to AstraZeneca for roxadustat sales and marketing efforts, capped at a percentage of Falikang's net roxadustat sales.
    - Profit share: The gross transaction price is then adjusted for an estimated amount to achieve the 50/50 profit share from current period roxadustat net sales in China. The adjustments to date have been a reduction to the transaction price and the related accounts receivable from Falikang.

The non-refundable upfront license fees constitute a fixed consideration. The remainder of the above are variable consideration components, which may be constrained, and included in the transaction price 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. The calculation of the above variable consideration includes significant assumptions such as total sales quantity, performance period, gross transaction price and profit share, which require a significant judgment.

Any net transaction price in excess of the revenue recognized is deferred, and will be recognized over future periods as the performance obligations are satisfied.

Direct Sales to Distributors

The Company sells roxadustat in China directly to a number of pharmaceutical distributors located in a few provinces in China that are not covered by Falikang. These pharmaceutical distributors are the Company's customers. Hospitals order roxadustat through a distributor and the Company ships the product directly to the distributors. The delivery of roxadustat to a distributor represents a single performance obligation. Distributors are responsible for delivering product to end users, primarily hospitals. Distributors bear inventory risk once they receive and accept the product. Product revenue is recognized when control of the promised good is transferred to the customer in an amount that reflects the consideration that the Company expects to be entitled to in exchange for the product.

The period between the transfer of control of the promised goods and when the Company receives payment is based on 60-day payment terms. As such, product revenue is not adjusted for the effects of a significant financing component.

Product revenue is recorded at the net sales prices that includes the following estimates of variable consideration:

- Price adjustment: When China's National Healthcare Security Administration releases price guidance for roxadustat under the National Reimbursement Drug List, any channel inventories that have not been sold through by distributors, or to patients by hospitals and retailers, would be eligible for a price adjustment under the price protection. The price adjustment is calculated based on estimated channel inventory levels;

- Contractual sales rebate: The contractual sales rebate is calculated based on the stated percentage of gross sales by each distributor in the distribution agreement entered between FibroGen and each distributor. The contractual sales rebate is recorded as a reduction to revenue at the point of sale to the distributor;
- Non-key account hospital listing award: A one-time fixed-amount award is offered to a distributor who successfully lists the product with an eligible hospital, and who meets certain requirements. For the year ended December 31, 2020, the non-key account hospital listing award was capitalized when the distributor meets eligibility requirements, and amortized as reduction to product revenue over future sales orders made by the distributor until exhausted. For the year ended December 31, 2021, the non-key account hospital listing award was immaterial and recorded as a reduction to revenue when distributor meets eligibility requirements;
- Other discounts and rebates, including key account hospital sales rebate and transfer fee discount, are generally based on a percentage of eligible gross sales made by the distributor and recorded as a reduction to revenue at the point of sale to the distributor; and
- Sales returns: Distributors can request to return product to the Company only due to quality issues or for product purchased within one year prior to the product's expiration date.

The calculation of the above variable consideration is based on gross sales to the distributor, or estimated utilizing best available information from the distributor, maximum known exposures and other available information including estimated channel inventory levels and estimated sales made by the distributor to hospitals, which involve a significant judgment.

The above rebates and discounts all together are eligible to be applied against the distributor's future sales order, limited to certain maximums until such rebates and discounts are exhausted. These rebates and discounts are recorded as contract liabilities at the time they become eligible and in the same period that the related revenue is recorded. Due to the distributor's legal right to offset, at each balance sheet date, the liability for rebates and discounts are presented as reductions of 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 distributor's legal right of offset is calculated at the individual distributor level.

Drug product revenue

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 New Drug Application ("NDA") or Marketing Authorization Application approval, and to Astellas for ongoing commercial launch in Japan and Europe. Drug product revenue is recognized when the Company fulfills 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. Estimating variable consideration and the related constraint requires the use of significant management judgment. The Company reviews new information that may affect its variable consideration estimate at every reporting period and records revenue adjustment, if certain and material. Actual amounts of consideration ultimately received in the future may differ from the Company's estimates, for which the Company will adjust these estimates and affect the drug product revenue in the period such variances become known. The total amount constrained as of December 31, 2021 was $88.8 million related to the drug product shipments to Astellas and AstraZeneca.

As each of the Company's collaboration agreements provide for annual true up to the considerations paid for its commercial supplies, the Company will re-evaluate the transaction price in each reporting period and record adjustment to revenue as uncertain events are resolved or other changes in circumstances occur.

License Acquisition Agreement

In June 2021, the Company entered into an exclusive license and option agreement (the "HiFiBiO Agreement") with HiFiBiO Therapeutics ("HiFiBiO"), pursuant to which the Company exclusively licensed all product candidates in HiFiBiO's Galectin-9 program. Pursuant to its option, the Company has also exclusively licensed all product candidates in HiFiBiO's CCR8 program in December 2021. The Company has declined to exercise its option to HiFiBiO's CXCR5 program, however, it is pursuing a replacement option program as specified under the HiFiBiO Agreement. Under the terms of the HiFiBiO Agreement, the Company has paid a $25.0 million upfront payment to HiFiBiO during the year ended December 31, 2021, and recorded a $35.0 million upfront payment for the CCR8 option exercise in accrued liabilities as of December 31, 2021, which was paid during the first quarter of 2022. In addition, HiFiBiO may receive up to a total of an additional $1.1 billion in future option, clinical, regulatory, and commercial milestone payments across all three potential programs. HiFiBiO will also be eligible to receive royalties based upon worldwide net sales.

The acquisition of these licenses was accounted for as an asset acquisition. The above-mentioned upfront payments of $60.0 million related to the license and options acquisition meets the definition of an in-process research and development asset ("IPR&D asset") under the ASC 730, *Research and Development.* They relate to particular research and development projects and are determined to have no alternative future uses and thus have no separate economic value. Therefore, these upfront payments were recorded as research and development expenses during the year ended December 31, 2021, and the cash payment of $25.0 million during the year ended December 31, 2021 was reflected as an investing activity in the consolidated statement of cash flows.

Contingent consideration payments will be evaluated and recognized when they become probable and reasonably estimable. The related IPR&D asset will only be capitalized if it has an alternative future use other than in a particular research and development project. Otherwise, amounts allocated to IPR&D asset that have no alternative use will be expensed. As of December 31, 2021, all programs were at the early stage of development and the contingencies related to the milestone payments had not been resolved, therefore no contingent consideration was recognized. The Company will reassess the probability of future option payments and contingent payments on a quarterly basis.

Research and Development Expenses

Research and development expenses consist of above-mentioned expense for acquired IPR&D asset, independent research and development costs and the gross amount of costs associated with work performed under collaboration agreements. Research and development costs include employee-related expenses, 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. All research and development costs are expensed as incurred.

Clinical Trial Accruals

Clinical trial costs are a component of research and development expenses. The Company accrues and expenses clinical trial activities performed by third parties based upon actual work completed in accordance with agreements established with clinical research organizations and clinical sites. The Company determines the costs to be recorded based upon validation with the external service providers as to the progress or stage of completion of trials or services and the agreed-upon fee to be paid for such services.

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.

Income Taxes

The Company utilizes the asset and liability method of accounting for income taxes, which requires the recognition of deferred tax assets and liabilities for expected future consequences of temporary differences between the financial reporting and income tax bases of assets and liabilities using enacted tax rates. Management makes estimates, assumptions and judgments to determine the Company's provision for income taxes and for deferred tax assets and liabilities, and any valuation allowances recorded against the Company's deferred tax assets. The Company assesses the likelihood that its deferred tax assets will be recovered from future taxable income and, to the extent the Company believes that recovery is not likely, the Company must establish a valuation allowance.

The calculation of the Company's current provision for income taxes involves the use of estimates, assumptions and judgments while taking into account current tax laws, interpretation of current tax laws and possible outcomes of future tax audits. The Company has established reserves to address potential exposures related to tax positions that could be challenged by tax authorities. Although the Company believes its estimates, assumptions and judgments to be reasonable, any changes in tax law or its interpretation of tax laws and the resolutions of potential tax audits could significantly impact the amounts provided for income taxes in the Company's consolidated financial statements.

The calculation of the Company's deferred tax asset balance involves the use of estimates, assumptions and judgments while taking into account estimates of the amounts and type of future taxable income. Actual future operating results and the underlying amount and type of income could differ materially from the Company's estimates, assumptions and judgments thereby impacting the Company's financial position and results of operations.

During 2020, the Company transferred certain intellectual property rights relating to its Chinese business between its wholly owned subsidiaries that are based in different tax jurisdictions. See Note 12, *Income Taxes*, for more information. The establishment of a deferred tax asset from the intra-entity transfer of intangible assets required the Company to make significant estimates and assumptions to determine the fair value of intellectual property rights transferred, which include but are not limited to, its expectations of discount rate, revenue volume and price. The accuracy of these estimates could be affected by unforeseen events or actual results, and the sustainability of the Company's future tax benefits is dependent upon the acceptance of these valuation estimates and assumptions by the taxing authorities.

The Company has adopted ASC 740-10, *Accounting for Uncertainty in Income Taxes*, that prescribes a recognition threshold and measurement attribute for the financial statement recognition and measurement of uncertain tax positions taken or expected to be taken in the Company's income tax return, and also provides guidance on derecognition, classification, interest and penalties, accounting in interim periods, disclosure and transition.

The Company includes interest and penalties related to unrecognized tax benefits within income tax expense in the Consolidated Statements of Operations.

Stock-Based Compensation

The Company maintains equity incentive plans under which incentive and nonqualified stock options are granted to employees and non-employee consultants. Compensation expense relating to non-employee stock options has not been material for all the periods presented.

The Company measures and recognizes compensation expense for all stock options and restricted stock units ("RSUs") 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 fair value is recognized as expense, net of estimated forfeitures, over the requisite service period, which is generally the vesting period of the respective award, on a straight-line basis. 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. The determination of the grant date fair value of options using an option pricing 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.

Comprehensive Income (Loss)

The Company is required to report all components of comprehensive income (loss), including net loss, in the consolidated financial statements in the period in which they are recognized. Comprehensive income (loss) is defined as the change in equity during a period from transactions and other events and circumstances from non-owner sources, including unrealized gains and losses on investments and foreign currency translation adjustments. Comprehensive gains (losses) have been reflected in the consolidated statements of comprehensive income (loss) for all periods presented.

Recently Issued and Adopted Accounting Guidance

In December 2019, the Financial Accounting Standards Board ("FASB") issued Accounting Standards Update ("ASU") No. 2019-12, *Income Taxes (Topic 740): Simplifying the Accounting for Income Taxes*. This guidance simplifies the accounting for income taxes by clarifying and amending existing guidance related to the recognition of franchise tax, the evaluation of a step up in the tax basis of goodwill, and the effects of enacted changes in tax laws or rates in the effective tax rate computation, among other clarifications. This guidance was effective for annual reporting periods beginning after December 15, 2020 including interim periods. The Company adopted this guidance on January 1, 2021, and the adoption of this guidance did not have material impact to the Company's consolidated financial statements and related disclosures.

In August 2018, the Financial Accounting Standards Board ("FASB") issued Accounting Standards Update ("ASU") No. 2018-15, *Intangibles—Goodwill and Other—Internal-Use Software (Subtopic 350-40): Customer's Accounting for Implementation Costs Incurred in a Cloud Computing Arrangement That Is a Service Contract.* This guidance requires capitalizing implementation costs incurred to develop or obtain internal-use software (and hosting arrangements that include an internal-use software license). This guidance was effective for annual reporting periods beginning after December 15, 2019, including interim periods. The Company adopted this guidance on January 1, 2020 using the prospective method, and the adoption of this guidance did not have material impact to the Company's consolidated financial statements.

In June 2016, the FASB issued ASU No. 2016-13, *Financial Instruments - Credit Losses (Topic 326): Measurement of Credit Losses on Financial Instruments* ("ASU 2016-13"). This guidance is intended to provide financial statement users with more decision-useful information about the expected credit losses on financial instruments and other commitments to extend credit held by a reporting entity at each reporting date. This guidance requires the measurement of financial assets with a methodology that reflects expected credit losses and requires consideration of a broader range of reasonable and supportable information to inform credit loss estimates. This guidance requires an impairment model, known as the current expected credit loss model, which is based on expected losses rather than incurred losses. Entities are required to carry an allowance for expected credit losses for financial assets, including most debt instruments (except those carried at fair value) and trade receivables. In November 2019, the FASB issued ASU No. 2019-11, *Codification Improvements to Topic 326, Financial Instruments-Credit Losses* ("ASU 2019-11"), which has the same effective dates and transition requirements as ASU 2016-13. ASU 2016-13 and ASU 2019-11 were effective for annual reporting periods beginning after December 15, 2019 including interim periods. The Company's investment portfolio primarily consists of U.S. Treasury bills and notes carried at fair value, which is required to follow the impairment model under Topic 326. The Company adopted this guidance on January 1, 2020. Based on the composition of the Company's trade receivables and investment portfolio, economic conditions and historical credit loss activity, the adoption of this guidance did not have material impact to the Company's consolidated financial statements.

In February 2016, the FASB issued ASU 2016-02, *Leases (Topic 842).* The Company adopted the lease guidance under ASC 842 as of January 1, 2019, using the modified retrospective transition method, through a cumulative-effect adjustment. The adoption of this guidance resulted in a reduction of $8.7 million to the Company's accumulated deficit and also impacted various balance sheet line items in its consolidated balance sheet as of January 1, 2019 upon adoption. The adoption of this guidance did not have a material impact to the Company's consolidated statement of operations or consolidated statement of cash flows for the year ended December 31, 2019.

In February 2018, the FASB issued ASU 2018-02, *Income Statement - Reporting Comprehensive Income: Reclassification of Certain Tax Effects from Accumulated Other Comprehensive Income*. The Company adopted this guidance on January 1, 2019 using the modified retrospective approach, with a reduction of $0.6 million to its accumulated other comprehensive loss and an increase of $0.6 million to its accumulated deficit as of January 1, 2019 upon adoption. The adoption of this guidance had no impact to the Company's consolidated statement of operations or consolidated statement of cash flows for the year ended December 31, 2019.

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 ASU 2020-04. 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 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 year ended December 31, 2021 and is currently evaluating the impact on its consolidated financial statements and related disclosures upon adoption of this guidance.

3. Collaboration Agreements, License Agreement and Revenues

Astellas Agreements

Japan Agreement

In June 2005, the Company 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"). Under this agreement, Astellas paid license fees and other consideration totaling $40.1 million (such amounts were fully received as of February 2009). Under the Japan Agreement, the Company is also eligible to receive from Astellas an aggregate of approximately $132.5 million in potential milestone payments, comprised of (i) up to $22.5 million in milestone payments upon achievement of specified clinical and development milestone events (such amounts were fully received as of July 2016), (ii) up to $95.0 million in milestone payments upon achievement of specified regulatory milestone events, and (iii) up to approximately $15.0 million in milestone payments upon the achievement of specified commercial sales milestone. 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 the Japanese Ministry of Health, Labour and Welfare, adjusted for certain elements, after commercial launch.

During the fourth quarter of 2020, the Japanese Ministry of Health, Labour and Welfare approved EVRENZO® (roxadustat) for the treatment of anemia of CKD in adult patients not on dialysis. This approval triggered a $15.0 million milestone payable to the Company by Astellas under the Japan Agreement. Accordingly, the consideration of $15.0 million associated with this milestone was included in the transaction price and allocated to performance obligations under the Japan Agreement in the fourth quarter of 2020, substantially all of which was recognized as revenue during the year ended December 31, 2020 from performance obligations satisfied or partially satisfied.

In September 2019, the Japanese Ministry of Health, Labour and Welfare approved EVRENZO® (generic name: roxadustat; tradename EVRENZO® in Japan) for the treatment of anemia associated with CKD in dialysis patients. This approval triggered a $12.5 million milestone payable to the Company by Astellas under the Japan Agreement. Accordingly, the consideration of $12.5 million associated with this milestone was included in the transaction price and allocated to performance obligations under the Japan Agreement in the third quarter of 2019, substantially all of which was recognized as revenue during the year ended December 31, 2019 from performance obligations satisfied or partially satisfied.

The aggregate amount of the considerations received under the Japan Agreement, through December 31, 2021 totals $105.1 million, excluding drug product revenue that is discussed separately below.

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"). Under this amendment, FibroGen would continue to manufacture and supply roxadustat API to Astellas for the roxadustat commercial launch in Japan. The commercial terms of the Japan Agreement relating to the transfer price for roxadustat for commercial use remain substantially the same, reflecting an adjustment for the manufacture of drug product by Astellas rather than FibroGen. The related drug product revenue, as described in details under *Drug Product Revenue* section below, were $2.1 million, $4.3 million and $(36.3) million in the years ended December 31, 2021, 2020 and 2019, 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 paid license fees and other upfront consideration totaling $320.0 million (such amounts were fully received as of February 2009). The Europe Agreement also provides for additional development and regulatory approval milestone payments up to $425.0 million, comprised of (i) up to $90.0 million in milestone payments upon achievement of specified clinical and development milestone events (such amounts were fully received as of 2012), (ii) up to $335.0 million in milestone payments upon achievement of specified regulatory milestone events. 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.

During the third quarter of 2021, the European Commission approved EVRENZO® (roxadustat) for the treatment of adult patients with symptomatic anemia associated with CKD. Astellas has launched EVRENZO in Germany, the United Kingdom, the Netherlands, and Austria. This approval triggered a total of $120.0 million milestone payable to the Company by Astellas under the Europe Agreement. Accordingly, the consideration of $120.0 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 year ended December 31, 2021 from performance obligations satisfied.

During the second quarter of 2019, the Company received positive topline results from analyses of pooled major adverse cardiovascular event ("MACE") and MACE+ data from its Phase 3 trials evaluating roxadustat as a treatment for dialysis and non-dialysis CKD patients, enabling Astellas to prepare for a Marketing Authorization Application ("MAA") submission to the European Medicines Agency in the second quarter of 2020, following the Company's NDA submission to the FDA that was accepted for review in February 2020. The Company evaluated the two regulatory milestone payments associated with the planned MAA submission and concluded that these milestones became probable of being achieved in the second quarter of 2019. Accordingly, the total consideration of $130.0 million associated with these milestones was included in the transaction price and allocated to performance obligations under the Europe Agreement in the second quarter of 2019, of which $128.8 million was recognized as revenue during the year ended December 31, 2019 and immaterial amounts for the years ended December 31, 2021 and 2020, from performance obligations satisfied or partially satisfied. According to the Europe Agreement, these milestone payments are billable to Astellas upon the submission of an MAA, therefore this $130.0 million was an unbilled contract asset as of December 31, 2019, and billed to Astellas upon the submission of an MAA in the second quarter of 2020 with the total $130.0 million received during the same quarter.

The aggregate amount of the considerations received under the Europe Agreement through December 31, 2021 totals $660.0 million, excluding drug product revenue that is discussed separately below.

Under the Europe Agreement, Astellas has an option to purchase roxadustat bulk drug product in support of commercial supplies. The Company fulfilled an inventory transfer obligation under the terms of the Europe Agreement in the fourth quarter of 2020. During the first quarter of 2021, the Company entered into an Astellas EU Supply Agreement ("EU Supply Agreement") under the Europe 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. The Company transferred bulk drug product to Astellas as pre-commercial supply for process validation purposes during the first quarter and commercial product during the fourth quarter of 2021. The Company recognized the related fully burdened manufacturing costs of $1.0 million as drug product revenue during the year ended December 21, 2021, and recorded the consideration of $25.9 million from these inventory transfers as deferred revenue as of December 31, 2021. See details under *Drug Product Revenue* section below.

Accounting for the Astellas Agreements

For each of the Astellas agreements, the Company has evaluated the promised services within the respective arrangements and has identified performance obligations representing those services and bundles of services that are distinct.

Promised services that were not distinct have been combined with other promised services to form a distinct bundle of promised services, with revenue being recognized on the bundle of services rather than the individual services. There are no right-of-return provisions for the delivered items in the Astellas agreements.

As of December 31, 2021, the transaction price for the Japan Agreement, excluding manufacturing services that is discussed separately below, included $40.1 million of non-contingent upfront payments, $65.0 million of variable consideration related to payments for milestones considered probable of being achieved, and $11.9 million of variable consideration related to co-development billings. The transaction price for the Europe Agreement, excluding manufacturing services that is discussed separately below, included $320.0 million of non-contingent upfront payments, $340.0 million of variable consideration related to payments for milestones considered probable of being achieved, and $219.9 million of variable consideration related to co-development billings.

For revenue recognition purposes, the Company determined that the term of each collaboration agreement with Astellas begins on the effective date and ends upon the completion of all performance obligations contained in the agreement. The contract term is defined as the period in which parties to the contract have present and enforceable rights and obligations. The Company believes that the requirement to continue funding development for a substantive period of time and loss of product rights, along with non-refundable upfront payments already remitted by Astellas, create significant disincentive for Astellas to exercise its right to terminate the agreements.

For the Astellas agreements, the Company allocated the transaction price to the various performance obligations based on the relative SSP of each performance obligation, with the exception of co-development billings allocated entirely to co-development services performance obligations.

For the technology license under the Japan Agreement and the Europe Agreement, SSP was determined primarily by using the discounted cash flow (“DCF”) method, which aggregates the present value of future cash flows to determine the valuation as of the effective date of each of the agreements. The DCF method involves the following key steps: 1) the determination of cash flow forecasts and 2) the selection of a range of comparative risk-adjusted discount rates to apply against the cash flow forecasts. The discount rates selected were based on expectations of the total rate of return, the rate at which capital would be attracted to the Company and the level of risk inherent within the Company. The discounts applied in the DCF analysis ranged from 17.5% to 20.0%. The Company’s cash flow forecasts were derived from probability-adjusted revenue and expense projections by territory. Such projections included consideration of taxes and cash flow adjustments. The probability adjustments were made after considering the likelihood of technical success at various stages of clinical trials and regulatory approval phases. SSP also considered certain future royalty payments associated with commercial performance of the Company’s compounds, transfer prices and expected gross margins.

The promised services that were analyzed, along with their general timing of satisfaction and recognition as revenue, are as follows:

(1) *License to the Company’s technology existing at the effective date of the agreements.* For both of the Astellas agreements, the license was delivered at the beginning of the agreement term. In both cases, the Company concluded at the time of the agreement that its collaboration partner, Astellas, would have the knowledge and capabilities to fully exploit the licenses without the Company’s further involvement. However, the Japan Agreement has contractual limitations that might affect Astellas’ ability to fully exploit the license and therefore, potentially, the conclusion as to whether the license is capable of being distinct. In the Japan Agreement, Astellas does not have the right to manufacture commercial supplies of the drug. In order to determine whether this characteristic of the agreement should lead to a conclusion that the license was not distinct in the context of the agreement, the Company considered the ability of Astellas to benefit from the license together with other resources readily available to Astellas. Finally, the Company considered the fact that at the time of delivery of the license, the development services were beyond the preclinical development phase and any remaining development work in either agreement would not be expected to result in any significant modification or customization to the licensed technology. As such, the development services are separately identifiable from the licensed technology, indicating that the license is a distinct performance obligation.

Manufacturing rights. In the case of the Japan Agreement, the Company retained manufacturing rights largely because of the way the parties chose for FibroGen to be compensated under the agreement. At the time the agreement was signed, the Company believed that it was more advantageous upon commercialization to have a transfer price revenue model in place as opposed to a traditional sales-based model. The manufacturing process does not require specialized knowledge or expertise uniquely held by FibroGen, and notwithstanding contractual restrictions, Astellas could employ manufacturing services from readily available third parties in order to benefit from the license. Therefore, along with the foregoing paragraph, the Company determined that the license in Japan is a distinct performance obligation despite the retention of manufacturing rights by the Company.

In summary, the Company concludes that item (1) represents a performance obligation. The portion of the transaction price allocated to this performance obligation based on a relative SSP basis is recognized as revenue in its entirety at the point in time the license transfers to Astellas.

(2) *Co-development services (Europe Agreement).* This promise relates to co-development services that were reasonably expected to be performed by the Company at the time the collaboration agreement was signed and is considered distinct. Co-development billings are allocated entirely to the co-development services performance obligation as amounts are related specifically to research and development efforts necessary to satisfy the performance obligation, and such an allocation is consistent with the allocation objective. Revenue is recognized over time based on progress toward complete satisfaction of the performance obligation. The Company uses an input method to measure progress toward the satisfaction of the performance obligation, which is based on costs of labor hours and out-of-pocket expenses incurred relative to total expected costs to be incurred. The measure of progress is updated each reporting period. Co-development services related to CKD continued over its development period through August 2021. In addition, the Company accounts for the indications related to chemotherapy-induced anemia and myelodysplastic syndromes separately through the end of 2021 and the third quarter of 2024, respectively. There was no provision for co-development services in the Japan Agreement.

(3) *License to the Company's technology developed during the term of the agreement and development (referred to as "when and if available") and information sharing services.* These promises are generally satisfied throughout the term of the agreements.

(4) *Manufacturing of clinical supplies of products.* This promise is satisfied as supplies for clinical product are delivered for use in the Company's clinical trial programs during the development period, or pre-commercialization period.

(5) *Committee service*. This promise is satisfied throughout the course of the agreements as meetings are attended.

Items (2)-(5) are bundled into a single performance obligation that is distinct given the fact that all are highly interrelated during the development period (pre-commercial phase of development) such that satisfying them independently is not practicable. Revenue is recognized over time based on progress toward complete satisfaction of the performance obligation. The Company uses an input method to measure progress toward the satisfaction of the performance obligation, which is based on costs of labor hours or full time equivalents and out-of-pocket expenses incurred relative to total expected costs to be incurred. The measure of progress is updated each reporting period.

(6) *Manufacturing commercial supplies of products.* This promised service is distinct as services are not interrelated with any of the other performance obligations. Payments received for commercial supplies of products represent sales-based payments related predominately to the license of intellectual property under both Astellas agreements. Revenue is recognized as supplies are shipped for commercial use during the commercialization period.

Under the Japan Amendment, the drug product revenue represents variable consideration and is estimated based on the quantity of product shipped, actual listed price for roxadustat issued by the Japanese Ministry of Health, Labour and Welfare and possible future changes to the listed price, adjusted for the timing of and estimated bulk product strength mix intended to be manufactured by Astellas, estimated cost to convert the API to bulk drug product tablets, and estimated yield from the manufacture of bulk product tablets, among others.

Under the Europe Agreement, the drug product revenue amount represents variable consideration and is estimated based on the quantity of product transferred and an estimated price. The estimated price is based on the contractual transfer price percentage applied on the estimated weighted average net sales price per strength, which is estimated to be realized by Astellas from the end sale of roxadustat in its approved territories.

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 paid upfront, non-contingent, non-refundable and time-based payments totaling $374.0 million (such amounts were fully received as of June 2016). Under the U.S./RoW Agreement, the Company is also eligible to receive from AstraZeneca an aggregate of approximately $875.0 million in potential milestone payments, comprised of (i) up to $65.0 million in milestone payments upon achievement of specified clinical and development milestone events, (ii) up to $325.0 million in milestone payments upon achievement of specified regulatory milestone events, (iii) up to $160.0 million in milestone payments related to activity by potential competitors and (iv) up to approximately $325.0 million in milestone payments upon the achievement of specified commercial sales events.

Under the U.S./RoW Agreement, the Company and AstraZeneca will equally share in the development costs of roxadustat not already paid for by Astellas, up to a total of $233.0 million (i.e. the Company's share of development costs is $116.5 million, which was reached in 2015). Development costs incurred by FibroGen during the development period in excess of the $233.0 million (aggregated spend) are fully reimbursed by AstraZeneca. 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.

As mentioned above, during the second quarter of 2019, the Company received positive topline results from analyses of pooled MACE and MACE+ data from its Phase 3 trials for roxadustat, enabling the Company's NDA submission to the FDA. The Company evaluated the regulatory milestone payment associated with this planned NDA submission and concluded that this milestone became probable of being achieved in the second quarter of 2019. Accordingly, the consideration of $50.0 million associated with this milestone was included in the transaction price and allocated to performance obligations under the combined arrangement in the second quarter of 2019, of which $42.4 million was recognized as revenue during the year ended December 31, 2019 and immaterial amounts were recognized as revenue during the years ended December 31, 2021 and 2020, from performance obligations satisfied or partially satisfied. This milestone was fully received in April 2020.

The aggregate amount of the considerations received under the U.S./RoW Agreement through December 31, 2021 totals $439.0 million, excluding drug product revenue that is discussed separately below. In 2020, the Company entered into Commercial Supply Agreement under the U.S./RoW Agreement with AstraZeneca to define general forecast, order, supply and payment terms for AstraZeneca to purchase roxadustat bulk drug product from FibroGen in support of commercial supplies. The Company shipped bulk drug product to AstraZeneca as commercial supply during 2020, and the first and second quarter of 2021. In August 2021, the FDA Issued a complete response letter 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 Company evaluated the impact of these developments in revising its estimates of variable consideration associated with drug product revenue and updated the estimated transaction price, and recorded $11.2 million as deferred revenue as of December 31, 2021. See details under *Drug Product Revenue* section below.

China Agreement

Effective July 30, 2013, the Company (through its subsidiaries affiliated with China) entered into a collaboration agreement with AstraZeneca for the development and commercialization (but not manufacture) of roxadustat for the treatment of anemia in China ("China Agreement"). Under the terms of the China Agreement, AstraZeneca agreed to pay upfront consideration totaling $28.2 million (such amounts were fully received in 2014). Under the China Agreement, the Company is also eligible to receive from AstraZeneca an aggregate of approximately $348.5 million in potential milestone payments, comprised of (i) up to $15.0 million in milestone payments upon achievement of specified clinical and development milestone events, (ii) up to $146.0 million in milestone payments upon achievement of specified regulatory milestone events, and (iii) up to approximately $187.5 million in milestone payments upon the achievement of specified commercial sales and other events. 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 the third quarter of 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.

In December 2019, roxadustat has been included on the updated National Reimbursement Drug List ("NRDL") released by China's National Healthcare Security Administration for the treatment of anemia in CKD, covering patients who are non-dialysis dependent as well as those who are dialysis-dependent. The inclusion on the NRDL triggered a total of $22.0 million milestones payable to the Company by AstraZeneca. Accordingly, the total consideration of $22.0 million associated with these milestones was included in the transaction price and allocated to performance obligations under the combined arrangement, of which $18.7 million was recognized as revenue during the year ended December 31, 2019. This milestone payment was received during the first quarter of 2020. The Company continued to recognize related revenue during the years ended December 31, 2021 and 2020, from performance obligations satisfied or partially satisfied, and the amounts were not material.

The aggregate amount of the considerations received for milestone and upfront payments under the China Agreement through December 31, 2021 totals $77.2 million.

China Amendment

In July 2020, FibroGen Cayman, FibroGen Beijing, and FibroGen International (Hong Kong) Limited (collectively, "FibroGen China") and AstraZeneca (together with FibroGen China, the "Parties") entered into the China Amendment, effective July 1, 2020, relating to the development and commercialization of roxadustat in China. While the responsibilities of the Parties under the China Agreement remain largely the same, certain changes were made.

Under the China Amendment, in September 2020, FibroGen Beijing and AstraZeneca completed the establishment of a jointly owned entity, Falikang, which performs roxadustat distribution, as well as conduct sales and marketing through AstraZeneca.

Under the China Amendment, the interim period is defined as the period from April 1, 2020 to the time when Falikang is fully operational. Falikang became fully operational in January 2021. The calculation for profit or loss share related to sales of roxadustat in China has changed for the period from April 1, 2020 onwards. With effect from April 1, 2020, the Parties have changed the method under which commercial expenses incurred by AstraZeneca are calculated and billed. AstraZeneca's co-promotion expenses for their sales and marketing efforts are now subject to a cap of a percentage of net sales. Once AstraZeneca has been fully reimbursed for their sales and marketing costs under the cap, AstraZeneca will bill the co-promotion expenses based on actual costs on a prospective basis. In addition, the China Amendment has allowed for a higher cost of manufacturing incurred by FibroGen Beijing to be included in the profit or loss share calculation, subject to an annual cap, among other changes.

As a result, the interim period during the year ended December 31, 2020 primarily included the following activities:

- Co-promotion expenses: The China Amendment revised the payment arrangements and calculation of the historical unpaid co-promotion expenses to AstraZeneca for its sales and marketing efforts associated with the commercial sales for roxadustat in China since the product launch. Under the China Amendment, a portion of the historical unpaid co-promotion expenses was adjusted to reduce the amount owed by FibroGen Beijing and the current period co-promotion expenses are capped at a percentage of net roxadustat sales in China. As a result, in the third quarter of 2020, the Company reversed approximately $84.4 million of previously accrued co-promotion expenses payable, which was recorded as a reduction to selling, general and administrative expenses, where these expenses were initially recorded during the periods from the initiation of commercial activities in the first quarter of 2019 to the second quarter of 2020. The co-promotion expenses for the years ended December 31, 2021 and 2020, capped at a percentage of net roxadustat sales in China, were $4.7 million and $27.2 million, respectively, included in the selling, general and administrative expenses.
- Profit share: Profit/loss share between FibroGen Beijing and AstraZeneca is based on a calculation of the current period net roxadustat sales in China and deductible expenses pursuant to the China Agreement. Based on the calculation revised under the China Amendment, profit was achieved during the third and fourth quarter of 2020. As a result, the Company recorded a profit share liability of $7.9 million and $7.0 million to AstraZeneca as of December 31, 2021 and 2020, respectively, in the accrued and other current liabilities, which correspondingly reduced the deferred revenue related to the performance obligation in accordance with the China Agreement.

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 a few provinces in China. FibroGen Beijing manufactures and supplies commercial product to Falikang based on a gross transaction price, which is adjusted for the estimated profit share. In addition, AstraZeneca now bills the co-promotion expenses to Falikang and to FibroGen Beijing, respectively, for its services provided to the respective entity. Development costs continue to be shared 50/50 between the Parties.

During the year ended December 31, 2021, the Company recognized $35.6 million 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 year ended December 31, 2021, the Company recognized $12.1 million of net product revenue from sales directly to distributors in a few provinces in China, as described as direct sales under *Product Revenue, Net* section below.

Accounting for the AstraZeneca Agreements

The Company evaluated whether the U.S./RoW Agreement and the China Agreement should be accounted for as a single or separate arrangements and concluded that the agreements should be accounted for as a single arrangement with the presumption that two or more agreements executed with a single customer at or around the same time should be presumed to be a single arrangement. The key points the Company considered in reaching this conclusion are as follows:

1. While the two agreements were largely negotiated separately, those negotiations proceeded concurrently, and were intended to be completed contemporaneously, presuming AstraZeneca decided to proceed with licenses in all regions available.

2. Throughout negotiations for both agreements, the Company and the counterparties understood and considered the possibility that one arrangement may be executed without the execution of the other arrangement. However, the preference for the Company and the counterparties during the negotiations was to execute both arrangements concurrently.

3. The two agreements were executed as separate agreements because different development, regulatory and commercial approaches required certain terms of the agreements to be structured differently, rather than because the Company or the counterparties considered the agreements to be fundamentally separate negotiations.

Accordingly, as the agreements are being accounted for as a single arrangement, upfront and other non-contingent consideration received and to be received has been and will be pooled together and allocated to each of the performance obligations in both the U.S./RoW Agreement and the China Agreement based on their relative SSPs.

For each of the AstraZeneca agreements, the Company has evaluated the promised services within the respective arrangements and has identified performance obligations representing those services and bundled services that are distinct.

Promised services that were not distinct have been combined with other promised services to form a distinct bundle of promised services, with revenue being recognized on the bundle of services rather than the individual promised services. There are no right-of-return provisions for the delivered items in the AstraZeneca agreements.

As of December 31, 2021, the transaction price for the U.S./RoW Agreement and the China Agreement, excluding manufacturing services that is discussed separately below, included $402.2 million of non-contingent upfront payments, $114.0 million of variable consideration related to payments for milestones considered probable of being achieved, $610.9 million of variable consideration related to co-development billings, offset by $7.0 million of variable consideration related to profit share under the China Amendment.

For the AstraZeneca agreements, the Company allocated the transaction price to the various performance obligations based on the relative SSP of each performance obligation, with the exception of co-development billings and commercial sale of product. Co-development billings under the U.S./RoW Agreement were allocated entirely to the U.S./RoW co-development services performance obligation, and co-development billings under the China Agreement were allocated entirely to the combined performance obligation under the China Agreement. Commercial sale of product under the U.S./ROW Agreement is entirely allocated to the manufacturing commercial supply of products performance obligation, and commercial sale of product under the China Agreement is allocated entirely to the combined China performance obligation.

For revenue recognition purposes, the Company determined that the terms of its collaboration agreements with AstraZeneca begin on the effective date and end upon the completion of all performance obligations contained in the agreements. The contract term is defined as the period in which parties to the contract have present and enforceable rights and obligations. The Company believes that the requirement to continue funding development for a substantive period of time and the loss of product rights, along with non-refundable upfront payments already remitted by AstraZeneca, represent substantive termination penalties that create significant disincentive for AstraZeneca to exercise its right to terminate the agreement.

For the technology license under the AstraZeneca U.S./RoW Agreement, SSP was determined based on a two-step process. The first step involved determining an implied royalty rate that would result in the net present value of future cash flows to equal to zero (i.e. where the implied royalty rate on the transaction would equal the target return for the investment). This results in an upper bound estimation of the magnitude of royalties that a hypothetical acquirer would reasonably pay for the forecasted cash flow stream. The Company's cash flow forecasts were derived from probability-adjusted revenue and expense projections. Such projections included consideration of taxes and cash flow adjustments. The probability adjustments were made after considering the likelihood of technical success at various stages of clinical trials and regulatory approval phases. The second step involved applying the implied royalty rate, which was determined to be 40%, against the probability-adjusted projected net revenues by territory and determining the value of the license as the net present value of future cash flows after adjusting for taxes. The discount rate utilized was 17.5%.

U.S./RoW Agreement:

The promised services that were analyzed, along with their general timing of satisfaction and recognition as revenue, are as follows:

(1) *License to the Company's technology existing at the effective date of the agreements.* For the U.S./RoW Agreement, the license was delivered at the beginning of the agreement term. The Company concluded that AstraZeneca has the knowledge and capabilities to fully exploit the license under the U.S./RoW Agreement without the Company's further involvement. Finally, the Company considered the fact that at the time of delivery of the license, the development services were beyond the preclinical development phase and any remaining development work would not be expected to result in any significant modification or customization to the licensed technology. As such, the development services are separately identifiable from the licensed technology, indicating that the license is a distinct performance obligation. Therefore, the Company has concluded that the license is distinct and represents a performance obligation. The portion of the transaction price allocated to this performance obligation based on a relative SSP basis is recognized as revenue in its entirety at the point in time the license transfers to AstraZeneca.

(2) *Co-development services.* This promise relates to co-development services that were reasonably expected to be performed by the Company at the time the collaboration agreement was signed and is distinct. Co-development billings are allocated entirely to the co-development services performance obligation as amounts are related specifically to research and development efforts necessary to satisfy the performance obligation, and such an allocation is consistent with the allocation objective. Revenue is recognized over time based on progress toward complete satisfaction of the performance obligation. The Company uses an input method to measure progress toward the satisfaction of the performance obligation, which is based on costs of labor hours or full time equivalents and out-of-pocket expenses incurred relative to total expected costs to be incurred. Co-development services related to CKD continued over its development period through the end of 2021. In addition, the Company accounts for the other significant indications related to chemotherapy-induced anemia and myelodysplastic syndromes separately over their development periods through the end of 2021 and the third quarter of 2024, respectively.

(3) *Manufacturing of clinical supplies of products.* This promise is satisfied as supplies for clinical product are delivered for use in the Company's clinical trial programs during the development period, or pre-commercialization period.

(4) *Information sharing and committee service.* These promises are satisfied throughout the course of the agreement as services are provided.

Items (2)-(4) are bundled into a single performance obligation that is distinct given the fact that all are highly interrelated during the development period (pre-commercial phase of development) such that delivering them independently is not practicable. Revenue is recognized over time based on progress toward complete satisfaction of the performance obligation. The Company uses an input method to measure progress toward the satisfaction of the performance obligation, which is based on costs of labor hours or full time equivalents and out-of-pocket expenses incurred relative to total expected costs to be incurred. The measure of progress is updated each reporting period.

(5) *Manufacturing commercial supplies of products.* This promise is distinct as services are not interrelated with any of the other performance obligations. Revenue is recognized as supplies are shipped for commercial use during the commercialization period. The drug product revenue amount represents variable consideration and is estimated based on the quantity of product shipped and an estimated price for each individual purchase order. The estimated price is based on the contractual transfer price percentage applied on the estimated weighted average net sales price, which is estimated to be realized by AstraZeneca from the end sale of roxadustat in its approved territories.

China Agreement:

The promised services that were analyzed are consistent with the U.S./RoW Agreement, except for license to the Company's technology existing at the effective date of the agreement, described as follows:

- *License to the Company's technology existing at the effective date of the agreement.* The license was delivered at the beginning of the agreement term. However, the China Agreement with AstraZeneca has contractual limitations that might affect AstraZeneca's ability to fully exploit the license and therefore, potentially, the conclusion as to whether the license is distinct in the context of the agreement. In the China Agreement, AstraZeneca does not have the right to manufacture commercial supplies of the drug. In order to determine whether this characteristic of the arrangement should lead to a conclusion that the license was not distinct in the context of the agreement, the Company considered the ability of AstraZeneca to benefit from the license on its own or together with other resources readily available to AstraZeneca.

For the China Agreement, the Company retained manufacturing rights as an essential part of a strategy to pursue domestic regulatory pathway for product approval, which requires the regulatory licensure of the manufacturing facility in order to commence commercial shipment. The prospects for the collaboration as a whole would have been substantially different had manufacturing rights been provided to AstraZeneca. The Company holds the rights to manufacture commercial drug product in China. Therefore, AstraZeneca cannot benefit from the license on its own or together with other readily available resources. Accordingly, all the promises identified, including the license, co-development services and manufacturing of commercial supplies, under the China Agreement have been bundled into a single performance obligation and amounts of the transaction price allocable to this performance obligation are deferred until control of the manufactured commercial drug product has begun to transfer to AstraZeneca.

In accordance with the China Amendment, once Falikang is fully operational, which commenced in January 2021, substantially all product sales will be made by Falikang directly to the distributors in China, while the Company continues to sell directly in a few provinces in China. Revenue is recognized at a point in time when control of roxadustat commercial product is transferred to Falikang. For the Company's direct sales of commercial drug product, revenue is recognized when control of the promised good is transferred to the customer in an amount that reflects the consideration that the Company expects to be entitled to in exchange for the product.

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 (the "Eluminex Agreement"), Eluminex will make an $8.0 million upfront payment to FibroGen. 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.

The Company accounted for this agreement under ASC 606 and identified one performance obligation at inception of the agreement related to the granting of the license rights to the investigational biosynthetic cornea derived from recombinant human collagen Type III. The Company based its assessment on the determination that Eluminex can benefit from the granted license on its own by developing and commercializing the underlying product using its own resources. All components of the transaction price in the agreement were allocated to the single performance obligation. Additionally, the Company will be responsible for supplying the cornea product at 110% of its product manufacturing costs until its manufacturing technology is fully transferred to Eluminex. Supply of the cornea product will be managed by a separate agreement and is considered a separate performance obligation.

During the year ended December 31, 2021, the $8.0 million upfront license payment was recognized as license revenue for the performance obligation satisfied. This amount was recorded as an unbilled contract asset as of December 31, 2021 in the prepaid expenses and other current assets in the consolidated balance sheets. The remaining future variable consideration related to future manufacturing, clinical, regulatory milestone payments as described above were fully constrained because the Company cannot conclude that it is probable that a significant reversal of the amount of cumulative revenue recognized will not occur, given the inherent uncertainties of success with these future milestones. For commercial milestones and royalties, the Company determined that the license is the predominant item to which the royalties or sales-based milestones relate and revenue will be recognized when the corresponding milestones and royalties are earned.

License Revenue and Development Revenue Recognized Under the Collaboration Agreements and License Agreement

License amounts identified below are included in the “License revenue” line item in the consolidated statements of operations. All other elements identified below are included in the “Development and other revenue” line item in the consolidated statements of operations.

Amounts recognized as license revenue and development revenue under the Japan Agreement with Astellas were as follows (in thousands):

		Years Ended December 31,		
Agreement	**Performance Obligation**	**2021**	**2020**	**2019**
Japan	License revenue	$ —	$ 14,323	$ 11,935
	Development revenue	$ 248	$ 1,220	$ 1,222

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 December 31, 2021**	**Deferred Revenue at December 31, 2021**	**Total Consideration Through December 31, 2021**
License	$ 100,347	$ —	$ 100,347
Development revenue	16,598	—	16,598
Total license and development revenue	$ 116,945	$ —	$ 116,945

The revenue recognized under the Japan Agreement for the year ended December 31, 2021 included immaterial revenue resulting from changes to estimated variable consideration in the current year relating to performance obligations satisfied or partially satisfied in previous periods. The Company does not expect material variable consideration from estimated future co-development billing beyond development period in the transaction price related to the Japan Agreement.

Amounts recognized as license revenue and development revenue under the Europe Agreement with Astellas were as follows (in thousands):

		Years Ended December 31,		
Agreement	**Performance Obligation**	**2021**	**2020**	**2019**
Europe	License revenue	$ 108,434	$ —	$ 117,470
	Development revenue	$ 21,679	$ 17,954	$ 28,172

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 December 31, 2021	Deferred Revenue at December 31, 2021	Total Consideration Through December 31, 2021
License	$ 596,385	$ —	$ 596,385
Development revenue	270,641	—	270,641
Total license and development revenue	$ 867,026	$ —	$ 867,026

The revenue recognized under the Europe Agreement for the year ended December 31, 2021 included an increase in revenue of $1.0 million resulting from changes to estimated variable consideration in the current year relating to performance obligations satisfied or partially satisfied in previous periods. The remainder of the transaction price related to the Europe Agreement includes $12.9 million of variable consideration from estimated future co-development billing and is expected to be recognized over the remaining development service period.

Amounts recognized as license revenue and development revenue under the U.S./RoW and China Agreements with AstraZeneca were as follows (in thousands):

		Years Ended December 31,		
Agreement	Performance Obligation	2021	2020	2019
U.S. / RoW and China	License revenue	$ —	$ —	$ 47,681
	Development revenue	48,345	61,508	84,629
	China performance obligation	$ —	$ (90)	$ 90

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, along with any associated deferred revenue as follows (in thousands):

U.S. / RoW and China Agreements	Cumulative Revenue Through December 31, 2021	Deferred Revenue at December 31, 2021	Total Consideration Through December 31, 2021
License	$ 341,844	$ —	$ 341,844
Co-development, information sharing & committee services	603,119	—	603,119
China performance obligation *	35,568	171,516	207,084
Total license and development revenue	$ 980,531	$ 171,516 **	$ 1,152,047

* 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 December 31, 2021, deferred revenue included $162.4 million related to the U.S./RoW and China Agreement, which represents the net of $171.5 million of deferred revenue presented above and a $9.1 million unbilled co-development revenue under the China Amendment with AstraZeneca.

The revenue recognized under the U.S./RoW Agreement and China Agreement for the year ended December 31, 2021 included a reduction in revenue of $4.8 million resulting from changes to estimated variable consideration in the current year relating to performance obligations satisfied or partially satisfied in previous periods. The remainder of the transaction price related to the U.S./RoW Agreement and China Agreement includes $30.9 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.

Amounts recognized as revenue under the Eluminex were as follows (in thousands):

		Years Ended December 31,		
Agreement	**Performance Obligation**	**2021**	**2020**	**2019**
Eluminex	License revenue	$ 8,000	$ —	$ —

Product Revenue, Net

Product revenue, net from the sales of roxadustat commercial product in China was as follows (in thousands):

	Years Ended December 31,		
	2021	**2020**	**2019**
Direct Sales:			
Gross revenue	$ 13,727	$ 89,027	2,803
Price adjustment	(982)	—	(936)
Non-key account hospital listing award	95	(9,325)	—
Contractual sales rebate	(832)	(6,189)	(149)
Other discounts and rebates	(21)	(923)	(18)
Sales returns	83	(92)	—
Direct sales revenue, net	12,070	72,498	1,700
Sales to Falikang:			
Gross transaction price	97,531	—	—
Profit share	(34,759)	—	—
Net transaction price	62,772	—	—
Increase in deferred revenue	(27,204)	—	—
Sales to Falikang revenue, net	35,568	—	—
Total product revenue, net	$ 47,638	$ 72,498	$ 1,700

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 sales rebates and discounts.

The total discounts and rebates were $1.7 million, $16.4 million and $1.1 million for the years ended December 31, 2021, 2020 and 2019, respectively. The discounts and rebates for the years ended December 31, 2021 and 2019 primarily consisted of $1.0 million and $0.9 million, respectively, of price adjustments recorded based on government-listed price guidance and estimated channel inventory levels. The discounts and rebates also consisted of the contractual sales rebate calculated based on the stated percentage of gross sales by each distributor in the distribution agreement entered between FibroGen and each distributor. The contractual sales rebate was $0.8 million, $6.2 million and $0.1 million, respectively, for the years ended December 31, 2021, 2020 and 2019. In addition, in the second quarter of 2020, the Company amended the agreement with its pharmaceutical distributors, which triggered accounting modifications particularly related to the non-key account hospital listing award. For the year ended December 31, 2020, the non-key account hospital listing award was $9.3 million, which was recorded as a reduction to the revenue and calculated based on eligible non-key account hospital listings to date achieved by each distributor with certain requirements met during the period. All other rebates and discounts, including sales return allowance were immaterial for the periods presented.

The rebates and discounts that the Company's pharmaceutical distributors have earned are eligible to be applied against future sales orders, limited to certain maximums until such rebates and discounts are exhausted. These rebates and discounts are recorded as contract liabilities at the time they become eligible in the same period that the related revenue is recorded. Due to the distributor'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 related contract liabilities (in thousands):

	Balance at December 31, 2020	Additions	Deduction	Currency Translation and Other	Balance at December 31, 2021
Product revenue - Direct sales - contract liabilities	$ (15,137)	$ (1,371)	$ 13,645	$ (313)	$ (3,176)

As of December 31, 2021 and 2020, the total contract liabilities was $3.2 million and $15.1 million, respectively, which was included in accrued and other current liabilities in the consolidated balance sheet. As of December 31, 2021 and 2020, the total rebates and discounts reflected as reductions to gross accounts receivable for direct sales was $1.1 million and $0.5 million, 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 transaction price for FibroGen Beijing's product sales to Falikang is based on a gross transaction 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 obligations are satisfied. During the year ended December 31, 2021, following updates to its estimates, the Company deferred $27.2 million from the net transaction price to Falikang, which was included in the related deferred revenue of the China performance obligation.

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, 2020	Additions	Recognized as Revenue	Balance at December 31, 2021
Product revenue - AstraZeneca China performance obligation - deferred revenue	$ (137,338)	$ (69,746)	$ 35,568	$ (171,516)

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 December 31, 2021, approximately $10.6 million of the 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.

The reductions to gross accounts receivable related to product revenue to Falikang was $13.4 million as of December 31, 2021.

Drug Product Revenue

Drug product revenue was as follows (in thousands):

	Years Ended December 31,		
	2021	2020	2019
Astellas	$ 3,186	$ 4,281	$ (36,324)
AstraZeneca	(2,224)	4,625	—
Drug product revenue	$ 962	$ 8,906	$ (36,324)

During the second quarter of 2020, the Company fulfilled shipment obligations under the terms of Japan Amendment with Astellas, and recognized related drug product revenue of $8.2 million in the same period.

During the years ended December 31, 2021, 2020 and 2019, the Company updated its estimate of variable consideration related to the API shipments fulfilled under the terms of the Japan Amendment with Astellas in 2018 and 2020, and recorded an adjustment to the drug product revenue of $2.1 million, $(4.0) million and $(36.3) million for the years ended December 31, 2021, 2020 and 2019, respectively. Specifically, the change in estimated variable consideration was based on the API held by Astellas at the 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 fourth quarter of 2021, the Company transferred bulk drug product for commercial purposes under the terms of the Europe Agreement and the EU Supply Agreement with Astellas, and recognized the related fully burdened manufacturing costs of $1.0 million as drug product revenue, and recorded $8.3 million as deferred revenue as of December 31, 2021, due to a high degree of uncertainty associated with the final consideration. During the first quarter of 2021, the Company transferred bulk drug product from process validation supplies for commercial purposes under the terms of the Europe Agreement and the EU Supply Agreement with Astellas. The Company recorded the consideration of $11.8 million from this inventory transfer as deferred revenue as of December 31, 2021, due to a high degree of uncertainty associated with the final consideration. During the fourth quarter of 2020, the Company transferred bulk drug product from process validation supplies for commercial purposes under the terms of the Europe Agreement with Astellas. As a result, the Company recorded $6.0 million as deferred revenue as of December 31, 2020, due to a high degree of uncertainty associated with the final consideration. The Company recognized royalty revenue of $0.2 million from this deferred revenue during the year ended December 31, 2021. The remainder of the deferred revenue will be recognized as and when uncertainty is resolved.

During the fourth quarter of 2021, the Company updated its estimate of variable consideration related to the bulk drug product inventory transfers fulfilled under the terms of the Europe Agreement and the EU Supply Agreement with Astellas, and recorded an unbilled contract asset of $49.8 million, which was offset by related deferred revenue under the Europe Agreement and EU Supply Agreement. 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, among others.

During the first half of 2021 and during the year ended December 31, 2020, the Company shipped bulk drug product to AstraZeneca as commercial supply under the terms of the Master Supply Agreement. Based on the complete response letter issued by the FDA in August 2021, the Company evaluated the impact of these developments in revising its estimates of variable consideration associated with drug product revenue. As a result, the Company updated the estimated transaction price for these shipments, and recorded $11.2 million as deferred revenue as of December 31, 2021.

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, 2020	Additions	Recognized as Revenue	Balance Presented Net Against Contract Asset	Balance at December 31, 2021
Astellas - Japan Agreement	$ —	$ (1,974)	$ —	$ —	$ (1,974)
Astellas - Europe Agreement	(5,984)	(69,874)	179	49,788	(25,891)
AstraZeneca - U.S. Agreement	—	(11,171)	—	—	(11,171)
Drug product revenue - deferred revenue	$ (5,984)	$ (83,019)	$ 179	$ 49,788	$ (39,036)

4. Equity method investment - 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, the Company concluded that Falikang qualifies as a VIE for U.S. GAAP purposes under ASC 810. As Falikang is a distribution joint venture between FibroGen Beijing and AstraZeneca, 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 U.S. GAAP 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 consolidated financial statements. Accordingly, the Company records its total investments in Falikang as an equity method investment in an unconsolidated VIE in the consolidated balance sheet. In addition, the Company recognizes its proportionate share of the reported profits or losses of Falikang as investment income (loss) in unconsolidated VIE in the consolidated statement of operations, and as an adjustment to its investment in Falikang in the 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 for the year ended December 31, 2021 (in thousands):

Entity	Ownership Percentage	Balance at December 31, 2020	Share of Net Income	Currency Translation	Balance at December 31, 2021
Falikang	51.1%	$ 2,728	$ 1,007	$ 90	$ 3,825

Falikang is considered as a related party to the Company. See Note 13, *Related Party Transactions*, for related disclosures.

On an ongoing basis, the Company will re-evaluate the VIE assessment based on changes in facts and circumstances, including but not limited to, the shareholder loans received by Falikang and the execution of any future significant agreements between Falikang and its shareholders and/or other third parties.

The Company will assess the impairment of its equity method investment whenever events or changes in circumstances indicate that a decrease in value of the investment has occurred that is other than temporary.

5. Fair Value Measurements

In accordance with the authoritative guidance on fair value measurements and disclosures under U.S. GAAP, the Company presents all financial assets and liabilities and any other assets and liabilities that are recognized or disclosed at fair value on a nonrecurring basis. The guidance defines fair value, establishes a framework for measuring fair value in generally accepted accounting principles and expands disclosures about fair-value measurements. The guidance also requires fair value measurements be classified and disclosed in one of the following three categories:

Level 1: Quoted prices in active markets for identical assets or liabilities.

Level 2: Observable inputs other than quoted prices in active markets for identical assets or liabilities.

Level 3: Unobservable inputs.

The Company values certain assets and liabilities, focusing on the inputs used to measure fair value, particularly in instances where the measurement uses significant unobservable (Level 3) inputs. The Company's financial instruments are valued using quoted prices in active markets (Level 1) or based upon other observable inputs (Level 2). The Company's assessment of the significance of a particular input to the fair value measurement in its entirety requires management to make judgments and considers factors specific to the asset or liability. In addition, the categories presented do not suggest how prices may be affected by the size of the purchases or sales, particularly with the largest highly liquid financial issuers who are in markets continuously with non-equity instruments, or how any such financial assets may be impacted by other factors such as U.S. government guarantees. Assets and liabilities measured at fair value are classified in their entirety based on the lowest level of input that is significant to the fair value measurement. The availability of observable data is monitored to assess appropriate classification of financial instruments within the fair value hierarchy. Depending upon the availability of such inputs, specific securities may transfer between levels. In such instances, the transfer is reported at the end of the reporting period.

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

	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

	December 31, 2020			
	Level 1	Level 2	Level 3	Total
Bond and mutual funds	$ —	$ 8,144	$ —	$ 8,144
Equity investments	244	—	—	244
Money market funds	590,347	—	—	590,347
Total	$ 590,591	$ 8,144	$ —	$ 598,735

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 for the years ended December 31, 2021 and 2020. During the fourth quarter of 2019, there was a $29.8 million transfer of assets from Level 1 to Level 2 as such US treasury notes and bills were changed to off-the-run when they were issued before the most recent issue and were still outstanding at measurement day.

The fair value of the Company's financial liabilities related to lease obligations were derived by using an income approach, which required Level 3 inputs such as discounted estimated future cash flows, which were immaterial as of December 31, 2021 and 2020. There were no transfers of liabilities between levels for the years ended December 31, 2021, 2020 and 2019.

6. Leases

The Company's long-term property lease with Alexandria for its corporate headquarters in San Francisco, California, had an initial term of 15 years, scheduled to expire in 2023. The original lease was accounted for as a finance lease upon adoption of ASC 842, *Leases* ("ASC 842"), at January 1, 2019. On June 1, 2021, the Company entered into an amendment with Alexandria to extend the lease to 2028 ("Lease Amendment"). Under the terms of the Lease Amendment, the Company has two optional rights to each extend the lease for an additional five years. The lease contract provides for a fixed annual rent, with scheduled increases of two percent that occur on each anniversary of the rent commencement date through 2023, and with scheduled increases of three percent that occur on each anniversary of the rent commencement date through 2028. This lease requires the Company to pay all costs of ownership, operation, and maintenance of the premises, including without limitation all operating costs, insurance costs, and taxes.

Company determined that the Lease Amendment was a lease modification, effective June 1, 2021, and thus reassessed the lease classification, remeasured the related lease liability using an updated discount rate, and adjusted the related right-of-use asset under the lease modification guidance under the ASC 842. Accordingly, on June 1, 2021, the Company determined that the modified lease be accounted for as an operating lease, and therefore derecognized the previous finance lease right-of-use asset of $24.6 million and the related finance lease liability of $32.6 million, and recognized an operating lease right-of-use asset of $93.2 million and the related operating lease liability of $101.2 million. Starting June 1, 2021, the cash payment related to this lease was classified as an operating activity, the impact of which was approximately $7.9 million to the consolidated statement of cash flow for the year ended December 31, 2021.

During the first quarter of 2021, after FibroGen Beijing's previous long-term lease agreement expired, the Company entered into a new lease agreement with the landlord for the same pilot plant located in Beijing Yizhuang Biomedical Park of BDA. The new lease term is five year, scheduled to expire in 2026, and is treated as an operating lease. Accordingly, the Company recorded $3.4 million in the operating right-of-use assets and total operating lease liabilities, respectively. The lease contract provides for fixed quarterly rent payments, and requires the Company to pay operating and maintenance costs.

The Company currently has several additional real estate leases for office spaces in Shanghai and Beijing, China, which are treated as operating leases. These leases have lease terms ranging from one to five years, expiring in 2023. These lease contracts provide for fixed quarterly rent payments, and require the Company to pay operating and maintenance costs, and a fixed amount for property management fees.

In addition, the Company has several immaterial lease arrangements in China and U.S. for office equipment, scientific devices and automobile leases, with contracted lease terms ranging from one to five years, treated as finance leases or operating leases, respectively.

The Company's lease assets and related lease liabilities were as follows (in thousands):

	Balance Sheet Line Item	December 31, 2021	December 31, 2020
Assets			
Finance:			
Right-of-use assets cost		$ 2,165	$ 50,477
Accumulated amortization		(1,404)	(20,871)
Finance lease right-of-use assets, net	Finance lease right-of-use assets	761	29,606
Operating:			
Right-of-use assets cost		100,912	3,934
Accumulated amortization		(9,800)	(1,891)
Operating lease right-of-use assets, net	Operating lease right-of-use assets	91,112	2,043
Total lease assets		$ 91,873	$ 31,649
Liabilities			
Current:			
Finance lease liabilities	Finance lease liabilities, current	$ 11	$ 12,330
Operating lease liabilities	Operating lease liabilities, current	10,944	1,188
Non-current:			
Finance lease liabilities	Finance lease liabilities, non-current	3	25,391
Operating lease liabilities	Operating lease liabilities, non-current	88,776	853
Total lease liabilities		$ 99,734	$ 39,762

The components of lease expense were as follows (in thousands):

	Statement of Operations Line Item	Years Ended December 31, 2021	2020	2019
Finance lease cost:				
Amortization of right-of-use assets	Cost of goods sold; Research and development; Selling, general and administrative expenses	$ 4,639	$ 10,369	$ 10,307
Interest on lease liabilities	Interest expense	628	1,932	2,373
Operating lease cost	Cost of goods sold; Research and development; Selling, general and administrative expenses	10,722	1,151	891
Sublease income	Selling, general and administrative expenses	(1,271)	(1,201)	(1,385)
Total lease cost		$ 14,718	$ 12,251	$ 12,186

Supplemental cash flow information related to leases were as follows (in thousands):

	Years Ended December 31,		
	2021	2020	2019
Cash paid for amounts included in the measurement of lease liabilities:			
Operating cash flows from operating leases	$ 10,022	$ 951	$ 914
Operating cash flows from finance leases	629	1,896	2,196
Financing cash flows from finance leases	5,489	12,620	11,925
Non-cash: Right-of-use assets obtained in exchange for new lease liabilities:			
Finance leases	450	662	49,909
Operating leases	3,585	1,072	2,736
Non-cash: Increase (decrease) resulting from lease modification:			
Finance lease right-of-use assets	(24,654)	—	—
Operating lease right-of-use assets	93,222	—	—
Finance lease liabilities, current	(12,587)	—	—
Operating lease liabilities, current	9,221	—	—
Finance lease liabilities, non-current	(20,009)	—	—
Operating lease liabilities, non-current	$ 91,943	$ —	$ —

Lease term and discount rate were as follows:

	December 31,	
	2021	2020
Weighted-average remaining lease term (years):		
Finance leases	1.1	2.9
Operating leases	6.8	1.8
Weighted-average discount rate:		
Finance leases	4.64%	4.39%
Operating leases	4.75%	4.74%

Maturities of lease liabilities as of December 31, 2021 are as follows (in thousands):

Year Ending December 31,	Finance Leases	Operating Leases
2022	$ 12	$ 15,387
2023	3	13,469
2024	—	16,810
2025	—	18,205
2026	—	18,005
Beyond 2026	—	35,877
Total future lease payments	15	117,753
Less: Interest	(1)	(18,033)
Present value of lease liabilities	$ 14	$ 99,720

7. Balance Sheet Components

Cash and Cash Equivalents

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

	December 31,	
	2021	2020
Cash	$ 111,422	$ 88,046
Commercial paper	1,000	—
Money market funds	58,801	590,347
Total cash and cash equivalents	$ 171,223	$ 678,393

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):

	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

	December 31, 2020			
	Amortized Cost	Gross Unrealized Holding Gains	Gross Unrealized Holding Losses	Fair Value
Bond and mutual funds	$ 8,147	$ —	$ (3)	$ 8,144
Equity investments	125	119	—	244
Total investments	$ 8,272	$ 119	$ (3)	$ 8,388

The contractual maturities of the available-for-sale investments were as follows (in thousands):

	December 31, 2021
Within one year - Bond and mutual funds	$ 233,967
After one year through three years	167,796
Total investments	$ 401,763

The Company periodically reviews its available-for-sale investments for other-than-temporary impairment. The Company considers factors such as the duration, severity and the reason for the decline in value, the potential recovery period and its intent to sell. For debt securities, the Company also considers whether (i) it is more likely than not that the Company will be required to sell the debt securities before recovery of their amortized cost basis, and (ii) the amortized cost basis cannot be recovered as a result of credit losses. During the three years ended December 31, 2021, the Company did not recognize any other-than-temporary impairment loss.

Inventories

Inventories consisted of the following (in thousands):

	December 31,	
	2021	2020
Raw materials	$ 1,363	$ 2,303
Work-in-progress	21,499	8,114
Finished goods	8,153	6,113
Total inventories	$ 31,015	$ 16,530

The Company capitalizes inventory costs for FibroGen Beijing's production of roxadustat for commercial sales purposes. The Company started capitalizing inventory costs for the U.S. entity in the second quarter of 2020 prior to regulatory approvals in the U.S., Europe and other territories. As of December 31, 2021 and 2020, inventory capitalized for the U.S. entity was 38% and 29% 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 December 31, 2021 and 2020.

Prepaid expenses and other current assets

Prepaid expenses and other current assets consisted of the following (in thousands):

	December 31,	
	2021	2020
Unbilled contract assets	$ 66,909	$ 2,147
Deferred revenues from associated contracts	(58,909)	(2,147)
Net unbilled contract assets	8,000	—
Prepaid assets	7,383	8,353
Other current assets	5,070	1,807
Total prepaid expenses and other current assets	$ 20,453	$ 10,160

The unbilled contract assets as of December 31, 2021 included $49.8 million related to transfer price true up for bulk drug product under the Europe Agreement with Astellas, $9.1 million related to unbilled co-development revenue under the China Amendment with AstraZeneca, and the $8.0 million unbilled upfront license payment under the Eluminex Agreement. The unbilled contract assets as of December 31, 2020 were related to unbilled co-development revenue under the China Amendment with AstraZeneca. See Note 3, *Collaboration Agreements, License Agreement and Revenues*, for details.

Property and Equipment

Property and equipment consisted of the following (in thousands):

	December 31,	
	2021	2020
Leasehold improvements	$ 103,352	$ 102,006
Laboratory equipment	19,300	18,143
Machinery	8,339	8,312
Computer equipment	9,670	9,545
Furniture and fixtures	6,201	6,128
Construction in progress	2,423	760
Total property and equipment	$ 149,285	$ 144,894
Less: accumulated depreciation	(121,008)	(111,247)
Property and equipment, net	$ 28,277	$ 33,647

Depreciation expense for the years ended December 31, 2021, 2020 and 2019 was $10.2 million, $11.7 million, and $11.1 million, respectively.

Accrued and Other Current Liabilities

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

	December 31,	
	2021	2020
Preclinical and clinical trial accruals	$ 56,283	$ 44,113
Acquired in-process research and development asset	35,000	—
Payroll and related accruals	20,909	22,800
Contract liabilities to pharmaceutical distributors	3,176	15,137
Accrued co-promotion expenses - current	25,746	11,537
Roxadustat profit share to AstraZeneca	7,895	7,007
Property taxes and other taxes	12,610	5,970
Professional services	6,074	4,869
Other	4,895	6,900
Total accrued and other current liabilities	$ 172,588	$ 118,333

The acquired IPR&D asset of $35.0 million as of December 31, 2021 was related to the upfront payment to HiFiBiO under the HiFiBiO Agreement. See Note 2, *Summary of Significant Accounting Policies - License Acquisition Agreement*, for details.

The profit share liability to AstraZeneca as of December 31, 2021 and 2020 was $7.9 million and $7.0 million, respectively, which represented the profit/loss share between FibroGen Beijing and AstraZeneca that was calculated for the interim period pursuant to the China Amendment. This liability correspondingly reduced the deferred revenue related to the performance obligation in accordance with the China Amendment. See Note 3, *Collaboration Agreements, License Agreement and Revenues*, for details.

Other Long-term Liabilities

Other long-term liabilities consisted of the following (in thousands):

	December 31, 2021	December 31, 2020
Accrued long-term co-promotion expenses	$ 15,236	$ 27,424
Other long-term tax liabilities	9,192	8,675
Other	1,590	2,690
Total other long-term liabilities	$ 26,018	$ 38,789

8. Product Development Obligations

The Technology Development Center of the Republic of Finland (“TEKES”) product development obligations consist of 11 separate advances (each in the form of a note agreement) received by FibroGen Europe between 1996 and 2008 from TEKES. These advances are granted on a project-by-project basis to fund various product development efforts undertaken by FibroGen Europe only. Each separate note is denominated in EUR and bears interest (not compounded) calculated as one percentage point less than the Bank of Finland rate in effect at the time of the note, but no less than 3.0%.

If the research work funded by TEKES does not result in an economically profitable business or does not meet its technological objectives, TEKES may, on application from FibroGen Europe, forgive each of these loans, including accrued interest, either in full or in part. As of December 31, 2021 and 2020, the Company had U.S. Dollar equivalent of $10.7 million and $11.6 million of principal outstanding, respectively, and $6.9 million and $7.1 million of interest accrued, respectively, which were presented in the product development obligations line on the consolidated balance sheets.

The Company is not a guarantor of these loans, and these loans are not repayable by FibroGen Europe until it has distributable funds.

9. Commitments and Contingencies

Contract Obligations

As of December 31, 2021, the Company had the following outstanding non-cancelable purchase obligations (in thousands):

	Purchase Obligations Due In The Year Ending December 31,		
	2022	2023	Total
	(in thousands)		
Manufacture and supply of pamrevlumab	$ 25,480	$ 19,918	$ 45,398
Manufacture and supply of roxadustat	14,591	3,920	18,511
Other purchases	9,353	—	9,353
Total purchase obligations	$ 49,424	$ 23,838	$ 73,262

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 December 31, 2021, 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 Galectin-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 currently active legal action in its consolidated balance sheets as of December 31, 2021, 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 has been set for April 28, 2022.

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 a forthcoming 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. Defendants have not been served in the second action.

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.

10. Equity and Stock-based Compensation

Common Stock

Each share of Common Stock is entitled to one vote. The holders of Common Stock are also entitled to receive dividends whenever funds are legally available and when declared by the board of directors, subject to the prior rights of holders of all classes of stock outstanding.

Shares of Common Stock outstanding, shares of stock plans outstanding and shares reserved for future issuance related to stock options and RSU grants and the Company's Employee Stock Purchase Plan ("ESPP") purchases are as follows (in thousands):

	December 31,	
	2021	2020
Common stock outstanding	92,881	91,441
Stock options outstanding	8,967	9,290
RSUs outstanding	2,304	1,893
Shares reserved for future stock options and RSUs grant	10,253	7,910
Shares reserved for future ESPP offering	4,771	4,070
Total shares of common stock reserved	119,176	114,604

Stock Plans

Stock Option and RSU Plans

Under the Company's Amended and Restated 2005 Stock Plan ("2005 Stock Plan"), the Company may issue shares of Common Stock and options to purchase Common Stock and other forms of equity incentives to employees, directors and consultants. Options granted under the 2005 Stock Plan may be incentive stock options or nonqualified stock options. Incentive stock options may be granted only to employees and officers of the Company. Nonqualified stock options and stock purchase rights may be granted to employees, directors and consultants. The board of directors has the authority to determine to whom options will be granted, the number of options, the term and the exercise price. Options are to be granted at an exercise price not less than fair market value for an incentive stock option or a nonqualified stock option. Options generally vest over four years. Options expire no more than 10 years after the date of grant. Upon the effective date of the registration statement related to the Company's initial public offering, the 2005 Plan was amended to cease the grant of any additional awards thereunder, although the Company will continue to issue common stock upon the exercise of previously granted stock options under the 2005 Plan.

In September 2014, the Company adopted a 2014 Equity Incentive Plan (the "2014 Plan") which became effective on November 13, 2014. The 2014 Plan is the successor equity compensation plan to the 2005 Plan. The 2014 Plan will terminate on November 12, 2024. The 2014 Plan provides for the grant of incentive stock options, nonqualified stock options, restricted stock awards, stock appreciation rights, performance stock awards, performance cash awards, restricted stock units and other stock awards to employees, directors and consultants. Stock options granted must be at prices not less than 100% of the fair market value at date of grant. Option vesting schedules are determined by the Company at the time of issuance and generally have a four year vesting schedule (25% vesting on the first anniversary of the vesting base date and quarterly thereafter over the next 3 years). Options generally expire ten years from the date of grant unless the optionee is a 10% stockholder, in which case the term will be five years from the date of grant. Unvested options exercised are subject to the Company's repurchase right. Shares reserved for issuance increases on January 1 of each year commencing on January 1, 2016 and ending on January 1, 2024 by the lesser of (i) the amount equal to 4% of the number of shares issued and outstanding on December 31 immediately prior to the date of increase or (ii) such lower number of shares as may be determined by the board of directors. As of December 31, 2021, the Company has reserved 10,252,944 shares of its common stock that remains unissued for issuance under the 2014 Plan.

Issuance of shares upon share option exercise or share unit conversion is made through issuance of new shares authorized under the plan.

Certain Common Stock option holders have the right to exercise unvested options, subject to a right held by the Company to repurchase the stock, at the original exercise price, in the event of voluntary or involuntary termination of employment of the stockholder. The shares are generally released from repurchase provisions ratably over four years. The Company accounts for the cash received in consideration for the early exercised options as a liability. At December 31, 2021 and 2020, no shares of Common Stock were subject to repurchase by the Company.

Stock option transactions, including forfeited options granted under the 2014 Plan as well as prior plans, are summarized below:

	Shares (In thousands)	Weighted Average Exercise per Share	Weighted Average Remaining Contractual Life (In Years)	Aggregate Intrinsic Value (In thousands)
Outstanding at December 31, 2020	9,290	$ 32.94		
Granted	3,452	35.58		
Exercised	(688)	13.89		
Expired	(1,259)	35.40		
Forfeited	(1,828)	34.07		
Outstanding at December 31, 2021	8,967	34.84	6.41	$ 2,622
Vested and expected to vest, December 31, 2021	8,535	34.76	6.28	2,460
Exercisable at December 31, 2021	5,241	$ 32.80	4.78	$ 1,408

The total intrinsic value of options exercised during the years ended December 31, 2021, 2020 and 2019 was $13.1 million, $89.6 million, and $59.2 million, respectively.

The following table summarizes RSU activity:

	Shares (In thousands)	Fair Value at Grant
Unvested at December 31, 2020	1,893	$ 37.60
Granted	1,808	30.19
Vested	(828)	37.66
Forfeited	(569)	42.28
Unvested at December 31, 2021	2,304	$ 30.60

Among the vested RSUs during the year ended December 31, 2021, 538,607 shares were released and issued, while the remaining was withheld for the related payroll taxes. The estimated weighted-average fair value of the awards granted during the years ended December 31, 2021, 2020 and 2019 was $30.19, $29.99 and $54.74, respectively.

ESPP

In September 2014, the Company adopted a 2014 ESPP that became effective on November 13, 2014. The 2014 ESPP is designed to enable eligible employees to periodically purchase shares of the Company's common stock at a discount through payroll deductions of up to 15% of their eligible compensation, subject to any plan or IRS limitations. At the end of each offering period, employees are able to purchase shares at 85% of the lower of the fair market value of the Company's common stock on the first trading day of the offering period or on the last day of the offering period. Purchases are accomplished through participation in discrete offering periods. The 2014 ESPP is intended to qualify as an ESPP under Section 423 of the Internal Revenue Code. The Company has reserved 1,600,000 shares of its common stock for issuance under the 2014 ESPP and shares reserved for issuance increases January 1 of each year commencing January 1, 2016 by the lesser of (i) a number of shares equal to 1% of the total number of outstanding shares of common stock on December 31 immediately prior to the date of increase; (ii) 1,200,000 shares or (iii) such number of shares as may be determined by the board of directors. There were 213,505 shares, 143,876 shares and 135,115 shares purchased by employees under the 2014 Purchased Plan for the years ended December 31, 2021, 2020 and 2019, respectively.

The expected term of 2014 ESPP shares is the average of the remaining purchase periods under each offering period.

Stock-Based Compensation

Stock-based compensation expense was recorded directly to research and development and selling, general and administrative expense for the years ended December 31, 2021, 2020 and 2019 was as follows (in thousands):

	Years Ended December 31,		
	2021	2020	2019
Research and development	$ 40,547	$ 46,229	$ 41,015
Selling, general and administrative	30,614	26,491	25,252
Total stock-based compensation expense	$ 71,161	$ 72,720	$ 66,267

The Company estimates the fair value of stock options using the Black-Scholes option valuation model. The fair value of employee stock options is being amortized on a straight-line basis over the requisite service period of the awards. The fair market value of common stock is based on the closing price of the Company's common stock as reported on the Nasdaq Global Select Market on the date of the grant.

The fair value of employee stock-based compensation is estimated using the following assumptions:

- Expected Term. Expressed as a weighted-average, the expected life of the options is based on the average period the stock options are expected to be outstanding and was based on the Company's historical information of the option exercise patterns and post-vesting termination behavior as well as contractual terms of the instruments.
- Expected Volatility. The Company considers its historical volatility data for volatility considerations for its ESPP. Historically, the expected volatility for all other stock-based compensation was based upon a blend of the Company's and comparable public entities' historical volatility. Since the third quarter of 2020, the expected volatility for all other stock-based compensation is currently based upon the Company's historical volatility data.
- Risk-Free Interest Rate. Expressed as a weighted-average, the risk-free interest rate assumption is based on the U.S. Treasury instruments whose term was consistent with the expected term of the Company's stock options.
- Expected Dividend Yield. The Company has never declared or paid any cash dividends and does not plan to pay cash dividends in the foreseeable future.

The assumptions used to estimate the fair value of stock options granted and ESPPs using the Black-Scholes option valuation model were as follows:

	Years Ended December 31,		
	2021	2020	2019
Stock Options			
Expected term (in years)	5.7	5.7	5.3
Expected volatility	61.9 %	67.1 %	68.0 %
Risk-free interest rate	0.8 %	0.8 %	2.4 %
Expected dividend yield	—	—	—
Weighted average estimated fair value	$ 20.21	$ 18.36	$ 31.98
ESPPs			
Expected term (in years)	0.5 - 2.0	0.5 - 2.0	0.5 - 2.0
Expected volatility	47.1 - 104.4 %	47.5 - 77.1 %	48.1 - 62.1 %
Risk-free interest rate	0.0 - 2.2 %	0.1 - 2.9 %	1.3 - 2.9 %
Expected dividend yield	—	—	—
Weighted average estimated fair value	$ 12.40	$ 17.53	$ 19.27

As of December 31, 2021, there was $56.4 million of total unrecognized compensation costs, net of estimated forfeitures, related to non-vested stock option awards granted that will be recognized on a straight-line basis over the weighted-average period of 2.57 years. As of December 31, 2021, there was $52.3 million of total unrecognized compensation costs, net of estimated forfeitures, related to non-vested RSUs granted that will be recognized on a straight-line basis over the weighted-average period of 2.29 years.

Warrants

During the year ended December 31, 2019, a warrant to purchase 4,430 shares of our common stock was exercised and there was no warrant to purchase shares of Common Stock outstanding at December 31, 2021 and 2020.

Subsidiary Stock and Non-Controlling Interests

FibroGen Europe

As of December 31, 2021 and 2020, respectively, FibroGen Europe had a total of 42,619,022 shares of Preferred Stock outstanding, of which there were 1,700,845 shares of Series A Preferred Stock, 1,875,000 shares of Series B Preferred Stock, 1,599,503 shares of Series C Preferred Stock, 1,520,141 shares of Series D Preferred Stock, 459,565 shares of Series E Preferred Stock, 5,714,332 shares of Series F Preferred Stock, 9,927,500 shares of Series G Preferred Stock and 19,822,136 shares of Series H Preferred Stock, all of which shares no longer have any right to be exchanged for FibroGen, Inc. Common Stock. The holders of FibroGen Europe's shares of Preferred Stock ("Preferred Shares") have the following rights, preferences and privileges:

Dividend Rights — When the assets of FibroGen Europe are distributed (except for distribution in a liquidation), Preferred Shares shall have the same rights to dividend or other forms of distribution as shares of Common Stock of FibroGen Europe. In the event of a merger, holders of Preferred Shares do not have the right to demand FibroGen Europe to redeem all or part of their Preferred Shares. FibroGen Europe may repurchase shares of Common Stock or Preferred Shares for consideration.

Pre-emptive Right — Preferred Shares shall have pre-emptive subscription right in accordance with the Finnish Limited Liability Companies Act if additional shares are issued, option rights are given, or convertible loan is taken, *provided*, *however*, that the foregoing pre-emptive right does not apply to a directed share issue, for which two thirds (2/3) of the voting shares represented at a general meeting of shareholders approve for an important legitimate cause.

Redemption Right — If a Preferred Share can be redeemed by a majority shareholder owning more than ninety percent (90%) of the shares of FibroGen Europe in accordance with the provisions of the Finnish Limited Liability Companies Act, the minority holders of Preferred Shares have the right to request redemption of their shares.

Voting Right — Each share has one vote. Preferred Shares have voting rights only in situations that are specifically *provided in the Articles of Association, which include a merger transaction and directed share issue. In addition, Preferred Shares have right to vote in a general shareholder meeting for amending the Articles of Association if the amendment will affect the rights of Preferred Shares.*

Conversion Right (1-for-1 basis into Common Stock of FibroGen Europe):

- Voluntary conversion right: Preferred Shares can be converted into common shares upon the written request of a shareholder provided that the conversion is feasible within the maximum and minimum amounts of shares of classes of FibroGen Europe as set forth in its Articles of Association. Such request can be withdrawn before the notification of conversion is filed with the Finnish Trade Register.
- Compulsory conversion right: Preferred Shares will be converted into common shares if (i) FibroGen Europe's shares are listed in a stock exchange or other trading system in the European Economic Area, or (ii) FibroGen Europe's recombinant collagen and gelatin production technology is being put into commercial use in the area of Europe and certain other European states. Commercial use means there is income generated from the first commercial sale of the products incorporating the above-mentioned technology and does not include license fees, development financing, milestone payments or income from test products or equipment used in research. The board of directors of FibroGen Europe shall notify the shareholders of the compulsory conversion in writing, and the shareholders shall request to convert their shares within the timeframe provided in the notification. Should the shareholders fail to make the conversion request within the time limit, FibroGen Europe may redeem the shares of such shareholders.

Liquidation Right — In the event of a dissolution of FibroGen Europe, holders of Preferred Shares are entitled to be paid in an amount equal to the subscription price of the shares before any distribution is made to holders of common shares. Among holders of Preferred Shares, holders of shares of Series F Preferred Stock are entitled to be paid in an amount equal to the subscription price of Series F Preferred Stock before any distribution is made to holders of other Preferred Shares.

FibroGen Cayman

FibroGen Cayman had 6,758,000 Series A Preference Shares outstanding as of December 31, 2021 and 2020, respectively. The holders of the FibroGen Cayman Series A Preference Shares have the following rights, preferences and privileges:

Liquidation — In the event of liquidation, dissolution, or winding up of the Company, either voluntary or involuntary, including by means of a merger, the holders of FibroGen Cayman Series A Preference Shares are entitled to be paid an amount equal to the product of the number of shares held by a holder of shares of FibroGen Cayman Series A Preference Shares and the original issue price of $1.00 (subject to equitable adjustment for any stock dividend, combination, split, reclassification, recapitalization) plus all declared and unpaid dividends thereon.

Conversion — Each share of FibroGen Cayman Series A Preference Shares is convertible into the number of fully paid and non-assessable shares of Common Stock of FibroGen Cayman that results from dividing the original issue price by the conversion price in effect at the time of the conversion, subject to adjustments for stock splits, stock dividends, reclassifications and like events. The FibroGen Cayman Series A Preference Shares have a conversion price that is equal to the original issuance price such that the conversion ratio to FibroGen Cayman Common Stock is 1:1 as of all periods presented.

Voting — The holders of FibroGen Cayman Series A Preference Shares are entitled to vote together with the FibroGen Cayman Common Stockholders on all matters submitted for a vote of the stockholders. The holder of each share of FibroGen Cayman Series A Preference Shares has the number of votes equal to the number of shares of FibroGen Cayman Common Stock into which it is convertible.

Dividends — The holders of FibroGen Cayman Series A Preference Shares are entitled to receive cash dividends when and if declared, at a rate of 6%.

Non-Controlling Interests

Non-controlling interest positions related to the issuance of subsidiary stock as described above are reported as a separate component of consolidated equity from the equity attributable to the Company’s stockholders at December 31, 2021 and 2020. In addition, the Company does not allocate losses to the non-controlling interests as the outstanding shares representing the non-controlling interest do not represent a residual equity interest in the subsidiary.

In January 2013, FibroGen Cayman entered into a $0.6 million convertible promissory note. The note bears simple interest at a rate of two percent (2.00%) per annum, accrued on an annual basis in arrears. The outstanding principal balance and unpaid accrued interest on the note is due and payable upon the earlier of (a) the effectiveness of the initial public offering of FibroGen Cayman or (b) the eight year anniversary of the date of the note. As of December 31, 2020, the total outstanding principal balance and accrued interest were $0.7 million and recorded in the other long-term liabilities in the consolidated balance sheets. During the year ended December 31, 2021, at the option of the lender, the $0.7 million total outstanding principal balance and unpaid accrued interest on the note were converted into Series A Preferred Stock of FibroGen Cayman, and was recorded as an addition to the non-controlling interest of the Company.

Upon the initial public offering and as described above, all eligible FibroGen Europe preferred shares were exchanged for 958,996 shares of FibroGen Common Stock. No other FibroGen Europe shares have the right to be exchanged for FibroGen, Inc. Common Stock.

11. 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. During the years ended December 31, 2021, 2020 and 2019, the Company reported a net loss. Therefore, dilutive common shares are not assumed to have been issued since their effect is anti-dilutive.

Diluted weighted average shares excluded the following potential common shares related to stock options, restricted stock units and shares to be purchased under the employee stock purchase plan for the three years presented as they were anti-dilutive (in thousands):

	Years Ended December 31,		
	2021	2020	2019
Employee stock options	8,461	6,694	7,602
RSUs	1,538	564	1,187
ESPP	417	306	260
Warrants	—	—	1
	10,416	7,564	9,050

12. Income Taxes

The components of loss before income taxes are as follows (in thousands):

	Years Ended December 31,		
	2021	2020	2019
Domestic	$ (268,499)	$ (195,617)	$ 2,538
Foreign	(22,184)	6,888	(79,180)
Loss before provision for income taxes	$ (290,683)	$ (188,729)	$ (76,642)

The provision for income taxes consists of the following (in thousands):

	Years Ended December 31,		
	2021	2020	2019
Current:			
Federal	$ —	$ —	$ —
State	—	—	—
Foreign	347	360	328
Total current	347	360	328
Deferred:			
Federal	—	—	—
State	—	—	—
Foreign	—	—	—
Total deferred	—	—	—
Total provision for income taxes	$ 347	$ 360	$ 328

The following is the reconciliation between the statutory federal income tax rate and the Company's effective tax rate:

	Years Ended December 31,		
	2021	2020	2019
Tax at statutory federal rate	21.0%	21.0%	21.0%
State tax	—%	—%	—%
Stock-based compensation expense	(1.8)%	2.4%	6.3%
Benefit due to intercompany transfer of assets	—%	41.7%	—%
Valuation allowance on intercompany transfer of assets	—%	(41.7)%	—%
Net operating losses not benefitted	(16.8)%	(23.2)%	(2.9)%
Foreign net operating losses not benefitted	(1.6)%	0.7%	(21.7)%
Deduction limitation on executive compensation	(0.3)%	(0.8)%	(2.5)%
Other	(0.6)%	(0.3)%	(0.6)%
Total	(0.1)%	(0.2)%	(0.4)%

Significant components of the Company's deferred tax assets are as follows (in thousands):

	December 31,	
	2021	2020
Federal and state net operating loss carryforwards	$ 167,135	$ 134,033
Tax credit carryforwards	78,832	62,465
Foreign net operating loss carryforwards	38,117	32,417
Stock-based compensation	10,050	10,399
Lease obligations	20,415	8,243
Reserves and accruals	6,067	5,875
Deferred revenue	20,101	13,550
Intangible assets	84,625	75,915
Other	825	—
Subtotal	426,167	342,897
Less: Valuation allowance	(409,810)	(337,824)
Net deferred tax assets	16,357	5,073
Fixed assets	(16,357)	(5,073)
Other	—	—
Net deferred tax liabilities	(16,357)	(5,073)
Total net deferred tax assets	$ —	$ —

A valuation allowance has been provided to reduce the deferred tax assets to an amount management believes is more likely than not to be realized. Expected realization of the deferred tax assets for which a valuation allowance has not been recognized is based on upon the reversal of existing temporary differences and future taxable income.

The valuation allowance increased by $72.0 million, $124.0 million and $19.9 million for the years ended December 31, 2021, 2020 and 2019, respectively. Due to uncertainty surrounding the realization of the favorable tax attributes in the future tax returns, the Company has established a valuation allowance against its otherwise recognizable net deferred tax assets.

The Company intends to continue maintaining a full valuation allowance on its deferred tax assets until there is sufficient evidence to support the reversal of all or some portion of this allowance. However, given the anticipated future foreign earnings, the Company believes that there is a reasonable possibility that within the next 12 months, sufficient positive evidence may become available 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 the Company is able to actually achieve.

During 2020, the Company transferred certain intellectual property rights relating to its Chinese business between its wholly owned subsidiaries that are based in different tax jurisdictions. The transferor entity was not subject to income taxes in its local jurisdiction. The acquiring entity of the intellectual property is entitled to amortize the acquisition price of the intangible assets for tax purposes. In accordance with ASU 2016-16, *Intra-Entity Transfers of Assets Other Than Inventory*, the Company recognized a deferred tax asset of $78.7 million for the temporary difference arising from the acquirer's excess tax basis. Furthermore, based upon the weight of available evidence, the Company recognized a full valuation allowance against this deferred tax asset since it does not currently believe that realization of this gross deductible temporary difference is more likely than not. Accordingly, this inter-company transfer did not have a material impact to the Company's consolidated financial statements.

At December 31, 2021, the Company had net operating loss carryforwards available to offset future taxable income of approximately $764.1 million and $134.6 million for federal and state tax purposes, respectively. These carryforwards will begin to expire in 2026 for federal and 2022 for state purposes, if not utilized before these dates. The Company also had foreign net operating loss carryforwards of approximately $198.7 million, which expire between 2022 and 2031 if not utilized.

At December 31, 2021, the Company had approximately $87.8 million of federal and $36.6 million of California research and development tax credit and other tax credit carryforwards available to offset future taxable income. The federal credits begin to expire in 2022 and the California research credits have no expiration dates.

Federal and state tax laws impose substantial restrictions on the utilization of net operating loss and credit carryforwards in the event of an "ownership change" for tax purposes, as defined in IRC Section 382. The Company reviewed its stock ownership for year ended December 31, 2021 and concluded no ownership changes occurred which would result in a reduction of its net operating loss or in its research and development credits expiring unused. If additional ownership change occurs, the utilization of net operating loss and credit carryforwards could be significantly reduced.

Uncertain Tax Positions

The Company had unrecognized tax benefits of approximately $57.7 million as of December 31, 2021. Approximately $0.7 million of unrecognized tax benefits, if recognized, would affect the effective tax rate. The interest accrued as of December 31, 2021 and 2020 was immaterial.

A reconciliation of the beginning and ending amounts of unrecognized income tax benefits during the three years ended December 31, 2021 is as follows (in thousands):

	Federal and State
Balance as of December 31, 2018	$ 27,956
Decrease due to prior positions	(111)
Increase due to current year position	4,418
Balance as of December 31, 2019	32,263
Decrease due to prior positions	(137)
Increase due to current year position	16,448
Balance as of December 31, 2020	48,574
Decrease due to prior positions	(245)
Increase due to current year position	8,415
Foreign exchange rate differential	927
Balance as of December 31, 2021	$ 57,671

Unrecognized tax benefits may change during the next twelve months for items that arise in the ordinary course of business. The Company does not anticipate a material change to its unrecognized tax benefits over the next twelve months that would affect the Company's effective tax rate.

The Company classifies interest and penalties as a component of tax expense, if any.

The Company files income tax returns in the U.S. federal jurisdiction, U.S. state and other foreign jurisdictions. The U.S. federal and U.S. state taxing authorities may choose to audit tax returns for tax years beyond the statute of limitation period due to significant tax attribute carryforwards from prior years, making adjustments only to carryforward attributes. The foreign statute of limitation generally remains open from 2012 to 2021. The Company is not currently under audit in any tax jurisdiction.

13. Related Party Transactions

Astellas is an equity investor in the Company and considered a related party. During the years ended December 31, 2021, 2020 and 2019, the Company recorded license and development revenue related to collaboration agreements with Astellas of $130.4 million, $33.5 million, and $158.8 million, respectively.

During the years ended December 31, 2021, 2020 and 2019, the Company also recorded drug product revenue from Astellas of $3.2 million, $4.3 million, and $(36.3) million, respectively. See Note 3, *Collaboration Agreements, License Agreement and Revenues*, for details.

During the years ended December 31, 2021, 2020 and 2019, the Company recorded expense related to collaboration agreements with Astellas of $0.2 million, $0.5 million and $2.8 million, respectively.

As of December 31, 2021 and 2020, accounts receivable from Astellas were $10.9 million and $4.1 million, respectively.

As of December 31, 2021 and 2020, total deferred revenue from Astellas were $27.9 million and $7.5 million, respectively.

As of December 31, 2021, the amount due to Astellas was immaterial. As of December 31, 2020, amount due to Astellas was $1.1 million.

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 4, *Equity method investment - Variable Interest Entity*, for details.

For the year ended December 31, 2021, the net product revenue from Falikang was $35.6 million. See Note 3, *Collaboration Agreements, License Agreement and Revenues*, for details.

For the years ended December 31, 2021 and 2020, the investment income (loss) in Falikang was $1.0 million and $(0.2) million, respectively. As of December 31, 2021 and 2020, the Company's equity method investment in Falikang was $3.8 million and $2.7 million, respectively. See Note 4, *Equity method investment - Variable Interest Entity*, for details.

As of December 31, 2021, accounts receivable, net, from Falikang was zero. As of December 31, 2021, the advanced payment from Falikang, classified as deferred revenue, was $1.2 million.

As of December 31, 2021, there was no miscellaneous receivables from Falikang. As of December 31, 2020, prepaid expenses and other current assets included miscellaneous receivables from Falikang of $0.9 million.

14. Segment and Geographic Information

The Company has determined that the chief executive officer is the chief operating decision maker ("CODM"). The CODM reviews financial information presented for the Company's various clinical trial programs as well as results on a consolidated basis. License revenues and development revenues received are not allocated to various programs for purposes of determining a profit measure and resource allocation decisions are made by the CODM based primarily on consolidated results. As such, the Company has concluded that it operates as one segment. Supplemental enterprise-wide information has been presented below.

Geographic Revenues

To provide a more meaningful disclosure along with the developments in its business, the Company changed its methodology of summarizing geographic revenues to be by the region that the revenue is generated, from the previously reported by the bill-to region. Accordingly, the information for the year ended December 31, 2020 and 2019 were recalculated. Geographic revenues, which are based on the region that revenue is generated, are as follows (in thousands):

	Years Ended December 31,		
	2021	2020	2019
Europe	$ 131,243	$ 17,954	$ 145,641
Japan	2,305	19,824	(23,167)
China	55,640	73,361	20,967
United States	46,121	65,180	113,134
All other	—	—	2
Total revenue	$ 235,309	$ 176,319	$ 256,577

Geographic Assets

Geographic information for inventory is as follows (in thousands):

	December 31,	
	2021	2020
By geographic location:		
United States	$ 5,522	$ 1,080
China	25,493	15,450
Total inventory	$ 31,015	$ 16,530
By inventory ownership:		
United States	$ 11,695	$ 4,715
China	19,320	11,815
Total inventory	$ 31,015	$ 16,530

Property and equipment, net by geographic location are as follows (in thousands):

	December 31,	
	2021	2020
United States	$ 15,002	$ 20,673
China	13,275	12,974
Total property and equipment	$ 28,277	$ 33,647

Finance lease right-of-use assets and operating lease right-of-use assets, net by geographic location are as follows (in thousands):

	December 31,	
	2021	2020
United States	$ 730	$ 29,551
China	31	55
Total finance lease right-of-use assets	$ 761	$ 29,606
United States	$ 87,113	$ 47
China	3,999	1,996
Total operating lease right-of-use assets	$ 91,112	$ 2,043

Customer Concentration

The Company's revenues to date have been generated from the following collaboration partners and distribution entity that respectively accounted for 10% or more of the Company's total revenue and accounts receivable:

	Percentage of Revenue			Percentage of Accounts Receivable	
	Years Ended December 31,			December 31,	
	2021	2020	2019	2021	2020
Astellas—Related party	57%	21%	48%	63%	10%
AstraZeneca	20%	37%	52%	34%	26%
Falikang—Related party	15%	—%	—%	—%	—%

The Company started selling roxadustat in China since late 2019 through a growing number of pharmaceutical distributors located in China. In January 2021, Falikang became fully operational and substantially all direct product sales to distributors in China were made by Falikang, while FibroGen Beijing continued to sell product directly in a few provinces in China during 2021. The aggregate revenue from FibroGen Beijing's direct sales to distributors for the year ended December 31, 2021 and the aggregate accounts receivable from direct sales to distributors as of December 31, 2021 were immaterial. For the year ended December 31, 2020, the aggregate revenue from distributors represented 42% of the consolidated revenue, with no individual distributor representing over 10% of the total revenue. As of December 31, 2020, the aggregate accounts receivable from distributors represented 64% of the consolidated accounts receivable, with no material balance from any individual distributor. The aggregate revenue from distributors for the year ended December 31, 2019 and the aggregate accounts receivable from distributors as of December 31, 2019 were immaterial.

Schedule II: Valuation and Qualifying Accounts
(in thousands)

	Balance at Beginning of Year	Charged (Credited) to Statement of Operation	Charged to Other Accounts - Liabilities and Equity	Deductions, Net	Balance at End of Year
Valuation allowances for deferred tax assets					
Year ended December 31, 2021	$ 337,824	$ 71,986	$ —	$ —	$ 409,810
Year ended December 31, 2020	$ 213,847	$ 123,977	$ —	$ —	$ 337,824
Year ended December 31, 2019	$ 193,987	$ 19,860	$ —	$ —	$ 213,847
Allowances for rebates and discounts					
Year ended December 31, 2021	$ 548	$ 44,258	$ (734)	$ (29,629)	$ 14,443
Year ended December 31, 2020	$ 1,102	$ 16,497	$ (14,867)	$ (2,184)	$ 548
Year ended December 31, 2019	$ —	$ 1,102	$ —	$ —	$ 1,102

PART IV

ITEM 15. EXHIBITS AND FINANCIAL STATEMENT SCHEDULES

(a) We have filed the following documents as part of this Annual Report:

1. Consolidated Financial Statements

Information in response to this Item is included in Part II, Item 8 of this Annual Report.

2. Financial Statement Schedules

Schedule II is included on page 58. All other schedules are omitted because they are not required or the required information is included in the consolidated financial statements or notes thereto.

3. Exhibits

See Item 15(b) below.

(b) ***Exhibits***—We have filed, or incorporated into this Annual Report by reference, the exhibits listed below. Where an exhibit is incorporated by reference, the number in parentheses indicates the document to which cross-reference is made. Refer to the end of this table for a listing of cross-reference documents.

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
4.4	Description of Capital Stock of FibroGen, Inc.	10-K	001-36740	4.4	3/2/2020
10.1(i)+	FibroGen, Inc. Amended and Restated 2005 Stock Plan.	S-1	333-199069	10.3(i)	10/1/2014
10.1(ii)+	Forms of stock option agreement, restricted stock purchase agreement and stock appreciation right agreement under the FibroGen, Inc. Amended and Restated 2005 Stock Plan.	S-1	333-199069	10.3(ii)	10/1/2014
10.1(iii)+	Form of stock option agreement under the FibroGen, Inc. Amended and Restated 2005 Stock Plan applicable to options exchanged pursuant to FibroGen, Inc.'s 2010 amendment and exchange offer.	S-1	333-199069	10.3(iii)	10/1/2014

10.1(iv)+	Form of 2010 amendment to the form of stock option agreement under the FibroGen, Inc. Amended and Restated 2005 Stock Plan applicable to options amended pursuant to FibroGen, Inc.'s 2010 amendment and exchange offer.	S-1	333-199069	10.3(iv)	10/1/2014
10.1(v)+	Form of 2013 amendment to the form of stock option agreement under the FibroGen, Inc. Amended and Restated 2005 Stock Plan applicable to options amended or exchanged pursuant to FibroGen, Inc.'s 2010 amendment and exchange offer.	S-1	333-199069	10.3(v)	10/1/2014
10.2+	FibroGen, Inc. 2014 Equity Incentive Plan and forms of agreement thereunder.	S-1/A	333-199069	10.4	11/12/2014
10.3+	FibroGen, Inc. 2014 Employee Stock Purchase Plan.	S-1/A	333-199069	10.5	11/12/2014
10.4+	FibroGen, Inc. Non-Employee Director Compensation Policy, as amended.	10-Q	001-36740	10.1	5/7/2020
10.5+	FibroGen, Inc. 2018 Bonus Plan.	8-K	001-36740	10.5	2/16/2018
10.6	Lease Agreement by and between FibroGen, Inc. and X-4 Dolphin LLC, dated as of September 22, 2006; as amended by First Amendment to Lease by and between FibroGen, Inc. and X-4 Dolphin LLC, dated as of October 10, 2007; as amended by Second Amendment to Lease by and between FibroGen, Inc. and X-4 Dolphin LLC, dated as of June 29, 2009; as amended by Third Amendment to Lease by and between FibroGen, Inc. and Are-San Francisco No. 43, LLC (as successor in interest to X-4 Dolphin LLC), dated as of May 19, 2011; as amended by Fourth Amendment to Lease by and between FibroGen, Inc. and Are-San Francisco No. 43, LLC, dated as of September 8, 2011.	S-1	333-199069	10.8	10/1/2014
10.7	Lease for Premises in Beijing BDA Biomedical Park by and among Beijing FibroGen Medical Technology Development Co., Ltd., Beijing Economic and Technology Investment Development Parent Company and Beijing BDA International Biological Pharmaceutical Investment Management Co., Ltd., effective as of February 1, 2013, as supplemented by the Supplementary Agreement to Lease of Premises in Beijing BDA Biomedical Park by and among Beijing FibroGen Medical Technology Development Co., Ltd., Beijing Economic Technology Investment Development Parent Company and Beijing BDA International Biological Pharmaceutical Investment Management Co., Ltd., dated as of January 30, 2013.	S-1	333-199069	10.9	10/1/2014

10.8+	Form of Employment Offer Letter.	S-1	333-199069	10.10	10/1/2014
10.9†	Collaboration Agreement, by and between FibroGen, Inc. and Astellas Pharma Inc., effective as of June 1, 2005.	10-Q	001-36740	10.1	11/5/2020
10.9(i)†	Amendment No. 1 to Collaboration Agreement, by and between FibroGen, Inc. and Astellas Pharma Inc., effective as of January 1, 2013.	10-K	001-36740	10.9(i)	2/27/2019
10.10†	Anemia License and Collaboration Agreement, by and between FibroGen, Inc. and Astellas Pharma Inc., effective as of April 28, 2006.	S-1	333-199069	10.12	10/1/2014
10.11†	Amendment to Anemia License and Collaboration Agreement, by and between FibroGen, Inc. and Astellas Pharma Inc., effective as of August 31, 2006.	S-1	333-199069	10.13	10/1/2014
10.12	Amendment No. 2 to Anemia License and Collaboration Agreement, by and between FibroGen, Inc. and Astellas Pharma Inc., effective as of December 1, 2006.	S-1	333-199069	10.14	10/1/2014
10.13†	Supplement to Anemia License and Collaboration Agreement, by and between FibroGen, Inc. and Astellas Pharma Inc., effective as of April 28, 2006.	S-1	333-199069	10.15	10/1/2014
10.14†	Amendment No. 3 to Anemia License and Collaboration Agreement, by and between FibroGen, Inc. and Astellas Pharma Inc., dated as of May 10, 2012.	S-1	333-199069	10.16	10/1/2014
10.15†	Amended and Restated License, Development and Commercialization Agreement (China) by and among FibroGen China Anemia Holdings, Ltd., Beijing FibroGen Medical Technology Development Co., Ltd., FibroGen International (Hong Kong) Limited and AstraZeneca AB, effective as of July 30, 2013.	10-Q	001-36740	10.3	11/5/2020
10.16†	Amended and Restated License, Development and Commercialization Agreement (for the U.S. and Certain Other Territories) by and between FibroGen, Inc. and AstraZeneca AB, effective as of July 30, 2013.	10-Q	001-36740	10.2	11/5/2020

10.17	Research and Commercialization Agreement by and among FibroGen, Inc., GenPharm International Inc., Medarex, Inc. and FibroPharma, Inc., effective as of July 9, 1998.	S-1	333-199069	10.21	10/1/2014
10.18	Amendment No. 1 to Research and Commercialization Agreement by and among FibroGen, Inc., GenPharm International Inc., Medarex, Inc. and FibroPharma, Inc., effective as of June 30, 2001.	S-1	333-199069	10.22	10/1/2014
10.19†	Amendment No. 2 to Research and Commercialization Agreement by and among FibroGen, Inc., GenPharm International Inc., Medarex, Inc. and FibroPharma, Inc., effective as of January 28, 2002.	10-Q	001-36740	10.6	11/5/2020
10.20+	Form of Indemnity Agreement by and between FibroGen, Inc. and its directors and officers.	S-1/A	333-199069	10.27	10/23/2014
10.21†	State-Owned Construction Land Use Right Granting Contract by and between FibroGen (China) Medical Technology Development Co., Ltd. and The Bureau of Land and Resources of Cangzhou, dated as of February 24, 2017.	10-Q	001-36740	10.32	5/9/2017
10.22†	Commercial Supply Agreement by and between FibroGen, Inc. and Catalent Pharma Solutions, LLC, effective as of January 1, 2020.	10-K	001-36740	10.28	3/2/2020
10.23†	Master Supply Agreement by and among FibroGen, Inc., Shanghai SynTheAll Pharmaceutical Co., Ltd. and STA Pharmaceutical Hong Kong Limited, effective March 2, 2020.	8-K	001-36740	99.1	3/24/2020
10.24†	Amendment No.1 to Master Supply Agreement by and among FibroGen, Inc., Shanghai SynTheAll Pharmaceutical Co., Ltd. and STA Pharmaceutical Hong Kong Limited, effective May 11, 2020.	10-Q	001-36740	10.2	8/6/2020
10.25†	Second Amended and Restated License, Development and Commercialization Agreement by and among FibroGen China Anemia Holdings, Ltd., FibroGen China Medical Technology Development Co., Ltd., FibroGen International (Hong Kong) Limited, and AstraZeneca AB, effective July 1, 2020.	10-Q	001-36740	10.3	8/6/2020
10.26†	Amendment No. 1 to the Amended and Restated License, Development and Commercialization Agreement by and between FibroGen, Inc. and AstraZeneca AB, effective July 1, 2020.	10-Q	001-36740	10.4	8/6/2020

10.27†	Amendment No. 2 to Master Supply Agreement by and among FibroGen, Inc., Shanghai SynTheAll Pharmaceutical Co., Ltd. and STA Pharmaceutical Hong Kong Limited, effective July 24, 2020.	10-Q	001-36740	10.8	11/5/2020
10.28†	Master Supply Agreement by and between FibroGen, Inc. and AstraZeneca UK Limited, effective September 10, 2020.	10-Q	001-36740	10.9	11/5/2020
10.29†	Master Services Agreement by and between FibroGen, Inc. and Samsung Biologics Co., Ltd., effective as of October 30, 2020.	10-K	001-36740	10.35	3/1/2021
10.30†	Product Specific Agreement by and between FibroGen, Inc. and Samsung Biologics Co., Ltd., effective as of October 30, 2020.	10-K	001-36740	10.36	3/1/2021
10.31†	Astellas EU Supply Agreement by and between FibroGen, Inc. and Astellas Pharma Europe Ltd, effective as of January 1, 2021.	10-Q	001-36740	10.2	5/10/2021
10.32†	Amendment No. 3 to Master Supply Agreement by and among FibroGen, Inc., Shanghai SynTheAll Pharmaceutical Co., Ltd., and STA Pharmaceutical Hong Kong Limited, dated as of January 12, 2021.	10-Q	001-36740	10.3	5/10/2021
10.33	Sixth Amendment to the Lease by and between ARE-San Francisco No., 43, LLC and FibroGen, Inc. as of June 1, 2021.	10-Q	001-36740	10.1	8/9/2021
10.34†	Exclusive License and Option Agreement by and between FibroGen, Inc. and HiFiBiO (HK) Limited (D.B.A. HiFiBiO Therapeutics), as of June 16, 2021.	10-Q	001-36740	10.2	8/9/2021
10.35†	Exclusive License Agreement by and between FibroGen, Inc. and Eluminex Biosciences (Suzhou) Limited, as of July 16, 2021.	10-Q	001-36740	10.1	11/9/2021
10.36†	Amendment No. 4 to Master Supply Agreement by and among FibroGen, Inc., Shanghai SynTheAll Pharmaceutical Co., Ltd., and STA Pharmaceutical Hong Kong Limited, dated as of October 29, 2021.	10-K	001-36740	10.36	2/28/2022
10.37+	Offer Letter, by and between FibroGen, Inc. and James Schoeneck, dated as of September 18, 2019.	10-Q	001-36740	10.7	11/12/2019

10.38+	Offer Letter, by and between FibroGen, Inc. and Christine Chung, dated as of June 17, 2008.	10-K	001-36740	10.32	3/2/2020
10.39+	Offer Letter, by and between FibroGen, Inc. and Elias Kouchakji, dated as of January 24, 2014.	10-K	001-36740	10.33	3/2/2020
10.40+	Offer Letter, by and between FibroGen, Inc. and Enrique Conterno, dated as of December 17, 2019.	10-K	001-36740	10.34	3/2/2020
10.41+	Offer Letter, by and between FibroGen, Inc. and Thane Wettig, dated as of May 7, 2020.	10-Q	001-36740	10.1	8/6/2020
10.42+	Offer Letter, by and between FibroGen, Inc. and Mark Eisner, dated as of October 22, 2020.	10-K	001-36740	10.44	3/1/2021
10.43+	Transition, Separation, and Consulting Agreement by and between FibroGen, Inc. and K. Peony Yu, dated as of November 27, 2020.	10-Q	001-36740	10.1	5/10/2021
10.44+	Offer Letter by and between FibroGen, Inc. and Juan Graham, effective as of July 30, 2021.	10-Q	001-36740	10.2	11/9/2021
10.45+	Transition Agreement by and between FibroGen, Inc. and Pat Cotroneo, dated as of August 14, 2021.	10-Q	001-36740	10.3	11/9/2021
10.46+	Form of Executive Officer Change in Control and Severance Agreement.	10-K	001-36740	10.35	3/2/2020
21.1	Subsidiaries of FibroGen, Inc.	10-Q	001-36740	21.1	8/9/2021
23.1*	Consent of PricewaterhouseCoopers LLP.	—	—	—	—
24.1	Power of Attorney.	10-K	001-36740	24.1	2/28/2022
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 Schema Linkbase Document	—	—	—	—
101.CAL*	Inline XBRL Calculation Linkbase Document	—	—	—	—

101.DEF*	Inline XBRL Definition Linkbase Document	—	—	—	—
101.LAB*	Inline XBRL Labels Linkbase Document	—	—	—	—
101.PRE*	Inline XBRL Taxonomy Presentation Linkbase Document	—	—	—	—
104	Cover Page Interactive Data File (embedded within the inline XBRL document)	—	—	—	—

* Filed herewith.

† Portions of this exhibit (indicated by asterisks) have been omitted as the Company has determined that (i) the omitted information is not material and (ii) the omitted information would likely cause competitive harm if publicly disclosed.

\+ Indicates a management contract or compensatory plan.

(1) This certification accompanies the Form 10-K 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-K), irrespective of any general incorporation language contained in such filing.

(c) ***Financial Statement Schedules***—See (a) 2 above. All other financial statement schedules are omitted because they are not applicable because the requested information is included in the consolidated financial statements or notes thereto.

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, as amended, the registrant has duly caused this Annual Report on Form 10-K/A to be signed on its behalf by the undersigned, thereunto duly authorized, in the City of San Francisco, State of California.

FIBROGEN, INC.

Date: March 4, 2022

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

Exhibit 23.1

Consent of Independent Registered Public Accounting Firm

We hereby consent to the incorporation by reference in the Registration Statements on Form S-3 (No. 333-236844) and Form S-8 (No. 333-200348, No. 333-213816, No. 333-216369, No. 333-233204 and No. 333-258655) of FibroGen Inc. of our report dated February 28, 2022 relating to the financial statements and financial statement schedule and the effectiveness of internal control over financial reporting, which appears in this Form 10-K.

/s/ PricewaterhouseCoopers LLP

San Jose, California
February 28, 2022

Exhibit 31.1

CERTIFICATION

I, Enrique Conterno, certify that;

1. I have reviewed this annual report on Form 10-K/A 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(s) 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 the 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(s) 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: March 4, 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 annual report on Form 10-K/A 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(s) 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 the 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(s) 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: March 4, 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 Annual Report on Form 10-K/A for the year ended December 31, 2021 (the "Form 10-K/A"), to which this Certification is attached as Exhibit 32.1, fully complies with the requirements of Section 13(a) or Section 15(d) of the Exchange Act, and

2. The information contained in the Form 10-K/A fairly presents, in all material respects, the financial condition and results of operations of the Company.

In Witness Whereof, the undersigned have set their hands hereto as of the 4th day of March 2022.

/s/ Enrique Conterno	/s/ Juan Graham
Enrique Conterno	Juan Graham
Chief Executive Officer	Senior Vice President and Chief Financial Officer

This certification accompanies the Form 10-K/A 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-K/A), irrespective of any general incorporation language contained in such filing.