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 001-38978

FULCRUM THERAPEUTICS, INC.

(Exact name of registrant as specified in its Charter)

Delaware	**47-4839948**
(State or other jurisdiction of incorporation or organization)	**(I.R.S. Employer Identification No.)**
26 Landsdowne Street Cambridge, Massachusetts	**02139**
(Address of principal executive offices)	**(Zip Code)**

Registrant's telephone number, including area code: (617) 651-8851

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

Title of each class	Trading Symbol(s)	Name of each exchange on which registered
Common stock, par value $0.001 per share	FULC	Nasdaq Global 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 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, 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 Exchange Act). YES ☐ NO ☒

As of June 30, 2021, the last business day of the registrant's most recently completed second fiscal quarter, the aggregate market value of the registrant's common stock held by non-affiliates of the registrant, based on the closing price of the shares of common stock on the Nasdaq Global Market on June 30, 2021, was approximately $248,910,889.

The number of shares of registrant's common stock outstanding as of February 24, 2022 was 40,637,216.

DOCUMENTS INCORPORATED BY REFERENCE

The registrant filed a definitive proxy statement pursuant to Regulation 14A relating to the 2022 Annual Meeting of Stockholders within 120 days of the end of the registrant's fiscal year ended December 31, 2021. Portions of such definitive proxy statement are incorporated by reference into Part III of this Annual Report on Form 10-K to the extent stated herein.

EXPLANATORY NOTE

Fulcrum Therapeutics, Inc. is filing this Amendment No. 1 on Form 10-K/A to amend its original Annual Report on Form 10-K for the fiscal year ended December 31, 2021, or Original Form 10-K, originally filed with the Securities and Exchange Commission, or SEC, on March 3, 2022, for the sole purpose of filing revised Exhibit 31.1 in order to include in the certifications set forth in such exhibit the language of revised paragraph 4(b), which language was inadvertently omitted from the certifications when originally filed as Exhibits 31.1 and 31.2. This amendment consists solely of the preceding cover page, this explanatory note, Item 8, Item 9A, the list of exhibits filed with this amendment, the signature page and the revised certifications filed as Exhibit 31.1 to this amendment and the required certifications required by the Sarbanes-Oxley Act in connection with the filing of this amendment.

Except as described above, this amendment does not reflect events occurring after the date of the filing of the original Annual Report on Form 10-K or modify or update any of the other disclosures contained therein in any way. Accordingly, this amendment should be read in conjunction with the original Annual Report on Form 10-K and the Company's other filings with the SEC. This amendment does not reflect events that may have occurred subsequent to the filing of the Original Form 10-K. The filing of this amendment is not an admission that the Original Form 10-K, when filed, included any untrue statement of a material fact or omitted to state a material fact necessary to make a statement not misleading.

Item 8. Financial Statements and Supplementary Data.

Our consolidated financial statements, together with the independent registered public accounting firm report thereon, are presented beginning on page F-1 of this Form 10-K/A.

Item 9A. Controls and Procedures.

Evaluation of Disclosure Controls and Procedures

Our management, with the participation of our principal executive officer and principal financial officer, evaluated the effectiveness of our disclosure controls and procedures as of December 31, 2021. The term "disclosure controls and procedures," as defined in Rules 13a-15(e) and 15d-15(e) under the Securities Exchange Act of 1934, as amended, or the Exchange Act, means controls and other procedures of a company that are designed to ensure that information required to be disclosed by a company in the reports that it files or submits under the Exchange Act is recorded, processed, summarized and reported, within the time periods specified in the SEC's rules and forms. Disclosure controls and procedures include, without limitation, controls and procedures designed to ensure that information required to be disclosed by a company in the reports that it files or submits under the Exchange Act is accumulated and communicated to the company's management, including its principal executive and principal financial officers, or persons performing similar functions, as appropriate to allow timely decisions regarding required disclosure. Our management recognizes that any controls and procedures, no matter how well designed and operated, can provide only reasonable assurance of achieving their objectives and our management necessarily applies its judgment in evaluating the cost-benefit relationship of possible controls and procedures. Based on the evaluation of our disclosure controls and procedures as of December 31, 2021, our principal executive officer and principal financial officer concluded that, as of such date, our disclosure controls and procedures were effective at the reasonable assurance level.

Management's Annual Report on Internal Control over Financial Reporting

Our management is responsible for establishing and maintaining adequate internal control over financial reporting for the company. Internal control over financial reporting is defined in Rules 13a-15(f) and 15d-15(f) under the Exchange Act as a process designed by, or under the supervision of, a company's principal executive officer and principal financial officer, or persons performing similar functions, and effected by a company's board of directors, management, and other personnel, 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 and includes those policies and procedures that:

- pertain to the maintenance of records that in reasonable detail accurately and fairly reflect the transactions and dispositions of a company's assets;
- provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that a company's receipts and expenditures are being made only in accordance with authorizations of a company's management and directors; and
- provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use or disposition of a 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. Therefore, even those systems determined to be effective can provide only reasonable assurance with respect to financial statement preparation and presentation. 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.

Under the supervision of and with the participation of our principal executive officer and principal financial officer, our management assessed the effectiveness of our internal control over financial reporting as of December 31, 2021 based on the criteria set forth by the Committee of Sponsoring Organizations of the Treadway Commission (COSO) in Internal Control—Integrated Framework (2013 framework). Based on this assessment, management concluded that our internal control over financial reporting was effective as of December 31, 2021.

This Form 10-K/A does not include an attestation report of our independent registered public accounting firm due to an exemption established by the JOBS Act for "emerging growth companies".

Changes in Internal Control over Financial Reporting

There was no change in our internal control over financial reporting (as defined in Rules 13a-15(f) and 15d-15(f) under the Exchange Act) that occurred during the three months ended December 31, 2021 that has materially affected, or is reasonably likely to materially affect, our internal control over financial reporting.

PART IV

Item 15. Exhibits and Financial Statement Schedules.

(1) Consolidated Financial Statements

The following documents are included on pages F-1 through F-31 attached hereto and are filed as part of this Form 10-K/A.

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(2) Financial Statement Schedules

All financial statement schedules have been omitted because they are not applicable, not required, or the information required is shown in the consolidated financial statements or the notes thereto.

(3) Exhibits

The exhibits required by Item 601 of Regulation S-K and Item 15(b) of Form 10-K are listed in the Exhibit Index immediately preceding the signature page of this Form 10-K/A. The exhibits listed in the Exhibit Index are incorporated by reference herein.

PART IV

INDEX TO CONSOLIDATED FINANCIAL STATEMENTS

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Report of Independent Registered Public Accounting Firm

To the Stockholders and the Board of Directors of Fulcrum Therapeutics, Inc.

Opinion on the Financial Statements

We have audited the accompanying consolidated balance sheets of Fulcrum Therapeutics, Inc. (the Company) as of December 31, 2021 and 2020, the related consolidated statements of operations and comprehensive loss, stockholders' equity and cash flows for the years then ended, and the related notes (collectively referred to as the "consolidated financial statements"). In our opinion, the consolidated financial statements present fairly, in all material respects, the financial position of the Company at December 31, 2021 and 2020, and the results of its operations and its cash flows for the years then ended, in conformity with U.S. generally accepted accounting principles.

Basis for Opinion

These financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on the Company's financial statements 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 audit to obtain reasonable assurance about whether the financial statements are free of material misstatement, whether due to error or fraud. The Company is not required to have, nor were we engaged to perform, an audit of its internal control over financial reporting. As part of our audits we are required to obtain an understanding of internal control over financial reporting but not for the purpose of expressing an opinion on the effectiveness of the Company's internal control over financial reporting. Accordingly, we express no such opinion.

Our audits included performing procedures to assess the risks of material misstatement of the 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 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 financial statements. We believe that our audits provide a reasonable basis for our opinion.

/s/ Ernst & Young LLP

We have served as the Company's auditor since 2017.

Boston, Massachusetts
March 3, 2022

Fulcrum Therapeutics, Inc.

Consolidated Balance Sheets

(In thousands, except share and per share amounts)

	December 31, 2021	December 31, 2020
Assets		
Current assets:		
Cash and cash equivalents	$ 35,412	$ 57,052
Marketable securities	182,750	55,862
Accounts receivable	2,500	2,000
Unbilled accounts receivable	1,137	531
Prepaid expenses and other current assets	4,199	4,065
Total current assets	225,998	119,510
Property and equipment, net	7,368	8,397
Restricted cash	1,092	1,092
Other assets	542	578
Total assets	$ 235,000	$ 129,577
Liabilities and stockholders' equity		
Current liabilities:		
Accounts payable	$ 4,788	$ 4,079
Accrued expenses and other current liabilities	9,231	7,267
Deferred lease incentive, current portion	469	469
Deferred revenue, current portion	4,711	14,910
Total current liabilities	19,199	26,725
Deferred rent, excluding current portion	1,680	1,649
Deferred lease incentive, excluding current portion	2,582	3,051
Deferred revenue, excluding current portion	—	2,971
Total liabilities	23,461	34,396
Commitments and contingencies (Note 12)		
Stockholders' equity:		
Preferred stock, $0.001 par value; 5,000,000 shares authorized; no shares issued or outstanding	—	—
Common stock, $0.001 par value; 200,000,000 shares authorized; 40,636,398 and 28,067,402 shares issued as of December 31, 2021 and December 31, 2020, respectively; 40,626,224 and 27,941,566 shares outstanding as of December 31, 2021 and December 31, 2020, respectively	41	28
Treasury stock, at cost; no shares as of December 31, 2021 and December 31, 2020	—	—
Additional paid-in capital	514,362	316,775
Accumulated other comprehensive loss	(397)	(2)
Accumulated deficit	(302,467)	(221,620)
Total stockholders' equity	211,539	95,181
Total liabilities and stockholders' equity	$ 235,000	$ 129,577

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

Fulcrum Therapeutics, Inc.

Consolidated Statements of Operations and Comprehensive Loss

(In thousands, except per share data)

	Year Ended December 31,	
	2021	**2020**
Collaboration revenue	$ 19,163	$ 8,823
Operating expenses:		
Research and development	69,701	59,042
General and administrative	30,516	21,392
Total operating expenses	100,217	80,434
Loss from operations	(81,054)	(71,611)
Other income, net	207	792
Net loss	$ (80,847)	$ (70,819)
Net loss per share, basic and diluted	$ (2.29)	$ (2.79)
Weighted average common shares outstanding, basic and diluted	35,361	25,354
Comprehensive loss:		
Net loss	$ (80,847)	$ (70,819)
Other comprehensive loss:		
Unrealized loss on marketable securities	(395)	(2)
Total other comprehensive loss	(395)	(2)
Comprehensive loss	$ (81,242)	$ (70,821)

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

Fulcrum Therapeutics, Inc.

Consolidated Statements of Stockholders' Equity

(In thousands, except share amounts)

	Common Stock		Treasury Stock		Additional Paid-In Capital	Accumulated Other Comprehensive Loss	Accumulated Deficit	Total Stockholders' Equity
	Shares	Amount	Shares	Amount				
Balance at December 31, 2019	22,654,444	$ 23	—	$ —	$ 237,931	$ —	$ (150,801)	$ 87,153
Issuance of common stock in connection with private placement, net of placement agent fees and offering costs	4,029,411	4	—	—	64,314	—	—	64,318
Issuance of common stock in "at-the-market" offering, net of issuance costs	550,000	1	—	—	5,735	—	—	5,736
Issuance of common stock under employee benefit plans	182,359	—	—	—	1,430	—	—	1,430
Vesting of restricted stock awards	525,352	—	—	—	15	—	—	15
Repurchase of unvested restricted stock awards	—	—	29,882	—	—	—	—	—
Retirement of treasury shares	—	—	(29,882)	—	—	—	—	—
Stock-based compensation expense	—	—	—	—	7,350	—	—	7,350
Unrealized loss on marketable securities	—	—	—	—	—	(2)	—	(2)
Net loss	—	—	—	—	—	—	(70,819)	(70,819)
Balance at December 31, 2020	27,941,566	$ 28	—	$ —	$ 316,775	$ (2)	$ (221,620)	$ 95,181
Issuance of common stock in connection with public offerings, net of issuance costs	12,190,000	12	—	—	182,845	—	—	182,857
Issuance of common stock under employee benefit plans	381,967	1	—	—	3,667	—	—	3,668
Vesting of restricted stock awards	112,691	—	—	—	5	—	—	5
Repurchase of unvested restricted stock awards	—	—	2,971	—	—	—	—	—
Retirement of treasury shares	—	—	(2,971)	—	—	—	—	—
Stock-based compensation expense	—	—	—	—	11,070	—	—	11,070
Unrealized loss on marketable securities	—	—	—	—	—	(395)	—	(395)
Net loss	—	—	—	—	—	—	(80,847)	(80,847)
Balance at December 31, 2021	40,626,224	$ 41	—	$ —	$ 514,362	$ (397)	$ (302,467)	$ 211,539

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

Fulcrum Therapeutics, Inc.

Consolidated Statements of Cash Flows

(In thousands)

	Year Ended December 31,	
	2021	**2020**
Operating activities		
Net loss	$ (80,847)	$ (70,819)
Adjustments to reconcile net loss to net cash used in operating activities:		
Depreciation expense	2,515	2,379
Stock-based compensation expense	11,070	7,350
Net amortization of premiums and discounts on marketable securities	673	(68)
Changes in operating assets and liabilities:		
Accounts receivable	(500)	(2,000)
Unbilled accounts receivable	(606)	(531)
Prepaid expenses and other current assets	(134)	(697)
Other assets	36	(519)
Accounts payable	973	1,773
Accrued expenses and other liabilities	1,950	1,976
Deferred revenue	(13,170)	7,881
Deferred rent and deferred lease incentive	(438)	(380)
Net cash used in operating activities	$ (78,478)	$ (53,655)
Investing activities		
Purchases of marketable securities	(216,234)	(124,270)
Maturities of marketable securities	88,278	68,474
Purchases of property and equipment	(1,713)	(1,342)
Net cash used in investing activities	$ (129,669)	$ (57,138)
Financing activities		
Payment of initial public offering costs	—	(193)
Proceeds from issuance of common stock in connection with private placement, net of placement agent fees and offering costs	—	64,210
Proceeds from issuance of common stock in connection with at-the-market offering, net of issuance costs	—	5,736
Proceeds from issuance of common stock in connection with public offerings, net of issuance costs	182,857	—
Principal payments on capital lease obligations	(18)	(50)
Proceeds from issuance of common stock under benefit plans, net	3,668	1,429
Net cash provided by financing activities	186,507	71,132
Net decrease in cash, cash equivalents and restricted cash	(21,640)	(39,661)
Cash, cash equivalents, and restricted cash, beginning of period	58,144	97,805
Cash, cash equivalents, and restricted cash, end of period	$ 36,504	$ 58,144
Supplemental cash flow information		
Cash paid for interest	$ —	$ 4
Non-cash investing and financing activities:		
Property and equipment purchases unpaid at end of period	$ 37	$ 262

The following table provides a reconciliation of the cash, cash equivalents, and restricted cash balances as of each of the periods shown above:

	December 31, 2021	**December 31, 2020**
Cash and cash equivalents	$ 35,412	$ 57,052
Restricted cash	1,092	1,092
Total cash, cash equivalents, and restricted cash	$ 36,504	$ 58,144

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

1. Nature of the Business and Basis of Presentation

Fulcrum Therapeutics, Inc. (the "Company" or "Fulcrum") was incorporated in Delaware on August 18, 2015. The Company is focused on improving the lives of patients with genetically-defined rare diseases in areas of high unmet medical need.

The Company is subject to a number of risks similar to other companies in the biotechnology industry, including, but not limited to, risks of failure of preclinical studies and clinical trials, dependence on key personnel, protection of proprietary technology, reliance on third party organizations, risks of obtaining regulatory approval for any product candidate that it may develop, development by competitors of technological innovations, compliance with government regulations, and the need to obtain additional financing. Product candidates currently under development will require significant additional research and development efforts, including extensive preclinical and clinical testing, and regulatory approval, prior to commercialization. These efforts require significant amounts of additional capital, adequate personnel infrastructure and extensive compliance-reporting capabilities. Even if the Company's development efforts are successful, it is uncertain when, if ever, the Company will realize significant revenue from product sales.

Basis of Presentation

The accompanying consolidated financial statements have been prepared in conformity with generally accepted accounting principles in the United States of America ("GAAP"). Any reference in these notes to applicable guidance is meant to refer to the authoritative GAAP as found in the Accounting Standards Codification ("ASC") and Accounting Standards Updates ("ASU") of the Financial Accounting Standards Board ("FASB").

Sales of Common Stock

On June 9, 2020, the Company issued and sold 4,029,411 shares of common stock to investors in a private placement at a price of $17.00 per share, resulting in net proceeds of $64.3 million after deducting offering costs.

On August 11, 2020, the Company entered into an Equity Distribution Agreement with Piper Sandler & Co. ("Piper Sandler"), as sales agent, pursuant to which the Company may offer and sell shares of its common stock with an aggregate offering price of up to $75.0 million under an "at-the-market" offering program (the "ATM Offering"). The Equity Distribution Agreement provides that Piper Sandler will be entitled to a sales commission equal to 3.0% of the gross sales price per share of all shares sold under the ATM Offering. From the initiation of the ATM Offering through December 31, 2021, the Company has issued and sold 550,000 shares under the ATM Offering, resulting in aggregate net proceeds of $5.7 million after deducting issuance costs of $0.2 million.

On January 22, 2021, the Company completed a public offering of its common stock and issued and sold 4,600,000 shares of common stock at a public offering price of $11.00 per share, resulting in net proceeds of $47.4 million after deducting underwriting discounts and commissions and offering expenses.

On August 16, 2021, the Company completed a public offering of its common stock and issued and sold 7,590,000 shares of common stock at a public offering price of $19.00 per share, resulting in net proceeds of $135.5 million after deducting underwriting discounts and commissions and offering expenses.

Liquidity

The Company has incurred recurring losses and negative cash flows from operations since inception and has primarily funded its operations with proceeds from the sale of shares of common stock in public offerings, a private placement, and the ATM Offering, through issuances of convertible preferred stock, and from upfront payments received from the collaboration and license agreements with Acceleron Pharma Inc. ("Acceleron"), a wholly-owned subsidiary of Merck & Co., Inc., and MyoKardia, Inc. ("MyoKardia"), a wholly-owned subsidiary of Bristol Myers Squibb Company. As of December 31, 2021, the Company had an accumulated deficit of $302.5 million. The Company expects its operating losses and negative operating cash flows to continue into the foreseeable future as it continues to expand its research and development efforts. The

Company expects to finance its future cash needs through a combination of equity offerings, debt financings, collaborations, strategic alliances and marketing, distribution or licensing arrangements.

The Company expects that its cash, cash equivalents, and marketable securities will be sufficient to fund its operating expenses and capital expenditure requirements for at least twelve months from the date of issuance of these financial statements. However, the Company has based this estimate on assumptions that may prove to be wrong, and its operating plan may change as a result of many factors currently unknown to it. As a result, the Company could deplete its capital resources sooner than it currently expects. If the Company is unable to raise additional funds through equity or debt financings when needed, it may be required to delay, limit, reduce or terminate development or future commercialization efforts or grant rights to develop and market product candidates that it would otherwise prefer to develop and market itself.

2. Summary of Significant Accounting Policies

Principles of Consolidation

The accompanying consolidated financial statements include the accounts of the Company and its wholly-owned subsidiary, Fulcrum Therapeutics Securities Corp., which is a Massachusetts subsidiary created to buy, sell, and hold securities. All intercompany transactions and balances have been eliminated.

Use of Estimates

The preparation of financial statements in accordance with GAAP requires management to make certain estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities as of the date of the financial statements, and the reported amount of expenses during the reported periods. Estimates inherent in the preparation of these consolidated financial statements include, but are not limited to, estimates related to revenue recognition, accrued expenses, stock-based compensation expense, and income taxes. The Company bases its estimates on historical experience and other market specific or other relevant assumptions it believes to be reasonable under the circumstances. On an ongoing basis, management evaluates its estimates as there are changes in circumstances, facts and experience. Actual results could differ from those estimates or assumptions.

Cash and Cash Equivalents

Cash equivalents are highly liquid investments that are readily convertible into cash with original maturities of three months or less when purchased. Cash equivalents include investments in money market funds that invest in U.S. Treasury obligations. The Company maintains its bank accounts at major financial institutions.

Restricted Cash

Restricted cash represents cash held to secure a letter of credit associated with the Company’s facility lease.

Fair Value of Financial Instruments

The fair value of the Company’s financial assets and liabilities reflects the Company’s estimate of amounts that it would have received in connection with the sale of the assets or paid in connection with the transfer of the liabilities in an orderly transaction between market participants at the measurement date. In connection with measuring the fair value of its assets and liabilities, the Company seeks to maximize the use of observable inputs (market data obtained from sources independent from the Company) and to minimize the use of unobservable inputs (the Company’s assumptions about how market participants would price assets and liabilities). The following fair value hierarchy is used to classify assets and liabilities based on the observable inputs and unobservable inputs used in order to value the assets and liabilities:

Level 1: Quoted prices in active markets for identical assets or liabilities. An active market for an asset or liability is a market in which transactions for the asset or liability occur with sufficient frequency and volume to provide pricing information on an ongoing basis.

Level 2: Observable inputs other than Level 1 inputs. Examples of Level 2 inputs include quoted prices in active markets for similar assets or liabilities and quoted prices for identical assets or liabilities in markets that are not active.

Level 3: Unobservable inputs based on the Company’s assessment of the assumptions that market participants would use in pricing the asset or liability.

The Company's cash equivalents and marketable securities are carried at fair value and are classified according to the fair value hierarchy described above (Note 3). The cash equivalents and marketable securities are initially valued at the transaction price, and subsequently revalued at the end of each reporting period, utilizing third-party pricing services. The pricing services utilize industry standard valuation models, including both income and market-based approaches, to determine fair value.

Marketable Securities

The Company classifies securities with a remaining maturity when purchased of greater than three months as marketable securities. As of December 31, 2021, the Company's marketable securities consisted of investments in corporate bonds and commercial paper. Marketable securities are classified as current assets on the consolidated balance sheets if the marketable securities are available to be converted into cash to fund current operations.

Marketable securities are carried at fair value with the unrealized gains and losses included in accumulated other comprehensive loss, which is a component of stockholders' equity, until such gains and losses are realized. Any premium arising at purchase is amortized to interest expense (a component of other income, net) over the period of the earliest call date, and any discount arising at purchase is accreted to interest income (a component of other income, net) over the life of the instrument. Realized gains and losses are determined using the specific identification method and are included in other income, net.

If any adjustment to fair value reflects a decline in value of the investment, the Company considers all available evidence to evaluate the extent to which the decline is "other-than-temporary" and, if so, marks the investment to market through a charge to the Company's statement of operations and comprehensive loss.

Property and Equipment

Property and equipment are recorded at cost, net of accumulated depreciation. Maintenance and repairs to an asset that do not improve or extend its life are charged to operations. Depreciation expense is recorded using the straight-line method over the estimated useful life of the related asset as follows:

	Estimated Useful Life (in years)
Lab equipment	5
Furniture and fixtures	4
Computer equipment	3
Software	3
Leasehold improvements	Shorter of useful life or remaining lease term

Construction-in-progress is stated at cost, which includes direct costs attributable to the setup or construction of the related asset. Depreciation expense is not recorded on construction-in-progress until the relevant assets are completed and put into use. When assets are retired or otherwise disposed of, the assets and related accumulated depreciation are eliminated from the accounts and any resulting gain or loss is reflected in the Company's consolidated statements of operations and comprehensive loss.

Impairment of Long-Lived Assets

Long-lived assets consist of property and equipment. 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. An impairment loss would be recognized when estimated undiscounted future cash flows expected to result from the use or disposition of an asset group are less than its carrying amount. The impairment loss would be based on the excess of the carrying value of the impaired asset group over its fair value, determined based on discounted cash flows. The Company did not record any impairment losses on long-lived assets during the years ended December 31, 2021 and 2020.

Leases

Leases are classified at their inception as either operating or capital leases. The Company recognizes rent expense for its facility leases, which are classified as operating leases, on a straight-line basis over the respective lease term, inclusive of

rent escalation provisions and rent holidays. The difference between rent payments made and straight-line rent expense is recorded as deferred rent. Additionally, the Company recognizes tenant improvement allowances for its operating leases as a deferred lease incentive and amortizes the lease incentive as a reduction to rent expense on a straight-line basis over the respective lease term.

Revenue Recognition

Under ASC 606, *Revenue from Contracts with Customers*, an entity recognizes revenue when its customer obtains control of promised goods or services, in an amount that reflects the consideration that the entity expects to receive in exchange for those goods or services. In applying ASC 606, the Company performs the following five steps:

1) Identify the contract with the customer

A contract with a customer exists when (i) the Company enters into an enforceable contract with a customer that defines each party's rights regarding the goods or services to be transferred and identifies the related payment terms, (ii) the contract has commercial substance and (iii) the Company determines that collection of substantially all consideration for goods and services that are transferred is probable based on the customer's intent and ability to pay the promised consideration.

2) Identify the promises and performance obligations in the contract

Performance obligations promised in a contract are identified based on the goods and services that will be transferred to the customer that are both capable of being distinct, whereby the customer can benefit from the good or service either on its own or together with other readily available resources, and are distinct in the context of the contract, whereby the transfer of the good or service is separately identifiable from other promises in the contract. To the extent a contract includes multiple promised goods and services, the Company must apply judgment to determine whether promised goods and services are capable of being distinct and distinct in the context of the contract. In assessing whether a promised good or service is distinct, the Company considers factors such as the research, manufacturing and commercialization capabilities of the customer and the availability of the associated expertise in the marketplace. The Company also considers the intended benefit of the contract in assessing whether a promised good or service is separately identifiable from other promises in the contract. If these criteria are not met, the promised goods and services are accounted for as a combined performance obligation.

3) Determine the transaction price

The transaction price is determined based on the consideration to which the Company will be entitled in exchange for transferring goods and services to the customer. If the consideration promised in a contract includes a variable amount, the Company estimates the amount of consideration to which it will be entitled in exchange for transferring the promised goods or services to a customer. The Company determines the amount of variable consideration by using the expected value method or the most likely amount method. The Company includes the unconstrained amount of estimated variable consideration in the transaction price. The amount included in the transaction price is constrained to the amount for which it is probable that a significant reversal of cumulative revenue recognized will not occur. At the end of each subsequent reporting period, the Company re-evaluates the estimated variable consideration included in the transaction price and any related constraint, and if necessary, adjusts the estimate of the overall transaction price. Any such adjustments are recorded on a cumulative catch-up basis in the period of adjustment. Changes to the constraint of variable consideration can have a material effect on the amount of revenue recognized in the period.

If an arrangement includes research and development milestone payments, the Company evaluates whether the milestones are considered probable of being reached and estimates the amount to be included in the transaction price using the most likely amount method. If it is probable that a significant revenue reversal would not occur, the associated milestone value is included in the transaction price. Milestone payments that are based on the occurrence of events not within the Company's control, such as regulatory approvals, are generally not considered probable of being achieved until the underlying events occur or the associated approvals are received.

For arrangements with licenses of intellectual property that include sales-based royalties, including milestone payments based on the level of sales, and the license is deemed to be the predominant item to which the royalties relate, the Company recognizes royalty revenue and sales-based milestones at the later of (i) when the related sales occur, or (ii) when the performance obligation to which the royalty has been allocated has been satisfied.

In determining the transaction price, the Company adjusts consideration for the effects of the time value of money if the timing of payments provides the Company with a significant benefit of financing. The Company assesses its revenue generating arrangements in order to determine whether a significant financing component exists.

4) Allocate the transaction price to the performance obligations in the contract

If the contract contains a single performance obligation, the entire transaction price is allocated to the single performance obligation. Contracts that contain multiple performance obligations require an allocation of the transaction price to each performance obligation on a relative standalone selling price basis, except for any variable consideration that meets the criteria to be allocated entirely to a single performance obligation or to a distinct service that forms part of a single performance obligation.

5) Recognize revenue when or as the Company satisfies a performance obligation

The Company may satisfy performance obligations over time or at a point in time, depending on the nature of the performance obligation. Revenue is recognized over time if the customer simultaneously receives and consumes the benefits provided by the entity's performance, the entity's performance creates or enhances an asset that the customer controls as the asset is created or enhanced, or the entity's performance does not create an asset with an alternative use to the entity and the entity has an enforceable right to payment for performance completed to date. If the entity does not satisfy a performance obligation over time, the related performance obligation is satisfied at a point in time by transferring the control of a promised good or service to a customer.

For revenue that the Company recognizes over time, the Company assesses whether an input or an output method is the appropriate measure of progress associated with the satisfaction of the performance obligation. In determining the appropriate method for measuring progress, the Company considers the nature of the good or service that it has promised to transfer to the customer. Output methods recognize revenue on the basis of direct measurements of the value to the customer of the goods or services transferred to date relative to the remaining goods or services promised under the contract. Input methods recognize revenue on the basis of the entity's efforts or inputs to the satisfaction of a performance obligation. Estimates inherent to the measurement of progress associated with the satisfaction of performance obligations based on an input method include the total estimated costs to satisfy the associated performance obligation.

See Note 10, "Collaboration and License Agreements", for further information on the application of ASC 606 to the collaboration and license agreement with Acceleron (the "Acceleron Collaboration Agreement") and the collaboration and license agreement with MyoKardia (the "MyoKardia Collaboration Agreement").

Research and Development Expenses

Research and development expenses include costs directly attributable to the conduct of research and development programs, including personnel-related expenses such as salaries, payroll taxes, benefits, and stock-based compensation expense, manufacturing and external costs related to outside vendors engaged to conduct both preclinical studies and clinical trials, laboratory supplies, depreciation on and maintenance of research equipment, and the allocable portions of facility costs, such as rent, utilities, repairs and maintenance, depreciation, and general support services. Expenditures relating to research and development are expensed in the period incurred. Non-refundable advance payments for goods and services that will be used in future research and development activities are expensed when the activity has been performed or when the goods have been received rather than when the payment is made.

Research Contract Costs and Accruals

The Company has entered into various research and development contracts with research institutions and other companies. The Company records accruals for estimated ongoing research costs that have not yet been invoiced. When evaluating the adequacy of the accrued liabilities, the Company analyzes progress of the studies or trials or the extent of services provided during the reporting periods, including invoices received and contracted costs. Significant judgments and estimates are made in determining the accrued balances at each reporting period. Actual results could differ from the Company's estimates.

Patent-Related Costs

Patent-related costs incurred in connection with patent applications are expensed as incurred due to the uncertainty about the recovery of the expenditure. Amounts incurred are classified as general and administrative expenses in the accompanying statements of operations.

Stock-Based Compensation

The Company measures stock-based awards based on the fair value on the date of grant. Compensation expense associated with those awards is recognized over the requisite service period, which is generally the vesting period of the respective award. Generally, the Company issues awards with only service-based vesting conditions and records the expense for these awards using the straight-line method.

The fair value of each restricted stock award is based on the fair value of the Company's common stock on the grant date, less any applicable purchase price. The fair value of each stock option is estimated on the grant date using the Black-Scholes option-pricing model, which requires inputs based on certain subjective assumptions, including the expected stock price volatility, the expected term of the award, the risk-free interest rate, and expected dividends. Expected volatility is calculated based on reported volatility data for a representative group of publicly traded companies for which historical information is available. The historical volatility is calculated based on a period of time commensurate with the assumption used for the expected term. The risk-free interest rate is based on the U.S. Treasury yield curve in effect at the time of grant commensurate with the expected term assumption. The Company uses the simplified method, under which the expected term is presumed to be the midpoint between the vesting date and the end of the contractual term. The Company utilizes this method due to the lack of historical exercise data and the plain nature of its stock-based awards. The expected dividend yield is assumed to be zero as the Company has never paid dividends and has no current plans to pay any dividends on common stock.

The Company accounts for forfeitures as they occur. The Company classifies stock-based compensation expense in its statements of operations in the same manner in which the award recipient's payroll or service costs are classified.

Income Taxes

The Company accounts for income taxes using the asset and liability method, which requires the recognition of deferred tax assets and liabilities for the expected future tax consequences of events that have been recognized in the consolidated financial statements or in the Company's tax returns. Under this method, deferred tax assets and liabilities are determined based on differences between the financial statement carrying amounts and the tax bases of the assets and liabilities using the enacted tax rates in effect in the years in which the differences are expected to reverse. A valuation allowance against deferred tax assets is recorded if, based on the weight of the available evidence, it is more likely than not that some or all of the deferred tax assets will not be realized. Potential for recovery of deferred tax assets is evaluated by considering several factors, including estimating the future taxable profits expected, estimating future reversals of existing taxable temporary differences, considering taxable profits in carryback periods, and considering prudent and feasible tax planning strategies.

The Company accounts for uncertain tax positions using a more-likely-than-not threshold for recognizing and resolving uncertain tax positions. The evaluation of uncertain tax positions is based on factors including, but not limited to, changes in the law, the measurement of tax positions taken or expected to be taken in tax returns, the effective settlement of matters subject to audit, new audit activity, and changes in facts or circumstances related to a tax position.

Comprehensive Loss

Comprehensive loss is defined as the change in equity of a business enterprise during a period from transactions and other events and circumstances from non-owner sources. For the years ended December 31, 2021 and 2020, comprehensive loss consists of net loss and unrealized losses on investments.

Net Income (Loss) Per Share

Basic net income (loss) per share is computed by dividing the net income (loss) by the weighted average number of shares of common stock outstanding for the period. Diluted net income (loss) per share is computed by dividing net income (loss) by the weighted average number of shares of common stock outstanding for the period, including potential dilutive common shares. For purpose of this calculation, outstanding options to purchase common stock and unvested restricted stock awards are considered potential dilutive common shares. The Company has generated a net loss in all periods presented, and

therefore the basic and diluted net loss per share are the same as the inclusion of the potentially dilutive securities would be anti-dilutive.

Off-Balance Sheet Risk and Concentrations of Credit Risk

The Company has no significant off-balance sheet risk such as foreign exchange contracts, option contracts, or other foreign hedging arrangements. Financial instruments that potentially expose the Company to concentrations of credit risk consist primarily of cash, cash equivalents, marketable securities, and restricted cash. The Company's cash, cash equivalents, and restricted cash are deposited in accounts at large financial institutions. The Company believes it is not exposed to significant credit risk due to the financial strength of the depository institutions in which the cash, cash equivalents and restricted cash are held. The Company maintains its cash equivalents in money market funds that invest in U.S. Treasury securities. The Company's marketable securities primarily consist of corporate bonds and commercial paper, and potentially subject the Company to concentrations of credit risk. The Company has adopted an investment policy that limits the amounts the Company may invest in any one type of investment. The Company has not experienced any credit losses and does not believe it is exposed to any significant credit risk on these funds.

Segment Information

Operating segments are defined as components of an enterprise about which separate discrete financial information is available for evaluation by the chief operating decision-maker in making decisions regarding resource allocation and assessing performance. The Company and the Company's chief operating decision-maker, the Company's chief executive officer, view the Company's operations and manage its business as a single operating segment.

Emerging Growth Company Status

The Company is an emerging growth company ("EGC"), as defined in the Jumpstart Our Business Startups Act (the "JOBS Act"), and may take advantage of certain exemptions from various reporting requirements that are applicable to other public companies that are not EGCs, including that an EGC can take advantage of the extended transition period afforded by the JOBS Act for the implementation of new or revised accounting standards. The Company has elected to use the extended transition period for complying with new or revised accounting standards, and as a result of this election, its consolidated financial statements may not be comparable to companies that comply with public company effective dates for ASUs. The Company may take advantage of these exemptions up until the last day of the fiscal year following the fifth anniversary of its initial public offering or such earlier time that it is no longer an EGC.

Recent Accounting Pronouncements—To Be Adopted

In February 2016, the FASB issued ASU 2016-02, *Leases (Topic 842)* ("ASU 2016-02"), as amended by various subsequently issued ASUs. Lessees are required to classify leases as either finance or operating leases. If the lease is effectively a financed-purchase by the lessee, it is classified as a financing lease, otherwise it is classified as an operating lease. This classification will determine whether lease expense is recognized based on an effective interest method or on a straight-line basis over the term of the lease. The standard requires lessees to recognize an operating lease with a term greater than one year on their balance sheets as a right-of-use asset and corresponding lease liability, measured at the present value of the lease payments. In July 2018, the FASB issued ASU 2018-11, *Leases (Topic 842): Targeted Improvements* ("ASU 2018-11"), which permits entities to continue applying legacy guidance in ASC 840, *Leases*, including its disclosure requirements, in the comparative periods presented in the year that the entity adopts the new leasing standard. In November 2019, the FASB deferred the effective date of ASU 2016-02, as amended, for private companies to fiscal years beginning after December 15, 2020. In June 2020, the FASB further deferred the effective date of ASU 2016-02, as amended, for private companies to fiscal years beginning after December 15, 2021. The new standard will become effective for the Company on January 1, 2022. The Company will apply the transition method permitted by ASU 2018-11. The Company is currently evaluating the effect that adoption of the standard is expected to have on the Company's consolidated financial statements and related disclosures. The Company expects to take advantage of certain available expedients by electing the transition package of practical expedients permitted within ASU 2016-02, as amended, which allows the Company to not reassess previous accounting conclusions around whether arrangements are, or contain, leases, the classification of leases, and the treatment of initial direct costs. The Company also expects to make an accounting policy election to exclude leases with an initial term of twelve months or less from the balance sheet. The Company expects that the adoption of ASU 2016-02, as amended, will result in the recognition of material right-of-use assets and lease liabilities in its consolidated balance sheets. The Company does not expect the adoption of ASU 2016-02, as amended, will have a material impact to its consolidated statements of operations and comprehensive loss.

In June 2016, the FASB issued ASU No. 2016-13, *Financial Instruments—Credit Losses (Topic 326): Measurement of Credit Losses on Financial Instruments*. The standard requires that credit losses be reported using an expected losses model rather than the incurred losses model that is currently used, and establishes additional disclosures related to credit risks. For available-for-sale debt securities with unrealized losses, this standard requires allowances to be recorded instead of reducing the amortized cost of the investment. The new standard will be effective for the Company on January 1, 2023. The Company is currently evaluating the potential impact that this standard may have on its consolidated financial position and results of operations.

In December 2019, the FASB issued ASU No. 2019-12, *Income Taxes-Simplifying the Accounting for Income Taxes*. The standard eliminates certain exceptions related to the approach for intraperiod tax allocation, the methodology for calculating income taxes in an interim period, and the recognition of deferred tax liabilities for outside basis differences. The new guidance also simplifies aspects of the accounting for franchise taxes and enacted changes in tax laws or rates and clarifies the accounting for transactions that result in a step-up in the tax basis of goodwill. The new standard will be effective for the Company on January 1, 2023. The Company is currently evaluating the potential impact that this standard may have on its consolidated financial position and results of operations.

3. Fair Value Measurements

The following tables present information about the Company's financial assets measured at fair value on a recurring basis and indicate the fair value hierarchy classification of such fair values as of December 31, 2021 and 2020 (in thousands):

	Fair Value Measurements at December 31, 2021			
	Total	Level 1	Level 2	Level 3
Cash equivalents:				
Money market funds	$ 35,412	$ 35,412	$ —	$ —
Marketable securities:				
Corporate bonds	101,368	—	101,368	—
Commercial paper	81,382	—	81,382	—
Total	$ 218,162	$ 35,412	$ 182,750	$ —

	Fair Value Measurements at December 31, 2020			
	Total	Level 1	Level 2	Level 3
Cash equivalents:				
Money market funds	$ 57,052	$ 57,052	$ —	$ —
Marketable securities:				
Corporate bonds	23,339	—	23,339	—
Commercial paper	32,523	—	32,523	—
Total	$ 112,914	$ 57,052	$ 55,862	$ —

There were no transfers between fair value levels during the years ended December 31, 2021 or 2020.

4. Cash Equivalents and Marketable Securities

Cash equivalents and marketable securities consisted of the following as of December 31, 2021 and December 31, 2020 (in thousands):

	Fair Value Measurements at December 31, 2021			
	Amortized Cost	Gross Unrealized Gains	Gross Unrealized Losses	Fair Value
Cash equivalents:				
Money market funds	$ 35,412	$ —	$ —	$ 35,412
Total cash equivalents	35,412	—	—	35,412
Marketable securities:				
Corporate bonds	101,697	—	(329)	101,368
Commercial paper	81,450	—	(68)	81,382
Total marketable securities	183,147	—	(397)	182,750
Total cash equivalents and marketable securities	$ 218,559	$ —	$ (397)	$ 218,162

	Fair Value Measurements at December 31, 2020			
	Amortized Cost	Gross Unrealized Gains	Gross Unrealized Losses	Fair Value
Cash equivalents:				
Money market funds	$ 57,052	$ —	$ —	$ 57,052
Total cash equivalents	57,052	—	—	57,052
Marketable securities:				
Corporate bonds	23,341	2	(4)	23,339
Commercial paper	32,523	—	—	32,523
Total marketable securities	55,864	2	(4)	55,862
Total cash equivalents and marketable securities	$ 112,916	$ 2	$ (4)	$ 112,914

There were no sales of marketable securities during the year ended December 31, 2021. As of December 31, 2021, the aggregate fair value of securities that were in an unrealized loss position for less than twelve months was $180.8 million. As of December 31, 2021, no securities were in an unrealized loss position for greater than twelve months.

The Company determined that it did not hold any securities with any other-than-temporary impairment as of December 31, 2021. As of December 31, 2021, the aggregate fair value of securities with a remaining contractual maturity of greater than one year was $39.7 million. As of December 31, 2021, the Company did not intend to sell, and would not be more likely than not be required to sell, the securities in an unrealized loss position before recovery of their amortized cost bases.

5. Property and Equipment, Net

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

	December 31, 2021	December 31, 2020
Lab equipment	$ 8,182	$ 6,877
Furniture and fixtures	594	594
Computer equipment	373	373
Software	199	199
Leasehold improvements	6,289	6,210
Construction in process	—	262
Total property and equipment	15,637	14,515
Less: accumulated depreciation	(8,269)	(6,118)
Property and equipment, net	$ 7,368	$ 8,397

Depreciation expense for the years ended December 31, 2021 and 2020 was $2.5 million and $2.4 million, respectively. Total property and equipment, gross, as of December 31, 2020 included $0.2 million of property and equipment recorded under capital leases. Accumulated depreciation as of December 31, 2020 included $0.2 million for property and equipment recorded under capital leases. No property and equipment was recorded under capital leases as of December 31, 2021.

6. Additional Balance Sheet Detail

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

	December 31, 2021	December 31, 2020
Prepaid expenses	$ 3,400	$ 3,668
Prepaid sign-on bonuses subject to vesting provisions	326	147
Interest income receivable	473	176
Other	—	74
Total prepaid expenses and other current assets	$ 4,199	$ 4,065

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

	December 31, 2021	December 31, 2020
External research and development	$ 3,171	$ 4,082
Payroll and benefits	4,990	2,928
Professional services	996	196
Capital lease obligation, current portion	—	17
Other	74	44
Total accrued expenses and other current liabilities	$ 9,231	$ 7,267

7. Preferred Stock

As of December 31, 2021 and 2020, 5,000,000 shares of undesignated preferred stock were authorized. No shares of preferred stock were issued or outstanding as of December 31, 2021 and 2020.

No dividends have been declared since inception.

8. Common Stock

As of December 31, 2021 and 2020, 200,000,000 shares of common stock, $0.001 par value per share, were authorized.

Each share of common stock entitles the holder to one vote on all matters submitted to a vote of the Company's stockholders. Common stockholders are not entitled to receive dividends, unless declared by the Company's board of directors, subject to the preferential dividend rights of any preferred stock then outstanding. No dividends have been declared or paid by the Company since its inception.

As of December 31, 2021 and 2020, the Company has reserved for future issuance the following number of shares of common stock:

	December 31, 2021	December 31, 2020
Shares reserved for exercises of outstanding stock options	5,188,354	2,962,347
Shares reserved for future issuance under the 2019 Stock Incentive Plan	286,324	1,728,616
Shares reserved for future issuance under the 2019 Employee Stock Purchase Plan	706,658	465,999
	6,181,336	5,156,962

9. Stock-based Compensation Expense

2016 Stock Incentive Plan

In July 2016, the Company adopted the 2016 Stock Incentive Plan (the “2016 Plan”), which provided for the grant of restricted stock awards, restricted stock units, incentive stock options, non-statutory stock options, and other stock-based awards to the Company’s eligible employees, officers, directors, consultants, and advisors. As of the effective date of the 2019 Stock Incentive Plan (the “2019 Plan”), and as of December 31, 2021 and 2020, no shares remained available for future issuance under the 2016 Plan. Any options or other awards outstanding under the 2016 Plan remain outstanding and effective.

2019 Stock Incentive Plan

On July 2, 2019, the Company’s stockholders approved the 2019 Plan, which became effective on July 17, 2019. The 2019 Plan provides for the grant of incentive stock options, non-statutory stock options, stock appreciation rights, restricted stock awards, restricted stock units and other stock-based awards to the Company’s officers, employees, directors, consultants and advisors. The number of shares initially reserved for issuance under the 2019 Plan was 2,017,142 shares, plus the shares of common stock remaining available for issuance under the 2016 Plan as of July 17, 2019. The number of shares reserved was annually increased on January 1, 2020 and will be increased each January 1 thereafter through January 1, 2029 by the least of (i) 2,000,000 shares, (ii) 4% of the number of shares of the Company’s common stock outstanding on the first day of each such year or (iii) an amount determined by the Company’s board of directors. As of December 31, 2021, there were 286,324 shares available for future issuance under the 2019 Plan. On January 1, 2022, the number of shares reserved for issuance under the 2019 Plan was increased by 1,625,455 shares.

The shares of common stock underlying any awards that expire, terminate, or are otherwise surrendered, cancelled, forfeited or repurchased by the Company under the 2016 Plan or the 2019 Plan will be added back to the shares of common stock available for issuance under the 2019 Plan. As of July 17, 2019, no further awards will be made under the 2016 Plan.

2022 Inducement Stock Incentive Plan

In February 2022, the Company's board of directors adopted the 2022 Inducement Stock Incentive Plan (the "Inducement Plan"), pursuant to which the Company may grant, subject to the terms of the Inducement Plan and Nasdaq rules, nonstatutory stock options, stock appreciation rights, restricted stock awards, restricted stock units, and other stock-based awards. The Company initially reserved a total of 1,750,000 shares of common stock for the issuance of awards under the Inducement Plan. The number of shares reserved and available for issuance under the Inducement Plan can be increased at any time with the approval of the Company’s board of directors. The Inducement Plan permits the board of directors, a delegated committee of the board of directors, or a delegated officer of the Company to grant the stock-based awards available under the Inducement Plan to attract key employees for the growth of the Company.

Restricted Stock

The Company may repurchase unvested shares at the original purchase price if employees or non-employees are terminated or cease their employment or service relationship with the Company. Shares of common stock repurchased from employees and non-employees are shares held in the Company’s treasury (“Treasury Shares”). The board of directors may, at its discretion, authorize that the Treasury Shares be returned to the pool of authorized but unissued common stock.

The shares of common stock underlying restricted stock awards typically vest over a four-year period. The shares of common stock are recorded in stockholders' equity as they vest.

The following table summarizes the Company's restricted stock activity under the 2019 Plan and 2016 Plan since December 31, 2019:

	Number of Shares	Weighted Average Grant Date Fair Value
Unvested at December 31, 2019	346,423	$ 3.05
Granted	—	—
Vested	(233,563)	3.00
Repurchased	(29,882)	3.05
Unvested at December 31, 2020	82,978	$ 3.19
Granted	—	—
Vested	(69,833)	3.17
Repurchased	(2,971)	3.22
Unvested at December 31, 2021	10,174	$ 3.35

Stock Options

Stock options granted by the Company typically vest over a four year period and have a ten year contractual term. Shares issued upon the exercise of stock options are issued from the Company's pool of authorized but unissued common stock. In addition to stock options granted under the 2019 Plan and 2016 Plan, the Company has granted stock options as material inducements to employment in accordance with Nasdaq Listing Rule 5635(c)(4), which were granted outside of the 2019 Plan and 2016 Plan. The following table summarizes the Company's stock option activity during the year ended December 31, 2021:

	Number of Shares	Weighted Average Exercise Price	Weighted Average Remaining Contractual Term (in years)	Aggregate Intrinsic Value
Outstanding at December 31, 2020	2,962,347	$ 11.57	8.55	$ 5,767,895
Granted	2,976,667	15.56		
Exercised	(341,952)	9.74		
Cancelled	(408,708)	12.44		
Outstanding at December 31, 2021	5,188,354	$ 13.91	8.57	$ 27,082,052
Exercisable at December 31, 2021	1,476,669	$ 11.54	7.70	$ 9,083,995

The aggregate intrinsic value of stock options is calculated as the difference between the exercise price of the stock options and the fair value of the Company's common stock as of the balance sheet date for those options that had exercise prices lower than the fair value of the Company's common stock.

The weighted average grant date fair value of stock options granted in the years ended December 31, 2021 and 2020 was $11.37 per share and $9.76 per share, respectively. The total intrinsic value of stock options exercised in the years ended December 31, 2021 and 2020 was $3.5 million and $1.4 million, respectively.

The fair value of stock options granted during the years ended December 31, 2021 and 2020 has been calculated on the date of grant using the following weighted average assumptions:

	Year Ended December 31, 2021	Year Ended December 31, 2020
Risk-free interest rate	0.9%	1.2%
Expected dividend yield	0.0%	0.0%
Expected term (years)	6.1	6.0
Expected stock price volatility	87.3%	77.6%

Restricted Stock Grants Outside of the 2016 Plan and the 2019 Plan

The following table summarizes the Company's restricted stock activity outside of the 2019 Plan and 2016 Plan since December 31, 2019:

	Number of Shares	Weighted Average Grant Date Fair Value
Unvested at December 31, 2019	334,647	$ 2.94
Granted	—	—
Vested	(291,789)	2.94
Repurchased	—	—
Unvested at December 31, 2020	42,858	$ 2.93
Granted	—	—
Vested	(42,858)	2.94
Repurchased	—	—
Unvested at December 31, 2021	—	$ —

The aggregate intrinsic value of all restricted stock awards that vested during the years ended December 31, 2021 and 2020 was $1.5 million and $8.8 million, respectively.

Stock-based Compensation Expense

The total compensation cost recognized in the statements of operations and comprehensive loss associated with all stock-based compensation awards granted by the Company is as follows (in thousands):

	Year Ended December 31,	
	2021	2020
General and administrative	$ 6,614	$ 3,970
Research and development	4,456	3,380
Total stock-based compensation expense	$ 11,070	$ 7,350

As of December 31, 2021, the Company had an aggregate of $34.6 million of unrecognized stock-based compensation expense, which is expected to be recognized over a weighted average period of 2.76 years.

2019 Employee Stock Purchase Plan

On July 2, 2019, the Company's stockholders approved the 2019 Employee Stock Purchase Plan (the "ESPP"), which became effective on July 17, 2019. A total of 252,142 shares of common stock were initially reserved for issuance under the ESPP. In addition, the number of shares of common stock reserved under the ESPP was annually increased on January 1, 2020, and will be increased on each January 1 thereafter through January 1, 2029, by the least of (i) 428,571 shares of common stock, (ii) 1% of the number of shares of the Company's common stock outstanding on the first day of each such year or (iii) an amount determined by the Company's board of directors. As of December 31, 2021, there were 706,658 shares available for future issuance under the ESPP. On January 1, 2022, the number of shares reserved for issuance under the 2019 ESPP was increased by 406,363 shares.

10. Collaboration and License Agreements

Acceleron Collaboration Agreement

On December 20, 2019, the Company entered into the Acceleron Collaboration Agreement to identify biological targets to modulate specific pathways associated with a targeted indication within the pulmonary disease space (the "Indication"). Under the terms of the Acceleron Collaboration Agreement, the Company granted Acceleron an exclusive worldwide license under certain intellectual property rights to make, have made, use, sell, have sold, import, export, distribute and have distributed, market, have marketed, promote, have promoted, or otherwise exploit molecules and products directed against or expressing certain biological targets identified by the Company for the treatment, prophylaxis, or diagnosis of the Indication.

Pursuant to a mutually agreed research plan, the Company will perform assay screening and related research activities to identify and validate potential biological targets for further research, in order to support the development, manufacture and commercialization of product candidates by Acceleron. Upon completion of the research activities, the Company will deliver a data package to Acceleron with respect to the biological targets identified by the Company in the conduct of the research activities for the treatment, prophylaxis, or diagnosis of the Indication. As provided for under the exclusive worldwide license that was conveyed at the inception of the arrangement, Acceleron has the right to designate a specified number of the biological targets identified by the Company for Acceleron's research, development, manufacture and commercialization of products or molecules directed to such targets for the treatment, prophylaxis, or diagnosis of the Indication (the "Targets"). If Acceleron does not designate any Targets during the designated period, then the Acceleron Collaboration Agreement will automatically terminate. If Acceleron designates one or more Targets, then Acceleron will be obligated to use commercially reasonable efforts to seek regulatory approval for one product directed to a Target in certain specified countries. Upon receipt of regulatory approval for any product directed to a Target, Acceleron must use commercially reasonable efforts to commercialize such product in certain specified countries.

Acceleron may also request that the Company perform medicinal chemistry services related to the generation and optimization of molecules directed against or expressing biological targets for the treatment, prophylaxis, or diagnosis of the Indication beyond the scope of the research plan. If the Company agrees to provide such medicinal chemistry services, the Company and Acceleron will negotiate to determine the scope, timeline and budget for such medicinal chemistry services.

The Company received a non-refundable upfront payment of $10.0 million in December 2019 upon the execution of the Acceleron Collaboration Agreement. The Company is entitled to research milestone payments of up to $18.5 million in the aggregate upon achievement of specified research milestones, development milestone payments of up to $202.5 million in the aggregate upon achievement of specified clinical and regulatory milestones, and sales milestones payments of up to $217.5 million in the aggregate upon the achievement of certain aggregate annual worldwide net sales milestones for certain products directed to a Target that have achieved such milestones. To date, the Company achieved $2.0 million of specified research milestones. In addition, the Company is entitled to tiered royalties ranging from a mid single-digit percentage to a low double-digit percentage on Acceleron's annual worldwide net sales of products directed to any Target, subject to reduction in specified circumstances. The Company is also entitled to receive reimbursement from Acceleron for research costs incurred under the research plan, including internal and external costs.

The Acceleron Collaboration Agreement continues on a country-by-country and Target-by-Target basis until the last to expire royalty term for a product directed to such Target, at which time the Acceleron Collaboration Agreement expires with respect to such Target in such country. Either party has the right to terminate the Acceleron Collaboration Agreement if the other party has materially breached in the performance of its obligations under the contract and such breach has not been cured within the applicable cure period. Acceleron also has the right to terminate the Acceleron Collaboration Agreement for convenience in its entirety or on a Target-by-Target and, if the Company performs medicinal chemistry services, on a molecule-by-molecule basis with respect to any molecule directed against a Target.

While the Company is performing the research activities pursuant to the research plan and for a specified period thereafter, the Company may not research, develop, manufacture, commercialize, use, or otherwise exploit any compound or product for the treatment, prophylaxis, or diagnosis of the Indication other than for Acceleron. While the Company is performing the research activities pursuant to the research plan and for a specified period thereafter, other than for Acceleron, the Company may not research, develop, manufacture, commercialize, use, or otherwise exploit any compound or product for the treatment, prophylaxis, or diagnosis of the Indication that is directed against certain specified biological targets identified by the Company in the performance of the research activities.

Accounting Analysis

Identification of the Contract

The Company assessed the Acceleron Collaboration Agreement and concluded that it represents a contract with a customer within the scope of ASC 606.

Identification of the Promises and Performance Obligations

The Company determined that the Acceleron Collaboration Agreement contains the following promises: (i) an exclusive worldwide license under certain intellectual property rights, including rights to a specified number of biological targets identified by the Company for the treatment, prophylaxis, or diagnosis of a targeted indication within the pulmonary disease space that was conveyed at the inception of the arrangement (the “License”), (ii) research services to identify and validate potential biological targets (the “Research Services”), and (iii) participation in the joint steering committee (the “JSC”).

The Company assessed the above promises and concluded that the License is not capable of being distinct from the Research Services given that the License has limited value without the performance of the Research Services and the Research Services can only be performed by the Company due to their specialized nature. Therefore, the Company has concluded that the License and the Research Services represent a single combined performance obligation.

The Company also assessed the participation on the JSC and concluded that the promise is quantitatively and qualitatively immaterial in the context of the Acceleron Collaboration Agreement. Accordingly, the Company has disregarded its participation on the JSC as a performance obligation.

The potential medicinal chemistry services were not identified as a promised good or service because the Company is under no obligation to provide those services.

Determination of the Transaction Price

The Company received a non-refundable upfront payment of $10.0 million upon the execution of the Acceleron Collaboration Agreement, which the Company included in the transaction price. In December 2020, the Company achieved $2.0 million of specified research milestones associated with the Acceleron Collaboration Agreement, which were previously constrained due to the significant uncertainty regarding whether such research milestones would be achieved. The Company included this amount in the transaction price as of December 31, 2020. Based on the continued uncertainty associated with the achievement of any of the remaining research and development milestone payments that the Company is eligible to receive, the Company has constrained the variable consideration associated with those remaining milestone payments and excluded them from the transaction price. As part of its evaluation of constraining the remaining research and development milestones, the Company considered numerous factors, including the fact that the achievement of the research and development milestones are contingent upon the results of the underlying research and development activities and are thus outside of the control of the Company.

The Company also included in the transaction price the expected amount of costs to be reimbursed for the Research Services.

The Company reassesses the transaction price at the end of each reporting period and as uncertain events are resolved or other changes in circumstances occur, and, if necessary, adjusts its estimate of the transaction price.

Any consideration related to sales milestone payments (including royalties) will be recognized when the related sales occur as these amounts have been determined to relate predominantly to the license granted to Acceleron and therefore are recognized at the later of when the related sales occur or the performance obligation is satisfied.

Allocation of the Transaction Price to Performance Obligations

As noted above, the Company has identified a single performance obligation associated with the Acceleron Collaboration Agreement. Therefore, the Company will allocate the entire amount of the transaction price to the identified single performance obligation.

Recognition of Revenue

The Company recognizes revenue related to the Acceleron Collaboration Agreement over time as the Research Services are rendered. The Company has concluded that an input method is a representative depiction of the transfer of services under the Acceleron Collaboration Agreement. The method of measuring progress towards the delivery of the services incorporates actual cumulative internal and external costs incurred relative to total internal and external costs expected to be incurred to satisfy the performance obligation. The period over which total costs are estimated reflects the Company's estimate of the period over which it will perform the Research Services. Changes in estimates of total internal and external costs expected to be incurred are recognized in the period of change as a cumulative catch-up adjustment.

During the year ended December 31, 2021, the Company recognized $9.6 million of collaboration revenue associated with the Acceleron Collaboration Agreement, which includes $7.3 million of revenue recognized that was included in deferred revenue as of December 31, 2020. During the year ended December 31, 2020, the Company recognized $6.3 million of collaboration revenue associated with the Acceleron Collaboration Agreement, which includes $3.4 million of revenue recognized that was included in deferred revenue as of December 31, 2019 and a cumulative catch-up adjustment of $0.5 million attributable to the removal of the constraint associated with the $2.0 million of research milestones achieved in December 2020. As of December 31, 2021 and 2020, the Company recorded deferred revenue associated with the Acceleron Collaboration Agreement of $0.6 million and $7.9 million, respectively, which is classified as either current or net of current portion in the accompanying consolidated balance sheets based on the period over which the revenue is expected to be recognized. The aggregate deferred revenue balance represents the aggregate amount of the transaction price allocated to the performance obligations that are unsatisfied as of December 31, 2021 and 2020. As of December 31, 2021, the Company had received $3.9 million of cost reimbursement payments under the Acceleron Collaboration Agreement and $2.0 million associated with the achievement of specified research milestones. As of December 31, 2020, the Company had received $1.7 million of cost reimbursement payments and no milestone or royalty payments under the Acceleron Collaboration Agreement. As of December 31, 2021, the Company recorded unbilled accounts receivable of $0.7 million related to reimbursable research and development costs under the Acceleron Collaboration Agreement for activities performed during the three months ended December 31, 2021. As of December 31, 2020, the Company recorded unbilled accounts receivable of $0.5 million related to reimbursable research and development costs under the Acceleron Collaboration Agreement for activities performed during the three months ended December 31, 2020. As of December 31, 2021, the Company had recorded no accounts receivable under the Acceleron Collaboration Agreement. As of December 31, 2020, the Company recorded accounts receivable of $2.0 million associated with the achievement of specified research milestones in December 2020.

MyoKardia Collaboration Agreement

On July 20, 2020, the Company entered into the MyoKardia Collaboration Agreement, pursuant to which the Company granted to MyoKardia an exclusive worldwide license under certain intellectual property rights to research, develop, make, have made, use, have used, sell, have sold, offer for sale, have offered for sale, import, have imported, export, have exported, distribute, have distributed, market, have marketed, promote, have promoted, or otherwise exploit products directed against certain biological targets identified by the Company that are capable of modulating up to a certain number of genes of interest with relevance to certain genetically defined cardiomyopathies.

Pursuant to a mutually agreed research plan, the Company will perform assay screening and related research activities to identify and validate up to a specified number of potential cardiomyopathy gene targets ("Identified Targets") for further research, development, manufacture and commercialization by MyoKardia. The Company and MyoKardia will work together to determine how best to advance at each stage of the research activities under the research plan and to identify which of the Identified Targets, if any, meet the criteria set forth in the research plan (the "Cardiomyopathy Target Candidates"). Upon completion of the research plan, the parties will work together to prepare a final data package and MyoKardia may designate certain Cardiomyopathy Target Candidates for MyoKardia's further exploitation under the MyoKardia Collaboration Agreement (the "Cardiomyopathy Targets"). If MyoKardia does not designate any Cardiomyopathy Targets during the designated period, then the MyoKardia Collaboration Agreement will automatically terminate. If MyoKardia designates one or more Cardiomyopathy Targets, then MyoKardia will be obligated to use commercially reasonable efforts to seek regulatory approval for and to commercialize one product directed against an Identified Target in certain specified countries.

During the period in which the Company is performing the research activities pursuant to the research plan (the "Research Term") and for a specified period beyond the Research Term if MyoKardia designates a Cardiomyopathy Target, the Company may only use the data generated from such research activities for MyoKardia in accordance with the MyoKardia Collaboration Agreement. During the Research Term and for a specified period thereafter, the Company may not research, develop, manufacture, commercialize, use, or otherwise exploit any compound or product (a) that is a Compound or Product under the MyoKardia Collaboration Agreement that is directed against the Cardiomyopathy Target Candidates for the treatment, prophylaxis, or diagnosis of any indication or (b) for the treatment of any genetically defined cardiomyopathies shown to be related to certain specified genes of interest that are modulated by the Cardiomyopathy Targets.

Under the MyoKardia Collaboration Agreement, MyoKardia made a $10.0 million upfront payment and a $2.5 million payment as prepaid research funding to the Company in July 2020. MyoKardia will also reimburse the Company for the costs of the research activities not covered by the prepaid research funding, up to a maximum amount of total research funding (including the prepaid research funding). Upon the achievement of specified preclinical, development and sales milestones, the Company will be entitled to preclinical milestone payments, development milestone payments and sales milestone payments of up to $298.5 million in the aggregate per target for certain Identified Targets, and of up to $150.0 million in the aggregate per target for certain other Identified Targets. To date, the Company has achieved a $2.5 million specified preclinical milestone. MyoKardia will also pay the Company tiered royalties ranging from a mid single-digit percentage to a low double-digit percentage based on MyoKardia's, and any of its affiliates' and sublicensees', annual worldwide net sales of products under the MyoKardia Collaboration Agreement directed against any Identified Target. The royalties are payable on a product-by-product basis during a specified royalty term, and may be reduced in specified circumstances.

The MyoKardia Collaboration Agreement continues on a country-by-country and product-by-product basis until the last to expire royalty term for a product, at which time the MyoKardia Collaboration Agreement expires with respect to such product in such country. Either party has the right to terminate the MyoKardia Collaboration Agreement if the other party has materially breached in the performance of its obligations under the MyoKardia Collaboration Agreement and such breach has not been cured within the applicable cure period. MyoKardia also has the right to terminate the MyoKardia Collaboration Agreement for convenience in its entirety or on a target-by-target, product-by-product or molecule-by-molecule basis.

Accounting Analysis

Identification of the Contract

The Company assessed the MyoKardia Collaboration Agreement and concluded that it represents a contract with a customer within the scope of ASC 606.

Identification of the Promises and Performance Obligations

The Company determined that the MyoKardia Collaboration Agreement contains the following promises: (i) an exclusive worldwide license under certain intellectual property rights, including rights to a specified number of potential cardiomyopathy gene targets identified by the Company for further research, development, manufacture and commercialization for the treatment, prophylaxis, or diagnosis of certain genetically defined cardiomyopathies that was conveyed at the inception of the arrangement (the "MyoKardia License"), (ii) research services to identify and validate potential biological targets (the "MyoKardia Research Services"), and (iii) participation in the joint steering committee (the "MyoKardia JSC").

The Company assessed the above promises and concluded that the MyoKardia License is not capable of being distinct from the MyoKardia Research Services given that the MyoKardia License has limited value without the performance of the MyoKardia Research Services and the MyoKardia Research Services can only be performed by the Company due to their specialized nature. Therefore, the Company has concluded that the MyoKardia License and the MyoKardia Research Services represent a single combined performance obligation.

The Company also assessed the participation on the MyoKardia JSC and concluded that the promise is quantitatively and qualitatively immaterial in the context of the MyoKardia Collaboration Agreement. Accordingly, the Company has disregarded its participation on the MyoKardia JSC as a performance obligation.

Determination of the Transaction Price

The Company received a non-refundable upfront payment of $10.0 million, which the Company included in the transaction price. In December 2021, the Company achieved a $2.5 million specified preclinical milestone associated with the MyoKardia Collaboration Agreement, which was previously constrained due to the significant uncertainty regarding whether such preclinical milestone would be achieved. Based on the uncertainty associated with the achievement of any preclinical and development milestone payments that the Company is eligible to receive, the Company has constrained the variable consideration associated with those milestone payments and excluded them from the transaction price. As part of its evaluation of constraining the preclinical and development milestones, the Company considered numerous factors, including the fact that the achievement of the preclinical and development milestones are contingent upon the results of the underlying preclinical and development activities and are thus outside of the control of the Company.

The Company also included in the transaction price the expected amount of costs to be reimbursed for the MyoKardia Research Services, which includes the $2.5 million prepaid research funding payment that the Company received in the third quarter of 2020.

The Company reassesses the transaction price at the end of each reporting period and as uncertain events are resolved or other changes in circumstances occur, and, if necessary, adjusts its estimate of the transaction price.

Any consideration related to sales milestone payments (including royalties) will be recognized when the related sales occur as these amounts have been determined to relate predominantly to the license granted to MyoKardia and therefore are recognized at the later of when the related sales occur or the performance obligation is satisfied.

Allocation of the Transaction Price to Performance Obligations

As noted above, the Company has identified a single performance obligation associated with the MyoKardia Collaboration Agreement. Therefore, the Company will allocate the entire amount of the transaction price to the identified single performance obligation.

Recognition of Revenue

The Company recognizes revenue related to the MyoKardia Collaboration Agreement over time as the MyoKardia Research Services are rendered. The Company has concluded that an input method is a representative depiction of the transfer of services under the MyoKardia Collaboration Agreement. The method of measuring progress towards the delivery of the services incorporates actual cumulative internal and external costs incurred relative to total internal and external costs expected to be incurred to satisfy the performance obligation. The period over which total costs are estimated reflects the Company's estimate of the period over which it will perform the MyoKardia Research Services. Changes in estimates of total internal and external costs expected to be incurred are recognized in the period of change as a cumulative catch-up adjustment.

During the year ended December 31, 2021, the Company recognized $9.6 million of collaboration revenue associated with the MyoKardia Collaboration Agreement, which includes $6.7 million of revenue recognized that was included in deferred revenue as of December 31, 2020 and a cumulative catch-up adjustment of $1.7 million attributable to the removal of the constraint associated with the $2.5 million preclinical milestone achieved in December 2021. During the year ended December 31, 2020, the Company recognized $2.5 million of collaboration revenue associated with the MyoKardia Collaboration Agreement. As of December 31, 2021 and 2020, the Company recorded deferred revenue of $4.1 million and $10.0 million, respectively, associated with the MyoKardia Collaboration Agreement, which is classified as either current or net of current portion in the accompanying consolidated balance sheets based on the period over which the revenue is expected to be recognized. The aggregate deferred revenue balance represents the aggregate amount of the transaction price allocated to the performance obligations that are unsatisfied as of December 31, 2021 and 2020. As of December 31, 2021, the Company had received $3.2 million of cost reimbursement payments under the MyoKardia Collaboration Agreement, including the $2.5 million payment as prepaid research funding in July 2020, and no milestone or royalty payments. As of December 31, 2020, the Company had not received any milestone, royalty, or cost reimbursement payments under the MyoKardia Collaboration Agreement, other than the $2.5 million payment as prepaid research funding in July 2020. As of December 31, 2021, the Company recorded unbilled accounts receivable of $0.5 million related to reimbursable research and development costs under the MyoKardia Collaboration Agreement for activities performed during the three months ended December 31, 2021. As of December 31, 2021, the Company has recorded accounts receivable of $2.5 million under the MyoKardia Collaboration Agreement associated with the achievement of a preclinical milestone in December 2021. As of December 31, 2020, the Company had recorded no accounts receivable under the MyoKardia Collaboration Agreement.

11. Right of Reference and License Agreement

In February 2019, the Company entered into the right of reference and license agreement, as amended (the "GSK Agreement"), with subsidiaries of GlaxoSmithKline plc (collectively referred to as "GSK"), pursuant to which the Company has been granted an exclusive worldwide license to develop and commercialize losmapimod. Under the GSK Agreement, the Company also acquired reference rights to relevant regulatory and manufacturing documents and GSK's existing supply of losmapimod drug substance and product. The Company also has the right to sublicense its rights under the license agreement, subject to certain conditions. The Company is obligated to use commercially reasonable efforts to develop and commercialize losmapimod at its sole cost. The Company is also responsible for costs related to the filing and maintenance of the licensed patent rights.

Under the GSK Agreement, the Company issued 12,500,000 shares of Series B Preferred Stock to GSK. In addition, the Company may owe GSK up to $37.5 million in certain specified clinical and regulatory milestones, including $2.5 million previously achieved and paid during 2019, and up to $60.0 million in certain specified sales milestones. The Company has agreed to pay tiered royalties on annual net sales of losmapimod that range from mid single-digit percentages to a low double-digit, but less than teens, percentage. The royalties are payable on a product-by-product and country-by-country basis, and may be reduced in specified circumstances.

The GSK Agreement may be terminated by either party for a material breach by the other, subject to notice and cure provisions. Unless earlier terminated, the GSK Agreement will continue in effect until the expiration of the Company's royalty obligations, which expire on a country-by-country basis on the later of (i) ten years after the first commercial sale in the country or (ii) approval of a generic version of losmapimod by the applicable regulatory agency.

The Company will recognize clinical and regulatory milestone payments when the underlying contingency is resolved and the consideration is paid or becomes payable. The milestone payments will be capitalized or expensed depending on the nature of the associated asset as of the date of recognition. The Company will record sales milestone payments and royalties as additional expense of the related product sales in the period in which the corresponding sales occur.

12. Commitments and Contingencies

Operating Leases

26 Landsdowne Street

In November 2017, the Company entered into a lease agreement for its current corporate headquarters comprising approximately 28,731 square feet of office and laboratory space at 26 Landsdowne Street in Cambridge, Massachusetts, commencing December 2017 when the Company gained access to the leased space for purposes of making leasehold improvements. The Company began recognizing rent expense associated with this lease during December 2017. The Company began to occupy and use the leased space for its intended purpose in June 2018. The lease ends on June 30, 2028. The Company has the option to extend the term of the lease for an additional five-year period, at the market rate, by giving the landlord written notice of its election to exercise the extension at least nine months prior to the original expiration of the lease term. The lease has a total commitment of $25.1 million over the ten year term, and includes escalating rent payments. The lease provides the Company with an allowance for normal leasehold improvements of $5.0 million. The Company accounts for leasehold improvement incentives as a reduction to rent expense ratably over the lease term. The balance from the leasehold improvement incentives is classified as a deferred lease incentive on the balance sheet. The lease agreement requires the Company to either pay a security deposit or maintain a letter of credit of $1.1 million. The Company maintains a letter of credit for this lease and has recorded the cash held to secure the letter of credit as restricted cash on the consolidated balance sheet as of December 31, 2021 and 2020. The Company records rent expense for this lease on a straight-line basis. Rent expense associated with this lease for the years ended December 31, 2021 and 2020 was approximately $1.9 million.

The future minimum lease payments associated with the lease for the Company's current headquarters as of December 31, 2021 are as follows (in thousands):

2022	2,424
2023	2,497
2024	2,572
2025	2,649
2026	2,729
Thereafter	4,237
Total minimum lease payments	$ 17,108

125 Sidney Street

In November 2021, the Company entered into a lease agreement comprising approximately 12,196 square feet of office space at 125 Sidney Street in Cambridge, Massachusetts, commencing November 2021 when the Company gained access to the leased space for purposes of making leasehold improvements. The Company began recognizing rent expense associated with this lease during November 2021. The lease ends on March 31, 2024. The Company has the option to extend the term of the lease for two successive one-year periods, at the market rate, by giving the landlord written notice of its election to exercise the extension at least nine months prior to the original expiration of the lease term. The lease has a total commitment of $1.7 million over the initial term, and includes escalating rent payments. Rent expense associated with this lease for the year ended December 31, 2021 was $0.1 million.

The future minimum lease payments associated with the 125 Sidney Street lease as of December 31, 2021 are as follows (in thousands):

2022	613
2023	836
2024	210
Total minimum lease payments	$ 1,659

Other Agreements

The Company has agreements with third parties in the normal course of business under which it can license certain developed technologies. If the Company exercises its rights to license the technologies it may be subject to additional fees and milestone payments. As of December 31, 2021, the Company has not exercised its rights to license such technologies.

Indemnification Agreements

In the ordinary course of business, the Company may provide indemnification of varying scope and terms to vendors, lessors, business partners and other parties with respect to certain matters arising out of the relationship between such parties and the Company. In addition, the Company has entered into indemnification agreements with members of its board of directors and senior management that will require the Company, among other things, to indemnify them against certain liabilities that may arise by reason of their status or service as directors or officers. The maximum potential amount of future payments the Company could be required to make under these indemnification agreements is, in many cases, unlimited. To date, the Company has not incurred any material costs as a result of such indemnifications. The Company is not aware of any claims under indemnification arrangements, and it has not accrued any liabilities related to such obligations as of December 31, 2021 or 2020.

Legal Proceedings

The Company is not currently a party to any material legal proceedings. At each reporting date, the Company evaluates whether or not a potential loss amount or a potential range of loss is probable and reasonably estimable under the provisions of the authoritative guidance that addresses accounting for contingencies. The Company expenses the costs related to its legal proceedings as they are incurred. No such costs have been incurred for the years ended December 31, 2021 and 2020.

13. Income Taxes

A reconciliation of the U.S. federal statutory income tax rate to the Company's effective income tax rate is as follows:

	Year Ended December 31, 2021	Year Ended December 31, 2020
Federal income tax at statutory rate	21.00%	21.00%
Permanent differences	(0.31)	(0.79)
Federal and state research and development credits	2.39	2.57
Federal orphan drug credits	4.51	4.28
State income tax, net of federal benefit	6.12	6.14
Other	(0.06)	0.47
Change in valuation allowance	(33.65)	(33.67)
Effective income tax rate	—%	—%

During the years ended December 31, 2021 and 2020, the Company incurred book and tax losses and, because it maintains a full valuation allowance on its net deferred tax assets, did not recognize federal or state income tax expense or benefit.

The Company's deferred tax assets and liabilities consist of the following (in thousands):

	December 31, 2021	December 31, 2020
Deferred tax assets:		
Net operating loss carryforwards	$ 67,043	$ 46,603
Research and development credit carryforwards	8,774	6,842
Orphan drug credit carryforwards	6,679	3,032
Intangible assets	6,192	6,722
Deferred revenue	1,061	1,791
Accrued expenses and other	4,537	2,240
Deferred lease incentive	832	962
Deferred rent	471	450
Gross deferred tax assets	95,589	68,642
Valuation allowance	(94,630)	(67,427)
Net deferred tax assets	959	1,215
Deferred tax liability	(959)	(1,215)
Net deferred tax assets	$ —	$ —

The Company has evaluated the positive and negative evidence bearing upon its ability to realize the net deferred tax assets. The Company considered its history of cumulative net losses incurred since inception and its lack of commercialization of any products since inception and has concluded that it is more likely than not that the Company will not realize the benefits of the net deferred tax assets. Accordingly, a full valuation allowance has been established against the net deferred tax assets as of December 31, 2021 and 2020. The valuation allowance increased by $27.2 million during the year ended December 31, 2021, which is primarily attributable to increases in net operating loss carryforwards as a result of current year net losses and the generation of research and development and orphan drug tax credit carryforwards. The Company reevaluates the positive and negative evidence at each reporting period.

As of December 31, 2021, the Company had federal net operating loss carryforwards of approximately $245.8 million, a portion of which begin to expire in 2036. Approximately $214.8 million of the federal net operating losses can be carried forward indefinitely. As of December 31, 2021, the Company also had state net operating loss carryforwards of approximately $244.0 million, which begin to expire in 2036.

As of December 31, 2021, the Company had federal orphan drug credits of approximately $6.7 million, which begin to expire in 2040. As of December 31, 2021, the Company had federal research and development tax credit carryforwards of approximately $6.1 million, which begin to expire in 2035. As of December 31, 2021, the Company also had state research and development tax credit carryforwards of approximately $3.3 million, which begin to expire in 2030.

Utilization of the net operating loss carryforwards and research and development tax credit carryforwards may be subject to an annual limitation under Section 382 of the Internal Revenue Code of 1986, as amended (the "Internal Revenue Code"), and corresponding provisions of state law, due to ownership changes that have occurred previously or that could occur in the future. These ownership changes may limit the amount of carryforwards that can be utilized annually to offset future taxable income. In general, an ownership change, as defined by Section 382, results from transactions increasing the ownership of certain shareholders or public groups in the stock of a corporation by more than 50% over a three-year period. The Company has not conducted a study to assess whether a change of control has occurred or whether there have been multiple changes of control since inception due to the significant complexity and cost associated with such a study. If the Company has experienced a change of control, as defined by Section 382, at any time since inception, utilization of the net operating loss carryforwards or research and development tax credit carryforwards would be subject to an annual limitation under Section 382, which is determined by first multiplying the value of the Company's stock at the time of the ownership change by the applicable long-term tax-exempt rate, and then could be subject to additional adjustments, as required. Any limitation may result in expiration of a portion of the net operating loss carryforwards or research and development tax credit carryforwards before utilization. Further, until a study is completed and any limitation is known, no amounts are being presented as an uncertain tax position.

The Company files tax returns as prescribed by the tax laws of the jurisdictions in which it operates. In the normal course of business, the Company is subject to examination by federal and state jurisdictions, where applicable. There are currently no pending tax examinations. As of December 31, 2021, the Company's tax years are still open under statute from 2016 to the present.

It is the Company's policy to include penalties and interest expense related to income taxes as a component of the provision for income taxes. As of December 31, 2021 and 2020, the Company had no accrued interest or penalties related to uncertain tax positions and no amounts have been recognized in the Company's statements of operations. For the year ended December 31, 2021, the Company generated research and development tax credits but has not conducted a study to document the qualified activities. This study may result in an adjustment to the Company's research and development tax credit carryforwards; however, until a study is completed and any adjustment is known, no amounts are being presented as an uncertain tax position. A full valuation allowance has been provided against the Company's research and development tax credit carryforwards and, if an adjustment is required, this adjustment would result in an adjustment to the deferred tax asset established for the research and development tax credit carryforwards and the valuation allowance.

14. Defined Contribution Plan

The Company has a defined contribution savings plan under Section 401(k) of the Internal Revenue Code (the "401(k) Plan"). The 401(k) Plan covers all employees who meet defined minimum age and service requirements, and allows participants the option to elect to defer a portion of their annual compensation on a pretax basis. As currently established, the Company is not required to make and has not made any contributions to the 401(k) Plan as of December 31, 2021.

15. Net Loss per Share

The following common stock equivalents were excluded from the calculation of diluted net loss per share for the periods indicated because including them would have had an anti-dilutive effect:

	Year Ended December 31,	
	2021	2020
Outstanding stock options	5,188,354	2,962,347
Unvested restricted stock awards	10,174	125,836
Total	5,198,528	3,088,183

EXHIBIT INDEX

Exhibit Number	Description
3.1	Restated Certificate of Incorporation of the Registrant (incorporated by reference to Exhibit 3.1 to the Registrant's Current Report on Form 8-K filed with the Securities and Exchange Commission on July 22, 2019).
3.2	Amended and Restated Bylaws of the Registrant (incorporated by reference to Exhibit 3.2 to the Registrant's Current Report on Form 8-K filed with the Securities and Exchange Commission on July 22, 2019).
4.1	Specimen Stock Certificate evidencing shares of common stock (incorporated by reference to Exhibit 4.1 to the Registrant's Registration Statement on Form S-1 (File No. 333-232260) filed with the Securities and Exchange Commission on June 21, 2019).
4.2	Description of the Registrant's Securities Registered under Section 12 of the Exchange Act (incorporated by reference to Exhibit 4.2 to the Registrant's Annual Report on Form 10-K filed with the Securities and Exchange Commission on March 5, 2020).
10.1	Amended and Restated Investors' Rights Agreement, dated as of August 24, 2018, by and among the Registrant and the other parties thereto (incorporated by reference to Exhibit 10.1 to the Registrant's Registration Statement on Form S-1 (File No. 333-232260) filed with the Securities and Exchange Commission on June 21, 2019).
10.2	Registration Rights Agreement, dated June 9, 2020, by and among the Registrant and the other parties thereto (incorporated by reference to Exhibit 10.2 of the Registrant's Current Report on Form 8-K filed with the Securities and Exchange Commission on June 10, 2020).
10.3#	2016 Stock Incentive Plan, as amended (incorporated by reference to Exhibit 10.2 to the Registrant's Registration Statement on Form S-1 (File No. 333-232260) filed with the Securities and Exchange Commission on June 21, 2019).
10.4#	Form of Incentive Stock Option Agreement under the 2016 Stock Incentive Plan (incorporated by reference to Exhibit 10.3 to the Registrant's Registration Statement on Form S-1 (File No. 333-232260) filed with the Securities and Exchange Commission on June 21, 2019).
10.5#	Form of Non-Statutory Stock Option Agreement under the 2016 Stock Incentive Plan (incorporated by reference to Exhibit 10.4 to the Registrant's Registration Statement on Form S-1 (File No. 333-232260) filed with the Securities and Exchange Commission on June 21, 2019).
10.6#	Form of Restricted Stock Agreement under the 2016 Stock Incentive Plan (incorporated by reference to Exhibit 10.5 to the Registrant's Registration Statement on Form S-1 (File No. 333-232260) filed with the Securities and Exchange Commission on June 21, 2019).
10.7#	2019 Stock Incentive Plan (incorporated by reference to Exhibit 10.6 to Amendment No. 1 to Registrant's Registration Statement on Form S-1 (File No. 333-232260) filed with the Securities and Exchange Commission on July 8, 2019).
10.8#	Form of Stock Option Agreement under the 2019 Stock Incentive Plan (incorporated by reference to Exhibit 10.7 to Amendment No. 1 to Registrant's Registration Statement on Form S-1 (File No. 333-232260) filed with the Securities and Exchange Commission on July 8, 2019).
10.9#	Form of Inducement Stock Option Agreement (incorporated by reference to Exhibit 10.1 to the Registrant's Quarterly Report on Form 10-Q filed with the Securities and Exchange Commission on November 4, 2021).
10.10#	Form of Restricted Stock Unit Agreement under the 2019 Stock Incentive Plan (incorporated by reference to Exhibit 10.10 to the Registrant's Annual Report on Form 10-K filed with the Securities and Exchange Commission on March 3, 2022).
10.11#	2019 Employee Stock Purchase Plan (incorporated by reference to Exhibit 10.8 to Amendment No. 1 to Registrant's Registration Statement on Form S-1 (File No. 333-232260) filed with the Securities and Exchange Commission on July 8, 2019).
10.12#	2022 Inducement Stock Incentive Plan (incorporated by reference to Exhibit 10.12 to the Registrant's Annual Report on Form 10-K filed with the Securities and Exchange Commission on March 3, 2022).
10.13#	Form of Non-Statutory Stock Option Agreement under 2022 Inducement Stock Incentive Plan (incorporated by reference to Exhibit 10.13 to the Registrant's Annual Report on Form 10-K filed with the Securities and Exchange Commission on March 3, 2022).
10.14#	Form of Restricted Stock Unit Agreement under 2022 Inducement Stock Incentive Plan (incorporated by reference to Exhibit 10.14 to the Registrant's Annual Report on Form 10-K filed with the Securities and Exchange Commission on March 3, 2022).
10.15#	Summary of Non-Employee Director Compensation Program (incorporated by reference to Exhibit 10.15 to the Registrant's Annual Report on Form 10-K filed with the Securities and Exchange Commission on March 3, 2022).

10.16#	Form of Employment Agreement for Executive Officers (incorporated by reference to Exhibit 10.12 to Amendment No. 1 to Registrant's Registration Statement on Form S-1 (File No. 333-232260) filed with the Securities and Exchange Commission on July 8, 2019).
10.17#	Consulting Agreement, dated March 31, 2021, by and between the Registrant and Robert J. Gould (incorporated by reference to Exhibit 10.3 to the Registrant's Quarterly Report on Form 10-Q filed with the Securities and Exchange Commission on May 6, 2021).
10.18#	Employment Agreement, dated March 31, 2021, by and between the Registrant and Bryan Stuart (incorporated by reference to Exhibit 10.4 to the Registrant's Quarterly Report on Form 10-Q filed with the Securities and Exchange Commission on May 6, 2021).
10.19#	Employment Agreement, dated October 29, 2020, by and between the Registrant and Curtis Oltmans (incorporated by reference to Exhibit 10.16 to the Registrant's Annual Report on Form 10-K filed with the Securities and Exchange Commission on March 4, 2021).
10.20#	Employment Agreement, dated February 6, 2021, by and between the Registrant and Christopher Moxham (incorporated by reference to Exhibit 10.1 to the Registrant's Quarterly Report on Form 10-Q filed with the Securities and Exchange Commission on May 6, 2021).
10.21#	Employment Agreement, dated February 6, 2021, by and between the Registrant and Judith Dunn (incorporated by reference to Exhibit 10.2 to the Registrant's Quarterly Report on Form 10-Q filed with the Securities and Exchange Commission on May 6, 2021).
10.22#	Employment Agreement, dated May 10, 2021, by and between the Registrant and Christopher Morabito (incorporated by reference to Exhibit 10.1 to the Registrant's Quarterly Report on Form 10-Q filed with the Securities and Exchange Commission on August 10, 2021).
10.23#	Employment Agreement, dated January 3, 2022, by and between the Registrant and Esther Rajavelu (incorporated by reference to Exhibit 10.23 to the Registrant's Annual Report on Form 10-K filed with the Securities and Exchange Commission on March 3, 2022).
10.24#	Form of Indemnification Agreement between the Registrant and each of its Executive Officers and Directors (incorporated by reference to Exhibit 10.15 to Registrant's Registration Statement on Form S-1 (File No. 333-232260) filed with the Securities and Exchange Commission on June 21, 2019).
10.25†	Right of Reference and License Agreement, dated as of February 8, 2019, by and among the Registrant, GlaxoSmithKline Intellectual Property (No. 2) Limited, GlaxoSmithKline LLC and Glaxo Group Limited (incorporated by reference to Exhibit 10.10 to the Registrant's Registration Statement on Form S-1 (File No. 333-232260) filed with the Securities and Exchange Commission on June 21, 2019).
10.26†	First Amendment to the Right of Reference and License Agreement, dated as of September 23, 2020, by and among the Registrant, GlaxoSmithKline Intellectual Property (No. 2) Limited, GlaxoSmithKline LLC and Glaxo Group Limited (incorporated by reference to Exhibit 10.2 to the Registrant's Quarterly Report on Form 10-Q (File No. 001-38978) filed with the Securities and Exchange Commission on November 10, 2020).
10.27†	Collaboration and License Agreement, dated as of December 20, 2019, by and between the Registrant and Acceleron Pharma Inc, a wholly-owned subsidiary of Merck & Co., Inc. (incorporated by reference to Exhibit 10.17 to the Registrant's Annual Report on Form 10-K (File No. 001-38978) filed with the Securities and Exchange Commission on March 5, 2020).
10.28†	Collaboration and License Agreement, dated as of July 20, 2020, by and between the Registrant and MyoKardia, Inc, a wholly-owned subsidiary of Bristol Myers Squibb Company (incorporated by reference to Exhibit 10.1 to the Registrant's Quarterly Report on Form 10-Q (File No. 001-38978) filed with the Securities and Exchange Commission on November 10, 2020).
10.29	Lease for 26 Landsdowne Street, dated November 22, 2017, by and between the UP 26 Landsdowne, LLC and the Registrant (incorporated by reference to Exhibit 10.11 to the Registrant's Registration Statement on Form S-1 (File No. 333-232260) filed with the Securities and Exchange Commission on June 21, 2019).
10.30	Equity Distribution Agreement, dated August 11, 2020, by and between the Registrant and Piper Sandler & Co. (incorporated by reference to Exhibit 1.2 to the Registrant's Registration Statement on Form S-3 (File No. 333-244136) filed with the Securities and Exchange Commission on August 11, 2020).
10.31	Amendment No. 1 to the Equity Distribution Agreement, dated November 4, 2021, by and between the Registrant and Piper Sandler & Co. (incorporated by reference to Exhibit 1.3 to the Registrant's Registration Statement on Form S-3 (File No. 333-260754) filed with the Securities and Exchange Commission on November 4, 2021.
21.1	Subsidiary of the Registrant (incorporated by reference to Exhibit 21.1 to the Registrant's Annual Report on Form 10-K filed with the Securities and Exchange Commission on March 3, 2022).
23.1*	Consent of Ernst & Young LLP, independent registered public accounting firm.

31.1*	Certification of Principal Executive Officer and Principal Financial Officer Pursuant to Rules 13a-14(a) and 15d-14(a) under the Securities Exchange Act of 1934, as Adopted Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.
32.1+	Certification of Principal Executive Officer and Principal Financial Officer Pursuant to 18 U.S.C. Section 1350, as Adopted Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.
101.INS	Inline XBRL Instance Document
101.SCH	Inline XBRL Taxonomy Extension Schema Document
101.CAL	Inline XBRL Taxonomy Extension Calculation Linkbase Document
101.DEF	Inline XBRL Taxonomy Extension Definition Linkbase Document
101.LAB	Inline XBRL Taxonomy Extension Label Linkbase Document
101.PRE	Inline XBRL Taxonomy Extension Presentation Linkbase Document
104	Cover Page Interactive Data File (formatted as Inline XBRL with applicable taxonomy extension information contained in Exhibits 101)

# Indicates a management contract or any compensatory plan, contract or arrangement.

† Certain portions of this exhibit have been omitted because they are not material and would likely cause competitive harm to the Registrant if disclosed.

* Filed herewith.

+ Furnished herewith.

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 Report to be signed on its behalf by the undersigned, thereunto duly authorized**.**

Fulcrum Therapeutics, Inc.

Date: June 23, 2023

By: /s/ Robert J. Gould

Robert J. Gould, Ph.D.

Interim President and Chief Executive Officer (Principal Executive Officer and Principal Financial Officer)

Exhibit 23.1

Consent of Independent Registered Public Accounting Firm

We consent to the incorporation by reference in the following Registration Statements:

1. Registration Statement (Form S-8 No. 333-233452) pertaining to the 2016 Stock Incentive Plan, as amended, 2019 Stock Incentive Plan, and 2019 Employee Stock Purchase Plan of Fulcrum Therapeutics, Inc.;
2. Registration Statement (Form S-8 No. 333-236910) pertaining to the 2019 Stock Incentive Plan and 2019 Employee Stock Purchase Plan of Fulcrum Therapeutics, Inc.;
3. Registration Statement (Form S-1 No. 333-239353) and related Prospectus of Fulcrum Therapeutics, Inc. (as amended by Form S-3/A No. 333-239353);
4. Registration Statement (Form S-8 No. 333-253862) pertaining to the 2019 Stock Incentive Plan and 2019 Employee Stock Purchase Plan of Fulcrum Therapeutics, Inc.,
5. Registration Statement (Form S-8 No. 333-262356) pertaining to the 2019 Stock Incentive Plan, 2019 Employee Stock Purchase Plan, and Inducement Stock Option Awards (September 2021 – January 2022) of Fulcrum Therapeutics, Inc.,
6. Registration Statement (Form S-8 No. 333-263249) pertaining to 2022 Inducement Stock Incentive Plan, and Inducement Stock Option Award, as amended (February 2022) of Fulcrum Therapeutics, Inc.; and
7. Registration Statement (Form S-8 No. 333-270385) pertaining to the 2019 Stock Incentive Plan, the 2019 Employee Stock Purchase Plan and the 2022 Inducement Stock Incentive Plan.

of our report dated March 3, 2022, with respect to the consolidated financial statements of Fulcrum Therapeutics, Inc. included in this Annual Report (Form 10-K/A) of Fulcrum Therapeutics, Inc. for the year ended December 31, 2021.

/s/ Ernst & Young LLP

Boston, Massachusetts
June 23, 2023

Exhibit 31.1

CERTIFICATION PURSUANT TO RULES 13a-14(a) AND 15d-14(a) UNDER THE SECURITIES EXCHANGE ACT OF 1934, AS ADOPTED PURSUANT TO SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002

I, Robert J. Gould, certify that:

1. I have reviewed this Annual Report on Form 10-K, as amended, of Fulcrum Therapeutics, 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. I am responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

(a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under my supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to me 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 my 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 my 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. I have disclosed, based on my 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: June 23, 2023

By: /s/ Robert J. Gould

Robert J. Gould, Ph.D.
Interim President and Chief Executive Officer
(Principal Executive Officer and Principal Financial Officer)

Exhibit 32.1

CERTIFICATION PURSUANT TO 18 U.S.C. SECTION 1350,
AS ADOPTED PURSUANT TO
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002

In connection with the Annual Report on Form 10-K, as amended, of Fulcrum Therapeutics, Inc. (the "Company") for the year ended December 31, 2021, as filed with the Securities and Exchange Commission on the date hereof (the "Report"), the undersigned, Robert J. Gould, Interim President and Chief Executive Officer of the Company, hereby certifies, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that to his knowledge:

(1) the Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and

(2) the information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Date: June 23, 2023

By: /s/ Robert J. Gould
Robert J. Gould, Ph.D.
Interim President and Chief Executive Officer
(Principal Executive Officer and Principal Financial Officer)