

CUE BIOPHARMA, INC.

671,572 Shares of Common Stock

This prospectus relates to 671,572 shares of common stock of Cue Biopharma, Inc. for the sale from time to time by the Albert Einstein College of Medicine, Inc. ("Einstein"), including its transferees, pledgees, donees or successors. The number of shares Einstein may sell consists of 671,572 shares of common stock that are currently issued and outstanding. You can find detailed information on Einstein and the transaction in which it acquired our securities in the section entitled "Selling Stockholders" beginning on page 6 of this prospectus.

The selling stockholders may sell their shares of common stock from time to time at market prices prevailing at the time of sale, at prices related to the prevailing market price, or at privately negotiated prices. We will not receive any proceeds from the sale of common stock by the selling stockholders. We have agreed to bear all of the expenses incurred in connection with the registration of the common stock. The selling stockholders will pay or assume brokerage commission and similar charges, if any, incurred in the sale of the common stock.

Our common stock is traded on the Nasdaq Capital Market under the trading symbol CUE. On July 9, 2018, the closing price of our common stock was \$11.78 per share.

We are an "emerging growth company" as that term is used in the Jumpstart Our Business Startups Act of 2012 and, as such, have elected to comply with certain reduced public company reporting requirements for this prospectus and future filings.

You should read this prospectus, together with additional information described under the headings "Incorporation of Certain Information by Reference" and "Where You Can Find More Information", carefully before you invest in any of our securities.

Investing in our common stock involves a high degree of risk. See "Risk Factors" beginning on page 4 for a discussion of information that should be considered in connection with an investment in our securities.

Neither the Securities and Exchange Commission nor any state securities commission has approved or disapproved of these securities or determined if this prospectus is truthful or complete. Any representation to the contrary is a criminal offense.

This prospectus is dated July 19, 2018.

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Unless otherwise stated or the context otherwise requires, the terms "Cue Biopharma," "we," "us," "our" and the "Company" refer to Cue Biopharma, Inc.

You should rely only on the information contained in this prospectus. We have not authorized anyone to provide you with additional or different information. The information contained in this prospectus is accurate only as of the date on the front cover of this prospectus, regardless of the time of delivery of this prospectus or of any sale of our common stock.

No dealer, salesperson or any other person is authorized in connection with this offering to give any information or make any representations about us, the securities offered hereby or any matter discussed in this prospectus, other than those contained in this prospectus and, if given or made, the information or representations must not be relied upon as having been authorized by us. This prospectus does not constitute an offer to sell or a solicitation of an offer to buy any security other than the securities offered by this prospectus, or an offer to sell or a solicitation of an offer to buy any securities by anyone in any circumstance in which the offer or solicitation is not authorized or is unlawful.

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PROSPECTUS SUMMARY

This summary highlights selected information contained elsewhere in this prospectus and does not contain all of the information that you need to consider in making your investment decision. You should carefully read this entire prospectus, as well as the information to which we refer you, before deciding whether to invest in our common stock. You should pay special attention to the "Risk Factors" section of this prospectus to determine whether an investment in our common stock is appropriate for you.

The registration statement of which this prospectus forms a part, including the exhibits and any schedules thereto, contains additional relevant information about us and our securities. With respect to the statements contained in this prospectus regarding the contents of any agreement or any other document, in each instance, the statement is qualified in all respects by the complete text of the agreement or document, a copy of which has been filed or incorporated by reference as an exhibit to the registration statement.

About Cue Biopharma, Inc.

We are an innovative biopharmaceutical company developing a novel and proprietary class of biologic drugs for the selective modulation of the human immune system to treat a broad range of cancers and autoimmune disorders. We believe our innovative CUE Biologics™ platform approach to selectively modulate disease relevant T cells provides a transformative solution to the challenges facing prevailing immunotherapeutics. By directly engaging and modulating disease relevant T cells in the patient's body via an injectable drug, we believe our biologic drug candidates will be able to realize the true potential of immune modulation. Through our proprietary CUE Biologics™ platform, we believe we are uniquely positioned to become a prominent and leading player in immunotherapy, immuno-oncology and autoimmune disease. While currently in preclinical development, our proprietary platform is intended to allow us to efficiently design and develop drug candidates that specifically and selectively engage disease relevant T cells for therapeutic affect, while minimizing or eliminating unwanted side effects. We have been aggressively seeking patent protection for our pioneering innovations and, combined with a license agreement with the Albert Einstein College of Medicine ("Einstein"), continue to build a robust intellectual property portfolio. This portfolio includes our core technology platform for the engineering of biologics to selectively control T cell activity, which we call CUE Biologics™, a growing portfolio of precision immuno-modulatory drug candidates, and two supporting technologies we call MOD™ and viraTope™ that enable the discovery of costimulatory signaling molecules (ligands) and T cell targeting peptides, respectively.

Status as an Emerging Growth Company

We are an "emerging growth company" as that term is defined in the Jumpstart Our Business Startups Act of 2012 (the "JOBS Act"). Section 102(b)(1) of the JOBS Act exempts emerging growth companies from being required to comply with new or revised financial accounting standards until private companies (i.e., those that have not had a registration statement declared effective under the Securities Act of 1933, as amended (the "Securities Act"), or do not have a class of securities registered under the Securities Exchange Act of 1934, as amended (the "Exchange Act")) are required to comply with such new or revised financial accounting standards. The JOBS Act also provides that an emerging growth company can elect to opt out of the extended transition period provided by Section 102(b)(1) of the JOBS Act and comply with the requirements that apply to non-emerging growth companies, but any such election to opt out is irrevocable. We have irrevocably elected to opt out of this extended transition period provided by Section 102(b)(1) of the JOBS Act. Even though we have elected to opt out of the extended transition period, we may still take advantage of all of the other provisions of the JOBS Act, which include, but are not limited to, not being required to comply with the

auditor attestation requirements of Section 404 of the Sarbanes-Oxley Act, the reduced disclosure obligations regarding executive compensation in our periodic reports and proxy statements and the exemptions from the requirements of holding a nonbinding advisory vote on executive compensation and stockholder approval of any golden parachute payments not previously approved.

General Company Information

We were incorporated as Imagen Biopharma, Inc. in Delaware on December 31, 2014. In October 2016, we changed our name to Cue Biopharma, Inc. The address of our corporate headquarters is 21 Erie Street, Cambridge, Massachusetts 02139 and our telephone number is (617) 949-2680. Our website can be accessed at www.cuebiopharma.com. The information contained on, or that may be obtained from, our website is not, and shall not be deemed to be, a part of this prospectus.

THE OFFERING

This prospectus relates to the resale by Einstein, including its transferees, pledgees, donees and successors, of up to 671,572 shares of common stock. Such shares were issued to Einstein pursuant to the Amended and Restated License Agreement dated as of July 31, 2017 by and between us and Einstein (the "Einstein License Agreement"). In the Einstein License Agreement we agreed to use our best efforts to file a registration statement covering the resale of the 671,572 shares as soon as practicable, but no later than 180 calendar days, from the date of our initial public offering, which occurred on December 27, 2017.

All the shares covered by this prospectus, when sold, will be sold by the selling stockholders. The selling stockholders may sell the shares from time to time at market prices prevailing at the time of sale, at prices related to the prevailing market price, or at privately negotiated prices. We will not receive any proceeds from the sale of shares by the selling stockholders.

RISK FACTORS

You should carefully consider all of the information set forth in this prospectus and the documents incorporated by reference herein, unless expressly provided otherwise, and in particular the risk factors described in "Item 1A - Risk Factors" contained in our Annual Report on Form 10-K for the fiscal year ended December 31, 2017. The risks described in any document incorporated by reference are not the only ones we have, but are considered to be the most material. Additional risks of which we are not presently aware or that we currently believe are immaterial may also harm our business and results of operations. If any of these risks actually occur, our business, financial condition and results of operations would likely suffer. In that case, the market price of the Common Stock could decline, and you may lose part or all of your investment in our company.

SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS AND OTHER INFORMATION CONTAINED IN THIS PROSPECTUS

Certain information set forth in this prospectus or incorporated by reference herein may contain forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Securities Exchange Act of 1934, as amended, that are intended to be covered by the "safe harbor" created by those sections. Forward-looking statements, which are based on certain assumptions and describe our future plans, strategies and expectations, can generally be identified by the use of forward-looking terms such as "believe," "expect," "may," "will," "should," "would," "could," "seek," "intend," "plan," "goal," "project," "estimate," "anticipate," "strategy", "future", "likely" or other comparable terms and references to future periods. All statements other than statements of historical facts included in this prospectus or incorporated by reference herein regarding our strategies, prospects, financial condition, operations, costs, plans and objectives are forward-looking statements. Examples of forward-looking statements include, among others, statements we make regarding: anticipated results of our drug development efforts, including study results, our expectations regarding regulatory developments and expected future operating results.

Forward-looking statements are neither historical facts nor assurances of future performance. Instead, they are based only on our current beliefs, expectations and assumptions regarding the future of our business, future plans and strategies, projections, anticipated events and trends, the economy and other future conditions. Because forward-looking statements relate to the future, they are subject to inherent uncertainties, risks and changes in circumstances that are difficult to predict and many of which are outside of our control. Our actual results and financial condition may differ materially from those indicated in the forward-looking statements. Therefore, you should not rely on any of these forward-looking statements. Important factors that could cause our actual results and financial condition to differ materially from those indicated in the forward-looking statements include, among others, the following:

- our limited operating history, limited cash and a history of losses;
- our ability to secure required Food and Drug Administration ("FDA") or other governmental approvals for our product candidates and the breadth of any approved indication;
- negative or inconclusive results from our clinical studies or serious and unexpected drug-related side effects or other safety issues experienced by participants in our clinical trials;
- delays and changes in regulatory requirements, policy and guidelines including potential delays in submitting required regulatory applications to the FDA;

- · our reliance on licensors, collaborations and strategic alliances;
- · our ability to obtain adequate financing to fund our business operations in the future; and
- the other risks and uncertainties described in Part I, Item 1A, Risk Factors of our Annual Report on Form 10-K for the fiscal year ended December 31, 2017 incorporated by reference herein. There have been no material changes to such risk factors as at the date of this prospectus.

Therefore, you should not rely on any of these forward-looking statements. We urge you to consider those risks and uncertainties in evaluating our forward-looking statements. All subsequent written and oral forward-looking statements attributable to us or to persons acting on our behalf are expressly qualified in their entirety by the applicable cautionary statements. We further caution readers not to place undue reliance upon any such forward-looking statements, which speak only as of the date made. Except as otherwise required by the federal securities laws, we undertake no obligation to publicly update any forward-looking statement, whether written or oral, that may be made from time to time, whether as a result of new information, future developments or otherwise.

USE OF PROCEEDS

We are filing the registration statement of which this prospectus forms a part to permit the selling stockholders to resell the shares of common stock covered by this prospectus. We will not receive any proceeds from the sale of our common stock by the selling stockholders.

DETERMINATION OF OFFERING PRICE

The selling stockholders will determine at what price they may sell the shares of common stock offered by this prospectus, and such sales may be made at market prices prevailing at the time of sale, at prices related to the prevailing market price, or at privately negotiated prices.

SELLING STOCKHOLDERS

We and Einstein entered into an Amended and Restated License Agreement dated as of July 31, 2017. In the Einstein License Agreement we agreed to use our best efforts to file a registration statement covering the resale of the 671,572 shares no later than 180 days after the consummation of our initial public offering, which occurred on December 27, 2017.

This prospectus covers the resale of such 671,572 shares of common stock held by Einstein (or hereafter may be held by Einstein's transferees, pledgees, donees or successors).

The following table sets forth certain information regarding Einstein and the shares of common stock beneficially owned by them, which information is available to us as of July 9, 2018. Einstein may offer the shares under this prospectus from time to time and may elect to sell some, all or none of its shares. As a result, we cannot estimate the number of shares of common stock that Einstein will beneficially own after the termination of sales under this prospectus. However, for the purpose of the table below, we have assumed that, after the completion of the offering, none of the shares covered by this prospectus will be held by Einstein. In addition, Einstein may have sold, transferred or otherwise disposed of all or a portion of its shares of common stock since the date on which Einstein provided information for this table. We have not made independent inquiries about this. We are relying on written communications from Einstein to notify us of any changes in their beneficial ownership after the date Einstein originally provided this information. For further information see the section of this prospectus entitled "Plan of Distribution" beginning on page 7.

	# of Shares Beneficially		# of Shares Beneficially	% of Shares	
				Beneficially	
	Owned Before	# of Shares	Owned After	Owned After	
Selling Stockholder	Offering	Offered	Offering	Offering	
Albert Einstein College of Medicine,	671,572	671,572		 %	
Inc.					

PLAN OF DISTRIBUTION

We are registering the 671,572 shares of common stock previously issued to Einstein to permit the resale of these shares of common stock by Einstein and its transferees, donees, pledgees or other successors in interest from time to time after the date of this prospectus. We will not receive any of the proceeds from the sale by the selling stockholders of the shares of common stock. We will bear all fees and expenses incident to our obligation to register the shares of common stock.

The selling stockholders may sell all or a portion of the shares of common stock beneficially owned by them and offered hereby from time to time directly or through one or more underwriters, broker-dealers or agents. If the shares of common stock are sold through underwriters or broker-dealers, the selling stockholders will be responsible for underwriting discounts or commissions or agent's commissions. The shares of common stock may be sold in one or more transactions at fixed prices, at prevailing market prices at the time of the sale, at varying prices determined at the time of sale, or at negotiated prices. The selling stockholders will act independently of us in making decisions with respect to the timing, manner and size of each sale. These sales may involve cross trades or block transactions. These sales may be effected in transactions:

- on any national securities exchange or quotation service on which the securities may be listed or quoted at the time of sale;
- in the over-the-counter market;
- in transactions otherwise than on these exchanges or systems or in the over-the-counter market;
- through the writing of options, whether such options are listed on an options exchange or otherwise;
- ordinary brokerage transactions and transactions in which the broker-dealer solicits purchasers;
- block trades in which the broker-dealer will attempt to sell the shares as agent but may position and resell a portion of the block as principal to facilitate the transaction:
- purchases by a broker-dealer as principal and resale by the broker-dealer for its account;
- an exchange distribution in accordance with the rules of the applicable exchange;
- privately negotiated transactions;
- · short sales:
- through the distribution of the common stock by any selling stockholders to its partners, members or stockholders;
- through one or more underwritten offerings on a firm commitment or best efforts basis;
- broker-dealers may agree with the selling stockholders to sell a specified number of such shares at a stipulated price per share;
- a combination of any such methods of sale; and
- any other method permitted pursuant to applicable law.

The selling stockholders may also sell shares pursuant to Rule 144 under the Securities Act, or any other exemption from registration, if available, rather than under this prospectus.

If the selling stockholders effect such transactions by selling shares of common stock to or through underwriters, broker-dealers or agents, such underwriters, broker-dealers or agents may receive commissions in the form of discounts, concessions or commissions from the selling stockholders or commissions from purchasers of the shares of common stock for whom they may act as agent or to whom they may sell as principal (which discounts, concessions or commissions as to particular underwriters, broker-dealers or agents may be in excess of those customary in the types of transactions involved). In connection with sales of the shares of common stock or otherwise, the selling stockholders may enter into hedging transactions with broker-dealers, which may in turn engage in

short sales of the shares of common stock in the course of hedging in positions they assume. The selling stockholders may also sell shares of common stock short and deliver shares of common stock covered by this prospectus to close out short positions and to return borrowed shares in connection with such short sales. The selling stockholders may also loan or pledge shares of common stock to broker-dealers that in turn may sell such shares.

The selling stockholders may pledge or grant a security interest in some or all of the shares of common stock owned by them and, if they default in the performance of their secured obligations, the pledgees or secured parties may offer and sell the shares of common stock from time to time pursuant to this prospectus or any amendment to this prospectus under Rule 424(b)(3) or other applicable provision of the Securities Act amending, if necessary, the list of selling stockholders to include the pledgee, transferee or other successors in interest as selling stockholders under this prospectus.

The selling stockholders and any broker-dealer participating in the distribution of the shares of common stock may be deemed to be "underwriters" within the meaning of the Securities Act, and any commission paid, or any discounts or concessions allowed to, any such broker-dealer may be deemed to be underwriting commissions or discounts under the Securities Act. At the time a particular offering of the shares of common stock is made, a prospectus supplement, if required, will be distributed which will set forth the aggregate amount of shares of common stock being offered and the terms of the offering, including the name or names of any broker-dealers or agents, any discounts, commissions and other terms constituting compensation from the selling stockholders and any discounts, commissions or concessions allowed or reallowed or paid to broker-dealers. The selling stockholders may indemnify any broker-dealer that participates in transactions involving the sale of the shares of common stock against certain liabilities, including liabilities arising under the Securities Act.

Under the securities laws of some states, the shares of common stock may be sold in such states only through registered or licensed brokers or dealers. In addition, in some states the shares of common stock may not be sold unless such shares have been registered or qualified for sale in such state or an exemption from registration or qualification is available and is complied with.

There can be no assurance that any selling stockholder will sell any or all of the shares of common stock registered pursuant to the registration statement, of which this prospectus forms a part.

The selling stockholders and any other person participating in such distribution will be subject to applicable provisions of the Exchange Act and the rules and regulations thereunder, including, without limitation, Regulation M of the Exchange Act, which may limit the timing of purchases and sales of any of the shares of common stock by the selling stockholders and any other participating person. Regulation M may also restrict the ability of any person engaged in the distribution of the shares of common stock to engage in market-making activities with respect to the shares of common stock and the ability of any person or entity to engage in market-making activities with respect to the shares of common stock.

We will pay all expenses of the registration of the shares of common stock pursuant to the registration rights agreement, including, without limitation, SEC filing fees and expenses of compliance with state securities or "Blue Sky" laws; provided, however, that a selling stockholder will pay all underwriting discounts and selling commissions, if any. We will indemnify the selling stockholders against liabilities, including some liabilities under the Securities Act, in accordance with the registration rights agreement, or the selling stockholders will be entitled to contribution. We may be indemnified by the selling stockholders against civil liabilities, including liabilities under the Securities Act, that may arise from any written information furnished to us by the selling stockholder specifically for use in this prospectus, in accordance with the registration rights agreement, or we may be entitled to contribution.

Once sold under the registration statement, of which this prospectus forms a part, the shares of common stock will be freely tradable in the hands of persons other than our affiliates.

The 671,572 shares of common stock previously issued to Einstein will be available for sale in the public market following the expiration of the 12-month lock-up agreed to by Einstein (the "Einstein Lock-Up"), which expires on December 14, 2018. Under the Einstein Lock-Up, the selling stockholders agreed that they will not sell, contract to sell, grant any option for the sale or otherwise dispose of any of our equity securities, or any securities convertible into or exercisable or exchangeable for our equity securities, without the prior written consent of MDB Capital Group, LLC ("MDB"). Under the Einstein License Agreement, Einstein also agreed to abide by the volume limitations applicable to an "affiliate" under Rule 144 of the Securities Act, unless we or MDB agree otherwise.

In general, under Rule 144, as currently in effect, an "affiliate" or persons selling shares on behalf of an "affiliate" would be entitled to sell, within any three-month period, a number of shares that does not exceed the greater of:

- 1% of the number of shares of common stock then outstanding; or
- the average weekly trading volume of the common stock during the four calendar weeks preceding the filing of a notice on Form 144 with respect to such sale.

The shares of common stock issued to the selling stockholders are subject to certain registration rights, as described below in the "Description of Capital Stock" section of this prospectus.

DESCRIPTION OF CAPITAL STOCK

The following is a brief description of our capital stock. This summary does not purport to be complete in all respects. This description is subject to and qualified entirely by the terms of our amended and restated certificate of incorporation (the "Certificate of Incorporation"), and our amended and restated bylaws (the "Bylaws"), copies of which have been filed with the SEC and are also available upon request from us.

Authorized Capitalization

We have 60,000,000 shares of capital stock authorized under our Certificate of Incorporation, consisting of 50,000,000 shares of common stock with a par value of \$0.001 per share and 10,000,000 shares of preferred stock with a par value of \$0.001 per share. As of March 31, 2018, we had 20,130,766 shares of common stock outstanding and no shares of preferred stock outstanding. Our authorized but unissued shares of common stock and preferred stock are available for issuance without further action by our stockholders, unless such action is required by applicable law or the rules of any stock exchange or automated quotation system on which our securities may be listed or traded in the future.

Common Stock

Holders of our common stock are entitled to such dividends as may be declared by our board of directors out of funds legally available for such purpose. The shares of common stock are neither redeemable nor convertible. Holders of common stock have no preemptive or subscription rights to purchase any of our securities.

Each holder of our common stock is entitled to one vote for each such share outstanding in the holder's name. No holder of common stock is entitled to cumulate votes in voting for directors.

In the event of our liquidation, dissolution or winding up, the holders of our common stock are entitled to receive pro rata our assets, which are legally available for distribution, after payments of all debts and other liabilities. All of the outstanding shares of our common stock are fully paid and non-assessable. The shares of common stock offered by this prospectus will also be fully paid and non-assessable.

Stock Options and Warrants

As of March 31, 2018, we had reserved the following shares of common stock for issuance pursuant to stock options, warrants and equity plans:

- 2,757,221 shares of our common stock reserved for issuance under stock option agreements issued pursuant to our 2016
 Omnibus Incentive Plan and 2016 Non-Employee Equity Incentive Plan at a weighted average exercise price of \$4.18 per
 share;
- 1,252,441 shares of common stock reserved for issuance under outstanding warrants at a weighted average exercise price of \$7.40 per share;
- 2,301,550 shares of our common stock reserved for future issuance under our 2016 Omnibus Incentive Plan; and
- 130,000 shares of our common stock reserved for future issuance under our 2016 Non-Employee Equity Incentive Plan.

Stock Incentive Plan and Other Employment Related Options

We have adopted the 2016 Omnibus Incentive Plan (the "Omnibus Plan") and the 2016 Non-Employee Equity Incentive Plan (the "Non-Employee Plan"), which provide for the grant of incentive stock options and non-qualified stock options to purchase shares of our common stock, restricted stock and restricted stock units, performance awards and other share-based awards. The purpose of the plans is to enhance the Company's ability to attract and retain highly qualified officers, non-employee directors, key employees and consultants, and to motivate such persons to serve the Company and to expend maximum effort to improve the business results and earnings of the Company, by providing to such persons an opportunity to acquire or increase a direct proprietary interest in the operations and future success of the Company.

In August 2017, our board of directors approved an amendment and restatement of the Omnibus Plan. As of March 31, 2018 we had reserved 2,301,550 shares of common stock under the Omnibus Plan and 130,000 shares of our common stock under the Non-Employee Plan. The Omnibus Plan, as amended and restated, provides that on the first day of each fiscal year of the Company during the period beginning in fiscal year 2018 and ending on the second day of fiscal year 2027, the number of shares of common stock authorized to be issued under the Omnibus Plan shall be increased by an amount equal to the lesser of (i) the number of shares necessary such that the aggregate number of shares available to be issued under the Omnibus Plan equals 20.0% of the number of fully-diluted outstanding shares on such date (assuming the conversion of all outstanding shares of preferred stock and other outstanding convertible securities and exercise of all outstanding options and warrants to purchase shares) and (ii) an amount determined by our board of directors.

All officers, directors and employees and certain consultants to our company are eligible to participate under the plan. The plans provide that options may not be granted at an exercise price less than the fair market value of our common shares on the date of grant. The plan is administered by the board of directors or a committee thereof, which currently is the Compensation Committee. The board of directors and the committee have the discretion to determine the nature of the awards and the number of shares subject to an award, the exercise price, vesting provisions, and the term of the award. Awards under the plans are intended to be exempt from Section 16 of the Exchange Act, and will be administered to achieve this objective.

As of March 31, 2018, under the Omnibus Plan we had granted options to purchase an aggregate of 2,387,221 shares of our common stock at a weighted average exercise price of \$4.11 per share and had available for future grants 2,301,550 shares. As of March 31, 2018, under the Non-Employee Plan we had granted options to purchase an aggregate of 370,000 shares of our common stock at a weighted average exercise price of \$4.65 per share and had available for future grants 130,000 shares.

Registration Rights

Under the terms of a registration rights agreement dated as of June 15, 2015 among us and the holders of securities issued in the June 2015 private placement, as supplemented by a joinder and amendment to registration rights agreement, dated as of December 22, 2016, among us and the holders of securities issued in the December 2016 private placement (the "Registration Rights Agreement"), the holders of 7,357,054 shares of our common stock, including those issuable upon the exercise of outstanding warrants issued to private placement agent MDB Capital Group, LLC ("MDB"), are entitled to rights with respect to the registration of these securities under the Securities Act. The holders of securities issued in the June 2015 private placement and the December 2016 private placement are referred to, collectively, as the "Private Placement Holders".

Pursuant to the Registration Rights Agreement, beginning 180 days after the date of our initial public offering, if we register any of our securities, the Private Placement Holders will be entitled to include in the registration their shares that are subject to the Registration Rights Agreement. Additionally, Private Placement Holders who collectively hold more than 50% of the shares subject to the Registration Rights Agreement have a one-time right to demand that we register for resale their shares that are subject to the Registration Rights Agreement. MDB, one of the Private Placement Holders, also has a one-time right under the Registration Rights Agreement to demand that we register for resale its shares that are subject to the registration rights agreement.

The rights under the Registration Rights Agreement are subject to certain cutback provisions and customary suspension provisions. We have agreed to pay all registration expenses (excluding underwriting fees, discounts and selling commissions) under the Registration Rights Agreement.

Preferred Stock

Our board of directors has the authority, without further action by the stockholders, to issue up to 10,000,000 shares of preferred stock in one or more series and to fix the designations, powers, rights, preferences, qualifications, limitations and restrictions thereof. These designations, powers, rights and preferences could include voting rights, dividend rights, dissolution rights, conversion rights, exchange rights, redemption rights, liquidation preferences, and the number of shares constituting any series or the designation of such series, any or all of which may be greater than the rights of common stock. The issuance of preferred stock could adversely affect the voting power of holders of common stock and the likelihood that such holders will receive dividend payments and payments upon liquidation. In addition, the issuance of preferred stock could have the effect of delaying, deferring or preventing change in our control or other corporate action. No shares of preferred stock are outstanding, and we have no present plan to issue any shares of preferred stock.

Anti-Takeover Provisions

The provisions of Delaware law, our Amended and Restated Certificate of Incorporation and Bylaws could have the effect of delaying, deferring or discouraging another person from acquiring control of our company. These provisions, which are summarized below, may have the effect of discouraging takeover bids. They are also designed, in part, to encourage persons seeking to acquire control of us to negotiate first with our board of directors. We believe that the benefits of increased protection of our potential ability to negotiate with an unfriendly or unsolicited acquirer outweigh the disadvantages of discouraging a proposal to acquire us because negotiation of these proposals could result in an improvement of their terms.

Delaware Law

We are subject to Section 203 of the Delaware General Corporation Law, an anti-takeover law. In general, Section 203 prohibits a Delaware corporation from engaging in any business combination (as defined below) with any interested stockholder (as defined below) for a period of three years following the date that the stockholder became an interested stockholder, unless:

- prior to that date, the board of directors of the corporation approved either the business combination or the transaction that resulted in the stockholder becoming an interested stockholder:
- upon consummation of the transaction that resulted in the stockholder becoming an interested stockholder, the interested stockholder owned at least 85% of the voting stock of the corporation outstanding at the time the transaction commenced, excluding for purposes of

determining the number of shares of voting stock outstanding (but not the voting stock owned by the interested stockholder) those shares owned by persons who are directors and officers and by excluding employee stock plans in which employee participants do not have the right to determine confidentially whether shares held subject to the plan will be tendered in a tender or exchange offer; or

• on or subsequent to that date, the business combination is approved by the board of directors of the corporation and authorized at an annual or special meeting of stockholders, and not by written consent, by the affirmative vote of at least 66 2/3% of the outstanding voting stock that is not owned by the interested stockholder.

In general, Section 203 defines "business combination" to include the following:

- any merger or consolidation involving the corporation and the interested stockholder;
- any sale, lease, exchange, mortgage, transfer, pledge or other disposition of 10% or more of the assets of the corporation involving the interested stockholder;
- subject to certain exceptions, any transaction that results in the issuance or transfer by the corporation of any stock of the corporation to the interested stockholder;
- subject to limited exceptions, any transaction involving the corporation that has the effect of increasing the proportionate share of the stock of any class or series of the corporation beneficially owned by the interested stockholder; or
- the receipt by the interested stockholder of the benefit of any loans, advances, guarantees, pledges or other financial benefits provided by or through the corporation.

In general, Section 203 defines an interested stockholder as any entity or person beneficially owning 15% or more of the outstanding voting stock of the corporation, or who beneficially owns 15% or more of the outstanding voting stock of the corporation at any time within a three-year period immediately prior to the date of determining whether such person is an interested stockholder, and any entity or person affiliated with or controlling or controlled by any of these entities or persons.

Certificate of Incorporation and Bylaw Provisions

Our Amended and Restated Certificate of Incorporation ("Certificate of Incorporation") and our Amended and Restated Bylaws ("Bylaws") include a number of provisions that could deter hostile takeovers or delay or prevent changes in control of our Company. Certain of these provisions are summarized in the following paragraphs.

Effects of authorized but unissued common stock. One of the effects of the existence of authorized but unissued common stock may be to enable our board of directors to make more difficult or to discourage an attempt to obtain control of our Company by means of a merger, tender offer, proxy contest or otherwise, and thereby to protect the continuity of management. If, in the due exercise of its fiduciary obligations, the board of directors were to determine that a takeover proposal was not in our best interest, such shares could be issued by the board of directors without stockholder approval in one or more transactions that might prevent or render more difficult or costly the completion of the takeover transaction by diluting the voting or other rights of the proposed acquirer or insurgent stockholder group, by putting a substantial voting block in institutional or other hands that might undertake to support the position of the incumbent board of directors, by effecting an acquisition that might complicate or preclude the takeover, or otherwise.

Cumulative Voting. Our Certificate of Incorporation does not provide for cumulative voting in the election of directors, which would allow holders of less than a majority of the stock to elect some directors.

Director Vacancies. Our Certificate of Incorporation provides that all vacancies may be filled only by the affirmative vote of a majority of directors then in office, even if less than a quorum.

Stockholder Action; Special Meeting of Stockholders. Our Bylaws provide that stockholders may act by written consent. However, stockholders pursuing an action by written consent will be required to comply with certain notice and record date requirements that are set forth in the General Corporation Law of the State of Delaware. A special meeting of stockholders may be called by the Chairman of the board of directors, the President, the Chief Executive Officer, or a majority of the board of directors at any time and for any purpose or purposes as shall be stated in the notice of the meeting, or by request of the holders of record of at least 20% of outstanding shares of common stock. This provision could prevent stockholders from calling a special meeting because, unless certain significant stockholders were to join with them, they might not obtain the percentage necessary to request the meeting. Therefore, stockholders holding less than 20% of issued and outstanding common stock, without the assistance of management, may be unable to propose a vote on any transaction which may delay, defer or prevent a change of control, even if the transaction were in the best interests of our stockholders.

Advance Notice Requirements for Stockholder Proposals and Director Nominations. Our Bylaws establish advance notice procedures with respect to stockholder proposals and the nomination of candidates for election as director. In order for any matter to be "properly brought" before a meeting, a stockholder will have to comply with such advance notice procedures and provide us with certain information. Our Bylaws allow the presiding officer at a meeting of stockholders to adopt rules and regulations for the conduct of meetings which may have the effect of precluding the conduct of certain business at a meeting if such rules and regulations are not followed. These provisions may also defer, delay or discourage a potential acquirer from conducting a solicitation of proxies to elect the acquirer's own slate of directors or otherwise attempting to influence or obtain control of our Company.

Supermajority Voting for Amendments to Our Governing Documents. Any amendment to our Certificate of Incorporation will require the affirmative vote of at least 66 2/3% of the voting power of all shares of our capital stock then outstanding. Our Certificate of Incorporation provides that the board of directors is expressly authorized to adopt, amend or repeal our Bylaws and that our stockholders may amend our Bylaws only with the approval of at least 66 2/3% of the voting power of all shares of our capital stock then outstanding.

Choice of Forum. Our Certificate of Incorporation provides that, subject to certain exceptions, the Court of Chancery of the State of Delaware will be the exclusive forum for any claim, including any derivative claim, (i) that is based upon a violation of a duty by a current or former director or officer or stockholder in such capacity or (ii) as to which the Delaware General Corporation Law, or any other provision of Title 8 of the Delaware Code, confers jurisdiction upon the Court of Chancery.

Listing on the Nasdaq Capital Market

Our shares of common stock are listed on the Nasdaq Capital Market under the symbol "CUE."

Transfer Agent

The name, address and telephone number of our stock transfer agent is Corporate Stock Transfer, Inc. at 3200 Cherry Creek Drive South, Suite 430, Denver, Colorado 80209.

LEGAL MATTERS

K&L Gates LLP, with an office at Hearst Tower, 47th Floor, 214 North Tryon Street, Charlotte, North Carolina 28202, will pass upon the validity of the shares of common stock offered by this prospectus.

EXPERTS

The financial statements of Cue Biopharma, Inc. as of December 31, 2017 and 2016 and for each of the years in the three-year period ended December 31, 2017 included in our annual report on Form 10-K for the year ended December 31, 2017, which is incorporated by reference into this prospectus, have been audited by Gumbiner Savett Inc., independent registered public accounting firm. We have included these financial statements in this prospectus in reliance upon the report of Gumbiner Savett Inc., given on their authority as experts in accounting and auditing.

WHERE YOU CAN FIND MORE INFORMATION

We file annual reports, quarterly reports, current reports, proxy statements and other information with the Securities and Exchange Commission (the "SEC"). Our SEC filings are and will become available to the public over the Internet at the SEC's website at www.sec.gov. You may also read and copy any document we file with the SEC at its public reference room at 100 F Street N.E., Washington, D.C. 20549. You can also obtain copies of the documents upon the payment of a duplicating fee to the SEC. Please call the SEC at 1-800-SEC-0330 for further information on the operation of the public reference room.

We have filed with the SEC a registration statement on Form S-1 under the Securities Act with respect to the shares of common stock being offered by this prospectus. This prospectus is part of that registration statement. This prospectus does not contain all of the information set forth in the registration statement or the exhibits to the registration statement. For further information with respect to us and the shares we are offering pursuant to this prospectus, you should refer to the registration statement and its exhibits. Statements contained in this prospectus as to the contents of any contract, agreement or other document referred to are not necessarily complete, and you should refer to the copy of that contract or other documents filed as an exhibit to the registration statement. You may read or obtain a copy of the registration statement at the SEC's public reference room and website referred to above.

DISCLOSURE OF COMMISSION POSITION ON INDEMNIFICATION FOR SECURITIES ACT LIABILITIES

Insofar as indemnification for liabilities arising under the Securities Act may be permitted to directors, officers or persons controlling the Company, we have been informed that in the opinion of the SEC such indemnification is against public policy as expressed in the Securities Act and is therefore unenforceable.

INCORPORATION OF CERTAIN INFORMATION BY REFERENCE

The SEC allows us to "incorporate by reference" information from other documents that we file with it, which means that we can disclose important information to you by referring you to those documents. The information incorporated by reference is considered to be part of this prospectus. Information in this prospectus supersedes information incorporated by reference that we filed with the SEC prior to the date of this prospectus.

We incorporate by reference into this prospectus and the registration statement of which this prospectus is a part the information or documents listed below that we have filed with the SEC:

- our Annual Report on Form 10-K for the year ended December 31, 2017, filed with the SEC on March 29, 2018;
- our Quarterly Report on Form 10-Q for the quarter ended March 31, 2018, filed with the SEC on May 14, 2018;
- our Current Reports on Form 8-K filed with the SEC on January 26, 2018, April 30, 2018, June 12, 2018, June 20, 2018, June 25, 2018 and June 26, 2018;
- our Definitive Proxy Statement on Schedule 14A related to our 2018 Annual Meeting of Stockholders, filed with the SEC on April 30, 2018; and
- the description of our common stock contained in our Registration Statement on Form 8-A, filed on December 13, 2017.

We will furnish without charge to you, on written or oral request, a copy of any or all of the documents incorporated by reference, including exhibits to these documents. You should direct any requests for documents to Cue Biopharma, Inc., P.O. Box 390509, Cambridge, Massachusetts 02139, Telephone: (617) 949-2680. Copies of the above reports may also be accessed from our web site at www.cuebiopharma.com. We have authorized no one to provide you with any information that differs from that contained in this prospectus or incorporated by reference herein. Accordingly, you should not rely on any information that is not contained in this prospectus or incorporated by reference herein. You should not assume that the information in this prospectus is accurate as of any date other than the date of the front cover of this prospectus.

Any statement contained in a document incorporated or deemed to be incorporated by reference in this prospectus will be deemed modified, superseded or replaced for purposes of this prospectus to the extent that a statement contained in this prospectus modifies, supersedes or replaces such statement.

671,572 Shares of Common Stock



Cue Biopharma, Inc.

PROSPECTUS