

**PROSPECTUS SUPPLEMENT**  
**(To Prospectus dated March 1, 2016)**

**Up to \$30,000,000**



**Ordinary Shares**

---

We have entered into a sales agreement, or the Sales Agreement, with Leerink Partners LLC, or Leerink, dated October 15, 2018, relating to our ordinary shares, par value NIS 0.07 per share, offered by this prospectus supplement and the accompanying prospectus. In accordance with the terms of the Sales Agreement, we may offer and sell our ordinary shares having an aggregate offering price of up to \$30,000,000 from time to time through Leerink, acting as our agent.

Our ordinary shares are listed on the Nasdaq Global Market under the symbol "ARCT." On October 12, 2018, the last reported sale price of our ordinary shares on the Nasdaq Global Market was \$7.00 per share.

Sales of our ordinary shares, if any, under this prospectus supplement and the accompanying prospectus may be made in sales deemed to be an "at the market offering" as defined in Rule 415(a)(4) promulgated under the Securities Act of 1933, as amended, or the Securities Act. Leerink is not required to sell any specific number or dollar amount of our ordinary shares but will act as our sales agent on a best efforts basis and use commercially reasonable efforts to sell on our behalf all of the ordinary shares requested to be sold by us consistent with its normal trading and sales practices, on mutually agreed terms between Leerink and us. There is no arrangement for funds to be received in any escrow, trust or similar arrangement.

The compensation payable to Leerink for sales of ordinary shares sold pursuant to the Sales Agreement will be an amount equal to 3.0% of the gross proceeds of any ordinary shares sold under the Sales Agreement. See "Plan of Distribution" beginning on page S-10 for additional information regarding the compensation to be paid to Leerink. In connection with the sale of the ordinary shares on our behalf, Leerink will be deemed to be an "underwriter" within the meaning of the Securities Act, and the compensation paid to Leerink will be deemed to be underwriting commissions or discounts. We have also agreed in the Sales Agreement to provide indemnification and contribution to Leerink with respect to certain liabilities, including liabilities under the Securities Act or the Securities Exchange Act of 1934, as amended, or the Exchange Act.

**Investing in our ordinary shares involves a high degree of risk. See "Risk Factors" beginning on page S-4 of this prospectus supplement and the risk factors in the documents incorporated by reference in this prospectus supplement and the accompanying prospectus.**

**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.**

---

**Leerink Partners**

---

**The date of this prospectus supplement is October 15, 2018**

---

## TABLE OF CONTENTS

### PROSPECTUS SUPPLEMENT

<a href="#">ABOUT THIS PROSPECTUS SUPPLEMENT</a>	S-2
<a href="#">PROSPECTUS SUPPLEMENT SUMMARY</a>	S-3
<a href="#">THE OFFERING</a>	S-5
<a href="#">RISK FACTORS</a>	S-6
<a href="#">CAUTIONARY NOTE REGARDING FORWARD-LOOKING STATEMENTS</a>	S-7
<a href="#">USE OF PROCEEDS</a>	S-9
<a href="#">PRICE RANGE OF ORDINARY SHARES</a>	S-9
<a href="#">DILUTION</a>	S-10
<a href="#">PLAN OF DISTRIBUTION</a>	S-11
<a href="#">LEGAL MATTERS</a>	S-12
<a href="#">EXPERTS</a>	S-12
<a href="#">WHERE YOU CAN FIND MORE INFORMATION</a>	S-12
<a href="#">INFORMATION INCORPORATED BY REFERENCE</a>	S-13

### PROSPECTUS

<a href="#">ABOUT THIS PROSPECTUS</a>	2
<a href="#">ABOUT ALCOBRA LTD.</a>	3
<a href="#">RISK FACTORS</a>	5
<a href="#">WARNING REGARDING FORWARD-LOOKING STATEMENTS</a>	5
<a href="#">CAPITALIZATION AND INDEBTEDNESS</a>	6
<a href="#">REASONS FOR THE OFFER AND USE OF PROCEEDS</a>	6
<a href="#">PRICE RANGE OF OUR ORDINARY SHARES</a>	7
<a href="#">DESCRIPTION OF OUR ORDINARY SHARES</a>	8
<a href="#">PLAN OF DISTRIBUTION</a>	10
<a href="#">EXPENSES</a>	11
<a href="#">LEGAL MATTERS</a>	12
<a href="#">EXPERTS</a>	12
<a href="#">WHERE YOU CAN FIND MORE INFORMATION AND INCORPORATION OF CERTAIN INFORMATION BY REFERENCE</a>	12
<a href="#">ENFORCEABILITY OF CIVIL LIABILITIES</a>	13

## ABOUT THIS PROSPECTUS SUPPLEMENT

This prospectus supplement contains two parts. The first part consists of this prospectus supplement, which describes the terms of this offering and also adds to and updates information contained in the accompanying prospectus and the documents incorporated by reference herein. The second part, the accompanying prospectus, provides more general information. Generally, when we refer to this “prospectus,” we are referring to both parts of this document combined. To the extent that any statement we make in this prospectus supplement is inconsistent with statements made in the accompanying prospectus or any documents incorporated by reference herein or therein filed prior to the date of this prospectus supplement, the statements made in this prospectus supplement will be deemed to modify or supersede those made in the accompanying prospectus and such documents incorporated by reference herein and therein; provided that if any statement in one of these documents is inconsistent with a statement in another document having a later date—for example, a document incorporated by reference into the accompanying prospectus—the statement in the document having the later date modifies or supersedes the earlier statement.

You should rely only on the information that we have included or incorporated by reference in this prospectus supplement, the accompanying prospectus and any related free writing prospectus that we have authorized for use in connection with this offering. Neither we nor Leerink Partners LLC, or Leerink, have authorized any dealer, salesman or other person to give any information or to make any representation other than those contained or incorporated by reference in this prospectus supplement, the accompanying prospectus or any related free writing prospectus that we have authorized for use in connection with this offering.

The representations, warranties and covenants made by us in any agreement that is filed as an exhibit to any document that is incorporated by reference in this prospectus supplement or the accompanying prospectus were made solely for the benefit of the parties to such agreement, including, in some cases, for the purpose of allocating risk among the parties to such agreements, and should not be deemed to be a representation, warranty or covenant to you. Moreover, such representations, warranties or covenants were accurate only as of the date when made. Accordingly, such representations, warranties and covenants should not be relied on as accurately representing the current state of our affairs.

This prospectus supplement, the accompanying prospectus and any related free writing prospectus do not constitute an offer to sell, or the solicitation of an offer to buy, the securities offered by this prospectus supplement and the accompanying prospectus in any jurisdiction to or from any person to whom or from whom it is unlawful to make such offer or solicitation of an offer in such jurisdiction. You should assume that the information contained in this prospectus supplement, the accompanying prospectus, and the documents incorporated by reference herein and in any free writing prospectus that we have authorized for use in connection with this offering is accurate only as of the date of those respective documents, even though this prospectus supplement, the accompanying prospectus or any related free writing prospectus may be delivered, or securities sold, on a later date. Our business, financial condition, results of operations and prospects may have changed materially since those dates.

You should read this prospectus supplement and the accompanying prospectus, including the information incorporated by reference herein and therein, and any related free writing prospectus that we have authorized for use in connection with this offering. You should also read and consider the information in the documents we have referred you to in the sections of this prospectus supplement and the accompanying prospectus entitled “Where You Can Find More Information” and “Information Incorporated by Reference.” This prospectus supplement contains or incorporates by reference summaries of certain provisions contained in some of the documents described herein, but all such summaries are qualified in their entirety by the actual documents. Copies of some of the documents referred to herein have been or will be filed or have been or will be incorporated by reference as exhibits to the registration statement of which this prospectus supplement forms a part, and you may obtain copies of those documents as described in this prospectus supplement under the heading “Where You Can Find More Information.”

Other than in the United States, no action has been taken by us or Leerink that would permit a public offering of the securities offered by this prospectus in any jurisdiction where action for that purpose is required. The securities offered by this prospectus may not be offered or sold, directly or indirectly, nor may this prospectus or any other offering material or advertisements in connection with the offer and sale of any such securities be distributed or published in any jurisdiction, except under circumstances that will result in compliance with the applicable rules and regulations of that jurisdiction. Neither we nor Leerink have authorized anyone to provide any information or to make any representations other than those contained or incorporated by reference in this prospectus supplement, the accompanying prospectus or in any free writing prospectus that we have authorized for use in connection with this offering. We and Leerink take no responsibility for, and can provide no assurance as to the reliability of, any other information that others may give you. Persons into whose possession this prospectus comes are advised to inform themselves about and to observe any restrictions relating to the offering and the distribution of this prospectus. Unless the context indicates otherwise, references in this prospectus to “NIS” are to the legal currency of Israel, and “U.S. dollars,” “\$” or “dollars” are to United States dollars.

## PROSPECTUS SUPPLEMENT SUMMARY

*This summary highlights selected information contained elsewhere in, or incorporated by reference into, this prospectus supplement and the accompanying prospectus. Because it is only a summary, it does not contain all of the information that you should consider before investing in our ordinary shares, and it is qualified in its entirety by, and should be read in conjunction with, the more detailed information appearing elsewhere in this prospectus supplement, the accompanying prospectus, any free writing prospectus that we have authorized for use in connection with this offering and the documents incorporated by reference in this prospectus supplement and the accompanying prospectus. You should read all such documents carefully, and you should pay special attention to the information contained under the caption entitled “Risk Factors” in this prospectus supplement and in our other reports filed from time to time with the SEC, which are incorporated by reference into this prospectus supplement and the accompanying prospectus, before deciding to buy our ordinary shares. Unless the context requires otherwise, references in this prospectus supplement to “Arcturus,” “we,” “us” and “our” refer to Arcturus Therapeutics Ltd. and our subsidiaries.*

### Company Overview

We are a preclinical nucleic acid medicines company focused on developing therapeutics for rare, infectious, fibrotic, and respiratory diseases with significant unmet medical needs. We have two proprietary technologies with the potential to address the major hurdles in nucleic acid medicine development, namely the effective and safe delivery of nucleic acids to disease-relevant target tissues. We believe the versatility of our platform to target multiple tissues, its compatibility with various nucleic acid therapeutic modalities, and our expertise developing scalable manufacturing processes puts us in a good position to deliver on the next generation of nucleic medicines.

- We have developed a novel lipid-mediated delivery system called Lipid-enabled and Unlocked Nucleomonomer Agent modified RNA, or LUNAR. Drawing from a library of over 150 proprietary lipids, LUNAR may be flexibly designed to deliver nucleic acids to many clinically important cells and tissues, including liver hepatocytes, liver stellate cells, myocytes and lung cells, resulting in knockdown or upregulation of target proteins. Our lipids are pH-sensitive and designed to be biodegradable, minimizing lipid accumulation in cells after multiple dosing and potentially improving chronic safety.
- Our proprietary Unlocked Nucleomonomer Agent, or UNA, oligomer chemistry technology may be incorporated into multiple types of nucleic acid medicines. UNA has the potential to improve the efficacy and/or safety profile of nucleic acid medicines.

Our LUNAR and UNA technologies are wholly-owned by us and covered by our patent portfolio of 140 patents and patent applications, issued in the United States, China, Europe, Japan and other countries. We believe that we can use our technologies to develop medicines in multiple nucleic acid-based therapeutic modalities: (1) mRNA, DNA, and replicon – up-regulation of proteins for therapeutics or vaccines; (2) siRNA, microRNA, and antisense oligonucleotides – knockdown of genes overexpressed in disease; and (3) CRISPR, TALEN, zinc finger proteins, and meganucleases – gene editing of errant genes. We are using our proprietary technology to develop nucleic acid medicines to treat diseases with clear unmet medical needs, accelerated clinical paths and commercial opportunities.

### The Merger

On November 15, 2017, Alcobra Ltd. (“Alcobra”), now named Arcturus Therapeutics Ltd. (“Arcturus” or the “Company”), completed its business combination (the “merger”) with Arcturus Therapeutics, Inc. (“Private Arcturus”), in accordance with the terms of the Agreement and Plan of Merger and Reorganization, dated as of September 27, 2017, among Alcobra, Aleph MergerSub, Inc. and Private Arcturus (as amended, the “merger agreement”). In connection with the merger, Alcobra agreed to acquire all of the outstanding common stock of Private Arcturus in exchange for issuing to the Private Arcturus stockholders an aggregate 6,631,712 of Alcobra’s ordinary shares, par value 0.07 NIS per share, after giving effect to a 1-for-7 reverse split effected immediately prior to the merger. As a result of the merger, Private Arcturus became a wholly-owned subsidiary of Alcobra. While Alcobra was the legal acquirer in the transaction, Private Arcturus was deemed the accounting acquirer. Immediately after giving effect to the merger, on November 15, 2017, Alcobra changed its name to Arcturus Therapeutics Ltd. Our current trading symbol is “ARCT.” For more information with respect to the Merger and the reverse share split, refer to our Annual Report on Form 20-F for the fiscal year ended December 31, 2017 filed with the Securities Exchange Commission on May 14, 2018, as amended on July 10, 2018.

## Corporate Information

Alcobra Ltd. was incorporated in Israel in 2008 and changed its name to Arcturus Therapeutics Ltd in connection with the merger on November 15, 2017. As part of the merger, the ordinary shares of the Company were listed on Nasdaq under the trading symbol “ARCT,” in place of the previous listing of the ordinary shares of Alcobra, which had traded under the symbol “ADHD.” The business plan of the post-merger company is that of Arcturus Therapeutics, Inc. As an Israeli company, we are subject to the Israeli Companies Law, 5759-1999, or the Israeli Companies Law.

Our principal place of business is 10628 Science Center Drive, Suite 250, San Diego, California, and our telephone number is (858) 900-2660. Our agent in the United States is Arcturus Therapeutics, Inc., whose address is that of our San Diego, California headquarters. Our website is [www.arcturusrx.com](http://www.arcturusrx.com). The information contained on that website is not a part of this prospectus supplement.

Information concerning our business and our prospects is included in the documents that we file with the SEC as a reporting company under the Exchange Act, which are accessible at [www.sec.gov](http://www.sec.gov), and on our website. The public can also obtain copies of these filings by visiting the SEC’s Public Reference Room at 100 F Street NE, Washington D.C. 20549, or by calling the SEC at 1-800-SEC-0330.

We have irrevocably appointed our subsidiary, Arcturus Therapeutics, Inc. as our agent to receive service of process in any action against us in the state and federal courts sitting in the City of New York, Borough of Manhattan arising out of any offering under the registration statement of which this prospectus forms a part, or any purchase or sale of securities in connection therewith. We have not given consent for this agent to accept service of process in connection with any other claim.

### Implications of Being an Emerging Growth Company and a Foreign Private Issuer

We are an “emerging growth company,” as defined in the Jumpstart Our Business Startups Act of 2012. We will remain an emerging growth company until December 31, 2018.

We are considered a “foreign private issuer.” In our capacity as a foreign private issuer, we are exempt from certain rules under the Exchange Act that impose certain disclosure obligations and procedural requirements for proxy solicitations under Section 14 of the Exchange Act. In addition, our officers, directors and principal shareholders are exempt from the reporting and “short-swing” profit recovery provisions of Section 16 of the Exchange Act and the rules under the Exchange Act with respect to their purchases and sales of our ordinary shares. Moreover, we are not required to file periodic reports and financial statements with the SEC as frequently or as promptly as domestic issuers whose securities are registered under the Exchange Act, although we reported and intend to continue to report our results of operations voluntarily on a quarterly basis. In addition, we are not required to comply with Regulation FD, which restricts the selective disclosure of material information.

We may take advantage of these exemptions until such time as we are no longer foreign private issuer.

## THE OFFERING

Ordinary Shares Offered by Us	Our ordinary shares having an aggregate offering price of up to \$30,000,000.
Ordinary shares to be outstanding after this offering	Up to 4,285,714 shares, assuming a sales price of \$7.00 per share, which was the last reported sale price of our ordinary shares on the Nasdaq Global Market on October 12, 2018. The actual number of shares issued will vary depending on the sales price under this offering.
Manner of Offering	Sales of our ordinary shares under this prospectus may be made by any method deemed to be an “at the market offering” as defined in Rule 415(a)(4) under the Securities Act of 1933, as amended. Subject to the terms of the sales agreement, Leerink Partners LLC will make all sales using commercially reasonable efforts consistent with its normal trading and sales practices and applicable state and federal laws, rules and regulations and the rules of The NASDAQ Global Market, on mutually agreeable terms between Leerink Partners LLC and us. See “Plan of Distribution” on page S-10.
Use of Proceeds	We intend to use the net proceeds from this offering, if any, for working capital and general corporate purposes, including development expenses and general and administrative expenses. See “Use of Proceeds.”
Risk Factors	Investing in our ordinary shares involves a high degree of risk. You should read the “Risk Factors” section of this prospectus supplement beginning on page S-4 as well as those risk factors that are incorporated by reference in this prospectus supplement and the accompanying prospectus for a discussion of factors to consider carefully before deciding to invest in our ordinary shares.
Nasdaq Global Market symbol	“ARCT”

The number of our ordinary shares to be outstanding after this offering is based on 10,704,988 of our ordinary shares outstanding as of June 30, 2018. The number of our ordinary shares to be outstanding as used throughout this prospectus supplement, unless otherwise indicated, excludes:

- 209,545 ordinary shares issuable upon exercise of options outstanding as of June 30, 2018 under the 2010 Incentive Option Plan, (our “2010 Plan”), at a weighted-average exercise price of \$4.38 per share;
- an aggregate of 472,502 additional ordinary shares reserved as of June 30, 2018 for issuance under our 2010 Plan; and
- an aggregate of 1,100,000 additional ordinary shares reserved for issuance under our 2018 Plan (adopted on July 5, 2018).

## RISK FACTORS

*An investment in our ordinary shares involves a high degree of risk. Before deciding whether to invest in our ordinary shares, you should carefully consider the risks described below and those discussed under the caption entitled “Risk Factors” in our Annual Report on Form 20-F for the year ended December 31, 2017 and any subsequent reports on Form 6-K, which are incorporated by reference in this prospectus supplement and the accompanying prospectus, together with other information in this prospectus supplement, the accompanying prospectus, the information and documents incorporated by reference herein and therein, and in any free writing prospectus that we have authorized for use in connection with this offering. If any of these risks actually occurs, our business, financial condition, results of operations or cash flow could be seriously harmed. This could cause the trading price of our ordinary shares to decline, resulting in a loss of all or part of your investment.*

### **Risks Related to this Offering**

*We have broad discretion in the use of the net proceeds from this offering and may not use them effectively.*

Our management will have broad discretion in the application of the net proceeds from this offering and could spend the proceeds in ways that do not improve our results of operations or enhance the value of our ordinary shares. The failure by our management to apply these funds effectively could result in financial losses, and these financial losses could have a material adverse effect on our business, cause the price of our ordinary shares to decline and delay the development of our product candidates. Pending their use, we may invest the net proceeds from this offering in a manner that does not produce income or that loses value.

*It is not possible to predict the aggregate proceeds resulting from sales made under the Sales Agreement.*

Subject to certain limitations in the sales agreement, or the Sales Agreement, with Leerink, dated October 15, 2018, and compliance with applicable law, we have the discretion to deliver a placement notice to Leerink at any time throughout the term of the Sales Agreement. The number of shares that are sold through Leerink after delivering a placement notice will fluctuate based on a number of factors, including the market price of our ordinary shares during the sales period, any limits we may set with Leerink in any applicable placement notice and the demand for our ordinary shares. Because the price per share of each share sold pursuant to the Sales Agreement will fluctuate over time, it is not currently possible to predict the aggregate proceeds to be raised in connection with sales under the sales agreement.

*The ordinary shares offered hereby may be sold in “at the market offerings,” and investors who buy shares at different times will likely pay different prices.*

Investors who purchase shares in this offering at different times will likely pay different prices, and accordingly may experience different levels of dilution and different outcomes in their investment results. We will have discretion, subject to market demand, to vary the timing, prices and number of shares sold in this offering. In addition, subject to the final determination by our board of directors or any restrictions we may place in any applicable placement notice, there is no minimum or maximum sales price for shares to be sold in this offering. Investors may experience a decline in the value of the shares they purchase in this offering as a result of sales made at prices lower than the prices they paid.

*If you purchase our ordinary shares in this offering, you may incur immediate and substantial dilution in the book value of your shares.*

The offering price per share of ordinary shares in this offering may exceed the net tangible book value per share of our ordinary shares outstanding prior to this offering. Therefore, if you purchase ordinary shares in this offering, you may pay a price per share that exceeds our as adjusted net tangible book value per share of our ordinary shares. Assuming that an aggregate of 4,285,714 of our ordinary shares are sold at an assumed offering price of \$7.00 per share, the last reported sale price of our ordinary shares on the Nasdaq Global Market on October 12, 2018, for aggregate gross proceeds of \$30,000,000, and after deducting commissions and estimated offering expenses payable by us, you would experience immediate dilution of \$3.90 per share, representing the difference between our as adjusted net tangible book value per share as of June 30, 2018, immediately after giving effect to this offering, and the assumed offering price. To the extent outstanding options or warrants are exercised, you will experience further dilution. See the section titled “Dilution” below for a more detailed illustration of the dilution you would incur if you participate in this offering.

*If you purchase ordinary shares in this offering, you may also experience future dilution as a result of future equity offerings.*

To raise additional capital, we may in the future offer additional our ordinary shares or other securities convertible into or exchangeable for our ordinary shares at prices that may not be the same as the price per share in this offering. We may sell shares or other securities in any other offering at a price per share that is less than the price per share paid by any investors in this offering, and investors purchasing shares or other securities in the future could have rights superior to existing shareholders. The price per share at which we sell additional our ordinary shares, or securities convertible or exchangeable into ordinary shares, in future transactions may be higher or lower than the price per share paid by any investors in this offering.

*We do not intend to pay dividends on our ordinary shares so any returns will be limited to the value of our shares.*

We have never declared or paid any cash dividends on our ordinary shares. We currently anticipate that we will retain future earnings for the development, operation and expansion of our business and do not anticipate declaring or paying any cash dividends for the foreseeable future. Moreover, the Israeli Companies Law imposes certain restrictions on our ability to declare and pay dividends. Any return to shareholders will therefore be limited to the appreciation of their shares.

#### **CAUTIONARY NOTE REGARDING FORWARD-LOOKING STATEMENTS**

The SEC encourages companies to disclose forward-looking information so that investors can better understand a company's future prospects and make informed investment decisions. This prospectus and the documents we have filed with the SEC that are incorporated herein by reference contain such "forward-looking statements" within the meaning of Section 27A of the Securities Act, Section 21E of the Exchange Act, and the Private Securities Litigation Reform Act of 1995. These statements, which represent our current expectations or beliefs concerning various future events, may contain words such as "may," "will," "expect," "anticipate," "intend," "plan," "believe," "estimate" or other words indicating future results, though not all forward-looking statements necessarily contain these identifying words. Such statements may include, but are not limited to, statements concerning the following:

- the initiation, cost, timing, progress and results of, and our expected ability to undertake certain activities and accomplish certain goals with respect to, our research and development activities, preclinical studies and clinical trials;
- our ability to obtain and maintain regulatory approval of our product candidates, and any related restrictions, limitations, and/or warnings in the label of an approved product candidate;
- our ability to obtain and deploy funding for our operations;
- our plans to research, develop and commercialize our product candidates;
- our strategic alliance partners' election to pursue development and commercialization of any programs or product candidates that are subject to our collaboration and license agreements with such partners;
- our ability to attract collaborators with relevant development, regulatory and commercialization expertise;
- future activities to be undertaken by our strategic alliance partners, collaborators and other third parties;
- our ability to avoid, settle or be victorious at costly litigation with shareholders, former executives or others;
- our ability to obtain and maintain intellectual property protection for our product candidates;
- the size and growth potential of the markets for our product candidates, and our ability to serve those markets;
- our ability to successfully commercialize, and our expectations regarding future therapeutic and commercial potential with respect to, our product candidates;
- the rate and degree of market acceptance of our product candidates;



- our ability to develop sales and marketing capabilities, whether alone or with potential future collaborators;
- regulatory developments in the United States and foreign countries;
- our ability to attract and retain experienced and seasoned scientific and management professionals to lead the Company;
- the performance of our third-party suppliers and manufacturers;
- the success of competing therapies that are or may become available;
- our expectations regarding the time during which we will be a foreign private issuer; and
- the accuracy of our estimates regarding future expenses, future revenues, capital requirements and need for additional financing.

We believe these forward-looking statements are reasonable; however, these statements are only current predictions and are subject to known and unknown risks, uncertainties and other factors that may cause our or our industry's actual results, levels of activity, performance or achievements to be materially different from those anticipated by the forward-looking statements. We discuss many of these risks in our Annual Report on Form 20-F for the year ended December 31, 2017 filed with the SEC on May 14, 2018, as amended on July 10, 2018, in greater detail under the heading "Risk Factors" and elsewhere in this prospectus supplement. Given these uncertainties, you should not rely upon forward-looking statements as predictions of future events.

All forward-looking statements attributable to us or persons acting on our behalf speak only as of the date hereof and are expressly qualified in their entirety by the cautionary statements included in this report. We undertake no obligations to update or revise forward-looking statements to reflect events or circumstances that arise after the date made or to reflect the occurrence of unanticipated events. In evaluating forward-looking statements, you should consider these risks and uncertainties.

You should read this prospectus supplement, the accompanying prospectus, the documents we have filed with the SEC that are incorporated by reference and any free writing prospectus that we have authorized for use in connection with this offering completely and with the understanding that our actual future results may be materially different from what we expect. We qualify all of the forward-looking statements in the foregoing documents by these cautionary statements.

## USE OF PROCEEDS

We may issue and sell our ordinary shares having an aggregate offering price of up to \$30,000,000 from time to time. Because there is no minimum offering amount required as a condition to close this offering, the actual total public offering amount, commissions to Leerink and proceeds to us, if any, are not determinable at this time. There can be no assurance that we will sell any shares under the Sales Agreement as a source of financing.

Except as described in any free writing prospectus that we may authorize to be provided to you, we currently intend to use the net proceeds from this offering, if any, for working capital and general corporate purposes, including development expenses and general and administrative expenses.

The amounts and timing of our use of the net proceeds from the sale of securities in this offering will depend on a number of factors, such as the timing and progress of our and our strategic partners' clinical trials of our product candidates and our development efforts, the timing and progress of any partnering efforts, technological advances and the competitive environment for our product candidates. As of the date of this prospectus supplement, we cannot specify with certainty all of the particular uses for the net proceeds to us from this offering. Accordingly, our management will have broad discretion in the timing and application of these proceeds. Pending application of the net proceeds as described above, we intend to temporarily invest the proceeds in short-term, interest-bearing instruments.

## PRICE RANGE OF ORDINARY SHARES

Our ordinary shares were listed on the Nasdaq Global Select Market under the symbol "ADHD" until November 15, 2017. Effective as of November 15, 2017, our ordinary shares have been listed on the Nasdaq Global Market under the symbol "ARCT". The following table sets forth the high and low sales prices per share of our ordinary shares as reported on the Nasdaq Global Select Market and the Nasdaq Global Market, as applicable, for the periods indicated:

	<b>High</b>	<b>Low</b>
<b>Year Ended December 31, 2016</b>		
First Quarter	\$ 45.4991	\$ 22.0496
Second Quarter	\$ 40.2492	\$ 25.2695
Third Quarter	\$ 37.5192	\$ 13.6497
Fourth Quarter	\$ 20.2996	\$ 12.3898
<b>Year Ended December 31, 2017</b>		
First Quarter	\$ 18.0414	\$ 5.8113
Second Quarter	\$ 9.3098	\$ 7.0699
Third Quarter	\$ 8.7498	\$ 6.5218
Fourth Quarter	\$ 15.1897	\$ 6.7206
<b>Year Ending December 31, 2018</b>		
First Quarter	\$ 10.4500	\$ 4.7800
Second Quarter	\$ 9.5600	\$ 4.9000
Third Quarter	\$ 10.0000	\$ 7.1110
Fourth Quarter (through October 12, 2018)	\$ 9.2520	\$ 6.3401

On October 12, 2018, the last sale price of our ordinary shares, as reported on the Nasdaq Global Market, was \$7.00 per share. As of June 30, 2018, we had approximately 60 holders of record of our ordinary shares. Our actual number of shareholders is greater than this number of record holders and includes shareholders who are beneficial owners but whose shares are held in street name by brokers and other nominees.

## DILUTION

If you invest in our ordinary shares in this offering, your ownership interest will be diluted immediately to the extent of the difference between the public offering price per share of our ordinary shares and the as adjusted net tangible book value per share of our ordinary shares immediately after giving effect to this offering.

We calculate net tangible book value per share of our ordinary shares by dividing the net tangible book value, which is tangible assets less total liabilities, by the number of our outstanding ordinary shares. Dilution represents the difference between the amount per share paid by purchasers of our ordinary shares in this offering and the as adjusted net tangible book value per share of our ordinary shares immediately after giving effect to this offering. Our historical net tangible book value as of June 30, 2018 was approximately \$17.8 million, or \$1.66 per ordinary share.

Immediately after giving effect to the assumed sale by us of our ordinary shares pursuant to this prospectus supplement and accompanying prospectus in the aggregate amount of \$30,000,000 at an assumed public offering price of \$7.00 per share, which was the last reported sale price of our ordinary shares on the Nasdaq Global Market on October 12, 2018, and after deducting commissions and estimated aggregate offering expenses payable by us, our as adjusted net tangible book value as of June 30, 2018 would have been \$46.5 million, or \$3.10 per share of our ordinary shares. This represents an immediate increase in the as adjusted net tangible book value of \$1.44 per share to our existing shareholders and an immediate dilution in as adjusted net tangible book value of \$3.90 per share to new investors participating in this offering. Dilution per share to new investors is determined by subtracting as adjusted net tangible book value per share after this offering from the public offering price per share paid by new investors. The following table illustrates this dilution on a per-share basis:

Assumed public offering price per share		\$	7.00
Historical net tangible book value per share as of June 30, 2018	\$	1.66	
Increase per share attributable to new investors	\$	1.44	
As adjusted net tangible book value per share after this offering	\$	3.10	
Dilution per share to new investors purchasing shares in this offering	\$	3.90	

The table above assumes for illustrative purposes that an aggregate of 4,285,714 of our ordinary shares are sold pursuant to this prospectus supplement and the accompanying prospectus at a public offering price of \$7.00 per share, which was the last reported sale price of our ordinary shares on the Nasdaq Global Market on October 12, 2018, for aggregate gross proceeds of \$30,000,000. Our ordinary shares sold in this offering, if any, will be sold from time to time at various prices. The as adjusted information is illustrative only and will adjust based on the actual price to the public, the actual number of shares sold and other terms of the offering determined at the time our ordinary shares are sold pursuant to this prospectus supplement.

An increase of \$1.00 per share in the price at which the shares are sold from the assumed public offering price of \$7.00 per share shown in the table above, assuming all of our ordinary shares in the aggregate amount of \$30,000,000 is sold at that price, would result in an as adjusted net tangible book value per share after the offering of \$3.22 per share and would increase the dilution in net tangible book value per share to new investors in this offering to \$4.78 per share, after deducting commissions and estimated aggregate offering expenses payable by us. A decrease of \$1.00 per share in the price at which the shares are sold from the assumed public offering price of \$7.00 per share shown in the table above, assuming all of our ordinary shares in the aggregate amount of \$30,000,000 is sold at that price, would result in an as adjusted net tangible book value per share after the offering of \$2.96 per share and would decrease the dilution in net tangible book value per share to new investors in this offering to \$3.04 per share, after deducting commissions and estimated aggregate offering expenses payable by us.

The number of our ordinary shares to be outstanding after this offering is based on 10,704,988 of our ordinary shares outstanding as of June 30, 2018. The number of our ordinary shares to be outstanding as used throughout this prospectus supplement, unless otherwise indicated, excludes:

- 209,545 ordinary shares issuable upon exercise of options outstanding as of June 30, 2018 under the 2010 Plan, at a weighted-average exercise price of \$4.38 per share; and
- an aggregate of 472,502 additional ordinary shares reserved as of June 30, 2018 for issuance under our 2010 Plan; and
- an aggregate of 1,100,000 additional ordinary shares reserved for issuance under our 2018 Plan (adopted on July 5, 2018).

## PLAN OF DISTRIBUTION

We have entered into a Sales Agreement, dated as of October 15, 2018, with Leerink under which we may issue and sell up to \$30,000,000 of our ordinary shares from time to time through Leerink acting as our sales agent. Sales of our ordinary shares, if any, will be made by any method that is deemed to be an “at the market offering” as defined in Rule 415(a)(4) under the Securities Act of 1933, as amended, or the Securities Act, including sales made directly on or through the Nasdaq Global Market or on or through any other existing trading market for the ordinary shares. The Sales Agreement is incorporated by reference in this prospectus supplement. The following summary of the material provisions of the Sales Agreement, as amended, does not purport to be a complete statement of its terms and conditions. See “Where You Can Find More Information” and “Information Incorporated by Reference” below.

Upon delivery of a placement notice, Leerink will offer our ordinary shares subject to the terms and conditions of the Sales Agreement on a daily basis or as otherwise agreed upon by us and Leerink. We will designate the maximum number or amount of ordinary shares to be sold through Leerink on a daily basis or otherwise determine such maximum number or amount together with Leerink. Subject to the terms and conditions of the Sales Agreement, Leerink will use commercially reasonable efforts consistent with its normal trading and sales practices to sell on our behalf all of the ordinary shares requested to be sold by us. We may instruct Leerink not to sell ordinary shares if the sales cannot be effected at or above a minimum price designated by us in any such instruction. Leerink or we may suspend the offering of our ordinary shares being made through Leerink under the Sales Agreement upon proper notice to the other party. Leerink and we each have the right, by giving written notice as specified in the Sales Agreement, to terminate the Sales Agreement in each party’s sole discretion at any time. The offering of our ordinary shares pursuant to the Sales Agreement will otherwise terminate upon the termination of the Sales Agreement as provided therein.

The compensation payable to Leerink as sales agent will be an amount equal to 3.0% of the gross proceeds of any ordinary shares sold through it pursuant to the Sales Agreement. Because there is no minimum offering amount required as a condition to close this offering, the actual total public offering amount, commissions and proceeds to us, if any, are not determinable at this time. We have also agreed to reimburse Leerink, under certain circumstances, for actual outside legal expenses incurred by Leerink in connection with this offering in an amount up to \$50,000. In accordance with FINRA Rule 5110, these reimbursed fees and expenses are deemed sales compensation to Leerink in connection with this offering. We estimate that the total expenses of the offering payable by us, excluding commissions payable to Leerink under the Sales Agreement, will be approximately \$200,000.

The remaining sales proceeds, after deducting any expenses payable by us and any transaction fees imposed by any governmental, regulatory or self-regulatory organization in connection with the sales of our ordinary shares, will equal our net proceeds for the sale of such ordinary shares.

Leerink will provide written confirmation to us no later than the next succeeding trading day on the Nasdaq Global Market after each day on which ordinary shares are sold through it as sales agent under the Sales Agreement. Each confirmation will include the number or amount of shares sold through it as sales agent on that day, the compensation payable by us to Leerink with respect to such sales, and the net proceeds to us from such sales. We will report at least quarterly the number of ordinary shares sold through Leerink under the Sales Agreement, the net proceeds to us and the compensation paid by us to Leerink in connection with the sales of ordinary shares during the relevant period.

Settlement for sales of ordinary shares will occur, unless the parties agree otherwise, on the second trading day following the date on which any sales were made in return for payment of the net proceeds to us. There is no arrangement for funds to be received in an escrow, trust or similar arrangement.

In connection with the sale of the ordinary shares on our behalf pursuant to the Sales Agreement, Leerink will be deemed to be an “underwriter” within the meaning of the Securities Act and the compensation paid to Leerink will be deemed to be underwriting commissions or discounts. We have agreed in the Sales Agreement to provide indemnification and contribution to Leerink with respect to certain liabilities, including liabilities under the Securities Act or the Exchange Act. As sales agent, Leerink will not engage in any transactions that stabilize our ordinary shares.

Our ordinary shares are listed on the Nasdaq Global Market and trades under the symbol “ARCT”. The transfer agent of our ordinary shares is Continental Stock Transfer & Trust Company.

Leerink and/or its affiliates may in the future provide various investment banking and other financial services for us for which services they may in the future receive customary fees.

The address for Leerink is 1301 Avenue of the Americas, 12th Floor, New York, New York 10019.

## LEGAL MATTERS

Certain legal matters of U.S. securities law relating to this offering will be passed upon for us by Dentons US LLP, New York, New York. The validity of the ordinary shares and certain other legal matters as to Israeli law will be passed upon for us by Barnea Jaffa Lande & Co., Tel Aviv, Israel. Leerink Partners LLC is being represented in connection with this offering by Goodwin Procter LLP, New York, New York.

## EXPERTS

The consolidated financial statements of Arcturus Therapeutics Ltd. appearing in the Annual Report (Form 20-F) for the year ended December 31, 2017, have been audited by Kost, Forer, Gabbay and Kasierer, a member of Ernst & Young Global, independent registered public accounting firm, and at December 31, 2016 and for each of the two years in the period ended December 31, 2016, by Ernst & Young LLP, independent registered public accounting firm, as set forth in their respective reports thereon, included therein, and incorporated herein by reference. Such consolidated financial statements are incorporated herein by reference in reliance upon such reports given on the authority of such firms as experts in accounting and auditing.

## WHERE YOU CAN FIND MORE INFORMATION

This prospectus supplement is part of a registration statement on Form F-3 filed with the SEC. This prospectus supplement and the accompanying prospectus omit some information contained in the registration statement in accordance with SEC rules and regulations. You should review the information and exhibits in the registration statement for further information about us and our consolidated subsidiaries and the securities we are offering. Statements in this prospectus supplement and in the accompanying prospectus concerning any document we filed as an exhibit to the registration statement or that we otherwise filed with the SEC are not intended to be comprehensive and are qualified by reference to these filings. You should review the complete document to evaluate these statements.

We are subject to the informational requirements of the Exchange Act applicable to foreign private issuers. We, as a “foreign private issuer,” are exempt from the rules under the Exchange Act prescribing certain disclosure and procedural requirements for proxy solicitations, and our officers, directors and principal shareholders are exempt from the reporting and “short-swing” profit recovery provisions contained in Section 16 of the Exchange Act, with respect to their purchases and sales of ordinary shares. In addition, we are not required to file annual, quarterly and current reports and financial statements with the SEC as frequently or as promptly as U.S. companies whose securities are registered under the Exchange Act.

Our SEC filings are available to the public over the Internet at the SEC’s website at <http://www.sec.gov>. Copies of certain information filed by us with the SEC are also available on our website at <http://www.arcturusrx.com>. Our website is not a part of this prospectus supplement and the accompanying prospectus and is not incorporated by reference in this prospectus supplement. You may also read and copy any document we file at the SEC’s Public Reference Room, 100 F Street, N.E., Washington, D.C. 20549. Please call the SEC at 1-800-SEC-0330 for further information on the operation of the Public Reference Room.

## INFORMATION INCORPORATED BY REFERENCE

The SEC allows us to “incorporate by reference” information that we file with them. Incorporation by reference allows us to disclose important information to you by referring you to those other documents. The information incorporated by reference is an important part of this prospectus, and information that we file later with the SEC will automatically update and supersede this information. Statements in this prospectus regarding the provisions of certain documents filed with, or incorporated by reference in, the registration statement are not necessarily complete and each statement is qualified in all respects by that reference. Copies of all or any part of the registration statement, including the documents incorporated by reference or the exhibits, may be obtained upon payment of the prescribed rates at the offices of the SEC listed above in “Where to Find More Information.” The documents we are incorporating by reference as of their respective dates of filing are:

- our Annual Report on Form 20-F for the year ended December 31, 2017, filed on May 14, 2018 and amended on July 10, 2018 (File No. 001-35932);
- our Reports on Form 6-K filed on January 24, 2018, January 31, 2018, February 2, 2018, February 5, 2018, February 13, 2018, February 28, 2018, March 13, 2018, March 29, 2018, April 2, 2018, April 9, 2018, May 14, 2018, May 21, 2018, May 24, 2018, May 29, 2018, June 1, 2018, June 15, 2018, July 10, 2018, July 20, 2018, July 27, 2018, August 29, 2018, September 28, 2018 and October 1, 2018; and
- The description of our ordinary shares contained in our registration statement on Form 8-A filed on May 17, 2013, including any amendments or reports filed for the purpose of updating such description.

All subsequent Annual Reports on Form 20-F and all subsequent reports on Form 6-K filed by us, that are identified by us as being incorporated by reference, shall be deemed to be incorporated by reference into this prospectus supplement and deemed to be a part hereof after the date of this prospectus supplement but before the termination of the offering under this prospectus supplement. Unless expressly incorporated by reference, nothing in this prospectus supplement and the accompanying prospectus shall be deemed to incorporate by reference information furnished to, but not filed with, the SEC.

Any statement contained in a document incorporated by reference herein shall be deemed to be modified or superseded for all purposes to the extent that a statement contained in this prospectus supplement, or in any other subsequently filed document which is also incorporated or deemed to be incorporated by reference, modifies or supersedes such statement. Any statement so modified or superseded shall not be deemed, except as so modified or superseded, to constitute a part of this prospectus supplement.

You may request a copy of these filings, at no cost, by writing or telephoning us at the following address or telephone number:

Arcturus Therapeutics Ltd.  
10628 Science Center Drive, Suite 250  
San Diego, California 92121  
Attention: Investor Relations  
Telephone: (858) 900-2660

Prospectus

\$100,000,000



### Ordinary Shares

We may offer and sell from time to time in one or more offerings up to a total amount of \$100,000,000 of our ordinary shares. Each time we sell ordinary shares pursuant to this prospectus, we will provide in a supplement to this prospectus the price and any other material terms of any such offering. We may also authorize one or more free writing prospectuses to be provided to you in connection with each offering. Any prospectus supplement and related free writing prospectuses may also add, update or change information contained in the prospectus. You should read this prospectus, any applicable prospectus supplement and related free writing prospectuses, as well as the documents incorporated by reference or deemed incorporated by reference into this prospectus, carefully before you invest in our ordinary shares.

Our ordinary shares are traded on the NASDAQ Global Market under the symbol "ADHD".

**Investing in our ordinary shares involves a high degree of risk. Risks associated with an investment in our ordinary shares will be described in any applicable prospectus supplement and are and will be described in certain of our filings with the Securities and Exchange Commission, as described in "Risk Factors" on page 4.**

The ordinary shares may be sold directly by us to investors, through agents designated from time to time or to or through underwriters or dealers, or through a combination of such methods, on a continuous or delayed basis. For additional information on the methods of sale, you should refer to the section entitled "Plan of Distribution" in this prospectus. If any agents or underwriters are involved in the sale of our ordinary shares with respect to which this prospectus is being delivered, the names of such agents or underwriters and any applicable fees, commissions, discounts and over-allotment options will be set forth in a prospectus supplement. The price to the public of our ordinary shares and the net proceeds that we expect to receive from such sale will also be set forth in a prospectus supplement.

**Neither the Securities and Exchange Commission nor any state securities commission has approved or disapproved of these securities or passed on completeness or the adequacy or accuracy of this prospectus. Any representation to the contrary is a criminal offense.**

The date of this prospectus is March 18, 2016

---

---

## TABLE OF CONTENTS

<a href="#">About This Prospectus</a>	2
<a href="#">About Alcobra Ltd.</a>	3
<a href="#">Risk Factors</a>	5
<a href="#">Warning Regarding Forward-Looking Statements</a>	5
<a href="#">Capitalization and Indebtedness</a>	6
<a href="#">Reasons for the Offer and Use of Proceeds</a>	6
<a href="#">Price Range of our Ordinary Shares</a>	7
<a href="#">Description of Our Ordinary Shares</a>	8
<a href="#">Plan of Distribution</a>	10
<a href="#">Expenses</a>	11
<a href="#">Legal Matters</a>	12
<a href="#">Experts</a>	12
<a href="#">Where You Can Find More Information and Incorporation of Certain Information By Reference</a>	12
<a href="#">Enforceability of Civil Liabilities</a>	13



## ABOUT THIS PROSPECTUS

This prospectus is part of a registration statement on Form F-3 that we filed with the Securities and Exchange Commission, or the SEC, utilizing a “shelf” registration process. Under this shelf registration process, we may offer from time to time up to an aggregate of \$100,000,000 of our ordinary shares in one or more offerings. We sometimes refer to our ordinary shares as the “securities” throughout this prospectus.

Each time we sell ordinary shares, we will provide you with a prospectus supplement that will describe the specific amounts, prices and terms of such offering. We may also authorize one or more free writing prospectuses to be provided to you in connection with such offering. The prospectus supplement and any related free writing prospectuses may also add, update or change information contained in this prospectus. You should read carefully both this prospectus, the applicable prospectus supplement and any related free writing prospectus together with additional information described below under “Where You Can Find More Information and Incorporation by Reference” before buying the ordinary shares being offered.

This prospectus does not contain all of the information provided in the registration statement that we filed with the SEC. For further information about us or our ordinary shares, you should refer to that registration statement, which you can obtain from the SEC as described below under “Where You Can Find More Information and Incorporation by Reference.”

You should rely only on the information contained or incorporated by reference in this prospectus, a prospectus supplement and related free writing prospectuses. We have not authorized any other person to provide you with different information. If anyone provides you with different or inconsistent information, you should not rely on it. This prospectus is not an offer to sell these securities and it is not soliciting an offer to buy these securities in any jurisdiction where the offer or sale is not permitted. You should not assume that the information contained in this prospectus and the accompanying prospectus supplement or related free writing prospectuses is accurate on any date subsequent to the date set forth on the front of the document or that any information that we have incorporated by reference is correct on any date subsequent to the date of the document incorporated by reference. Our business, financial condition, results of operations and prospects may have changed since those dates.

In this prospectus, references to the terms “Alcobra,” “the Company,” “we,” “us,” “our” and similar terms, refer to Alcobra Ltd., unless we state or the context implies otherwise. References to our “ordinary shares” mean our ordinary shares, par value New Israeli Shekels, or NIS, 0.01 per share.

## ABOUT ALCOBRA LTD.

*This summary highlights information contained in the documents incorporated herein by reference. Before making an investment decision, you should read the entire prospectus, and our other filings with the SEC, including those filings incorporated herein by reference, carefully, including the sections entitled "Risk Factors" and "Warning Regarding Forward-Looking Statements."*

We are an emerging biopharmaceutical company primarily focused on the development and commercialization of our proprietary oral drug candidate, MDX, to treat Attention Deficit and Hyperactivity Disorder, or ADHD, and other cognitive dysfunctions including Fragile X Syndrome, or Fragile X. The most common currently available treatments for ADHD are stimulants that increase the brain chemicals dopamine and norepinephrine. Stimulants have significant side effects, and are classified as controlled substances, which have significant potential for misuse, abuse and addiction. MDX is not a stimulant, and works with a different mechanism of action. MDX is a proprietary, combined rapid onset/extended release formulation of the chemical pyridoxine pyroglutamate, which is more broadly known as metadoxine. Metadoxine is designed to be a monoamine-independent modulator of gamma-aminobutyric acid transmission. Metadoxine has been available since the 1980s only in immediate release forms for the acute treatment of alcohol intoxication and the chronic treatment of alcoholic liver disease in Italy, Portugal, Hungary, Russia, India, China, Mexico and Thailand.

### *MDX for the Treatment of ADHD*

ADHD is one of the most common behavioral disorders in the world. It is estimated that between 8% and 10% of children worldwide are affected by this condition. Once believed to only affect children, ADHD is now known to persist into adolescence and adulthood in a large number of cases, with approximately 50% of all children with ADHD continuing to have symptoms of the disorder as adults. Over 90% of adults with ADHD experience impaired attention and executive function symptoms, of which approximately 35% also experience hyperactivity-impulsivity symptoms.

ADHD is a treatable condition. The most commonly used therapeutic drugs are stimulants (Schedule II, Controlled Substances), such as Ritalin, Adderall, Vyvanse and Concerta, which are all dopaminergic (related to dopamine) and noradrenergic (related to norepinephrine) compounds with significant abuse and misuse potential, as their use may lead to severe psychological or physical dependence. In addition, stimulants have numerous side effects, such as uncomfortable mental states, interference with sleep and appetite, development of nervous tics and potential cardiovascular effects resulting from increased blood pressure and heart rate. There are limited effective treatments for these side effects for patients taking the drugs. The prevalence of such side effects has also led to dramatically limited medication adherence rates. Up to 30% to 50% of those who are prescribed stimulants for ADHD either do not respond or cannot tolerate these treatments, and only about 20% of those who are prescribed stimulants are still taking them 12 months later. There also is a non-stimulant drug approved for children and adults with ADHD called Strattera (atomoxetine), approved in 2002. This drug also has significant potential side effects, such as fatigue, gastrointestinal upset, sexual problems, palpitations, increased heart rate and high blood pressure and also has regulatory warning labels relating to suicidal thoughts and liver damage. Moreover, Strattera may take six to eight weeks to achieve full clinical effectiveness. More recently, two additional non-stimulant medications were approved for use only in children and adolescents with ADHD, Intuniv (guanfacine) and Kapvay (clonidine). These two drugs have not been approved for use in adults with ADHD and have not had significant commercial success. All approved ADHD drugs need to be carefully monitored by the treating physician to optimize the dose, starting with a low dose and slowly escalating to the most effective and tolerable dose.

In contrast to the most common available treatments, which involve the use of stimulants, MDX is not a stimulant and employs a different mechanism of action that is neither dopaminergic (related to dopamine) nor noradrenergic (related to norepinephrine). Our clinical trials to date have suggested a pro-cognitive effect and favorable tolerability and safety. We therefore believe MDX potentially represents an effective treatment and a safer alternative to currently marketed treatments.

In September 2011, we completed a 120 subject double-blind placebo-controlled Phase 2 study in adult ADHD subjects in two academic sites in Israel. The study showed statistically significant improvement in clinical ADHD symptoms, and also showed favorable tolerability with no significant side effects over a placebo. The trial met all primary and secondary clinical endpoints showing statistically significant improvement over the placebo-treated control group.

In December 2013, we completed an additional 36 subject double-blind placebo-controlled Phase 2 study in adult ADHD subjects, which confirmed our previous findings, highlighted the rapid onset of MDX, and demonstrated efficacy over placebo from the first day of dosing, using a computerized assessment tool.

In October 2014, we announced the results of a 300 subject double-blind placebo-controlled Phase 3 study in adult ADHD in 20 sites (18 in the United States and two in Israel). The study's primary efficacy endpoint did not reach statistical significance. A non-significant favorable trend was observed on the primary endpoint. Other secondary measures showed strong or statistically significant trends. Similar to previous studies, MDX showed a favorable safety profile.

In March 2015, we reported that our Phase 2 safety and tolerability study of a single administration of MDX in adolescent patients with ADHD achieved its primary endpoint. In the study, MDX showed good tolerability and no safety concerns were identified.

In the first quarter of 2015, we met with the U.S. Food and Drug Administration, or the FDA, to discuss the results of our first Phase 3 study in adults with ADHD, the proposed protocol for our second Phase 3 study in adults, the requirements for clinical development of MDX for pediatric ADHD, as well as the requirements for a New Drug Application, or an NDA, submission. The FDA confirmed that a single additional study showing efficacy in adult ADHD may provide a sufficient basis of efficacy for approval of MDX in this sub-population. The FDA also confirmed that a single Phase 2 study, followed by a single Phase 3 study, in a pediatric ADHD population can provide a sufficient basis of efficacy for approval of MDX in this population. We currently plan to file a joint NDA for the adult and pediatric sub-populations. We expect to launch the first of two adequate, well-controlled, short-term efficacy studies in children with ADHD in 2016. The study will be a multi-center, placebo-controlled, short-term efficacy study.

In the second quarter of 2015, we launched the MEASURE study (MDX Evaluation in Adults — Study of Response and Efficacy). The MEASURE study is our second Phase 3 study of MDX in adults with ADHD. The study includes design and operational elements to potentially mitigate placebo response and reduce treatment response variability, and we expect to report data by year end 2016.

We plan to initiate in 2016 the first of two registration studies in the United States for the use of MDX to treat ADHD in pediatrics. The trial will include similar design and monitoring elements to our ongoing Phase 3 trial in adult ADHD to potentially mitigate the placebo effect and reduce variability.

If the data from these and future pre-clinical and clinical trials demonstrate the safety and efficacy of MDX in the pediatric and adult sub-populations, we will seek to obtain marketing approval from the FDA for MDX for use in ADHD. We have similar plans to seek marketing approval in other territories.

#### *MDX for the Treatment of Fragile X*

We are also studying MDX for the treatment of Fragile X, a rare neurogenetic disorder related to autism marked by severe intellectual disability. In June 2015, we reported that our Phase 2 exploratory clinical study of MDX in adolescent and adult patients with Fragile X did not achieve statistical significance on the primary endpoint, yet demonstrated statistically significant improvements in certain clinically meaningful behavioral and cognitive endpoints, including the Vineland II Daily Living Skills Assessment. The FDA has granted fast track designation and Orphan Drug status to MDX for the treatment of Fragile X.

In October 2015, we met with the FDA to discuss the results of our Phase 2 study in Fragile X and the requirements for NDA submission of MDX in this therapeutic indication. The FDA concurred that results from a single short-term, adequate and well-controlled efficacy study in adolescents and adult patients with Fragile X may be sufficient to support a claim of efficacy for approval of MDX in this indication (in line with the FDA's Guidance for Industry — Providing Evidence of Effectiveness for Human Drug and Biological Products, May 1998). We plan to submit a separate application for pediatric patients (ages 4-11) following FDA approval via a supplemental NDA. The FDA confirmed that the Vineland II Daily Living Skills Assessment could serve as the primary endpoint in the adolescents and adults Fragile X pivotal study.

To date, we have not generated revenue from the sale of any product, and we do not expect to generate significant revenue unless and until we obtain marketing approval of, and commercialize, MDX. As of December 31, 2015, we had an accumulated deficit of \$71 million.

## RISK FACTORS

Investing in our securities involves significant risks. Before making an investment decision, you should carefully consider the risks described under “Risk Factors” in the applicable prospectus supplement and under Item 3.D. – “Risk Factors” in our most recent Annual Report on Form 20-F, or any updates in our Reports on Form 6-K, together with all of the other information appearing in this prospectus or incorporated by reference into this prospectus and any applicable prospectus supplement, in light of your particular investment objectives and financial circumstances. The risks so described are not the only risks facing us. Additional risks not presently known to us or that we currently deem immaterial may also impair our business operations. Our business, financial condition and results of operations could be materially adversely affected by any of these risks. The trading price of our securities could decline due to any of these risks, and you may lose all or part of your investment. The discussion of risks includes or refers to forward-looking statements; you should read the explanation of the qualifications and limitations on such forward-looking statements discussed elsewhere in this prospectus.

### WARNING REGARDING FORWARD-LOOKING STATEMENTS

This prospectus contains and any prospectus supplement may contain, “forward-looking statements” within the meaning of the Private Securities Litigation Reform Act of 1995 and other U.S. Federal securities laws. Also, documents that we incorporate by reference into this prospectus, including documents that we subsequently file with the SEC, will contain forward-looking statements. These forward-looking statements include, but are not limited to, those statements regarding anticipated expenses, capital requirements and our needs for additional financing; timing, design, the initiation and successful completion of the clinical trials we are or anticipate conducting, if at all; FDA approval of, or other regulatory action in the U.S. and elsewhere, with respect to MDX; the commercial launch, marketing and future sales of MDX or any other future products or product candidates; our ability to achieve favorable pricing for MDX; and our expectations regarding licensing, acquisitions and strategic operations. In some cases, forward-looking statements are identified by terminology such as “may,” “will,” “could,” “should,” “expects,” “plans,” “anticipates,” “believes,” “intends,” “estimates,” “predicts,” “potential,” or “continue” or the negative of these terms or other comparable terminology. Such forward-looking statements involve known and unknown risks, uncertainties and other factors that may cause actual results or performance to differ materially from those projected. These statements are only current predictions and are subject to known and unknown risks, uncertainties, and other factors that may cause our or our industry’s actual results, levels of activity, performance or achievements to be materially different from those anticipated by the forward-looking statements. In addition, historic results of scientific research and clinical and preclinical trials do not guarantee that the conclusions of future research or trials would not suggest different conclusions or that historic results referred to in this prospectus would be interpreted differently in light of additional research and clinical and preclinical trials results. The forward-looking statements contained in this prospectus are subject to risks and uncertainties, including in our most recent Annual Report on Form 20-F, under Item 3.D. – “Risk Factors” and in our other filings with the SEC. You are cautioned not to place undue reliance on these forward looking statements, which speak only as of the date hereof. Although we believe that the expectations reflected in the forward-looking statements are reasonable, we cannot guarantee future results, levels of activity, performance, or achievements. Except as otherwise required by law, we are under no obligation to (and expressly disclaim any such obligation to) update or revise any of the forward-looking statements, whether as a result of new information, future events or otherwise, after the date of this prospectus.

## CAPITALIZATION AND INDEBTEDNESS

The following table sets forth cash and cash equivalents, short-term investments and our shareholders' equity as of December 31, 2015. The financial data in the following table should be read in conjunction with our consolidated financial statements included in our Annual Report on Form 20-F for the year ended December 31, 2015 filed with the SEC on March 4, 2016, which have been incorporated by reference in this prospectus.

	<b>As of December 31, 2015 (U.S. Dollars, in thousands)</b>	
Cash and cash equivalents	\$	16,658
Short-term bank deposit		34,022
Total cash, cash equivalents and short-term bank deposits		50,680
Shareholders' equity:		
Ordinary Shares of NIS 0.01 par value:		
Authorized – 50,000,000 as of December 31, 2015;		
Outstanding – 27,560,920 shares as of December 31, 2015.		74
Additional paid-in capital		140,274
Accumulated deficit during the development stage		(71,017)
Total shareholders' equity		69,331
Capitalization		69,331

## REASONS FOR THE OFFER AND USE OF PROCEEDS

Unless otherwise set forth in the related prospectus supplement or, if applicable, the pricing supplement, we intend to use the net proceeds from the sale of securities offered through this prospectus for general corporate purposes, which include financing our operations, capital expenditures and business development. The specific purpose of any individual issuance of securities will be described in the related prospectus supplement.

## PRICE RANGE OF OUR ORDINARY SHARES

Our ordinary shares were listed on the NASDAQ Capital Market under the symbol “ADHD” from May 22, 2013 until March 27, 2014. Since March 28, 2014, our ordinary shares have been listed on the NASDAQ Global Market. Prior to May 22, 2013, there was no public trading market for our ordinary shares. Our initial public offering was priced at \$8.00 per share on May 21, 2013. The following table sets forth for the periods indicated the high and low sales prices per ordinary share as reported on the NASDAQ Capital Market through March 27, 2014, and, starting March 28, 2014, on the NASDAQ Global Market:

<b>Annual Information:</b>	<b>Low</b>		<b>High</b>	
2013	\$	6.50	\$	26.96
2014		3.12		25.44
2015		3.68		9.50
<b>Quarterly Information</b>				
First Quarter 2014	\$	17.11	\$	25.44
Second Quarter 2014		13.63		21.33
Third Quarter 2014		14.77		22.19
Fourth Quarter 2014		3.12		15.68
First Quarter 2015		3.68		8.3
Second Quarter 2015		5.38		8.84
Third Quarter 2015		5.61		9.50
Fourth Quarter 2015		5.28		8.78
<b>Monthly Information:</b>				
September 2015	\$	5.61	\$	9.14
October 2015		5.28		8.34
November 2015		5.68		8.78
December 2015		5.54		6.66
January 2016		4.27		6.50
February 2016		4.45		5.66

## DESCRIPTION OF OUR ORDINARY SHARES

The following is a summary description of our ordinary shares under our amended and restated articles of association, or Articles of Association. Our share capital is NIS 500,000, consisting of 50,000,000 ordinary shares NIS 0.01 par value per share. The ordinary shares do not have cumulative voting rights in the election of directors. As a result, the holders of ordinary shares that represent more than 50% of the voting power have the power to elect all the directors.

*Dividend and Liquidation Rights.* Our board of directors may declare a dividend to be paid to the holders of our ordinary shares according to their rights and interests in our profits and may fix the record date for eligibility and the time for payment. The directors may from time to time pay to the shareholders on account of the next forthcoming dividend such interim dividends as, in their judgment, our position justifies. All dividends unclaimed for one year after having been declared may be invested or otherwise used by the directors for our benefit until claimed. No unpaid dividend or interest shall bear interest as against us. Our board of directors may determine that a dividend may be paid, wholly or partially, by the distribution of certain of our assets or by a distribution of paid up shares, debentures or debenture stock or any of our securities or of any other companies or in any one or more of such ways in the manner and to the extent permitted by the Israeli Companies Law 1999, or the Companies Law.

*Voting; annual, general and extraordinary meeting.* Subject to any rights or restrictions for the time being attached to any class or classes of shares, each shareholder shall have one vote for each share of which he or she is the holder, whether on a show of hands or on a poll. Our Articles of Association do not permit cumulative voting and it is not mandated by Israeli law. Votes may be given either personally or by proxy. A proxy need not be a shareholder. If any shareholder is without legal capacity, he may vote by means of a trustee or a legal custodian, who may vote either personally or by proxy. If two or more persons are jointly entitled to a share then, in voting upon any question, the vote of the senior person who tenders a vote, whether in person or by proxy, shall be accepted to the exclusion of the votes of the other registered holders of the share and, for this purpose seniority shall be determined by the order in which the names stand in the shareholder register.

*Quorum for general meetings.* The quorum required for our general meetings of shareholders consists of at least two shareholders present in person, by proxy or written ballot who holds or represent between them at least one-third of the total outstanding voting rights. A meeting adjourned for lack of a quorum is generally adjourned to the same day in the following week at the same time and place or to a later time/date if so specified in the summons or notice of the meeting. At the reconvened meeting, any two or more shareholders present in person or by proxy shall constitute a lawful quorum.

*Notice of general meetings.* Unless a longer period for notice is prescribed by the Companies Law, at least 10 days and not more than 60 days' notice of any general meeting shall be given, specifying the place, the day and the hour of the meeting and, in the case of special business, the nature of such business, shall be given in the manner hereinafter mentioned, to such shareholders as are under the provisions of our Articles of Association, entitled to receive notices from us. Only shareholders of record as reflected on our share register at the close of business on the date fixed by the board of directors as the record date determining the then shareholders who will be entitled to vote, shall be entitled to notice of, and to vote, in person or by proxy, at a general meeting and any postponement or adjournment thereof.

*Annual general meetings; agenda; calling a general meeting.* General meetings are held at least once in every calendar year at such time (within a period of 15 months after the holding of the last preceding general meeting), and at such time and place as may be determined by the board of directors. At a general meeting, decisions shall be adopted only on matters that were specified on the agenda. The board of directors is obligated to call extraordinary general meeting of the shareholders upon a written request in accordance with the Companies Law. The Companies Law provides that an extraordinary general meeting of shareholder may be called by the board of directors or by a request of two directors or 25% of the directors in office, or by shareholders holding at least 5% of the issued share capital of the company and at least 1% of the voting rights, or of shareholders holding at least 5% of the voting rights of the company.

*Majority vote.* Except as otherwise provided in the Articles of Association, any resolution at a general meeting shall be deemed adopted if approved by the holders of a majority of our voting rights represented at the meeting in person or by proxy and voting thereon. In the case of an equality of votes, the chairman of the meeting shall not be entitled to a further vote.

*No discrimination against shareholders.* According to our Articles of Association, there are no discriminating provisions against any existing or prospective holders of our shares as a result of a shareholder holding a substantial number of shares.

*Transfer of Shares; record dates.* Fully paid up ordinary shares may be freely transferred pursuant to our Articles of Association unless such transfer is restricted or prohibited by another instrument or securities laws. Each shareholder who would be entitled to attend and vote at a general meeting of shareholders is entitled to receive notice of any such meeting. For

purposes of determining the shareholders entitled to notice and to vote at such meeting, the board of directors will fix a record date.

*Modification of Class Rights.* If, at any time, the share capital is divided into different classes of shares, the rights attached to any class (unless otherwise provided by the terms of issuance of the shares of that class) may be varied with the consent in writing of the holders of all the issued shares of that class, or with the sanction of a majority vote at a meeting of the shareholders passed at a separate meeting of the holders of the shares of the class. The provisions of our Articles of Association relating to general meetings shall apply, mutatis mutandis, to every such separate general meeting. Any holder of shares of the class present in person or by proxy may demand a secret poll.

Unless otherwise provided by the conditions of issuance, the enlargement of an existing class of shares, or the issuance of additional shares thereof, shall not be deemed to modify or abrogate the rights attached to the previously issued shares of such class or of any other class. These conditions provide for the minimum shareholder approvals permitted by the Companies Law.

*Restrictions on Shareholders Rights to Own Securities.* Our Articles of Association and the laws of the State of Israel do not restrict in any way the ownership or voting on our shares by nonresidents of Israel, except with respect to subjects of countries which are in a state of war with Israel.

*Election of Directors.* Other than external directors, as defined in the Companies Law, for whom special election requirements and terms of office apply under the Companies Law, our directors are each elected at a general meeting of our shareholders and serve for a term of roughly one year. Directors may nevertheless be removed prior to the end of their term by the majority of our shareholders at a general meeting of our shareholders or upon the occurrence of certain events, all in accordance with the Companies Law and our Articles of Association. In addition, our Articles of Association allow our board of directors to appoint directors, other than external directors, to fill vacancies on our board of directors, for a term of office which shall continue until the next annual meeting following his or her appointment.

External directors are elected for an initial term of three years and may be elected for up to two additional three-year terms (or more) under certain circumstances. External directors may be removed from office only under the limited circumstances set forth in the Companies Law.



## PLAN OF DISTRIBUTION

We may sell the securities being offered hereby in one or more of the following methods from time to time:

- a block trade (which may involve crosses) in which the broker or dealer so engaged will attempt to sell the securities as agent but may position and resell a portion of the block as principal to facilitate the transaction;
- purchases by a broker or dealer as principal and resale by such broker or dealer for its own account pursuant to this prospectus;
- exchange distributions and/or secondary distributions;
- ordinary brokerage transactions and transactions in which the broker solicits purchasers;
- to one or more underwriters for resale to the public or to investors;
- through agents;
- in “at the market offerings,” within the meaning of Rule 415(a)(4) of the Securities Act, to or through a market maker or into an existing trading market, on an exchange or otherwise;
- transactions not involving market makers or established trading markets, including direct sales or privately negotiated transactions;
- through a combination of these methods of sale.

The securities that we distribute by any of these methods may be sold, in one or more transactions, at:

- a fixed price or prices, which may be changed;
- market prices prevailing at the time of sale;
- prices related to prevailing market prices; or
- negotiated prices.

We will set forth in a prospectus supplement the terms of the offering of securities, including:

- the name or names of any agents, dealers or underwriters;
- the purchase price of the securities being offered and the proceeds we will receive from the sale;
- any over-allotment options under which underwriters may purchase additional securities from us;
- any agency fees or underwriting discounts and other items constituting agents’ or underwriters’ compensation;
- the public offering price;
- any discounts or concessions allowed or reallocated or paid to dealers; and
- any securities exchanges or markets on which such securities may be listed.

If underwriters are used in the sale, they will acquire the securities for their own account and may resell the securities from time to time in one or more transactions at a fixed public offering price or at varying prices determined at the time of sale. The obligations of the underwriters to purchase the securities will be subject to the conditions set forth in the applicable underwriting agreement. We may offer the securities to the public through underwriting syndicates represented by managing underwriters or by underwriters without a syndicate. Subject to certain conditions, the underwriters will be obligated to

purchase all of the securities offered by the prospectus supplement, other than securities covered by any over-allotment option. Any public offering price and any discounts or concessions allowed or reallowed or paid to dealers may change from time to time. We may use underwriters with whom we have a material relationship. We will describe in the prospectus supplement, naming the underwriter, the nature of any such relationship.

We may sell securities directly or through agents we designate from time to time. We will name any agent involved in the offering and sale of securities and we will describe any commissions we will pay the agent in the prospectus supplement. Unless the prospectus supplement states otherwise, our agent will act on a best-efforts basis for the period of its appointment.

We may also sell securities directly to one or more purchasers without using underwriters or agents.

Underwriters, dealers and agents that participate in the distribution of the securities may be underwriters as defined in the Securities Act and any discounts or commissions they receive from us and any profit on their resale of the securities may be treated as underwriting discounts and commissions under the Securities Act. We will identify in the applicable prospectus supplement any underwriters, dealers or agents and will describe their compensation. We may have agreements with the underwriters, dealers and agents to indemnify them against specified civil liabilities, including liabilities under the Securities Act. Underwriters, dealers and agents may engage in transactions with or perform services for us in the ordinary course of their businesses.

In connection with an offering, an underwriter may purchase and sell securities in the open market. These transactions may include short sales, stabilizing transactions and purchases to cover positions created by short sales. Short sales involve the sale by the underwriters of a greater number of securities than they are required to purchase in the offering.

Accordingly, to cover these short sales positions or to otherwise stabilize or maintain the price of the securities, the underwriters may bid for or purchase securities in the open market and may impose penalty bids. If penalty bids are imposed, selling concessions allowed to syndicate members or other broker-dealers participating in the offering are reclaimed if securities previously distributed in the offering are repurchased, whether in connection with stabilization transactions or otherwise. The effect of these transactions may be to stabilize or maintain the market price of the securities at a level above that which might otherwise prevail in the open market. The impositions of a penalty bid may also affect the price of the securities to the extent that it discourages resale of the securities. The magnitude or effect of any stabilization or other transactions is uncertain. These transactions may be effected on The Nasdaq Global Market or otherwise and, if commenced, may be discontinued at any time.

In compliance with guidelines of the Financial Industry Regulatory Authority, or FINRA, the maximum commission or discount to be received by any FINRA member or independent broker dealer may not exceed 8% of the aggregate amount of the securities offered pursuant to this prospectus and any applicable prospectus supplement.

#### EXPENSES

We are paying all of the expenses of the registration of our securities under the Securities Act, including, to the extent applicable, registration and filing fees, printing and duplication expenses, administrative expenses, accounting fees and the legal fees of our counsel. We estimate these expenses to be approximately \$30,000 which at the present time include the following categories of expenses:

SEC registration fee	\$	6,382
Legal fees and expenses	\$	11,500
Accounting fees and expenses	\$	5,000
Miscellaneous expenses	\$	7,118
<b>Total</b>	<b>\$</b>	<b>30,000</b>

In addition, we anticipate incurring additional expenses in the future in connection with the offering of our securities pursuant to this prospectus. Any such additional expenses will be disclosed in a prospectus supplement.

## LEGAL MATTERS

The validity of the ordinary shares offered in this prospectus will be passed upon for us by Zysman, Aharoni, Gayer & Co., Tel Aviv, Israel. Zysman, Aharoni, Gayer and Sullivan & Worcester LLP, New York, New York, is acting as our counsel in connection with United States securities laws.

## EXPERTS

The financial statements, incorporated in this prospectus by reference from the Company's Annual Report on Form 20-F, have been audited by Kost Forer Gabbay & Kasierer, a member of EY Global, an independent registered public accounting firm, as stated in their report, which is incorporated herein by reference. Such financial statements have been so incorporated in reliance upon the reports of such firm given upon their authority as experts in accounting and auditing.

## WHERE YOU CAN FIND MORE INFORMATION AND INCORPORATION OF CERTAIN INFORMATION BY REFERENCE

We are an Israeli company and are a "foreign private issuer" as defined in Rule 3b-4 under the Securities Exchange Act of 1934, as amended, or the Exchange Act. As a result, (1) our proxy solicitations are not subject to the disclosure and procedural requirements of Regulation 14A under the Exchange Act, and (2) transactions in our equity securities by our officers and directors are exempt from Section 16 of the Exchange Act.

In addition, we are not required to file reports and financial statements with the SEC as frequently or as promptly as U.S. companies whose securities are registered under the Exchange Act. However, we file with the SEC an Annual Report on Form 20-F containing financial statements audited by an independent registered public accounting firm. We also furnish reports on Form 6-K containing unaudited financial information for each calendar quarter and other material information that we are required to make public, that we file with, and that is made public by, any stock exchange on which our shares are traded, or that we distribute, or that is required to be distributed by us, to our shareholders.

You can read and copy any materials we file with the SEC at its Public Reference Room at 100 F Street, N.E., Washington, D.C. 20549. You can obtain information about the operation of the SEC Public Reference Room by calling the SEC at 1-800-SEC-0330. The SEC also maintains a website that contains information we file electronically with the SEC, which you can access over the Internet at <http://www.sec.gov>. You may also access the information we file electronically with the SEC through our website at <http://www.alcobra-pharma.com>. The information contained on, or linked from our website or the SEC's website does not form part of this prospectus.

This prospectus is part of a registration statement on Form F-3 filed by us with the SEC under the Securities Act. As permitted by the rules and regulations of the SEC, this prospectus does not contain all the information set forth in the registration statement and the exhibits thereto filed with the SEC. For further information with respect to us and the ordinary shares offered hereby, you should refer to the complete registration statement on Form F-3, which may be obtained from the locations described above. Statements contained in this prospectus or in any prospectus supplement about the contents of any contract or other document are not necessarily complete. If we have filed any contract or other document as an exhibit to the registration statement or any other document incorporated by reference in the registration statement, you should read the exhibit for a more complete understanding of the document or matter involved. Each statement regarding a contract or other document is qualified in its entirety by reference to the actual document.

The following documents filed with or furnished to the SEC by our Company are incorporated by reference in this registration statement:

- The Company's Annual Report on Form 20-F for the fiscal year ended December 31, 2015; and
- The description of the Company's ordinary shares, par value NIS 0.01 per share contained in the Company's registration statement on Form 8-A filed pursuant to the Exchange Act on May 17, 2013 (File No. 001-35932), including any amendment or report filed which updates such description.

All subsequent Annual Reports filed by us pursuant to the Exchange Act on Form 20-F prior to the termination of the offering shall be deemed to be incorporated by reference to this prospectus and to be a part hereof from the date of filing of such documents. We may also incorporate any Form 6-K subsequently submitted by us to the SEC prior to the termination of the offering by identifying in such Forms 6-K that they are being incorporated by reference herein, and any Forms 6-K so

identified shall be deemed to be incorporated by reference in this prospectus and to be a part hereof from the date of submission of such documents. Any statement contained in a document incorporated or deemed to be incorporated by reference herein shall be deemed to be modified or superseded for purposes of this prospectus to the extent that a statement contained herein or in any other subsequently filed document which also is incorporated or deemed to be incorporated by reference herein modifies or supersedes such statement. Any such statement so modified or superseded shall not be deemed, except as so modified or superseded, to constitute a part of this prospectus.

The information we incorporate by reference is an important part of this prospectus, and later information that we file with the SEC will automatically update and supersede the information contained in this prospectus.

We will provide you without charge, upon your written or oral request, a copy of any of the documents incorporated by reference in this prospectus, other than exhibits to such documents which are not specifically incorporated by reference into such documents. Please direct your written or telephone requests to us at Alcobra Ltd., Azrieli Triangle Building, 132 Derech Menachem Begin, 39th Floor, Tel Aviv 6701101, Israel, attention: Dr. Tomer Berkovitz, Chief Financial Officer, telephone number: +972-72-220-4661.

### **ENFORCEABILITY OF CIVIL LIABILITIES**

We are incorporated in Israel, almost all of our executive officers and directors and the Israeli experts named herein are nonresidents of the United States, and a substantial portion of our assets and of such persons' assets are located outside the United States. Service of process upon us and upon our directors and officers and the experts named in his prospectus, may be difficult to obtain within the United States. Furthermore, because substantially all of our assets and substantially all of our directors and officers are located outside the United States, any judgment obtained in the United States against us or any of our directors and officers may not be collectible within the United States.

We have been informed by our legal counsel in Israel that it may be difficult to assert United States securities law claims in original actions instituted in Israel. Israeli courts may refuse to hear a claim based on a violation of United States securities laws because Israel is not the most appropriate forum to bring such a claim. In addition, even if an Israeli court agrees to hear a claim, it may determine that Israeli law and not U.S. law is applicable to the claim. If United States law is found to be applicable, the content of applicable U.S. law must be proved as a fact, which can be a time-consuming and costly process. Certain matters of procedure will also be governed by Israeli law. There is little binding case law in Israel addressing these matters.

Subject to specified time limitations and legal procedures, under the rules of private international law currently prevailing in Israel, Israeli courts may enforce a final U.S. judgment in a civil matter, including judgments based upon the civil liability provisions of the U.S. securities laws and including a monetary or compensatory judgment in a non-civil matter, provided that:

- the judgment is enforceable in the state in which it was given;
- adequate service of process has been effected and the defendant has had a reasonable opportunity to present his arguments and evidence;
- the judgment and the enforcement of the judgment are not contrary to the law, public policy, security or sovereignty of the state of Israel;
- the judgment was not obtained by fraud and does not conflict with any other valid judgment in the same matter between the same parties; and
- an action between the same parties in the same matter is not pending in any Israeli court at the time the lawsuit is instituted in the foreign court.

We have irrevocably appointed our subsidiary, Alcobra Inc., as our agent to receive service of process in any action against us in the state and federal courts sitting in the City of New York, Borough of Manhattan arising out of any offering under this registration statement of which this prospectus forms a part, or any purchase or sale of securities in connection therewith. We have not given consent for this agent to accept service of process in connection with any other claim.

**Up to \$30,000,000**



**Ordinary Shares**

---

**PROSPECTUS SUPPLEMENT**

---

**Leerink Partners**

---

October 15, 2018