

PROSPECTUS SUPPLEMENT NO. 2
(To Prospectus dated September 30, 2014)

CAN-FITE BIOPHARMA LTD.

1,490,378 Ordinary Shares represented by 745,189 American Depositary Shares

This Prospectus Supplement No. 2 is required to be delivered by certain holders of the above-referenced shares or by their transferees, pledges, donees or their successors in connection with the offer and sale of the above-referenced shares.

This Prospectus Supplement No. 2 supplements the Prospectus dated September 30, 2014 of Can-Fite Biopharma Ltd. (the "Company"), as amended by Prospectus Supplement No. 1 dated October 2, 2015, with the following addition and change:

- (1) Amend the selling shareholder information set forth in the Prospectus.

The attached information modifies and supersedes, in part, the information in the Prospectus. Any information that is modified or superseded in the Prospectus or any amendment or supplement thereto, shall not be deemed to constitute a part of the Prospectus except as modified or superseded by this Prospectus Supplement No. 2. This Prospectus Supplement No. 2 should be read in conjunction with the Prospectus, as amended by Prospectus Supplement No. 1.

INVESTING IN OUR SECURITIES INVOLVES A HIGH DEGREE OF RISK. SEE "RISK FACTORS" BEGINNING ON PAGE 7 OF THE PROSPECTUS, AND ANY OF OUR OTHER FILINGS INCORPORATED THEREIN BY REFERENCE.

NEITHER THE SECURITIES AND EXCHANGE COMMISSION NOR ANY STATE SECURITIES COMMISSION HAS APPROVED OR DISAPPROVED OF THESE SECURITIES OR DETERMINED IF THIS PROSPECTUS SUPPLEMENT IS TRUTHFUL OR COMPLETE. ANY REPRESENTATION TO THE CONTRARY IS A CRIMINAL OFFENSE.

The date of this Prospectus Supplement is January 19, 2016.

AMENDMENT TO SELLING SHAREHOLDER INFORMATION

This Prospectus Supplement No. 2 is being filed in connection with changes to the selling shareholders information as set forth in the Prospectus. Specifically, (i) Capital Ventures International assigned a warrant to purchase 292,000 ordinary shares represented by 146,000 American Depositary Shares, or ADSs, to CVI Investments, Inc. and (ii) Cranshire Capital Master Fund, Ltd. assigned a warrant to purchase 54,612 ordinary shares represented by 27,306 ADSs, to Intracoastal Capital LLC.

As a result, this Prospectus Supplement No. 2 is being filed to amend the selling shareholders table in the Prospectus so that it reflects the changes to such table resulting from the above-described assignments.

All other information in the Prospectus shall remain unchanged. Percentage of beneficial ownership was calculated based on 27,672,901 ordinary shares outstanding as of January 18, 2016. This Prospectus Supplement No. 2 reflects only the total number of ordinary shares registered for resale by the subject selling shareholder described herein, and we note that it does not reflect sales of ordinary shares by such selling shareholder pursuant to the Prospectus that may have occurred prior to the date of this Prospectus Supplement No. 2.

<u>Selling Shareholder</u>	<u>Number of Ordinary Shares Owned Prior to Offering</u>	<u>Maximum Number of Ordinary Shares to be Sold Pursuant to this Prospectus</u>	<u>Number of Ordinary Shares Owned After the Offering</u>	<u>Percentage of Ordinary Shares Owned After the Offering</u>
CVI Investments, Inc. (1)	292,000(2)	292,000(2)	0	0
Intracoastal Capital LLC (19)	971,694(20)	72,816(20.1)	898,878(20.2)	3.1%

- (1) Heights Capital Management, Inc., the authorized agent of CVI Investments, Inc., or CVI, has discretionary authority to vote and dispose of the shares held by CVI and may be deemed to be the beneficial owner of these shares. Martin Kobinger, in his capacity as Investment Manager of Heights Capital Management, Inc., may also be deemed to have investment discretion and voting power over the shares held by CVI. Mr. Kobinger disclaims any such beneficial ownership of the shares.
- (2) Represents 292,000 ordinary shares represented by 146,000 ADSs issuable upon exercise of warrants issued in our March 2014 financing held by CVI.
- (19) Mitchell P. Kopin, or Mr. Kopin, and Daniel B. Asher, or Mr. Asher, each of whom are managers of Intracoastal Capital LLC, or Intracoastal, have shared voting control and investment discretion over the securities reported herein that are held by Intracoastal. As a result, each of Mr. Kopin and Mr. Asher may be deemed to have beneficial ownership (as determined under Section 13(d) of Exchange Act) of the securities reported herein that are held by Intracoastal.

In the aggregate, Mr. Kopin and Mr. Asher may be deemed to have beneficial ownership (as determined under Section 13(d) of the Exchange Act) of 971,694 ordinary shares, which consists of (i) 72,816 ordinary shares represented by 36,408 ADSs issuable upon exercise of warrants originally issued in our March 2014 financing held by Intracoastal, and (ii) 898,878 ordinary shares represented by 449,439 ADSs issuable upon exercise of warrants originally issued in our December 2014 financing held by Intracoastal. The foregoing excludes (i) 850,574 ordinary shares represented by 425,287 ADSs issuable upon exercise of warrants issued in our September 2015 financing to Intracoastal because the foregoing warrants are not exercisable until on or after March 21, 2016, and (ii) 363,816 ordinary shares represented by 181,908 ADSs issuable upon exercise of warrants issued in our October 2015 financing to Intracoastal because the foregoing warrants are not exercisable until on or after April 15, 2016. Without the blocker provision described above with respect to foregoing warrants (and assuming that the foregoing warrants were currently exercisable), Mr. Kopin and Mr. Asher may be deemed to have beneficial ownership of 2,186,084 ordinary shares represented by 1,093,042 ADSs issuable upon exercise of warrants. Pursuant to the terms of the foregoing warrants the holders cannot exercise such warrants if they would beneficially own, after any such exercise, more than 4.99% of the outstanding ordinary shares.

Mr. Asher, who is a manager of Intracoastal, is also a control person of a broker-dealer. As a result of such common control, Intracoastal may be deemed to be an affiliate of a broker-dealer. Intracoastal acquired the ordinary shares being registered hereunder in the ordinary course of business, and at the time of the acquisition of the ordinary shares and warrants described herein, Intracoastal did not have any arrangements or understandings with any person to distribute such securities.

- (20) Represents (i) 72,816 ordinary shares represented by 36,408 ADSs issuable upon exercise of warrants originally issued in our March 2014 financing held by Intracoastal, and (ii) 898,878 ordinary shares represented by 449,439 ADSs issuable upon exercise of warrants originally issued in our December 2014 financing held by Intracoastal.
- (20.1) Represents 72,816 ordinary shares represented by 36,408 ADSs issuable upon exercise of warrants originally issued in our March 2014 financing held by Intracoastal.
- (20.2) Represents 898,878 ordinary shares represented by 449,439 ADSs issuable upon exercise of warrants issued in our December 2014 financing held by Intracoastal.