

PROSPECTUS SUPPLEMENT NO. 2

(TO PROSPECTUS DATED JUNE 20, 2018)

**INVIVO THERAPEUTICS HOLDINGS CORP.
388,403 shares of Common Stock and
388,403 Warrants to purchase shares of Common Stock
and
6,242,811 Pre-Funded Warrants to purchase shares of Common Stock and
6,242,811 Warrants to purchase shares of Common Stock**

This prospectus supplement No. 2 supplements and amends the prospectus dated June 20, 2018, as supplemented by prospectus supplement No.1, dated September 28, 2018, related to the sale or other disposition from time to time of 388,403 shares of common stock, par value \$0.00001 per share (the “Common Stock”), of InVivo Therapeutics Holdings Corp., a Nevada corporation (the “Company,” “we,” “us” or “our”), together with up to 388,403 warrants to purchase shares of Common Stock, and 6,242,811 pre-funded warrants to purchase shares of Common Stock together with 6,242,811 warrants to purchase shares of Common Stock, issued to Ladenburg Thalmann & Co. Inc., the underwriter named in the prospectus, also referred to as LTCO, pursuant to an underwriting agreement dated June 21, 2018 that we entered into with LTCO.

This prospectus supplement should be read in conjunction with the prospectus dated June 20, 2018, which is to be delivered with this prospectus supplement. This prospectus supplement is qualified by reference to the prospectus except to the extent that the information in this prospectus supplement supersedes the information contained in the prospectus. This prospectus supplement is not complete without, and may not be delivered or utilized except in connection with, the prospectus, including any amendments or supplements to it.

Our common stock is quoted on The Nasdaq Capital Market under the symbol “NVIV.” On October 4, 2018, the last reported sale price of our common stock on The Nasdaq Capital Market was \$2.03 per share.

This prospectus supplement incorporates into our prospectus the information contained in our Current Report on Form 8-K filed with the Securities and Exchange Commission on October 5, 2018 and attached hereto.

Investing in our common stock involves risks. See “Risk Factors” beginning on page 10 of the prospectus.

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

The date of this prospectus supplement is October 5, 2018.

**UNITED STATES
SECURITIES AND EXCHANGE COMMISSION**

Washington, D.C. 20549

FORM 8-K

CURRENT REPORT

Pursuant to Section 13 or 15(d) of the Securities Exchange Act of 1934

October 1, 2018

Date of Report (Date of earliest event reported)

INVIVO THERAPEUTICS HOLDINGS CORP.

(Exact Name of Registrant as Specified in Charter)

Nevada
(State or Other
Jurisdiction of Incorporation)

001-37350
(Commission File Number)

36-4528166
(IRS Employer
Identification No.)

**One Kendall Square, Suite B14402
Cambridge, Massachusetts 02139**
(Address of Principal Executive Offices) (Zip Code)

(617) 863-5500
(Registrant's telephone number, including area code)

(Former name or former address, if changed since last report)

Check the appropriate box below if the Form 8-K filing is intended to simultaneously satisfy the filing obligation of the registrant under any of the following provisions (see General Instruction A.2. below):

- ☐ Written communications pursuant to Rule 425 under the Securities Act (17 CFR 230.425)
- ☐ Soliciting material pursuant to Rule 14a-12 under the Exchange Act (17 CFR 240.14a-12)
- ☐ Pre-commencement communications pursuant to Rule 14d-2(b) under the Exchange Act (17 CFR 240.14d-2(b))
- ☐ Pre-commencement communications pursuant to Rule 13e-4(c) under the Exchange Act (17 CFR 240.13e-4(c))

Indicate by check mark whether the registrant is an emerging growth company as defined in Rule 405 of the Securities Act of 1933 (§230.405 of this chapter) or Rule 12b-2 of the Securities Exchange Act of 1934 (§240.12b-2 of this chapter).

Emerging growth company ☐

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act. ☐

Item 5.02. Departure of Directors or Certain Officers; Election of Directors; Appointment of Certain Officers; Compensatory Arrangements of Certain Officers.

On October 1, 2018, InVivo Therapeutics Holdings Corp. (the “Company”) entered into an amendment to the existing employment agreement (the “Employment Agreement”) with Richard Toselli, M.D., the Company’s President and Chief Executive Officer (the “Amendment”). The Amendment provides for an increase in Dr. Toselli’s annual base salary from \$435,000 to \$480,000, clarifies that Dr. Toselli’s existing annual bonus target of 50% of his base salary will be based on Dr. Toselli’s new base salary of \$480,000 and provides for an additional bonus, in the amount of \$360,000, less applicable taxes and withholdings (the “Additional Bonus”). The Additional Bonus is payable in two installments in accordance with and subject to the following: 1) \$120,000 on April 1, 2019, provided that Dr. Toselli is an active employee of the Company in his capacity as President and Chief Executive Officer through March 31, 2019 (the “First Payment”) and 2) \$240,000 on July 1, 2019, provided that Dr. Toselli is an active employee of the Company in his capacity as President and Chief Executive Officer through June 30, 2019. In the event Dr. Toselli’s employment is terminated either by the Company without Cause or by Dr. Toselli for Good Reason (each as defined the Employment Agreement), each prior to Dr. Toselli receiving either installment of the Additional Bonus, the Amendment provides that the Company will pay Dr. Toselli any remaining portion of the Additional Bonus on the payment date(s) set forth above, subject to Dr. Toselli executing and allowing to become effective a severance and release of claims agreement. If, following the First Payment but prior to July 1, 2019, Dr. Toselli resigns from employment without Good Reason or his employment is terminated for Cause, Dr. Toselli shall be required to forfeit and repay the gross portion of the First Payment within sixty (60) days after his employment termination.

The foregoing description of the Amendment is qualified in its entirety by reference to the full text of the Amendment, a copy of which is filed herewith as Exhibit 10.1, and is incorporated by reference herein. Unless otherwise specified, capitalized terms used above without definition have the meanings set forth in the Employment Agreement or the Amendment.

Item 9.01 Financial Statements and Exhibits.

(d) Exhibits

Exhibit Number	Description
10.1	Amendment to Employment Agreement, by and between InVivo Therapeutics Holdings Corp. and Richard Toselli, dated October 1, 2018.

SIGNATURE

Pursuant to the requirements of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned hereunto duly authorized.

INVIVO THERAPEUTICS HOLDINGS CORP.

Date: October 5, 2018

By: /s/ Richard Toselli

Name: Richard Toselli

Title: President and Chief Executive Officer

Amendment to the Employment Agreement

This Amendment to the Employment Agreement (the “Amendment”) is entered into by and between InVivo Therapeutics Holdings Corp. (the “Company”) and Richard Toselli, M.D. (the “Executive”) and shall become effective as of October 1, 2018 (the “Effective Date”).

WHEREAS, the Company and Executive are parties to an Employment Agreement dated December 18, 2017 (the “Employment Agreement”), pursuant to which Executive serves as the Company’s President and Chief Executive Officer; and

WHEREAS, the Company wishes to amend certain terms of Executive’s Employment Agreement to reflect and recognize his continued service as President and Chief Executive Officer; and

WHEREAS, Executive has agreed to the amendments of the Employment Agreement set forth in this Amendment;

NOW, THEREFORE, in consideration of the mutual covenants and promises contained herein and other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the parties hereto agree to the following changes to the Employment Agreement, effective as of the Effective Date:

1. Section 2(a) of the Employment Agreement shall be deleted in its entirety and replaced with the following:

“(a) Salary. For services rendered under this Agreement, the Company shall pay the Executive a base salary at the annualized rate of \$480,000 (the “base salary”), paid bi-weekly in accordance with the Company’s usual payroll practices. This salary will be reviewed annually by the Board (or a designated committee thereof) and will be adjusted upward (but not downward without the Executive’s consent) no less frequently than annually.”

2. Section 2(b) of the Employment Agreement shall be deleted in its entirety and replaced with the following:

“(b) Bonuses.

(i) Annual Bonus. Following the end of each fiscal year, the Executive shall be eligible to receive an annual target bonus of 50% of the base salary, subject to his performance of specified objectives to be established by the Board (or a designated committee thereof) each fiscal year. Actual bonus payout may be below or above the annual target bonus subject to performance.

(ii) FDA Performance Bonus. The Executive is also eligible to receive a one- time lump sum payment of \$150,000 should the FDA approve the Company’s Randomized Control Trial (Insipre2.0 Trial). The Company shall pay the Executive the lump sum bonus once the trial is approved by the FDA and open for enrollment.

(iii) Additional Bonus. The Executive will be paid a bonus in the amount of \$360,000, less applicable taxes and withholdings (the "Total Additional Bonus"), in two installments in accordance with and subject to the following: 1) \$120,000 on April 1, 2019, provided that the Executive is an active employee of the Company in his capacity as President and Chief Executive Officer through March 31, 2019 (the "First Payment") and 2) \$240,000 on July 1, 2019, provided that the Executive is an active employee of the Company in his capacity as President and Chief Executive Officer through June 30, 2019. In the event the Executive's employment is terminated either by the Company without Cause or by the Executive for Good Reason (each as defined in Section 3), each prior to the Executive receiving either installment of the Total Additional Bonus, the Company will pay the Executive any remaining portion of the Total Additional Bonus on the payment date(s) set forth above, subject to his executing and allowing to become effective a severance and release of claims agreement as set forth in Section 4(b)(iii) herein. If, following the First Payment but prior to July 1, 2019, the Executive resigns from employment without Good Reason or his employment is terminated for Cause, the Executive shall be required to forfeit and repay the gross portion of the First Payment within sixty (60) days after the Date of Termination. For the avoidance of doubt, the Total Additional Bonus set forth in this Section 2(i) is distinct and separate from the Annual Performance Bonus set forth in Section 2(b)."

(iv) Conditions. Except as and to the extent set forth in Section 4(b) of this Agreement, Executive must be an active employee of the Company on the date the aforementioned bonuses are distributed in order to be eligible for and to earn any bonus award, as they also serve as an incentive to remain employed by the Company."

3. Section 4(b)(iii) of the Employment Agreement shall be deleted in its entirety and replaced with the following:

"The payment to the Executive of the amounts payable under this Section 4(b), as well as any outstanding bonus payment(s) due to the Executive after the Date of Termination in accordance with and subject to Section 2(b)(iii), shall (A) be contingent upon the Executive entering into a severance and release of claims agreement in a form reasonably acceptable to the Company and (B) constitute the sole remedy of the Executive in the event of a termination of the Executive's employment in the circumstances set forth in this Section 4(b)."

4. Except as expressly modified herein, all terms of the Employment Agreement shall remain in full force and effect.

[Signature Page Follows]

IN WITNESS WHEREOF, the parties hereto have executed this Amendment as of the day and year set forth below.

**INVIVO THERAPEUTICS
HOLDINGS CORP.**

EXECUTIVE:

/s/ Daniel Marshak
Daniel Marshak
Chairman, Compensation Committee

/s/ Richard Toselli
Richard Toselli, M.D.

October 1, 2018
Date

October 1, 2018
Date