

**PROSPECTUS SUPPLEMENT NO. 3 DATED OCTOBER 4, 2011
TO PROSPECTUS DATED JULY 29, 2011**

INVIVO THERAPEUTICS HOLDINGS CORP.

26,047,200 Shares of Common Stock

This Prospectus Supplement No. 3 supplements and amends the prospectus dated July 29, 2011 filed pursuant to Rule 424(b)(3), which we refer to as the Prospectus. This prospectus supplement relates to the offer and sale of up to 26,047,200 shares of our common stock by certain selling securityholders.

On October 4, 2011, we filed with the Securities and Exchange Commission a Current Report on Form 8-K. A copy of such Current Report on Form 8-K is attached to and constitutes an integral part of this Prospectus Supplement No. 3.

This Prospectus Supplement No. 3 should be read in conjunction with the Prospectus, as supplemented by Supplement No. 1 to the Prospectus, dated August 5, 2011 and Supplement No. 2 to the Prospectus, dated August 11, 2011. This Prospectus Supplement No. 3 is qualified by reference to the Prospectus, as supplemented, except to the extent that the information in this Prospectus Supplement No. 3 supersedes the information contained in the Prospectus, as supplemented.

In reviewing the Prospectus and this Prospectus Supplement No. 3, you should carefully consider the risks under “Risk Factors” beginning on page 6 of the Prospectus.

NEITHER THE SECURITIES AND EXCHANGE COMMISSION NOR ANY STATE SECURITIES COMMISSION HAS APPROVED OR DISAPPROVED OF THESE SECURITIES OR PASSED UPON THE ADEQUACY OR ACCURACY OF THE PROSPECTUS OR THIS PROSPECTUS SUPPLEMENT NO. 3. ANY REPRESENTATION TO THE CONTRARY IS A CRIMINAL OFFENSE.

The date of this Prospectus Supplement No. 3 is October 4, 2011.

**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**

Date of Report (Date of earliest event reported): September 21, 2011

INVIVO THERAPEUTICS HOLDINGS CORP.

(Exact name of registrant as specified in its charter)

Nevada
(State or other jurisdiction
of incorporation)

000-52089
(Commission
File No.)

36-4528166
(IRS Employer
Identification No.)

One Broadway, 14th Floor
Cambridge, Massachusetts
(Address of principal executive offices)

02142
(Zip Code)

(617) 475-1520
(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:

- ☐ 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))
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Item 8.01 Other Events.

On September 21, 2011, InVivo Therapeutics Holdings Corp. (the “Registrant”) issued a press release announcing positive preclinical data in a rodent contusion model of spinal cord injury. A copy of the press release is filed as Exhibit 99.1 to this current report on Form 8-K.

Item 9.01 Financial Statements and Exhibits.

(d) Exhibits

The exhibit listed in the Exhibit Index below is filed with this report.

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 4, 2011

By: /s/ Frank M. Reynolds

Frank M. Reynolds
Chief Executive Officer

EXHIBIT INDEX

<u>Exhibit No.</u>	<u>Description</u>
99.1	Press Release of the Registrant, dated September 21, 2011.

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**InVivo Therapeutics Announces Positive Preclinical Data in
 Contusion Spinal Cord Injury Model**

CAMBRIDGE, Mass. (September 21, 2011) – InVivo Therapeutics Holdings Corp. (OTC/BB: NVIV), a company focused on the development of groundbreaking technologies for the treatment of spinal cord injuries (SCI), today announced that in a rodent contusion model of SCI the Company's proprietary biopolymer scaffold showed positive preliminary data that indicate a therapeutic effect. The technology tested was a biomaterial scaffold implant without drugs or cells and is the subject of a proposed 10-patient pilot study in humans in acute spinal cord injury, which the Company hopes to begin next year.

The data demonstrate evidence of efficacy with respect to decreased scarring, decreased lesion size, and increased neural survival following the implantation of the Company's lead technology in an acute SCI model. The results are consistent with InVivo's prior published peer-reviewed findings in hemisection models in both rodents and non-human primates.

"We are very excited that results from the most applicable injury model to humans, the contusion model, appear to confirm our findings in the hemisection model," said Rick Layer, PhD, Research & Development Manager at InVivo Therapeutics.

Jonathan Slotkin, MD, Medical Director at InVivo Therapeutics, added, "I am looking forward to finalizing this analysis and to submitting the data to a peer-reviewed journal, as well as to presenting it at upcoming scientific meetings. These data provide further encouragement as we work with the FDA on our recently submitted application."

About InVivo Therapeutics

InVivo Therapeutics Holdings Corp. is focused on utilizing polymers as a platform technology to develop treatments to improve function in individuals paralyzed as a result of traumatic spinal cord injury. The company was founded in 2005 on the basis of proprietary technology co-invented by Robert Langer, ScD. Professor at Massachusetts Institute of Technology, and Joseph P. Vacanti, M.D., who is affiliated with Massachusetts General Hospital.

Safe Harbor Statement

Any statements contained in this press release that do not describe historical facts may constitute forward-looking statements within the meaning of the federal securities laws. Any forward-looking statements contained herein are based on current expectations, but are subject to a number of risks and uncertainties. The factors that could cause actual future results to differ materially from current expectations include, but are not limited to, risks and uncertainties relating to the Company's ability to sell additional shares of

common stock and warrants to purchase common stock at additional closings, the Company’s ability to develop, market and sell products based on its technology; the expected benefits and efficacy of the Company’s products and technology in connection with spinal cord injuries; the availability of substantial additional funding for the Company to continue its operations and to conduct research and development, clinical studies and future product commercialization; and, the Company’s business, research, product development, regulatory approval, marketing and distribution plans and strategies. These and other factors are identified and described in more detail in our filings with the SEC, including our Form 10-K and Form 10-Qs and our current reports on Form 8-K. We do not undertake to update these forward-looking statements made by us.

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