

**PROSPECTUS SUPPLEMENT NO. 4 DATED NOVEMBER 14, 2011
TO PROSPECTUS DATED JULY 29, 2011**

INVIVO THERAPEUTICS HOLDINGS CORP.

26,047,200 Shares of Common Stock

This Prospectus Supplement No. 4 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 November 14, 2011, we filed with the Securities and Exchange Commission our Quarterly Report on Form 10-Q for the quarterly period ended September 30, 2011. A copy of such Quarterly Report on Form 10-Q is attached to and constitutes an integral part of this Prospectus Supplement No. 4.

This Prospectus Supplement No. 4 should be read in conjunction with the Prospectus, as supplemented by Supplement No. 1 to the Prospectus, dated August 5, 2011, Supplement No. 2 to the Prospectus, dated August 11, 2011 and Supplement No. 3 to the Prospectus, dated October 4, 2011. This Prospectus Supplement No. 4 is qualified by reference to the Prospectus, as supplemented, except to the extent that the information in this Prospectus Supplement No. 4 supersedes the information contained in the Prospectus, as supplemented.

In reviewing the Prospectus and this Prospectus Supplement No. 4, 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. 4. ANY REPRESENTATION TO THE CONTRARY IS A CRIMINAL OFFENSE.

The date of this Prospectus Supplement No. 4 is November 14, 2011.

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, DC 20549

FORM 10-Q

☒ QUARTERLY REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934

For the quarterly period ended September 30, 2011.

or

☐ TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934

For the transition period from to .

Commission File Number: 000-52089

InVivo Therapeutics Holdings Corp.
(Exact name of registrant as specified in its charter)

Nevada
(State or other jurisdiction of
incorporation or organization)

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

36-4528166
(I.R.S. Employer
Identification Number)

02142
(Zip code)

(617)-475-1520
(Registrant’s telephone number, including area code)

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes ☒ No ☐

Indicate by check mark whether the registrant has submitted electronically and posted on its corporate Web site, if any, every Interactive Data File required to be submitted and posted pursuant to Rule 405 of Regulation S-T (§232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit and post such files). Yes ☒ No ☐

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, or a smaller reporting company. See the definitions of “large accelerated filer,” “accelerated filer,” and “smaller reporting company” in Rule 12b-2 of the Exchange Act.

| | | | |
|-------------------------|--|---------------------------|-------------------------------------|
| Large accelerated filer | <input type="checkbox"/> | Accelerated filer | <input type="checkbox"/> |
| Non-accelerated filer | <input type="checkbox"/> (Do not check if a smaller reporting company) | Smaller reporting company | <input checked="" type="checkbox"/> |

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act). Yes ☐ No ☒

As of November 14, 2011, 52,038,062 shares of the registrant’s Common Stock \$0.00001 par value, were issued and outstanding.

INVIVO THERAPEUTICS HOLDINGS CORP.
Quarterly report on Form 10-Q for the period ended September 30, 2011

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PART I – FINANCIAL INFORMATION
Item 1. Financial Statements.

InVivo Therapeutics Holdings Corp.
(A Developmental Stage Company)

Consolidated Balance Sheets

| | As of | |
|--|---|------------------------------|
| | September 30, 2011 Unaudited | December 31, 2010 |
| ASSETS: | | |
| Current assets: | | |
| Cash and cash equivalents | \$ 3,686,929 | \$ 8,964,194 |
| Restricted cash | 155,000 | — |
| Prepaid expenses | 119,523 | 81,166 |
| Total current assets | 3,961,452 | 9,045,360 |
| Property and equipment, net | 520,992 | 280,181 |
| Other assets | 121,764 | 53,639 |
| Total assets | <u>\$ 4,604,208</u> | <u>\$ 9,379,180</u> |
| LIABILITIES AND STOCKHOLDERS' DEFICIT: | | |
| Current liabilities: | | |
| Accounts payable | \$ 553,807 | \$ 336,945 |
| Loan payable-current portion | 41,666 | — |
| Capital lease payable-current portion | 32,906 | — |
| Derivative warrant liability | 4,087,355 | 10,647,190 |
| Accrued expenses | 359,081 | 247,547 |
| Total current liabilities | 5,074,815 | 11,231,682 |
| Loan payable-less current portion | 76,391 | — |
| Capital lease payable-less current portion | 43,281 | — |
| Total liabilities | <u>5,194,487</u> | <u>11,231,682</u> |
| Commitments and contingencies | | |
| Stockholders' deficit: | | |
| Common stock, \$0.00001 par value, authorized 200,000,000 and 100,000,000 shares at September 30, 2011 and December 31, 2010, respectively; issued and outstanding 52,005,902 and 51,647,171 shares at September 30, 2011 and December 31, 2010, respectively. | 520 | 516 |
| Additional paid-in capital | 12,079,127 | 11,235,829 |
| Deficit accumulated during the development stage | (12,669,926) | (13,088,847) |
| Total stockholders' deficit | <u>(590,279)</u> | <u>(1,852,502)</u> |
| Total liabilities and stockholders' deficit | <u>\$ 4,604,208</u> | <u>\$ 9,379,180</u> |

See notes to the consolidated financial statements.

InVivo Therapeutics Holdings Corp.
(A Developmental Stage Company)
Consolidated Statements of Operations
(Unaudited)

| | Three Months Ended September 30, | | Nine Months Ended September 30, | | Period from November 28, 2005 (inception) to September 30, 2011 |
|---|-------------------------------------|---------------------|------------------------------------|-----------------------|--|
| | 2011 | 2010 | 2011 | 2010 | |
| Operating expenses: | | | | | |
| Research and development | \$ 1,016,865 | \$ 324,626 | \$ 3,045,426 | \$ 950,059 | \$ 7,826,413 |
| General and administrative | 1,196,455 | 424,050 | 3,095,877 | 974,942 | 6,791,542 |
| Total operating expenses | <u>2,213,320</u> | <u>748,676</u> | <u>6,141,303</u> | <u>1,925,001</u> | <u>14,617,955</u> |
| Operating loss | <u>(2,213,320)</u> | <u>(748,676)</u> | <u>(6,141,303)</u> | <u>(1,925,001)</u> | <u>(14,617,955)</u> |
| Other income (expense): | | | | | |
| Other income | — | — | — | — | 383,000 |
| Interest income | 4,778 | 47 | 7,539 | 267 | 18,829 |
| Interest expense | — | (36,931) | (7,150) | (285,259) | (1,060,805) |
| Derivatives gain (loss) | 5,275,591 | (51,195) | 6,559,835 | (51,195) | 2,607,253 |
| Other income (expense), net | <u>5,280,369</u> | <u>(88,079)</u> | <u>6,560,224</u> | <u>(336,187)</u> | <u>1,948,277</u> |
| Net income (loss) | <u>\$ 3,067,049</u> | <u>\$ (836,755)</u> | <u>\$ 418,921</u> | <u>\$ (2,261,188)</u> | <u>\$(12,669,678)</u> |
| Net income (loss) per share, basic | <u>\$ 0.06</u> | <u>\$ (0.03)</u> | <u>\$ 0.01</u> | <u>\$ (0.08)</u> | <u>\$ (0.43)</u> |
| Net income (loss) per share, diluted | <u>\$ 0.06</u> | <u>\$ (0.03)</u> | <u>\$ 0.01</u> | <u>\$ (0.08)</u> | <u>\$ (0.43)</u> |
| Weighted average number of common shares outstanding, basic | <u>51,889,111</u> | <u>31,147,190</u> | <u>51,743,138</u> | <u>29,378,512</u> | <u>29,782,271</u> |
| Weighted average number of common shares outstanding, diluted | <u>54,269,856</u> | <u>31,147,190</u> | <u>54,198,981</u> | <u>29,378,512</u> | <u>29,782,271</u> |

See notes to the consolidated financial statements.

InVivo Therapeutics Holdings Corp.
(A Developmental Stage Company)
Consolidated Statements of Cash Flows
(Unaudited)

| | Nine Months Ended September 30, | | Period from November 28, 2005 (inception) to September 30, 2011 |
|---|------------------------------------|--------------------|--|
| | 2011 | 2010 | |
| Cash flows from operating activities: | | | |
| Net income (loss) | \$ 418,921 | \$(2,261,188) | \$(12,669,678) |
| Adjustments to reconcile net loss to net cash used in operating activities: | | | |
| Depreciation and amortization expense | 101,599 | 36,136 | 194,564 |
| Non-cash derivatives (gain) loss | (6,559,835) | 51,195 | (2,607,253) |
| Non-cash interest expense | — | 236,286 | 962,834 |
| Common stock issued for services | 200,676 | — | 200,676 |
| Share-based compensation expense | 622,141 | 364,128 | 1,500,981 |
| Changes in operating assets and liabilities: | | | |
| Restricted cash | (155,000) | — | (155,000) |
| Prepaid expenses | (28,306) | (40,117) | (109,472) |
| Other assets | (75,000) | — | (150,000) |
| Accounts payable | 216,862 | 58,333 | 553,807 |
| Accrued interest payable | — | 13,968 | (15,256) |
| Accrued expenses | 111,534 | (207,807) | 359,081 |
| Net cash used in operating activities | <u>(5,146,408)</u> | <u>(1,749,066)</u> | <u>(11,934,716)</u> |
| Cash flows from investing activities: | | | |
| Purchases of property and equipment | <u>(241,995)</u> | <u>(24,610)</u> | <u>(593,780)</u> |
| Net cash used in investing activities | <u>(241,995)</u> | <u>(24,610)</u> | <u>(593,780)</u> |
| Cash flows from financing activities: | | | |
| Proceeds from issuance of convertible notes payable | — | 700,000 | 4,181,000 |
| Proceeds from convertible bridge notes | — | — | 500,000 |
| (Repayment of) proceeds from loans payable | 118,057 | (90,985) | 118,057 |
| Principal payments on capital lease obligation | (17,353) | — | (17,353) |
| Proceeds from issuance of common stock and warrants | 10,434 | 1,000,000 | 11,433,721 |
| Net cash provided by financing activities | <u>111,138</u> | <u>1,609,015</u> | <u>16,215,425</u> |
| (Decrease) Increase in cash and cash equivalents | (5,277,265) | (164,661) | 3,686,929 |
| Cash and cash equivalents at beginning of period | <u>8,964,194</u> | <u>226,667</u> | <u>—</u> |
| Cash and cash equivalents at end of period | <u>3,686,929</u> | <u>\$ 62,006</u> | <u>\$ 3,686,929</u> |

(continued)

See notes to the consolidated financial statements.

InVivo Therapeutics Holdings Corp.
(A Developmental Stage Company)
Consolidated Statements of Cash Flows (Concluded)
(Unaudited)

| | <div> <div>Nine Months Ended</div> <div>September 30,</div> </div> | | <div> <div>Period from</div> <div>November 28,</div> <div>2005</div> <div>(inception) to</div> <div>September 30,</div> <div>2011</div> </div> |
|--|--|-------------|--|
| | 2011 | 2010 | |
| Supplemental disclosure of cash flow information and non-cash transactions: | | | |
| Cash paid for interest | \$ 5,077 | \$ 29,586 | \$ 97,517 |
| Conversion of convertible notes payable and accrued interest into common stock | \$ — | \$3,323,128 | \$ 4,672,484 |
| Conversion of convertible bridge note payable and accrued interest into common stock | \$ — | \$ — | \$ 504,597 |
| Asset acquired through capital lease obligation | \$93,540 | \$ — | \$ 93,540 |
| Beneficial conversion feature on convertible and bridge notes payable | \$ — | \$ 134,410 | \$ 134,410 |
| Fair value of warrants issued with bridge notes payable | \$ — | \$ 178,726 | \$ 178,726 |
| Fair value of warrants issued in connection with loan agreement | \$10,051 | \$ — | \$ 10,051 |
| Issuance of founders shares | \$ — | \$ — | \$ 248 |

See notes to the consolidated financial statements.

InVivo Therapeutics Holdings Corp.
(A Development Stage Company)
Notes to Consolidated Financial Statements
Period Ended September 30, 2011 (Unaudited)

1. NATURE OF OPERATIONS AND BASIS OF PRESENTATION

Business

InVivo Therapeutics Corporation (“InVivo”) was incorporated on November 28, 2005 under the laws of the State of Delaware. InVivo is developing and commercializing biopolymer scaffolding devices for the treatment of spinal cord injuries. The biopolymer devices are designed to protect the damaged spinal cord from further secondary injury and promote neuroplasticity, a process where functional recovery can occur through the rerouting of signaling pathways to the spared healthy tissue.

Since its inception, InVivo has devoted substantially all of its efforts to business planning, research and development, recruiting management and technical staff, acquiring operating assets and raising capital. Accordingly, InVivo is considered to be in the development stage.

Reverse Merger

On October 26, 2010, InVivo completed a reverse merger transaction (the “Merger”) with InVivo Therapeutics Holdings Corporation (formerly Design Source, Inc.) (“ITHC”), a publicly traded company incorporated under the laws of the State of Nevada. InVivo became a wholly owned subsidiary of ITHC, which continues to operate the business of InVivo. As part of the Merger, ITHC issued 31,147,190 shares of its Common Stock to the holders of InVivo common stock on October 26, 2010 in exchange for the 2,261,862 outstanding common shares of InVivo and also issued 500,000 shares to its legal counsel in consideration for legal services provided. All share and per share amounts presented in these consolidated financial statements have been retroactively restated to reflect the 13.7706 to 1 exchange ratio of InVivo shares for ITHC shares in the Merger. Immediately prior to the Merger, ITHC had 6,999,981 shares of Common Stock outstanding.

The Merger was accounted for as a “reverse merger,” and InVivo is deemed to be the accounting acquirer. The Merger was recorded as a reverse recapitalization, equivalent to the issuance of common stock by InVivo for the net monetary assets of ITHC accompanied by a recapitalization. At the date of the Merger, the 6,999,981 outstanding ITHC shares were reflected as an issuance of InVivo common stock to the prior shareholders of ITHC. ITHC had no net monetary assets as of the Merger so this issuance was recorded as a reclassification between additional paid-in capital and par value of Common Stock.

The historical consolidated financial statements are those of InVivo as the accounting acquirer. The post-merger combination of ITHC and InVivo is referred to throughout these notes to consolidated financial statements as the “Company.” Subsequent to the Merger, the Company completed three closings as part of a private placement.

On October 26, 2010, in connection with the Merger described above, ITHC transferred all of its operating assets and liabilities to its wholly-owned subsidiary, D Source Split Corp., a company organized under the laws of Nevada (“DSSC”). DSSC was then split-off from ITHC through the sale of all outstanding shares of DSSC (the “Split-Off”). The assets and liabilities of ITHC were transferred to the Split-Off Shareholders in the Split-Off. ITHC executed a split off agreement with the Split-Off Shareholders which obligates the Split-Off Shareholders to assume all prior liabilities associated with Design Source, Inc. and all DSSC liabilities. In conjunction with the Split-Off, certain shareholders of ITHC surrendered for cancellation shares of ITHC common stock for no additional consideration. The purpose of the Split-Off was to make ITHC a shell company with no assets or liabilities in order to facilitate the Merger. Although all transactions related to the Merger occurred simultaneously, the Split-Off, including the cancellation of shares, was considered to have occurred immediately prior to the Merger for accounting purposes. As the accounting acquiree in a reverse merger with a shell company, the historical financial statements of ITHC are not presented and these ITHC transactions are not reflected in the Company’s accompanying consolidated financial statements.

Basis of Presentation

The accompanying unaudited consolidated financial statements have been prepared in conformity with generally accepted accounting principles in the United States (“GAAP”) consistent with those applied in, and should be read in conjunction with, the Company’s audited financial statements and related footnotes for the year ended December 31, 2010 included in the Company’s Annual Report on Form 10-K, as amended, as filed with the United States Securities and Exchange Commission (“SEC”). The unaudited consolidated financial statements reflect all adjustments, consisting only of normal recurring adjustments, which are, in the opinion of management, necessary for a fair presentation of the Company’s financial position as of September 30, 2011 and its results of operations and cash flows for the interim periods presented and are not necessarily indicative of results for subsequent interim periods or for the full year. The interim financial statements do not include all of the

information and footnotes required by GAAP for complete financial statements as allowed by the relevant SEC rules and regulations; however, the Company believes that its disclosures are adequate to ensure that the information presented is not misleading.

2. CASH AND CASH EQUIVALENTS

As of September 30, 2011, the Company held approximately \$3,700,000 in cash and cash equivalents. From time to time, the Company may have cash balances in financial institutions in excess of insurance limits. The Company has never experienced any losses related to these balances. All of the Company's non-interest bearing cash balances were fully insured at September 30, 2011 due to a temporary federal program in effect from December 31, 2010 through December 31, 2012. Under the program, there is no limit on the amount of insurance for eligible accounts. Beginning in 2013, insurance coverage will revert to \$250,000 per depositor at each financial institution, and non-interest bearing cash balances may again exceed federally insured limits. The Company's cash equivalents are in money market funds and certificates of deposit. The cash and cash equivalents in interest-bearing accounts and non-interest bearing accounts ineligible under the program amounted to approximately \$3,370,000 as of September 30, 2011. Restricted cash represents a \$105,000 security deposit related to the Company's credit card account and a \$50,000 minimum balance in a checking account that is required as part of a loan agreement.

3. FAIR VALUE OF ASSETS AND LIABILITIES

The Company groups its assets and liabilities generally measured at fair value in three levels, based on the markets in which the assets and liabilities are traded and the reliability of the assumptions used to determine fair value.

Level 1 – Valuation is based on quoted prices in active markets for identical assets or liabilities. Level 1 assets and liabilities generally include debt and equity securities that are traded in an active exchange market. Valuations are obtained from readily available pricing sources for market transactions involving identical assets or liabilities.

Level 2 – Valuation is based on observable inputs other than Level 1 prices, such as quoted prices for similar assets or liabilities; quoted prices in markets that are not active; or other inputs that are observable or can be corroborated by observable market data for substantially the full term of the assets or liabilities.

Level 3 – Valuation is based on unobservable inputs that are supported by little or no market activity and that are significant to the fair value of the assets or liabilities. Level 3 assets and liabilities include financial instruments whose value is determined using unobservable inputs to pricing models, discounted cash flow methodologies, or similar techniques, as well as instruments for which the determination of fair value requires significant management judgment or estimation.

The Company uses valuation methods and assumptions that consider among other factors the fair value of the underlying stock, risk-free interest rate, volatility, expected life and dividend rates in estimating fair value for the warrants considered to be derivative instruments.

Assets and liabilities measured at fair value on a recurring basis are summarized below:

| | | September 30, 2011 | | | |
|------------------------------|--|--------------------|--------------|---------|--------------|
| | | Level 1 | Level 2 | Level 3 | Fair Value |
| Liabilities: | | | | | |
| Derivative warrant liability | | \$ — | \$ 4,087,355 | — | \$ 4,087,355 |
| | | December 31, 2010 | | | |
| | | Level 1 | Level 2 | Level 3 | Fair Value |
| Liabilities: | | | | | |
| Derivative warrant liability | | \$ — | \$10,647,190 | — | \$10,647,190 |

4. COMMITMENTS***Operating Lease Commitment***

The Company leases approximately 1,200 square feet of laboratory and office space in Medford, Massachusetts under a lease expiring November 14, 2012. Future minimum lease payments under this operating lease are approximately as follows:

| | <u>Amount</u> |
|-----------------------------------|-----------------|
| For the years ending December 31, | |
| 2011 | \$ 11,976 |
| 2012 | <u>43,139</u> |
| Total | <u>\$55,115</u> |

The Company's rent expense under this lease was approximately \$12,000 and \$39,000 for the three and nine months ended September 30, 2011. Total rent expense in these periods was approximately \$88,000 and \$267,000, respectively.

Other Commitments

In February 2011, the Company entered into an agreement with a contract research organization to perform non-human clinical trials. The agreement requires total payments of \$850,000 of which \$425,000 was paid upon execution of the contract. The remaining \$425,000 is expected to be paid in the fourth quarter of 2011.

Registration Payment Arrangements

In connection with the Merger (see Note 1), the Company completed a private placement of 13,000,000 Units of its securities. The Company entered into a Registration Rights Agreement with the private placement investors, whereby the Company agreed to register common stock as defined in the agreement. The Company was required to file within 90 days of the date of the final closing (the "Filing Deadline"), a registration statement registering for resale all shares of Common Stock issued in the private placement, including Common Stock (i) included in the Units; and (ii) issuable upon exercise of the Investor Warrants. On July 29, 2011, the SEC declared that the Company's Registration Statement was effective. The Company has an on-going responsibility to maintain the effectiveness of the Registration Statement until the earlier of: (i) one year from the date of effectiveness or, (ii) when Rule 144 of the Securities Act is available to the private placement investors.

5. CAPITAL LEASE OBLIGATION

In February 2011, the Company entered into a capital lease agreement under which the Company leased certain laboratory equipment. Capital lease obligation consisted of the following:

| | <u>September 30, 2011</u> |
|-----------------------|-------------------------------|
| Capital lease payable | \$ 76,187 |
| Less: current portion | <u>(32,906)</u> |
| | <u>\$ 43,281</u> |

The total value of the laboratory equipment acquired under this capital lease agreement was \$124,151. The capital lease is payable in monthly installments of \$2,812 payable over thirty six months with the final payment due in January 2014. For the three and nine months ended September 30, 2011, interest expense recorded on the capital lease was \$949 and \$2,973, respectively. For the three and nine months ended September 30, 2011, depreciation expense was \$6,208 and \$16,553, respectively.

6. LOAN PAYABLE

In June 2011, the Company entered into a loan agreement with a bank. The loan agreement provides the Company with a \$1,000,000 line of credit for the purchase of capital equipment. The line is available to the Company until December 31, 2011. The annual interest rate is the greater of 6.75% or 3.50% above the Prime Rate. Borrowings are repayable in equal monthly installments over a thirty six month period. The Company was assessed a \$7,500 commitment fee and issued the bank a warrant for the purchase of 16,071 shares of Common Stock. The warrant has a seven year term and is exercisable at \$1.40 per share. The fair value of the warrant was determined to be approximately \$10,000 and was recorded as a deferred financing cost that will be amortized to interest expense over a three year period commencing from the date of the first draw from the equipment line of credit. Amortization of the deferred financing costs in the three and nine months ended September 30, 2011 was \$2,073. As of September 30, 2011, there was a total of \$125,000 advanced on the equipment line of credit. The equipment line of credit is secured by substantially all the assets of the Company excluding intellectual property. In accordance with the agreement, the Company is required to maintain its primary banking and investments accounts with the commercial bank and a deposit of not less than \$50,000 at the bank. The loan payable at September 30, 2011 consisted of the following:

| | September 30, 2011 |
|-----------------------|-----------------------|
| Equipment Loan | \$ 118,057 |
| Less: current portion | (41,666) |
| | <u>\$ 76,391</u> |

Interest expense related to the loan payable in the three and nine months ended September 30, 2011 was \$1,433.

7. COMMON STOCK

The Company has authorized 200,000,000 shares of Common Stock, \$0.00001 par value per share, of which 52,005,902 shares and 51,647,171 shares were issued and outstanding as of September 30, 2011 and December 31, 2010, respectively.

In February 2011, the Company issued 27,541 shares of Common Stock upon the exercise of stock options and received cash proceeds of \$1,999.

In June 2011, the Company issued 65,000 unregistered shares with a fair value of approximately \$55,000 to an investor relations firm in exchange for services provided.

In August 2011, the Company issued 150,000 unregistered shares with a fair value of approximately \$142,500 to a firm providing investor relations services.

On August 5, 2011, Company issued 116,190 shares of Common Stock upon the exercise of stock options and received cash proceeds of \$8,435.

8. DERIVATIVE INSTRUMENTS

Derivative financial instruments are recognized as a liability on the consolidated balance sheet and measured at fair value.

At September 30, 2011 and December 31, 2010, the Company had outstanding warrants to purchase 18,800,000 shares of its Common Stock which are considered to be derivative instruments since the agreements contain provisions that include anti-dilution protection and, under certain conditions, grant the right to the holder to request the Company to repurchase the warrant. The Company uses the Black-Scholes option pricing model and assumptions that consider, among other factors, the fair value of the underlying stock, risk-free interest rate, volatility, expected life and dividend rates in estimating fair value for the warrants considered to be derivative instruments. The fair value of these derivative instruments at September 30, 2011 and December 31, 2010 were \$4,087,355 and \$10,647,190, respectively. Changes in fair value of the derivative financial instruments are recognized currently in the Statement of Operations as a derivatives gain or loss. The warrant derivative gain for the three and nine months ended September 30, 2011 was \$5,275,590 and \$6,559,834, respectively, and was included in other income (expense) in the consolidated statement of operations. The warrant derivative loss for the three and nine months ended September 30, 2010 was \$51,195.

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The assumptions used principally in determining the fair value of warrants were as follows:

| | As of September 30, 2011 |
|-------------------------|--------------------------------|
| Risk free interest rate | .96% |
| Expected dividend yield | 0% |
| Contractual term | 3.9-4.2 years |
| Expected volatility | 67% |

The primary underlying risk exposure pertaining to the warrants is the change in fair value of the underlying Common Stock for each reporting period.

The table below presents the changes in derivative warrant liability during the nine months ended September 30, 2011:

| | Nine Months Period Ended September 30, 2011 |
|--|---|
| Balance as of December 31, 2010 | \$ 10,647,190 |
| Change in fair value of warrants with anti-dilution provisions | (6,559,835) |
| Balance as of September 30, 2011 | <u>\$ 4,087,355</u> |

9. STOCK OPTIONS

In 2007, the Company adopted the 2007 Employee, Director and Consultant Stock Plan (the “2007 Plan”). Pursuant to the 2007 Plan, the Company’s Board of Directors (or committees and/or executive officers delegated by the Board of Directors) may grant incentive and nonqualified stock options to the Company’s employees, officers, directors, consultants and advisors. As of September 30, 2011, there were options to purchase an aggregate of 4,379,005 shares of Common Stock outstanding under the 2007 Plan and no shares available for future grants under the 2007 Plan.

On October 26, 2010, the Company’s Board of Directors adopted the 2010 Equity Incentive Plan, (the “2010 Plan”). The Company’s shareholders approved the 2010 Plan, as amended, on August 3, 2011. The 2010 Plan provides for grants of incentive stock options to employees and nonqualified stock options and restricted Common Stock to employees, consultants and non-employee directors of the Company. As of September 30, 2011, the number of shares authorized for issuance under the 2010 Plan was 3,500,000 shares. As of September 30, 2011, there were options to purchase an aggregate of 940,000 shares of Common Stock outstanding under the 2010 Plan and 2,560,000 shares available for future grants under the 2010 Plan. Options issued under the 2007 Plan and the 2010 Plan (collectively the “Plans”) are exercisable for up to 10 years from the date of issuance.

Share-based compensation

For stock options issued and outstanding for the three and nine months ended September 30, 2011, the Company recorded non-cash, stock-based compensation expense of \$111,799 and \$622,141, respectively, net of forfeitures.

The fair value of each option award is estimated on the date of grant using the Black-Scholes option pricing model that uses the assumptions noted in the following table. Due to its limited operating history and limited number of sales of its Common Stock, the Company estimated its volatility in consideration of a number of factors including the volatility of comparable public companies. The Company uses historical data, as well as subsequent events occurring prior to the issuance of the financial statements, to estimate option exercises and employee terminations within the valuation model. The expected term of options granted under the Plans, all of which qualify as “plain vanilla,” is based on the average of the contractual term (generally 10 years) and the vesting period (generally 48 months). For non-employee options, the expected term is the contractual term. The risk-free rate is based on the yield of a U.S. Treasury security with a term consistent with the option.

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The assumptions used principally in determining the fair value of options granted to employees were as follows:

| | As of September 30, 2011 |
|---------------------------------|--------------------------------|
| Risk-free interest rate | 1.89% |
| Expected dividend yield | 0% |
| Expected term (employee grants) | 6.21 years |
| Expected volatility | 67% |

A summary of option activity under the Plans and options granted to officers of the Company outside any plan as of September 30, 2011 and changes during the nine months then ended is presented below:

| Options | Shares | Weighted Average Exercise Price | Weighted Average Remaining Contractual Term in Years | Aggregate Intrinsic Value |
|-----------------------------------|------------------|--|---|---------------------------------|
| Outstanding at December 31, 2010 | 6,195,557 | \$ 0.59 | | |
| Granted | 580,000 | \$ 1.08 | | |
| Forfeited | (1,392,821) | \$ 0.93 | | |
| Exercised | (143,731) | \$ 0.07 | | |
| Outstanding at September 30, 2011 | <u>5,239,005</u> | \$ 0.57 | <u>7.48</u> | <u>\$1,609,324</u> |
| Exercisable at September 30, 2011 | <u>2,808,842</u> | \$ 0.27 | <u>6.47</u> | <u>\$1,404,070</u> |

The weighted average grant-date fair value of options granted during the nine months ended September 30, 2011 was \$0.54 per share. The total fair value of options that vested in the nine months ended September 30, 2011 was \$1,404,070. As of September 30, 2011, there was approximately \$933,637 of total unrecognized compensation expense, related to non-vested share-based option compensation arrangements. The unrecognized compensation expense is estimated to be recognized over a period of 2.84 years at September 30, 2011.

In September 2011, the Company granted 80,000 shares of Common Stock under the 2010 Plan to a consultant as a restricted stock award with 30,000 shares vesting upon FDA clearance of an Investigational Device Exemption to permit the commencement of a human clinical trial and 50,000 shares vesting upon FDA approval of the Company's biopolymer scaffolding device to treat spinal cord injuries. The Company determined upon grant that the vesting of the 30,000 shares is probable and the fair value of these shares at \$23,400 is being amortized over an eight month period from September 2011 through April 2012. The Company has determined that vesting of the 50,000 shares is not probable at this time. For the three and nine months ended September 30, 2011, the Company amortized \$2,925 of stock compensation expense.

In September 2011, the Company entered into an employment agreement for a Chief Science Officer. The agreement requires the Company to issue 775,000 stock options at an exercise price equal to the closing price of the common stock on the date of grant upon commencement of employment which is anticipated to be December 2011. These options will have a vesting period of four years.

10. WARRANTS

The following presents information about warrants to purchase Common Stock issued and outstanding at September 30, 2011:

| <u>Year Issued</u> | <u>Classification</u> | <u>Number of Warrants</u> | <u>Exercise Price</u> | <u>Date of Expiration</u> |
|---------------------------------|-----------------------|-------------------------------|---------------------------|---------------------------|
| 2010 | Derivative | 15,600,000 | \$ 1.40 | 10/26/2015-12/3/2015 |
| 2010 | Derivative | 3,200,000 | 1.00 | 9/26/2015-12/3/2015 |
| 2011 | <u>Equity</u> | 16,071 | 1.40 | 6/17/2018 |
| Total | | <u>18,816,071</u> | | |
| Weighted average exercise price | | | \$ 1.33 | |
| Weighted average life in years | | | | <u>4.0</u> |

Item 2. MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS

The following management's discussion and analysis should be read in conjunction with the Company's historical consolidated financial statements and the related notes thereto included in our Annual Report on Form 10-K for the year ended December 31, 2010, as amended (the "2010 Annual Report"). The management's discussion and analysis contains forward-looking statements that involve risks and uncertainties, including those we detailed under "Risk Factors" in Item 1A of our 2010 Annual Report, such as statements of our plans, objectives, expectations and intentions. Any statements that are not statements of historical fact are forward-looking statements. When used, the words "believe," "plan," "intend," "anticipate," "target," "estimate," "expect" and the like, and/or future tense or conditional constructions ("will," "may," "could," "should," etc.), or similar expressions, identify certain of these forward-looking statements. These forward-looking statements are subject to risks and uncertainties that could cause actual results or events to differ materially from those expressed or implied by the forward-looking statements in this quarterly report. The Company's actual results and the timing of events could differ materially from those anticipated in these forward-looking statements as a result of several factors. The Company does not undertake any obligation to update forward-looking statements to reflect events or circumstances occurring after the date of this quarterly report.

The discussion and analysis of the Company's financial condition and results of operations are based on the Company's financial statements, which the Company has prepared in accordance with U.S. generally accepted accounting principles. The preparation of these financial statements requires the Company to make estimates and assumptions that affect the reported amounts of assets and liabilities and the disclosure of contingent assets and liabilities at the date of the financial statements, as well as the reported revenues and expenses during the reporting periods. On an ongoing basis, the Company evaluates such estimates and judgments, including those described in greater detail below. The Company bases its estimates on historical experience and on various other factors that the Company believes are reasonable under the circumstances, the results of which form the basis for making judgments about the carrying value of assets and liabilities that are not readily apparent from other sources. Actual results may differ from these estimates under different assumptions or conditions.

Overview

The Company is developing and commercializing biopolymer scaffolding devices for the treatment of spinal cord injuries. The biopolymer devices are designed to protect the damaged spinal cord from further secondary injury and promote neuroplasticity, a process where functional recovery can occur through the rerouting of signaling pathways to the spared healthy tissue.

Since its inception, the Company has devoted substantially all of its efforts to business planning, research and development, recruiting management and technical staff, acquiring operating assets and raising capital. Accordingly, the Company is considered to be in the development stage.

Critical Accounting Policies and Estimates

Our consolidated financial statements have been prepared in accordance with accounting principles generally accepted in the United States of America. The preparation of these financial statements requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and the disclosure of contingent assets and liabilities at the date of the financial statements and the reported amounts of revenues and expenses during the reporting period.

On an ongoing basis, we evaluate our estimates and judgments for all assets and liabilities, including those related to stock-based compensation expense and the fair value determined for stock purchase warrants classified as derivative liabilities. We base our estimates and judgments on historical experience, current economic and industry conditions and on various other factors that are believed to be reasonable under the circumstances. This forms the basis for making judgments about the carrying values of assets and liabilities that are not readily apparent from other sources. Actual results may differ from these estimates under different assumptions or conditions. There have been no changes in our critical accounting policies and estimates from our 2010 Annual Report, as amended. We believe that full consideration has been given to all relevant circumstances that we may be subject to, and the consolidated financial statements accurately reflect our best estimate of the results of operations, financial position and cash flows for the periods presented.

Results of Operations***Comparison of three months ended September 30, 2011 and 2010*****Research and Development Expenses**

Research and development expenses consist primarily of payments to contract research and development companies and payroll. Research and development expenses increased by \$692,000 to approximately \$1,017,000 for the three months ended September 30, 2011 from approximately \$325,000 for the three months ended September 30, 2010. The increase in expenses is primarily attributable to the hiring of additional personnel and an increase in costs of pre-clinical studies.

General and Administrative Expenses

General and administrative expenses consist primarily of payroll, rent and professional services. General and administrative expenses increased by \$773,000 to approximately \$1,197,000 for the three months ended September 30, 2011 from approximately \$424,000 for the three months ended September 30, 2010. The increase in expenses is primarily attributable to an increase in costs associated with operating as a public company and increases in rent, salary and benefit costs.

Interest expense

Interest expense decreased by \$37,000 to zero for the three months ended September 30, 2011 from approximately \$37,000 for the three months ended September 30, 2010. The decrease in interest expense is due to the conversion into common stock of the remaining balance of the convertible notes payable as of September 30, 2010.

Derivatives Gain (Loss)

Derivatives gain (loss) was approximately \$5,276,000 and (\$51,000) for the three months ended September 30, 2011 and 2010, respectively, and reflects primarily the decrease in the fair value of the underlying common stock during the period.

Comparison of nine months ended September 30, 2011 and 2010**Research and Development Expenses**

Research and development expenses increased by \$2,095,000 to \$3,045,000 for the nine months ended September 30, 2011 from approximately \$950,000 for the nine months ended September 30, 2010. The increase in expenses is primarily attributable to the hiring of additional personnel and an increase in costs of pre-clinical studies.

General and Administrative Expenses

General and administrative expenses increased by \$2,121,000 to approximately \$3,096,000 for the nine months ended September 30, 2011 from approximately \$975,000 for the nine months ended September 30, 2010. The increase in expenses is primarily attributable to an increase in costs associated with operating as a public company and increases in rent, salary and benefit costs.

Interest expense

Interest expense decreased by \$278,000 to approximately \$7,000 for the nine months ended September 30, 2011 from approximately \$285,000 for the nine months ended September 30, 2010. The decrease in interest expense is due to the conversion into common stock of the remaining balance of the convertible notes payable as of September 30, 2010.

Derivatives Gain (Loss)

Derivatives gain (loss) was approximately \$6,560,000 and (\$51,000) for the nine months ended September 30, 2011 and 2010, respectively, and reflects primarily the decrease in the fair value of underlying common stock during the period.

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Financial Condition, Liquidity and Capital Resources

Since its inception, the Company has devoted substantially all of its efforts to business planning, research and development, recruiting management and technical staff, acquiring operating assets and raising capital. Accordingly, the Company is considered to be in the development stage.

Since inception, the Company has experienced negative cash flows from operations. The Company has financed its operations primarily through the sale of equity-related securities. At September 30, 2011, the accumulated deficit was approximately \$12,670,000 and the stockholders' deficit was approximately \$590,000.

At September 30, 2011, we had total current assets of approximately \$3,961,000 and current liabilities of approximately \$5,075,000 resulting in a working capital deficit of approximately \$1,114,000. At September 30, 2011, the Company had total assets of approximately \$4,604,000 and total liabilities of approximately \$5,194,000, resulting in a stockholders' deficit of \$590,000.

Net cash used by operating activities for the nine months ended September 30, 2011 was approximately \$5,146,000. The Company spent approximately \$242,000 for the nine months ended September 30, 2011 on the purchase of equipment. The Company spent \$17,000 on principal payments to repay a capital lease. Proceeds from a loan payable provided \$118,000. The Company generated approximately \$10,000 from issuance of Common Stock.

At September 30, 2011, the Company had cash of approximately \$3,687,000 and the Company expects the cash to fund its operations through March 31, 2012. The Company will need to raise substantial additional capital to complete its clinical trials, obtain marketing approvals and commercialize its products.

Off-Balance Sheet Arrangements

We have no off-balance sheet arrangements, including unrecorded derivative instruments that have or are reasonably likely to have a current or future material effect on our financial condition, changes in financial condition, revenues or expenses, results of operations, liquidity, capital expenditures or capital resources. We have certain warrants and options outstanding but we do not expect to receive significant proceeds from the exercise of these instruments unless and until the trading price of our Common Stock is significantly greater than the applicable exercise prices of the options and warrants.

Effect of Inflation and Changes in Prices

Management does not believe that inflation and changes in price will have a material effect on our operations.

Item 3. Quantitative and Qualitative Disclosures About Market Risk

This information has been omitted as the Company qualifies as a smaller reporting company.

Item 4. Controls and Procedures.

Disclosure Controls and Procedures

Our management, with the participation of Frank Reynolds, our Chief Executive Officer and Chief Financial Officer, evaluated the effectiveness of our disclosure controls and procedures (as defined in Rule 13a-15(e) of the Exchange Act) as of the end of the period covered by this report. Based on that evaluation, our Chief Executive Officer and Chief Financial Officer concluded that our disclosure controls and procedures as of the end of the period covered by this report were effective in ensuring that information required to be disclosed by us in reports that we file or submit under the Exchange Act is recorded, processed, summarized and reported within the time periods specified in the SEC's rules and forms and that the information required to be disclosed by us in such reports is accumulated and communicated to our management, including our Chief Executive Officer and Chief Financial Officer, as appropriate to allow timely decisions regarding required disclosure.

Internal Control over Financial Reporting

There was no change in our internal control over financial reporting (as defined in Rule 13a-15(f) of the Exchange Act) that occurred during the fiscal quarter to which this report relates that has materially affected, or is reasonably likely to materially affect, our internal control over financial reporting.

PART II – OTHER INFORMATION

Item 5. Other Information.

During the quarter ended September 30, 2011, we made no material changes to the procedures by which stockholders may recommend nominees to our Board of Directors, as described in our most recent proxy statement.

Item 6. Exhibits.

The Exhibits listed in the Exhibit Index immediately preceding such Exhibits are filed with or incorporated by reference in this report.

SIGNATURES

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, thereunto duly authorized.

INVIVO THERAPEUTICS HOLDINGS CORP.

Date: November 14, 2011

By: /s/ Frank M. Reynolds

Name: Frank M. Reynolds

*Title: Chief Executive Officer and Chief Financial Officer
(Principal Executive, Financial and Accounting Officer)*

EXHIBIT INDEX

| | |
|-----------|--|
| 3.1 | Articles of Incorporation of InVivo Therapeutics Holdings Corp., as amended. |
| 10.1 | Employment Offer Letter from the Company to Dr. Edward D. Wirth III, dated September 24, 2011 (incorporated by reference from Exhibit 99.1 to the Company's Current Report on Form 8-K filed on October 14, 2011). |
| 31.1/31.2 | Certification by the Principal Executive Officer and Principal Financial Officer pursuant to Section 302 of the Sarbanes-Oxley Act of 2002. |
| 32.1/32.2 | Certification of Principal Executive Officer and Principal Financial Officer pursuant to Section 906 of the Sarbanes-Oxley Act of 2002. |
| 101.INS | XBRL Instance Document |
| 101.SCH | XBRL Taxonomy Extension Schema Document |
| 101.CAL | XBRL Taxonomy Calculation Linkbase Document |
| 101.DEF | XBRL Taxonomy Extension Definition Linkbase Document |
| 101.LAB | XBRL Taxonomy Label Linkbase Document |
| 101.PRE | XBRL Taxonomy Presentation Linkbase Document |