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**UNITED STATES  
SECURITIES AND EXCHANGE COMMISSION**  
Washington, D.C. 20549

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**SCHEDULE 13D**

Under the Securities Exchange Act of 1934  
(Amendment No. 5)\*

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**InVivo Therapeutics Holdings Corp.**  
(Name of Issuer)

**Common Stock**  
(Title of Class of Securities)

**46186M 100**  
(CUSIP Number)

**Francis M. Reynolds**  
**81 Lake Shore Road**  
**Salem, NH 03079**  
**(484) 919-6424**  
(Name, Address and Telephone Number of Person Authorized to Receive Notices and Communications)

**January 16, 2014**  
(Date of Event Which Requires Filing of This Statement)

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If the filing person has previously filed a statement on Schedule 13G to report the acquisition that is the subject of this Schedule 13D, and is filing this schedule because of §§240.13d-1(e), 240.13d-1(f) or 240.13d-1(g), check the following box. ☐

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**Note:** Schedules filed in paper format shall include a signed original and five copies of the schedule, including all exhibits. See §240.13d-7 for other parties to whom copies are to be sent.

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\* The remainder of this cover page shall be filled out for a reporting person's initial filing on this form with respect to the subject class of securities, and for any subsequent amendment containing information which would alter disclosures provided in a prior cover page.

The information required on the remainder of this cover page shall not be deemed to be "filed" for the purpose of section 18 of the Securities Exchange Act of 1934 ("Act") or otherwise subject to the liabilities of that section of the Act but shall be subject to all other provisions of the Act (however, see the Notes).

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1.	Names of reporting person  Francis M. Reynolds	
2.	Check the appropriate box if a member of a group (see instructions) (a) <input type="checkbox"/> (b) <input type="checkbox"/>	
3.	SEC use only	
4.	Source of funds (see instructions)  OO	
5.	Check box if disclosure of legal proceedings is required pursuant to Items 2(d) or 2(e) <input type="checkbox"/>	
6.	Citizenship or place of organization  United States	
Number of shares beneficially owned by each reporting person with	7.	Sole voting power  5,013,260
	8.	Shared voting power  0
	9.	Sole dispositive power  5,013,260
	10.	Shared dispositive power  0
11.	Aggregate amount beneficially owned by each reporting person  5,013,260	
12.	Check box if the aggregate amount in Row (11) excludes certain shares (see instructions) <input type="checkbox"/>	
13.	Percent of class represented by amount in Row (11)  5.3%*	
14.	Type of reporting person (see instructions)  IN	

\* Based upon 93,812,000 shares of the Company's common stock outstanding as of December 31, 2014.

## Explanatory Note

This Amendment No. 5 to Schedule 13D (“Amendment No. 5”) amends and supplements Amendment No. 4 to Schedule 13D filed by the Reporting Person (as defined below) with the Securities and Exchange Commission on September 24, 2014 (“Amendment No. 4”) and the Schedule 13D as originally filed by the Reporting Person with the Securities and Exchange Commission on November 1, 2010 with respect to shares of common stock, \$0.00001 par value per share (the “Common Stock”) of InVivo Therapeutics Holdings Corp. (the “Company”).

This Amendment No. 5 is being filed with respect to the disposition of shares of Common Stock discussed in more detail below under Item 3. January 16, 2014 was the date the Reporting Person’s ownership percentage of the Company was first decreased by an amount in excess of 1% following the filing of Amendment No. 4.

### Item 1. Security and Issuer.

This Amendment No. 5 relates to the Common Stock of the Company. The address of the principal executive offices of the Company is One Kendall Square, Building 1400 East, 4<sup>th</sup> Floor, Cambridge, MA 02139.

### Item 2. Identity and Background.

- (a) This statement is filed by Francis M. Reynolds (the “Reporting Person”).
- (b) The Reporting Person’s residential address is 81 Lake Shore Road, Salem, New Hampshire 03079.
- (c) The Reporting Person’s principal occupation is Chief Executive Officer of PixarBio Corporation.
- (d) The Reporting Person has not, during the last five years, been convicted in a criminal proceeding (excluding traffic violations or similar misdemeanors).
- (e) The Reporting Person has not, during the last five years, been party to a civil proceeding of a judicial or administrative body of competent jurisdiction and as a result of such proceeding was or is subject to a judgment, decree or final order enjoining future violations of, or prohibiting or mandating activities subject to, federal or state securities laws or finding any violation with respect to such laws.
- (f) The Reporting Person is a citizen of the United States.

### Item 3. Source or Amount of Funds or Other Consideration.

The Reporting Person acquired 15,147,660 shares of Common Stock from the Company in exchange for 1,100,000 shares of common stock, \$0.001 par value, of InVivo Therapeutics Corporation, a Delaware corporation (“InVivo Delaware”) in connection with the Company’s acquisition of InVivo Delaware on October 26, 2010.

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**Item 4. Purpose of Transaction.**

All of the shares of Common Stock owned by the Reporting Person were received in connection with the Company's acquisition of InVivo Delaware. The Reporting Person was party to a Rule 10b5-1 trading plan (the "Plan") relating to his ownership of shares of Common Stock although the Plan was terminated on May 9, 2014.

The Reporting Person submitted notice to the Company on March 18, 2014 of his intent to nominate himself as director for election at the Company's 2014 annual meeting of shareholders, but withdrew such nomination on May 9, 2014.

Other than as set forth above in this Item 4, the Reporting Person does not have any plans or proposals which relate to or would result in:

- (a) The acquisition by any person of additional securities of the Company, or the disposition of securities of the Company;
- (b) An extraordinary corporate transaction, such as a merger, reorganization or liquidation, involving the Company or any of its subsidiaries;
- (c) A sale or transfer of a material amount of assets of the Company or of any of its subsidiaries;
- (d) Any change in the present board of directors or management of the Company, including any plans or proposals to change the number or term of directors or to fill any existing vacancies on the board;
- (e) Any material change in the present capitalization or dividend policy of the Company;
- (f) Any other material change in the Company's business or corporate structure, including but not limited to, if the Company is a registered closed-end investment company, any plans or proposals to make any changes in its investment policy for which a vote is required by Section 13 of the Investment Company Act of 1940;
- (g) Changes in the Company's charter, bylaws or instruments corresponding thereto or other actions which may impede the acquisition of control of the Company by any person;
- (h) Causing a class of securities of the Company to be delisted from a national securities exchange or to cease to be authorized to be quoted in an inter-dealer quotation system of a registered national securities association;
- (i) A class of equity securities of the Company becoming eligible for termination of registration pursuant to Section 12(g)(4) of the Act; or
- (j) Any action similar to any of those enumerated above.

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**Item 5. Interest in Securities of the Issuer.**

- (a),(b) The aggregate number of shares of Common Stock beneficially owned by the Reporting Person is 5,013,260 as of the date of this Amendment No. 5. The aggregate number of shares of Common Stock beneficially owned by the Reporting Person represents a 5.3% ownership interest of the Company.
- The Reporting Person has the sole power to vote and dispose all of the shares of Common Stock that he holds.
- (c) The Reporting Person has effected the open market dispositions in the Company's common stock during the past 60 days set forth on Exhibit A hereto.
- (d) None.

**Item 6. Contracts, Arrangements, Understandings or Relationships with Respect to Securities of the Issuer.**

None.

**Item 7. Material to Be Filed as Exhibits.**

None.

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**SIGNATURE**

After reasonable inquiry and to the best of my knowledge and belief, I certify that the information set forth in this statement is true, complete and correct.

Date: January 22, 2015

/s/ Francis M. Reynolds

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Francis M. Reynolds

**Exhibit A**

**Dispositions in the Shares During the Past 60 Days**

<b><u>Date of Purchase</u></b>	<b><u>Shares of Common Stock Disposed Of</u></b>	<b><u>Price Per Share (\$)</u></b>
1/22/2015	30,000	1.77
1/16/2015	20,000	1.43
1/15/2015	20,000	1.48
1/14/2015	20,000	1.48
1/13/2015	20,000	1.46
1/12/2015	20,000	1.45
1/9/2015	20,000	1.44
1/8/2015	20,000	1.44
1/7/2015	20,000	1.46
1/6/2015	20,000	1.41
1/5/2015	20,000	1.26
1/2/2015	20,000	1.29
12/31/2014	23,000	1.29
12/30/2014	25,000	1.35
12/29/2014	20,000	1.39
12/26/2014	20,000	1.42
12/24/2014	20,000	1.30
12/23/2014	20,000	1.27
12/22/2014	15,000	1.46
12/19/2014	20,000	1.31
12/18/2014	20,000	1.08
12/17/2014	20,000	1.07
12/16/2014	20,000	1.07
12/15/2014	20,000	0.99
12/12/2014	20,000	0.98
12/11/2014	20,000	1.03
12/10/2014	20,000	1.03
12/9/2014	20,000	1.02
12/8/2014	20,000	1.02
12/5/2014	20,000	1.06
12/4/2014	20,000	1.06
12/3/2014	30,000	0.90
12/2/2014	20,000	0.96
12/1/2014	20,000	1.06