

Prospectus

**InVivo Therapeutics Holdings Corp.****3,016,191 Shares of Common Stock**

This prospectus relates to the resale by the selling stockholders identified in this prospectus of up to (i) up to an aggregate of 1,190,476 shares of our common stock that are issuable upon the exercise of certain outstanding warrants, (ii) 1,714,286 shares of common stock issuable upon the exercise of certain outstanding preferred investment options and (iii) 111,429 shares of common stock issuable upon the exercise of certain outstanding placement agent preferred investment options. We refer to the warrants and the preferred investment options collectively as the warrants, and the shares issuable upon exercise thereof we refer to as the warrant shares. The selling stockholders acquired the warrants pursuant to a securities purchase agreement dated October 7, 2022 or an engagement letter dated August 31, 2022.

We are not selling any shares of common stock and will not receive any proceeds from the sale of the warrant shares by the selling stockholders under this prospectus. In the event of the exercise of the warrants for all 3,016,191 warrant shares by payment of cash, however, we would receive aggregate gross proceeds of approximately \$9.4 million.

We have agreed to bear all of the expenses incurred in connection with the registration of the warrant shares. The selling stockholders will pay or assume any discounts, brokerage commissions, fees of underwriters, selling brokers and similar charges, if any, incurred for the sale of the warrant shares.

The selling stockholders identified in this prospectus may offer the shares from time to time through public or private transactions at fixed prices, at prevailing market prices, at varying prices determined at the time of sale, or at privately negotiated prices. We provide more information about how the selling stockholders may sell their shares of common stock in the section titled "Plan of Distribution" beginning on page 14 of this prospectus.

Our common stock is listed on the Nasdaq Capital Market under the symbol "NVIV." On November 4, 2022, the last reported sale price of our common stock on the Nasdaq Capital Market was \$2.20 per share.

We may amend or supplement this prospectus from time to time by filing amendments or supplements as required. You should read the entire prospectus and any amendments or supplements carefully before you make your investment decision, together with additional information described under the headings "Incorporation of Information by Reference" and "Where You Can Find More Information," carefully before you invest in any of our securities.

Investing in the offered securities involves a high degree of risk. See "Risk Factors" beginning on page 4 of this prospectus and the section entitled "Risk Factors" included in our most recent Annual Report on Form 10-K, as revised or supplemented by our subsequent Quarterly Reports on Form 10-Q, which are incorporated herein by reference, for a discussion of information that you should consider before investing in our securities.

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 this prospectus. Any representation to the contrary is a criminal offense.

Prospectus dated November 21, 2022

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ABOUT THIS PROSPECTUS

The registration statement we filed with the Securities and Exchange Commission, or the SEC, includes exhibits that provide more detail of the matters discussed in this prospectus. You should read this prospectus, the related exhibits filed with the SEC, and the documents incorporated by reference herein before making your investment decision. You should rely only on the information provided in this prospectus and the documents incorporated by reference herein or any amendment thereto. In addition, this prospectus contains summaries of certain provisions contained in some of the documents described herein, but reference is made to the actual documents for complete information. All of the summaries are qualified in their entirety by the actual documents. Copies of some of the documents referred to herein have been filed, will be filed or will be incorporated by reference as exhibits to the registration statement of which this prospectus is a part, and you may obtain copies of those documents as described below under the heading “Where You Can Find Additional Information.”

The selling stockholders may from time to time sell up to 3,016,191 shares of common stock, as described in this prospectus, in one or more offerings. This prospectus also covers any shares of common stock that may become issuable as a result of stock splits, stock dividends or similar transactions. We have agreed to pay the expenses incurred in registering these shares, including legal and accounting fees.

We have not, and the selling stockholders have not, authorized anyone to provide any information or to make any representations other than those contained in this prospectus, the documents incorporated by reference herein or in any free writing prospectuses prepared by or on behalf of us or to which we have referred you. We take no responsibility for, and can provide no assurance as to the reliability of, any other information that others may give you. The information contained in this prospectus, the documents incorporated by reference herein or in any applicable free writing prospectus is current only as of its date, regardless of its time of delivery or any sale of our securities. Our business, financial condition, results of operations and prospects may have changed since that date.

The selling stockholders are offering to sell, and seeking offers to buy, shares of our common stock only under circumstances and in jurisdictions where it is lawful to do so. The selling stockholders are not making an offer to sell these securities in any state or jurisdiction where the offer or sale is not permitted.

All other trademarks, trade names and service marks appearing in this prospectus or the documents incorporated by reference herein are the property of their respective owners. Use or display by us of other parties’ trademarks, trade dress or products is not intended to and does not imply a relationship with, or endorsements or sponsorship of, us by the trademark or trade dress owner. Solely for convenience, trademarks, tradenames and service marks referred to in this prospectus appear without the ® and ™ symbols, but those references are not intended to indicate, in any way, that we will not assert, to the fullest extent under applicable law, our rights or that the applicable owner will not assert its rights, to these trademarks and trade names.

PROSPECTUS SUMMARY

This summary provides an overview of selected information contained elsewhere or incorporated by reference in this prospectus and does not contain all of the information you should consider before investing in our securities. You should carefully read the prospectus, the information incorporated by reference and the registration statement of which this prospectus is a part in their entirety before investing in our securities, including the information discussed under "Risk Factors" in this prospectus and the documents incorporated by reference and our financial statements and notes thereto that are incorporated by reference in this prospectus. Some of the statements in this prospectus and the documents incorporated by reference herein constitute forward-looking statements that involve risks and uncertainties. See information set forth under the section "Special Note Regarding Forward-Looking Statements." Except where the context otherwise requires, the terms "we," "us," "our," "InVivo" or "the Company" refer to the business of InVivo Therapeutics Holdings Corp., a Nevada corporation, and its wholly owned subsidiary.

Business Overview

Overview

We are a research and clinical-stage biomaterials and biotechnology company with a focus on treatment of spinal cord injuries, or SCIs. Our approach to treating acute SCIs is based on our investigational Neuro-Spinal Scaffold™ implant, a bioresorbable polymer scaffold that is designed for implantation at the site of injury within a spinal cord and is intended to treat acute SCI. The Neuro-Spinal Scaffold implant incorporates intellectual property licensed under an exclusive, worldwide license from Boston Children's Hospital, or BCH, and the Massachusetts Institute of Technology, or MIT. We also plan to evaluate other technologies and therapeutics that may be complementary to our development of the Neuro-Spinal Scaffold implant, such as stem cells, therapeutics or electrical stimulation, including in combination with learnings applied from our Neuro-Spinal Scaffold implant or technologies that offer the potential to bring us closer to our goal of redefining the life of the SCI patient.

Corporate Information

We were incorporated on April 2, 2003, under the name of Design Source, Inc. On October 26, 2010, we acquired the business of InVivo Therapeutics Corporation, which was founded in 2005, and we are continuing the existing business operations of InVivo Therapeutics Corporation as our wholly owned subsidiary.

Our principal executive offices are located in leased premises at One Kendall Square, Suite B14402, Cambridge, Massachusetts 02139. Our telephone number is (617) 863-5500. We maintain a website at www.invivotherapeutics.com. Information contained on, or accessible through, our website is not a part of, and is not incorporated by reference into, this prospectus.

Implications of Being a Smaller Reporting Company

We are a "smaller reporting company," meaning that the market value of our stock held by non-affiliates is less than \$700 million and our annual revenue was less than \$100 million during our most recently completed fiscal year. We may continue to be a smaller reporting company if either (i) the market value of our stock held by non-affiliates is less than \$250 million or (ii) our annual revenue was less than \$100 million during the most recently completed fiscal year and the market value of our stock held by non-affiliates is less than \$700 million. For so long as we remain a smaller reporting company, we are permitted and intend to rely on exemptions from certain disclosure and other requirements that are applicable to other public companies that are not smaller reporting companies.

THE OFFERING

*Common Stock offered by the
Selling Stockholders:*

1,190,476 shares of common stock issuable upon the exercise of pre-funded warrants, 1,714,286 shares of common stock issuable upon the exercise of preferred investment options and 111,429 shares of common stock issuable upon the exercise of placement agent preferred investment options.

Use of proceeds

We will not receive any proceeds from the sale of common stock in this offering.

Nasdaq Capital Market symbol

Our common stock is listed on the Nasdaq Capital Market under the symbol "NVIV."

Risk factors

You should read the "Risk Factors" section included or incorporated by reference in this prospectus for a discussion of factors to consider carefully before deciding to invest in shares of our common stock.

PRIVATE PLACEMENT OF SHARES OF COMMON STOCK AND WARRANTS

On October 7, 2022, we entered into two securities purchase agreements with Armistice Capital Master Fund, Ltd., or Armistice, in connection with a concurrent registered direct offering and private placement, which we refer to as the offerings:

- a securities purchase agreement pursuant to which we agreed to issue and sell to Armistice: (i) in a registered direct offering priced at-the-market under Nasdaq rules 154,000 shares of our common stock for a purchase price of \$5.25 per share and associated preferred investment option, and pre-funded warrants to purchase up to 369,810 shares of our common stock, for a purchase price of \$5.2499 per pre-funded warrant and associated preferred investment option, and (ii) in a concurrent private placement, preferred investment options to purchase up to 523,810 shares of our common stock.
- a securities purchase agreement pursuant to which we agreed to issue and sell to Armistice, in a private placement priced at-the-market under Nasdaq rules, (i) pre-funded warrants to purchase up to 1,190,476 shares of our common stock, for a purchase price of \$5.2499 per pre-funded warrant and associated preferred investment option, and (ii) preferred investment options to purchase up to 1,190,476 shares of our common stock.

We received aggregate gross proceeds from the offerings of approximately \$9.0 million, before deducting placement agent fees and offering expenses, and excluding the exercise of any preferred investment options. The offerings closed on October 11, 2022.

In connection with the private placement of the pre-funded warrants and preferred investment options, we entered into a registration rights agreement with the selling stockholder, pursuant to which we agreed to register for resale the shares of our common stock issuable upon exercise of the unregistered pre-funded warrants and preferred investment options.

Concurrent with the offerings, we also entered into a warrant amendment agreement with Armistice. Under the warrant amendment agreement, we agreed to amend certain existing warrants to purchase up to 80,139 shares of common stock that were previously issued to Armistice in March 2020, April 2020 and October 2020, with exercise prices of \$68.75, \$40.50 and \$20.00 per share, respectively, in consideration for the purchase of our securities in the offering. Under the warrant amendment agreement, we agreed to (i) lower the exercise price of such existing warrants to \$5.05 per share and (ii) extend the original expiration date of such existing warrants to five and one-half years following the closing of the offerings.

On August 31, 2022, we entered in an engagement letter with H.C. Wainwright & Co., LLC, or Wainwright, providing for the payment of certain fees and expenses in connection with Wainwright serving as placement agent for the offerings. Pursuant to the engagement letter, in connection with the closing of the offerings we issued to certain Wainwright's associated persons placement agent preferred investment options to purchase up to an aggregate of 111,429 shares of our common stock. The placement agent preferred investment options have an exercise price equal to \$6.5625 per share.

For a detailed description of the transactions contemplated by the securities purchase agreements with Armistice and the engagement letter with Wainwright and the securities issued pursuant thereto, see the section captioned "Selling Stockholders" in this prospectus. We filed the registration statement on Form S-1, of which this prospectus forms a part, to fulfill our contractual obligations under the registration rights agreement entered into concurrently with the securities purchase agreement with Armistice to provide for the resale by the selling stockholders of the shares of common stock offered hereby.

RISK FACTORS

An investment in our securities involves a high degree of risk. Before deciding whether to invest in our securities, you should consider carefully the risks and uncertainties described below and in the section entitled "Risk Factors" included in our most recent Annual Report on Form 10-K, as revised or supplemented by our subsequent Quarterly Reports on Form 10-Q, which are incorporated herein by reference, and other filings we make with the SEC from time to time, which are incorporated by reference herein in their entirety, together with the other information in this prospectus and the information incorporated by reference herein and in any free writing prospectus that we may authorize for use in connection with this offering. If any of these risks actually occurs, our business, financial condition, results of operations or cash flow could suffer materially. In such event, the trading price of our common stock could decline and you might lose all or part of your investment.

SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS

This prospectus and the documents incorporated by reference herein contain “forward-looking statements” within the meaning of Section 27A of the Securities Act of 1933, as amended, or the Securities Act, and Section 21E of the Securities Exchange Act of 1934, as amended, or the Exchange Act. These statements include statements made regarding our commercialization strategy, future operations, cash requirements and liquidity, capital requirements, and other statements on our business plans and strategy, financial position, and market trends. In some cases, you can identify forward-looking statements by terms such as “may,” “might,” “will,” “should,” “believe,” “plan,” “intend,” “anticipate,” “target,” “estimate,” “expect,” and other similar expressions. 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, including factors such as our ability to raise substantial additional capital to finance our planned operations and to continue as a going concern; our ability to execute our strategy and business plan; our ability to obtain regulatory approvals for our products, including the *Neuro-Spinal Scaffold*; our ability to successfully commercialize our current and future product candidates, including the *Neuro-Spinal Scaffold*; the progress and timing of our development programs; market acceptance of our products; our ability to retain management and other key personnel; our ability to promote, manufacture, and sell our products, either directly or through collaborative and other arrangements with third parties; and other factors detailed under “Risk Factors” in this prospectus and in the section entitled “Risk Factors” included in our most recent Annual Report on Form 10-K, as revised or supplemented by our subsequent Quarterly Reports on Form 10-Q, which are incorporated herein by reference, and other filings we make with the SEC from time to time, which are incorporated herein by reference. These forward-looking statements are only predictions, are uncertain, and involve substantial known and unknown risks, uncertainties, and other factors which may cause our actual results, levels of activity, or performance to be materially different from any future results, levels of activity, or performance expressed or implied by these forward-looking statements. Such factors include, among others, the following:

- our limited operating history and history of net losses;
- our ability to raise substantial additional capital to finance our planned operations and to continue as a going concern;
- our ability to complete the INSPIRE 2.0 Study to support our existing Humanitarian Device Exemption application;
- the impact of the COVID-19 pandemic on our business;
- our ability to execute our strategy and business plan;
- our ability to obtain regulatory approvals for our current and future product candidates, including our Neuro-Spinal Scaffold implant;
- our ability to successfully commercialize our current and future product candidates, including our Neuro-Spinal Scaffold implant;
- the progress and timing of our current and future development programs;
- our ability to successfully open, enroll and complete clinical trials and obtain and maintain regulatory approval of our current and future product candidates;
- our ability to protect and maintain our intellectual property and licensing arrangements;
- our reliance on third parties to conduct testing and clinical trials;
- market acceptance and adoption of our current and future technology and products;
- our ability to promote, manufacture and sell our current and future products, either directly or through collaborative and other arrangements with third parties; and
- our ability to attract and retain key personnel.

We may not actually achieve the plans, intentions or expectations disclosed in our forward-looking statements, and you should not place undue reliance on our forward-looking statements. Actual results or events could differ materially from the plans, intentions and expectations disclosed in the forward-looking

statements we make. We have included important factors in the cautionary statements included, or incorporated by reference, in this prospectus, particularly in the “Risk Factors” section, that we believe could cause actual results or events to differ materially from the forward-looking statements that we make. You should also carefully review the risk factors and cautionary statements described in the other documents we file from time to time with the SEC that are incorporated herein by reference, specifically our most recent Annual Report on Form 10-K, our Quarterly Reports on Form 10-Q and our Current Reports on Form 8-K. Our forward-looking statements do not reflect the potential impact of any future acquisitions, mergers, dispositions, collaborations, joint ventures or investments that we may make or enter into.

You should read this prospectus, the documents incorporated by reference in herein and the documents that we have filed as exhibits to the registration statement of which this prospectus is a part completely and with the understanding that our actual future results may be materially different from what we expect. The forward-looking statements contained in this prospectus and incorporated by reference herein are made as of the date hereof, and we do not assume any obligation to update any forward-looking statements except as required by applicable law.

USE OF PROCEEDS

We are filing the registration statement of which this prospectus forms a part to permit the holders of certain outstanding pre-funded warrants and preferred investment options to purchase shares, or the warrant shares, of our common stock described in the section titled "Selling Stockholders" to resell such shares of common stock issuable upon exercise of such pre-funded warrants and preferred investment options.

The selling stockholders will receive all of the net proceeds from sales of the warrants shares sold pursuant to this prospectus and we will not receive any proceeds from the resale of any warrants shares offered by this prospectus by the selling stockholders.

However, in the event of full exercise of the pre-funded warrants and preferred investment options by payment of cash, we will receive aggregate gross proceeds of approximately \$9.4 million. Any proceeds from the exercise of the pre-funded warrants and preferred investment options will be used for working capital, business development activities, and general corporate purposes. We cannot predict when or if the pre-funded warrants and preferred investment options will be exercised, and it is possible that the pre-funded warrants and preferred investment options may expire and never be exercised.

We, and not the selling stockholders, will pay the costs, expenses and fees in connection with the registration and sale of the warrants shares covered by this prospectus, but the selling stockholders will pay all discounts, commissions or brokers' fees or fees of similar securities industry professionals and transfer taxes, if any, attributable to sales of the warrants shares.

DESCRIPTION OF OUR CAPITAL STOCK

General

The following description of our capital stock is intended as a summary only and therefore is not a complete description of our capital stock. This description is based upon, and is qualified by reference to, applicable provisions of the Nevada Revised Statutes (the “NRS”), our articles of incorporation, as amended, and our amended and restated bylaws and, which are filed as exhibits to the registration statement of which this prospectus forms a part.

As of November 4, 2022, 1,914,970 shares of the Company’s Common Stock, \$0.00001 par value, were issued and outstanding.

Our authorized capital stock consists of 250,000,000 shares of common stock, par value \$0.00001 per share, and 1,000,000 shares of preferred stock, par value \$0.00001 per share. Our common stock is registered under Section 12(b) of the Exchange Act.

Common Stock

Voting Rights. The holders of our common stock are entitled to one vote per share on all matters submitted to a vote of the stockholders, including the election of directors. Generally, all matters to be voted on by stockholders must be approved by a majority (or, in the case of election of directors, by a plurality) of the votes entitled to be cast by all shares of common stock that are present in person or represented by proxy. Except as otherwise provided by law, amendments to our articles of incorporation generally must be approved by a majority of the votes entitled to be cast by all outstanding shares of common stock. Our articles of incorporation do not provide for cumulative voting in the election of directors.

Dividends. Except as provided by law or in our articles of incorporation, the holders of common stock will be entitled to such cash dividends as may be declared from time to time by our board of directors from funds available.

Liquidation, Dissolution and Winding Up. Upon liquidation, dissolution or winding up of our Company, the holders of common stock will be entitled to receive pro rata all assets available for distribution to such holders after payment of our liabilities.

Other Rights. The holders of common stock have no preferential or preemptive right and no subscription, redemption or conversion privileges with respect to the issuance of additional shares of our common stock.

Preferred Stock

Under the terms of our articles of incorporation, our board of directors is authorized to issue shares of preferred stock in one or more series without stockholder approval. Our board of directors has the discretion to determine the rights, preferences, privileges and restrictions, including voting rights, dividend rights, conversion rights, redemption privileges and liquidation preferences, of each series of preferred stock.

Provisions of Our Articles of Incorporation and Bylaws and the NRS That May Have Anti-Takeover Effects

Anti-Takeover Effects of Provisions of Nevada State Law

We may be or in the future we may become subject to Nevada’s control share laws. A corporation is subject to Nevada’s control share law if it has more than 200 stockholders, at least 100 of whom are stockholders of record and residents of Nevada, and if the corporation does business in Nevada, including through an affiliated corporation. This control share law may have the effect of discouraging corporate takeovers. We currently have less than 100 stockholders of record who are residents of Nevada.

The control share law focuses on the acquisition of a “controlling interest,” which means the ownership of outstanding voting shares that would be sufficient, but for the operation of the control share law, to enable the acquiring person to exercise the following proportions of the voting power of the corporation in the election of directors: (1) one-fifth or more but less than one-third; (2) one-third or more but less than a

majority; or (3) a majority or more. The ability to exercise this voting power may be direct or indirect, as well as individual or in association with others.

The effect of the control share law is that an acquiring person, and those acting in association with that person, will obtain only such voting rights in the control shares as are conferred by a resolution of the stockholders of the corporation, approved at a special or annual meeting of stockholders. The control share law contemplates that voting rights will be considered only once by the other stockholders. Thus, there is no authority to take away voting rights from the control shares of an acquiring person once those rights have been approved. If the stockholders do not grant voting rights to the control shares acquired by an acquiring person, those shares do not become permanent non-voting shares. The acquiring person is free to sell the shares to others. If the buyer or buyers of those shares themselves do not acquire a controlling interest, the shares are not governed by the control share law.

If control shares are accorded full voting rights and the acquiring person has acquired control shares with a majority or more of the voting power, a stockholder of record, other than the acquiring person, who did not vote in favor of approval of voting rights, is entitled to demand fair value for such stockholder's shares.

In addition to the control share law, Nevada has a business combination law, which prohibits certain business combinations between Nevada corporations and "interested stockholders" for two years after the interested stockholder first becomes an interested stockholder, unless the corporation's board of directors approves the combination in advance. For purposes of Nevada law, an interested stockholder is any person who is: (a) the beneficial owner, directly or indirectly, of 10% or more of the voting power of the outstanding voting shares of the corporation, or (b) an affiliate or associate of the corporation and at any time within the previous two years was the beneficial owner, directly or indirectly, of 10% or more of the voting power of the then-outstanding shares of the corporation. The definition of "business combination" contained in the statute is sufficiently broad to cover virtually any kind of transaction that would allow a potential acquirer to use the corporation's assets to finance the acquisition or otherwise to benefit its own interests rather than the interests of the corporation and its other stockholders.

The effect of Nevada's business combination law is to potentially discourage parties interested in taking control of the Company from doing so if it cannot obtain the approval of our board of directors.

Anti-Takeover Effects of Provisions of Our Articles of Incorporation and Bylaws

Our articles of incorporation provide for a classified board of directors. This provision could prevent a party who acquires control of a majority of our outstanding common stock from obtaining control of the board until our second annual stockholders meeting following the date the acquirer obtains the controlling stock interest. The classified board provision could have the effect of discouraging a potential acquirer from making a tender offer or otherwise attempting to obtain control of us and could increase the likelihood that incumbent directors will retain their positions. In addition, under our amended and restated bylaws, directors may be removed only for cause and only by the affirmative vote of the holders of at least 80% of the voting power of our then outstanding shares of capital stock entitled to vote generally in the election of directors, voting together as a single class.

Our amended and restated bylaws also provide that stockholders may only act at meetings of stockholders and not by written consent in lieu of a stockholders' meeting. Our amended and restated bylaws provide that stockholders may not call a special meeting of stockholders. Rather, only the Chairman of our board of directors, the President, or the board of directors pursuant to a resolution approved by a majority of the entire board of directors are able to call special meetings of stockholders. These provisions may discourage another person or entity from making a tender offer, even if it acquired a majority of our outstanding voting stock, because the person or entity could only take action at a duly called stockholders' meeting relating to the business specified in the notice of meeting and not by written consent.

Our amended and restated bylaws also provide that stockholders may only conduct business at special meetings of stockholders that was specified in the notice of the meeting, and a stockholder must notify us in writing, within timeframes specified in our bylaws, of any stockholder nomination of a director and of any other business that the stockholders intends to bring at a meeting of stockholders. Our amended and restated bylaws also provide that our bylaws may be amended by our board of directors or by the affirmative

vote of at least 80% of our voting stock then outstanding. These provisions could have the effect of discouraging a potential acquirer from making a tender offer or otherwise attempting to obtain control of us because the foregoing provisions may limit the proposals that may be acted upon at a stockholders' meeting, and the amendment provisions in our bylaws make such provisions difficult to change.

Listing on The Nasdaq Capital Market

Our common stock is listed on the Nasdaq Capital Market under the symbol "NVIV." On November 4, 2022, the reported closing price per share of our common stock on the Nasdaq Capital Market was \$2.20.

Authorized but Unissued Shares

The authorized but unissued shares of common stock are available for future issuance without stockholder approval, subject to any limitations imposed by the listing requirements of the Nasdaq Capital Market. These additional shares may be used for a variety of corporate finance transactions, acquisitions and employee benefit plans. The existence of authorized but unissued and unreserved common stock could make it more difficult or discourage an attempt to obtain control of us by means of a proxy contest, tender offer, merger or otherwise.

Transfer Agent and Registrar

The transfer agent and registrar for our common stock is Continental Stock Transfer & Trust Company.

SELLING STOCKHOLDERS

On October 7, 2022, we entered into certain securities purchase agreements, or the Purchase Agreements, with Armistice Capital Master Fund Ltd. or Armistice, pursuant to which we agreed to issue and sell to Armistice, in a private placement priced at-the-market under Nasdaq rules, (i) pre-funded warrants to purchase up to 1,190,476 shares of the Company's common stock, for a purchase price of \$5.2499 per unregistered pre-funded warrant and associated preferred investment option and (ii) preferred investment options to purchase up to 1,714,286 shares of our common stock and (iii) preferred investment options to purchase up to 523,810 shares of our common stock. In a concurrent registered offering, we also sold to Armistice 154,000 share of our common stock and pre-funded warrants to purchase up to 369,810 shares of our common stock.

In connection with the private placement of the pre-funded warrants and preferred investment options, we entered into a registration rights agreement with Armistice, pursuant to which we agreed to register for resale the shares of our common stock issuable upon exercise of the unregistered pre-funded warrants and preferred investment options. We agreed to file the registration statement with respect to the resale of such shares within 30 days after the date of the registration rights agreement. The registration rights agreement includes customary indemnification rights in connection with the registration statement. The registration statement of which this prospectus is a part has been filed in accordance with the registration rights agreement.

Concurrent with the offerings, we also entered into a warrant amendment agreement with Armistice. Under the warrant amendment agreement, we agreed to amend certain existing warrants to purchase up to 80,139 shares of common stock that were previously issued to Armistice in March 2020, April 2020 and October 2020, with exercise prices of \$68.75, \$40.50 and \$20.00 per share, respectively, in consideration for the purchase of our securities in the offering. Under the warrant amendment agreement, we agreed to (i) lower the exercise price of such existing warrants to \$5.05 per share and (ii) extend the original expiration date of such existing warrants to five and one-half years following the closing of the offerings.

On August 31, 2022, we entered in an engagement letter with H.C. Wainwright & Co., LLC, or Wainwright, providing for the payment of certain fees and expenses in connection with Wainwright serving as placement agent for the offerings. Pursuant to the engagement letter, in connection with the closing of the offerings we issued to certain Wainwright's associated persons placement agent preferred investment options to purchase up to an aggregate of 111,429 shares of our common stock. The placement agent preferred investment options have an exercise price equal to \$6.5625 per share. Wainwright has acted as placement agent for prior offerings of our securities in November 2019, March 2020, April 2020 and October 2020.

The common stock being offered by the selling stockholders are those issuable to the selling stockholders upon exercise of the pre-funded warrants and preferred investment options. We are registering the shares of common stock in order to permit the selling stockholders to offer the shares for resale from time to time. Except for the transactions described above, the selling stockholders have not had any material relationship with us within the past three years.

The table below lists the selling stockholders and other information regarding the beneficial ownership of the shares of common stock by the selling stockholders. The second column lists the number of shares of common stock beneficially owned by the selling stockholders, based on its ownership of the shares underlying the pre-funded warrants and preferred investment options, as of November 4, 2022, assuming exercise of the pre-funded warrants and preferred investment options held by the selling stockholders on that date, without regard to any limitations on exercises. The percentages of shares of common stock beneficially owned prior to and after the offering are based on 1,914,970 shares of common stock outstanding as of November 4, 2022, which includes the shares of common stock offered by this prospectus.

The third column lists the shares of common stock being offered by this prospectus by the selling stockholders.

In accordance with the terms of a registration rights agreement with the selling stockholders, this prospectus generally covers the resale of the sum of (i) the number of shares of common stock issued to the selling stockholders in the "Private Placement of Shares of Common Stock and Warrants" described

above and (ii) the maximum number of shares of common stock issuable upon exercise of the related pre-funded warrants, determined as if the outstanding pre-funded warrants were exercised in full as of the trading day immediately preceding the date this registration statement was initially filed with the SEC, each as of the trading day immediately preceding the applicable date of determination and all subject to adjustment as provided in the registration right agreement, without regard to any limitations on the exercise of the pre-funded warrants. The fourth column assumes the sale of all of the shares offered by the selling stockholders pursuant to this prospectus.

Under the terms of the pre-funded warrants, the selling stockholders may not exercise the pre-funded warrants to the extent such exercise would cause such selling stockholders, together with its affiliates and attribution parties, to beneficially own a number of shares of common stock which would exceed 4.99% or 9.99%, as applicable, of our then outstanding common stock following such exercise, excluding for purposes of such determination shares of common stock issuable upon exercise of such pre-funded warrants which have not been exercised. The number of shares in the second and fourth columns do not reflect this limitation. The selling stockholders may sell all, some or none of their shares in this offering. See “Plan of Distribution.”

Name of Selling Stockholder	Shares of Common Stock Owned Prior to Offering		Number of shares of Common Stock to Being Offered	Shares of Common Stock Owned After Offering ⁽¹⁾	
	Number	Percentage		Number	Percentage
Armistice Capital Master Fund, Ltd. ⁽²⁾	2,984,901	60.5%	2,904,762	80,139	1.6%
Michael Vasinkevich ⁽³⁾⁽⁴⁾	78,950	1.6%	71,454	7,496	0.2%
Noam Rubinstein ⁽³⁾⁽⁵⁾	54,139	1.1%	35,100	19,039	0.4%
Craig Schwabe ⁽³⁾⁽⁶⁾	4,136	0.1%	3,761	375	—
Charles Worthman ⁽³⁾⁽⁷⁾	1,233	—	1,114	119	—

- (1) We do not know when or in what amounts the selling stockholders may offer shares for sale. The selling stockholders might not sell any or all of the shares offered by this prospectus. Because the selling stockholders may offer all or some of the shares pursuant to this offering, and because there are currently no agreements, arrangements or understandings with respect to the sale of any of the shares, we cannot estimate the number of the shares that will be held by the selling stockholders after completion of the offering. However, for purposes of this table, we have assumed that, after completion of the offering, none of the shares covered by this prospectus will be held by the selling stockholders.
- (2) The shares of Common Stock include (i) 1,270,615 pre-funded warrants and (ii) 1,714,286 preferred investment options, all of which are directly held by Armistice Capital Master Fund Ltd. (the “Master Fund”), a Cayman Islands exempted company, and may be deemed to be indirectly beneficially owned by Armistice Capital, LLC (“Armistice”), as the investment manager of the Master Fund; and (ii) Steven Boyd, as the Managing Member of Armistice Capital. Armistice and Steven Boyd disclaim beneficial ownership of the reported securities except to the extent of their respective pecuniary interest therein. The pre-funded warrants are subject to a 9.99% beneficial ownership limitation and the preferred investment options are subject to a 4.99% beneficial ownership limitation, which prohibit the Master Fund from exercising any portion of them if, following such exercise, the Master Fund’s ownership of our Common Stock would exceed the applicable limitation. The amounts and percentages in the table do not give effect to those limitations. The address of the Master Fund is c/o Armistice Capital, LLC, 510 Madison Avenue, 7th Floor, New York, NY 10022.
- (3) The selling stockholder is an associated person of Wainwright, a registered broker-dealer and has sole voting and dispositive power over the securities held. The selling stockholder acquired the preferred investment options in the ordinary course of business and, at the time the preferred investment options were acquired, the selling stockholder had no agreement or understanding, directly or indirectly, with any person to distribute such securities.
- (4) Before the offering includes placement agent warrants to purchase 7,496 shares of common stock and placement agent preferred investment options to purchase 71,454 shares of common stock. The address of Mr. Vasinkevich is c/o H.C. Wainwright & Co., LLC, 430 Park Avenue, 3rd Floor, New York, New York 10022.

- (5) Before the offering includes placement agent warrants to purchase 19,039 shares of common stock and placement agent preferred investment options to purchase 35,100 shares of common stock. The address of Mr. Rubinstein is c/o H.C. Wainwright & Co., LLC, 430 Park Avenue, 3rd Floor, New York, New York 10022.
- (6) Before the offering includes placement agent warrants to purchase 375 shares of common stock and placement agent preferred investment options to purchase 3,761 shares of common stock. The address of Mr. Schwabe is c/o H.C. Wainwright & Co., LLC, 430 Park Avenue, 3rd Floor, New York, New York 10022.
- (7) Before the offering includes placement agent warrants to purchase 119 shares of common stock and placement agent preferred investment options to purchase 1,114 shares of common stock. The address of Mr. Worthman is c/o H.C. Wainwright & Co., LLC, 430 Park Avenue, 3rd Floor, New York, New York 10022.

PLAN OF DISTRIBUTION

Each selling stockholder, or the Selling Stockholders, of the securities and any of their pledgees, assignees and successors-in-interest may, from time to time, sell any or all of their securities covered hereby on the principal Trading Market or any other stock exchange, market or trading facility on which the securities are traded or in private transactions. These sales may be at fixed or negotiated prices. A Selling Stockholder may use any one or more of the following methods when selling securities:

- ordinary brokerage transactions and transactions in which the broker-dealer solicits purchasers;
- block trades in which the broker-dealer will attempt to sell the securities as agent but may position and resell a portion of the block as principal to facilitate the transaction;
- purchases by a broker-dealer as principal and resale by the broker-dealer for its account;
- an exchange distribution in accordance with the rules of the applicable exchange;
- privately negotiated transactions;
- settlement of short sales entered into after the effective date of the registration statement of which this prospectus is a part;
- in transactions through broker-dealers that agree with the Selling Stockholders to sell a specified number of such securities at a stipulated price per security;
- through the writing or settlement of options or other hedging transactions, whether through an options exchange or otherwise;
- a combination of any such methods of sale; or
- any other method permitted pursuant to applicable law.

The Selling Stockholders may also sell securities under Rule 144 or any other exemption from registration under the Securities Act of 1933, as amended (the “Securities Act”), if available, rather than under this prospectus.

Broker-dealers engaged by the Selling Stockholders may arrange for other brokers-dealers to participate in sales. Broker-dealers may receive commissions or discounts from the Selling Stockholders (or, if any broker-dealer acts as agent for the purchaser of securities, from the purchaser) in amounts to be negotiated, but, except as set forth in a supplement to this Prospectus, in the case of an agency transaction not in excess of a customary brokerage commission in compliance with FINRA Rule 2121; and in the case of a principal transaction a markup or markdown in compliance with FINRA Rule 2121.

In connection with the sale of the securities or interests therein, the Selling Stockholders may enter into hedging transactions with broker-dealers or other financial institutions, which may in turn engage in short sales of the securities in the course of hedging the positions they assume. The Selling Stockholders may also sell securities short and deliver these securities to close out their short positions, or loan or pledge the securities to broker-dealers that in turn may sell these securities. The Selling Stockholders may also enter into option or other transactions with broker-dealers or other financial institutions or create one or more derivative securities which require the delivery to such broker-dealer or other financial institution of securities offered by this prospectus, which securities such broker-dealer or other financial institution may resell pursuant to this prospectus (as supplemented or amended to reflect such transaction).

The Selling Stockholders and any broker-dealers or agents that are involved in selling the securities may be deemed to be “underwriters” within the meaning of the Securities Act in connection with such sales. In such event, any commissions received by such broker-dealers or agents and any profit on the resale of the securities purchased by them may be deemed to be underwriting commissions or discounts under the Securities Act. Each Selling Stockholder has informed the Company that it does not have any written or oral agreement or understanding, directly or indirectly, with any person to distribute the securities.

The Company is required to pay certain fees and expenses incurred by the Company incident to the registration of the securities. The Company has agreed to indemnify the Selling Stockholders against certain losses, claims, damages and liabilities, including liabilities under the Securities Act.

We agreed to keep this prospectus effective until the earlier of (i) the date on which the securities may be resold by the Selling Stockholders without registration and without regard to any volume or manner-of-sale limitations by reason of Rule 144, without the requirement for the Company to be in compliance with the current public information requirement under Rule 144 under the Securities Act or any other rule of similar effect or (ii) the date on which all of the securities have been sold pursuant to this prospectus or Rule 144 under the Securities Act or any other rule of similar effect. The resale securities will be sold only through registered or licensed brokers or dealers if required under applicable state securities laws. In addition, in certain states, the resale securities covered hereby may not be sold unless they have been registered or qualified for sale in the applicable state or an exemption from the registration or qualification requirement is available and is complied with.

Under applicable rules and regulations under the Exchange Act, any person engaged in the distribution of the resale securities may not simultaneously engage in market making activities with respect to the common stock for the applicable restricted period, as defined in Regulation M, prior to the commencement of the distribution. In addition, the Selling Stockholders will be subject to applicable provisions of the Exchange Act and the rules and regulations thereunder, including Regulation M, which may limit the timing of purchases and sales of the common stock by the Selling Stockholders or any other person. We will make copies of this prospectus available to the Selling Stockholders and have informed them of the need to deliver a copy of this prospectus to each purchaser at or prior to the time of the sale (including by compliance with Rule 172 under the Securities Act).

LEGAL MATTERS

The validity of the common stock offered by this prospectus will be passed upon for us by Ballard Spahr LLP, Las Vegas, Nevada.

EXPERTS

The consolidated financial statements of InVivo Therapeutics Holdings Corp. and subsidiary as of December 31, 2021 and 2020 and for the years then ended incorporated in this Prospectus by reference from the InVivo Therapeutics Holdings Corp.'s [Annual Report on Form 10-K for the year ended December 31, 2021](#) have been audited by RSM US LLP, an independent registered public accounting firm, as stated in their report thereon, incorporated herein by reference, and have been incorporated in this Prospectus and Registration Statement in reliance upon such report and upon the authority of such firm as experts in accounting and auditing.

WHERE YOU CAN FIND ADDITIONAL INFORMATION

We file annual, quarterly and current reports, proxy statements and other information with the SEC. The SEC maintains an Internet site that contains reports, proxy and information statements, and other information regarding issuers that file electronically with the SEC; it is available at <http://www.sec.gov>. Our SEC filings are available to you on the SEC's Internet site. Copies of certain information filed by us with the SEC are also available on our website at www.invivotherapeutics.com. The information on our Internet website is not incorporated by reference in this prospectus.

This prospectus is part of a registration statement that we filed with the SEC. This prospectus does not contain all of the information included in the registration statement, including certain exhibits and schedules. You should review the information and exhibits in the registration statement for further information about us and the securities we are offering. Statements in this prospectus concerning any document we filed as an exhibit to the registration statement or that we otherwise filed with the SEC are not intended to be comprehensive and are qualified by reference to these filings. You should review the complete document to evaluate these statements. You can obtain a copy of the registration statement and exhibits from the SEC's Internet site.

INCORPORATION OF DOCUMENTS BY REFERENCE

The SEC allows us to incorporate by reference into this prospectus information and reports that we file with the SEC. This means that we can disclose important information to you by referring to other documents that contain that information. Any information that we incorporate by reference is considered part of this prospectus. The documents and reports that we list below are incorporated by reference into this prospectus, other than any portion of any such documents that are not deemed “filed” under the Exchange Act in accordance with the Exchange Act and applicable SEC rules.

In addition, all documents and reports which we file pursuant to Section 13(a), 13(c), 14 or 15(d) of the Exchange Act after the date of this prospectus and prior to the sale of all the shares covered by this prospectus are incorporated by reference in this prospectus as of the respective filing dates of these documents and reports, other than the portions of those documented not deemed to be filed.

We have filed the following documents with the SEC. These documents are incorporated in this prospectus by reference as of their respective dates of filing:

- 1) Our [Annual Report on Form 10-K for the fiscal year ended December 31, 2021, filed with the SEC on March 7, 2022](#) including the information specifically incorporated by reference into the Annual Report on Form 10-K from our [definitive proxy statement for the 2022 Annual Meeting of Stockholders](#);
- 2) Our Quarterly Reports on Form 10-Q for the quarterly periods ended March 31, 2022, June 30, 2022 and September 30, 2022, filed with the SEC on [May 10, 2022](#), [August 8, 2022](#) and [November 7, 2022](#), respectively;
- 3) [Our Definitive Proxy Statement on Schedule 14A for our annual meeting of stockholders held on August 24, 2022, filed with the SEC on August 18, 2022](#);
- 4) Current Reports on Form 8-K as filed with the SEC on [April 14, 2022](#), [April 26, 2022](#), [May 13, 2022](#), [May 26, 2022](#), [June 2, 2022](#), [July 12, 2022](#), [September 13, 2022](#) and [October 11, 2022](#);
- 5) [The description of our common stock contained in our Registration Statement on Form 8-A filed on April 15, 2015, including any amendments or reports filed for the purpose of updating such description](#).

You may request a copy of these documents, which will be provided to you at no cost, by writing or telephoning us at:

InVivo Therapeutics Holdings Corp.
One Kendall Square, Suite B14402
Cambridge, Massachusetts 02139
Attn: Investor Relations
(617) 863-5500

Statements contained in documents that we file with the SEC and that are incorporated by reference in this prospectus will automatically update and supersede information contained in this prospectus, including information in previously filed documents or reports that have been incorporated by reference in this prospectus, to the extent the new information differs from or is inconsistent with the old information. Any statement so modified or superseded will not be deemed to be a part of this prospectus, except as so modified or superseded. Because information that we later file with the SEC will update and supersede previously incorporated information, you should look at all of the SEC filings that we incorporate by reference to determine if any of the statements in this prospectus or in any documents previously incorporated by reference have been modified or superseded.



3,016,191 Shares of Common Stock

Prospectus

November 21, 2022
