Issuer Free Writing Prospectus
Filed Pursuant to Rule 433
Dated June 15, 2023
Relating to Preliminary Prospectus Supplement Dated June 15, 2023
Registration Statement No. 333-260726



Common stock

Pre-funded warrants to purchase common stock

This free writing prospectus relates only to the offering described below and should be read together with the preliminary prospectus supplement filed with the Securities and Exchange Commission on June 15, 2023 (the "Preliminary Prospectus Supplement"), including the documents incorporated by reference therein, and the accompanying base prospectus. This free writing prospectus supplements the Preliminary Prospectus Supplement primarily to reflect the addition of pre-funded warrants, and the shares of common stock issuable upon the exercise of such pre-funded warrants, to the securities being offered by Praxis Precision Medicines, Inc. Except as otherwise indicated, all information in this free writing prospectus and the Preliminary Prospectus Supplement assumes no exercise of outstanding options or vesting of outstanding restricted units, and no exercise of the pre-funded warrants included in this offering.

This free writing prospectus is qualified in its entirety by reference to the Preliminary Prospectus Supplement, including the documents incorporated by reference therein, and the accompanying base prospectus. Financial information and other information presented in the Preliminary Prospectus Supplement or incorporated by reference therein is deemed to have changed to the extent affected by the changes described herein. This free writing prospectus should be read together with the Preliminary Prospectus Supplement, including the documents incorporated by reference therein, and the accompanying base prospectus, before making a decision in connection with an investment in the securities. Capitalized terms used in this free writing prospectus but not defined have the meanings given to them in the Preliminary Prospectus Supplement.

Common stock we are offering:

shares

Pre-funded warrants offered by us:

We are also offering, in lieu of common stock to certain investors, pre-funded warrants to purchase shares of our common stock. The purchase price of each pre-funded warrant equals the price per share at which the shares of our common stock are being sold to the public in this offering, minus \$0.0001, which is the exercise price of each pre-funded warrant per share. Each pre-funded warrant will be exercisable at any time after the date of issuance of such pre-funded warrant, subject to an ownership limitation. See "Description of pre-funded warrants." This free writing prospectus and the Preliminary Prospectus Supplement also relate to the offering of the shares of our common stock issuable upon exercise of the pre-funded warrants.

The lock-up restrictions described in the Preliminary Prospectus Supplement under "Underwriting" will not apply to issuance of common stock upon the exercise of the pre-funded warrants during the 90-day period following the date of this prospectus.

Underwriters' option to purchase additional shares:

We have granted the underwriters an option, for a period of 30 days, to purchase additional shares of our common stock. The number of shares subject to the underwriters' option equals 15% of the total number of shares of common stock we are offering plus the shares of common stock underlying the pre-funded warrants.

Dilution:

After giving effect to our issuance and sale of shares of our common stock and pre-funded warrants to purchase up to shares of our common stock at the public offering price of \$ per share of our common stock and \$ per share underlying the pre-funded warrants (which equals the public offering price per share of the common stock less the \$0.0001 per share exercise price of each such pre-funded warrant) (and including shares of common stock issued upon exercise of such pre-funded warrants, but excluding any resulting accounting associated with the pre-funded warrants) and after deducting underwriting discounts and commissions and estimated offering expenses payable by us, our as adjusted net tangible book value as of March 31, 2023 would have been \$ million, or \$ per share of common stock. This represents an immediate increase in net tangible book value of \$ per share to our existing stockholders and an immediate dilution in as adjusted net tangible book value of \$ per share to new investors participating in this offering.

Listing

Shares of our common stock are listed on The Nasdaq Global Select Market, or Nasdaq, under the symbol "PRAX." We do not intend to list the pre-funded warrants on Nasdaq, any other nationally recognized securities exchange or any other nationally recognized trading system.

Risk factors

There is no public market for the pre-funded warrants being offered in this offering.

There is no public trading market for the pre-funded warrants being offered in this offering, and we do not expect a market to develop. In addition, we do not intend to apply to list the pre-funded warrants on any securities exchange or nationally recognized trading system, including Nasdaq. Without an active market, the liquidity of the pre-funded warrants will be limited.

We may not receive a significant amount or any additional funds upon the exercise of the pre-funded warrants.

Each pre-funded warrant is exercisable for \$0.0001 per share of common stock underlying such warrant or it may be exercised by way of a cashless exercise, meaning that the holder may not pay a cash purchase price upon exercise, but instead would receive upon such exercise the net number of shares of our common stock determined according to the formula set forth in the pre-funded warrant. Accordingly, we may not receive a significant amount or any additional funds upon the exercise of the pre-funded warrants.

Holders of any pre-funded warrants purchased in this offering will have no rights as holders of our common stock with respect to the shares of common stock underlying such pre-funded warrants until such holders exercise their pre-funded warrants and acquire our common stock.

Until holders of pre-funded warrants acquire shares of our common stock upon exercise of the pre-funded warrants, holders of pre-funded warrants will have no rights with respect to the shares of our common stock underlying such pre-funded warrants including with respect to dividends and voting rights. Upon exercise of the pre-funded warrants, the holders will be entitled to exercise the rights of a holder of our common stock with respect to the shares of common stock underlying such pre-funded warrants only as to matters for which the record date occurs after the exercise date.

Significant holders or beneficial holders of our common stock may not be permitted to exercise pre-funded warrants that they hold.

A holder of a pre-funded warrant will not be entitled to exercise any portion of any pre-funded warrant which, upon giving effect to such exercise, would cause (i) the aggregate number of shares of our common stock beneficially owned by the holder (together with its affiliates) to exceed 9.99% of the number of shares of our common stock outstanding immediately after giving effect to the exercise, or (ii) the combined voting power of our securities beneficially owned by the holder (together with its affiliates) to exceed 9.99% of the combined voting power of all of our securities then outstanding immediately after giving effect to the exercise, as such percentage ownership is determined in accordance with the terms of the pre-funded warrants. Such percentage may be increased by the holder of the pre-funded warrant to any other percentage not in excess of 19.99% upon at least 61 days' prior notice from the holder to us. As a result, you may not be able to exercise your pre-funded warrants for shares of our common stock at a time when it would be financially beneficial for you to do so. In such circumstance you could seek to sell your pre-funded warrants to realize value, but you may be unable to do so in the absence of an established trading market for the pre-funded warrants.

If you purchase our securities in this offering, you will incur immediate and substantial dilution in the net tangible book value of your shares.

The offering price per share in this offering may exceed the net tangible book value per share of our common stock outstanding prior to this offering. Based on the public offering price of \$ per share, you will experience immediate dilution of \$ per share, representing the difference between our as adjusted net tangible book value per share as of March 31, 2023 after giving effect to this offering, based on the sale by us of shares of common stock at the public offering price of \$ per share and pre-funded warrants to purchase shares of our common stock for \$ per pre-funded warrant (which equals the public offering price per share of the common stock less the \$0.0001 per share exercise price of each such pre-funded warrant) (and including shares of common stock issued upon exercise of such pre-funded warrants, but excluding any resulting accounting associated with the pre-funded warrants), less the underwriting discounts and commissions and estimated offering expenses payable by us in each case.

Use of proceeds

We estimate that we will receive net proceeds of approximately \$\) million from the issuance and sale of shares of our common stock and pre-funded warrants in this offering, after deducting underwriting discounts and commissions and estimated offering expenses payable by us. We will receive nominal proceeds, if any, upon exercise of the pre-funded warrants.

We currently intend to use the net proceeds from this offering, together with our existing cash, cash equivalents and marketable securities, to advance the development of ulixacaltamide in two Phase 3 studies for essential tremor, to continue clinical development of PRAX-562, PRAX-222 and PRAX-628 for various epilepsies, and the remainder for working capital and other general corporate purposes.

Based on the planned use of proceeds described above, we believe that the net proceeds from this offering, together with our existing cash, cash equivalents and marketable securities, will be sufficient to enable us to fund our operating expenses and capital expenditure requirements. We have based this estimate on assumptions that may prove to be incorrect. We could use our available capital resources sooner than we currently expect. We may satisfy our future cash needs through the sale of equity securities, debt financings, working capital lines of credit, corporate collaborations or license agreements, grant funding, interest income earned on invested cash balances or a combination of one or more of these sources.

The expected use of the net proceeds from this offering, if any, represents our intentions based upon our current plans and business conditions, which could change in the future as our plans and business conditions evolve. The amounts and timing of our actual expenditures will depend on numerous factors, including the factors described under "Risk Factors" in this prospectus supplement, the accompanying base prospectus and in the documents incorporated by reference herein and therein, as well as the amount of cash used in our operations. We may find it necessary or advisable to use the net proceeds for other purposes, and we will have broad discretion in the application of the net proceeds. Pending the uses described above, we may invest the net proceeds in a variety of capital preservation instruments, including short-term, investment-grade, interest-bearing instruments and U.S. government securities.

Description of pre-funded warrants

The following is a brief summary of certain terms and conditions of the pre-funded warrants being offered in this offering. The following description is subject in all respects to the provisions contained in the pre-funded warrants.

Form

The pre-funded warrants will be issued as individual warrant agreements to the purchasers. The form of pre-funded warrant will be filed as an exhibit to a Current Report on Form 8-K that we expect to file with the Securities and Exchange Commission.

Term

The pre-funded warrants will expire on the date the warrant is exercised in full.

Exercisability

The pre-funded warrants are exercisable at any time after their original issuance date. The pre-funded warrants will be exercisable, at the option of each holder, in whole or in part by delivering to us a duly executed exercise notice and by payment in full of the exercise price in immediately available funds for the number of shares of common stock purchased upon such exercise. As an alternative to payment in immediately available funds, the holder may, in its sole discretion, elect to exercise the pre-funded warrant through a cashless exercise, in which the holder would receive upon such exercise the net number of shares of our common stock determined according to the formula set forth in the pre-funded warrant. No fractional shares of our common stock will be issued in connection with the exercise of a pre-funded warrant. In lieu of fractional shares, we will pay the holder an amount in cash equal to the fractional amount multiplied by the fair market value of our common stock on the exercise date.

Exercise Limitations

We may not affect the exercise of any pre-funded warrant, and a holder will not be entitled to exercise any portion of any pre-funded warrant that, upon giving effect to such exercise, would cause: (i) the aggregate number of shares of our common stock beneficially owned by such holder (together with its affiliates) to exceed 9.99% of the number of shares of our common stock outstanding immediately after giving effect to the exercise; or (ii) the combined voting power of our securities beneficially owned by such holder (together with its affiliates) to exceed 9.99% of the combined voting power of all of our securities outstanding immediately after giving effect to the exercise, as such percentage ownership is determined in accordance with the terms of the prefunded warrants. However, any holder of a pre-funded warrant may increase or decrease such percentage to any other percentage not in excess of 19.99% upon at least 61 days' prior notice from the holder to us.

Exercise Price

The exercise price of our common stock purchasable upon the exercise of the pre-funded warrants is \$0.0001 per share. The exercise price of the pre-funded warrants and the number of shares of our common stock issuable upon exercise of the pre-funded warrants is subject to appropriate adjustment in the event of certain stock dividends and distributions, stock splits, stock combinations, reclassifications or similar events affecting our common stock.

Transferability

Subject to applicable laws, the pre-funded warrants may be offered for sale, sold, transferred or assigned without our consent.

Exchange Listing

There is no established trading market for the pre-funded warrants, and we do not expect a market to develop. We do not intend to apply for the listing of the pre-funded warrants on Nasdaq, any other national securities exchange or any other nationally recognized trading system.

Fundamental Transactions

Upon the consummation of a fundamental transaction (as described in the pre-funded warrants, and generally including any reorganization, recapitalization or reclassification of our common stock, the sale, transfer or other disposition of all or substantially all of our properties or assets, our consolidation or merger with or into another person, the acquisition of more than 50% of our outstanding common stock, or any person or group becoming the beneficial owner of 50% of the voting power of our outstanding common stock), the holders of the pre-funded warrants will be entitled to receive, upon exercise of the pre-funded warrants, the kind and amount of securities, cash or other property that such holders would have received had they exercised the pre-funded warrants immediately prior to such fundamental transaction, without regard to any limitations on exercise contained in the pre-funded warrants. In the event the holder of a pre-funded warrant does not exercise the pre-funded warrant as contemplated by the fundamental transaction provisions in the pre-funded warrant, the pre-funded warrant will be deemed exercised in full without regard to any limitations on exercise contained herein pursuant to the "cashless exercise" provision in the pre-funded warrant upon the effective date of the consummation of certain types of fundamental transactions.

No Rights as a Stockholder

Except by virtue of such holder's ownership of shares of our common stock, the holder of a pre-funded warrant does not have the rights or privileges of a holder of our common stock, including any voting rights, until such holder exercises the pre-funded warrant.

Material U.S. Federal Income Tax Consequences

Although it is not entirely free from doubt, a pre-funded warrant should be treated as a share of our common stock for U.S. federal income tax purposes and a holder of pre-funded warrants should generally be taxed in the same manner as a holder of such common stock, as described below. Accordingly, no gain or loss should be recognized (other than with respect to cash paid in lieu of a fractional share) upon the exercise of a pre-funded warrant and, upon exercise, the holding period of a pre-funded warrant should carry over to the common stock received. Similarly, the tax basis of the pre-funded warrant should carry over to the share received upon exercise, increased by the exercise price per share. If a pre-funded warrant expires without being exercised, the holder thereof should recognize a capital loss in an amount equal to such holder's tax basis in the pre-funded warrant. This loss will be long-term capital loss if, at the time of the expiration, the holder's holding period in the pre-funded warrant is longer than one year. The deductibility of capital losses is subject to limitations.

A U.S. holder of pre-funded warrants may, in some circumstances, be deemed to have received a distribution subject to U.S. federal income tax as a result of an adjustment or the non-occurrence of an adjustment to the exercise price or number of shares of common stock issuable upon exercise of such pre-funded warrants. U.S. holders should consult their tax advisors regarding the proper treatment of any adjustments to pre-funded warrants.

Our characterization is not binding on the IRS, and the IRS may treat our pre-funded warrants as warrants to acquire our common stock. In that case, the amount and character of your gain with respect to an investment in our pre-funded warrants could be materially different than the discussion set forth below. Accordingly, each holder should consult his, her or its tax advisor regarding the risks associated with the acquisition of pre-funded warrants pursuant to this offering (including potential alternative characterizations). The remainder of this discussion generally assumes that a pre-funded warrant is treated as a share of our common stock for U.S. federal income tax purposes.

Underwriting

The underwriters will purchase the pre-funded warrants pursuant to the underwriting agreement described in the Preliminary Prospectus Supplement on terms generally consistent with those applicable to the shares of common stock being sold in the offering. The per share underwriting discounts and commissions for the pre-funded warrants will be on equal terms to the per share underwriting discounts and commissions on the shares of our common stock sold in the offering.

General

Additional conforming changes are hereby made to the Preliminary Prospectus Supplement to reflect the changes described in this free writing prospectus. All terms of the Preliminary Prospectus Supplement applicable to our common stock will be applicable to the shares underlying the pre-funded warrants upon issuance.

The Issuer has filed a registration statement (including a preliminary prospectus supplement dated June 15, 2023 and the accompanying base prospectus) with the Securities and Exchange Commission, or the SEC, for the offering to which this communication relates. Before you invest, you should read the preliminary prospectus supplement and the accompanying base prospectus and other documents the Issuer has filed with the SEC for more complete information about the Issuer and the offering. You may get these documents for free by visiting EDGAR on the SEC website at www.sec.gov. Alternatively, copies may be obtained from: Piper Sandler & Co., 800 Nicollet Mall, J12S03, Minneapolis, MN 55402, Attention: Prospectus Department, by telephone at (800) 747-3924, or by email at prospectus@psc.com; or Truist Securities, Inc., Attn: Prospectus Department, 3333 Peachtree Road NE, 9th floor, Atlanta, GA 30326, email: TruistSecurities.prospectus@Truist.com, or by telephone: 1-800-685-4786.