Filed pursuant to Rule 424(b)(5)
Registration No. 333-283306

AMENDMENT NO. 1, dated February 3, 2025,
to PROSPECTUS SUPPLEMENT dated January 6, 2025

Up to $3,592,560

Common Stock

This Amendment No. 1 to Prospectus Supplement (this "Amendment") amends and updates our prospectus supplement, dated January 6, 2025, filed with the Securities and Exchange Commission as part of our registration statement on Form S-3, File No. 333-283306 (the "Prospectus Supplement"). This Amendment should be read in conjunction with the Prospectus Supplement and the accompanying prospectus dated January 6, 2025 (the "Prospectus"), each of which are to be delivered with this Amendment. This Amendment amends and/or updates only those sections of the Prospectus Supplement set forth in this Amendment; all other sections of the Prospectus Supplement remain unchanged. This Amendment is not complete without, and may only be delivered or utilized in connection with, the Prospectus Supplement, and any future amendments or supplements hereto or thereto.

We have entered into an At The Market Offering Agreement, or the Sales Agreement, with H.C. Wainwright & Co., LLC, or Wainwright, dated November 18, 2024. Under this Sales Agreement, as updated by this Amendment, we may offer and sell common stock having an aggregate offering price of up to $3,592,560 from time to time through Wainwright, acting as sales agent, in accordance with the Sales Agreement.

Sales of the common stock, if any, under this prospectus, as amended, may be made by any method permitted that is deemed an "at the market" offering as defined in Rule 415(a)(4) promulgated under the Securities Act of 1933, as amended, or the Securities Act. Wainwright may sell our common stock by any method permitted by law deemed to be an at-the-market offering as defined in Rule 415(a)(4) promulgated under the Securities Act. Wainwright is not required to sell any specific number or dollar amount of securities but will act as our sales agent using commercially reasonable efforts consistent with their normal trading and sales practices and applicable state and federal laws, rules and regulations and the rules of the Nasdaq, on mutually agreed terms between the Wainwright and us. There are no minimum sale requirements, and there is no arrangement for funds to be received in any escrow, trust or similar arrangement.

We are filing this Amendment to amend the Prospectus Supplement to update the amount of shares of common stock we are eligible to sell under General Instruction I.B.6 of Form S-3 and pursuant to the Sales Agreement. As of January 31, 2025, the aggregate market value of our common stock held by non-affiliates, or public float, was approximately $10,777,681 based on 1,628,659 shares of common stock outstanding (less any insider holdings), based on a closing price of $6.63 per share on December 24, 2024, which was the highest closing sale price of our common stock on the Nasdaq Global Market, the principal market for our common equity, within 60 days of the filing date of this registration statement, as amended. In the past 12 calendar months, we have not offered and sold any securities pursuant to General Instruction I.B.6 of Form S-3, and in no event will we sell securities registered on this registration statement in a public primary offering with a value exceeding more than one-third of our public float in any 12-month period so long as our public float remains below $75.0 million.

Wainwright will be entitled to a commission of 3.0% of the gross sales price per share sold under the Sales Agreement. See "*Plan of Distribution*" beginning on page S-11 of our prospectus supplement, dated January 6, 2025 for additional information regarding the compensation to be paid to Wainwright. In connection with the sale of the common stock on our behalf, Wainwright will be deemed to be an "underwriter" within the meaning of the Securities Act, and the compensation paid to Wainwright will be deemed to be underwriting compensation. We have also agreed in the Sales Agreement to provide indemnification and contribution to Wainwright with respect to certain liabilities, including liabilities under the Securities Act.

Our common stock is listed on the Nasdaq under the symbol "NEUP." On January 31, 2025, the last reported sale price of our common stock on the Nasdaq was $5.30 per share.

INVESTING IN OUR COMMON STOCK INVOLVES A HIGH DEGREE OF RISK. BEFORE MAKING AN INVESTMENT DECISION, PLEASE READ THE INFORMATION UNDER THE HEADING "RISK FACTORS" BEGINNING ON PAGE S-6 OF THIS PROSPECTUS SUPPLEMENT, AND IN THE DOCUMENTS INCORPORATED BY REFERENCE INTO THIS PROSPECTUS SUPPLEMENT.

Neither the Securities and Exchange Commission, any state securities commission, nor any other foreign securities commission has approved or disapproved of these securities or passed upon the adequacy or accuracy of this prospectus supplement. Any representation to the contrary is a criminal offense.

H.C. Wainwright & Co.

The date of this Amendment No. 1 to prospectus supplement is February 3, 2025.

PROSPECTUS SUMMARY

This summary does not contain all of the information that may be important to you in making your investment decision. In addition to this summary, you should carefully read the entire prospectus, the applicable prospectus supplement, this Amendment and any related free writing prospectus, including the risks of investing in our securities discussed under the heading "Risk Factors" contained in the applicable prospectus supplement and any related free writing prospectus, and under similar headings in the other documents that are incorporated by reference into the prospectus before deciding whether to invest in our securities. You should also carefully read the information incorporated by reference into this prospectus and the prospectus supplement, including our financial statements, and the exhibits to the registration statement of which this amendment to the prospectus supplement is a part.

Overview

We are a clinical-stage biotechnology company dedicated to developing therapies that address the complex needs of individuals affected by neuropsychiatric disorders. Neuphoria is advancing its lead drug candidate, BNC210, an oral, proprietary, selective negative allosteric modulator of the α7 nicotinic acetylcholine receptor, for the acute, "as needed" treatment of social anxiety disorder ("SAD") and for chronic treatment of post-traumatic stress disorder ("PTSD"). BNC210 is a first-of-its-kind, well-tolerated, broad spectrum anti-anxiety experimental therapeutic, designed to restore neurotransmitter balance in relevant brain areas, providing rapid relief from stress and anxiety symptoms without the common pitfalls of sedation, cognitive impairment, or addiction. In addition, Neuphoria has a strategic partnership with Merck & Co., Inc. (known as MSD outside the United States and Canada) with two drugs in early-stage clinical trials for the treatment of cognitive deficits in Alzheimer's disease and other central nervous system conditions. Neuphoria's pipeline also includes the α7 nicotinic acetylcholine receptor next generation and the Kv3.1/3.2 preclinical programs, both in the lead optimization development stage.

We are advancing our lead product candidate, BNC210, an oral, proprietary, selective negative allosteric modulators of the α7 nicotinic acetylcholine ("ACh") receptor ("α7 receptor"), for the chronic treatment of PTSD and the acute treatment of Social Anxiety Disorder. There remains a significant unmet medical need for the over 27 million patients in the United States alone suffering from SAD and PTSD.

Current pharmacological treatments include certain antidepressants and benzodiazepines, and there have been no new FDA approved therapies in these indications in nearly two decades. These existing treatments have multiple shortcomings, such as a slow onset of action of antidepressants, and significant side effects of both classes of drugs, including abuse liability, addiction potential and withdrawal symptoms. BNC210 has been observed in our clinical trials to have a fast onset of action and clinical activity without the limiting side effects seen with the current standard of care.

In September 2023, we announced the results of the Phase 2b ATTUNE study, which was a double-blind, placebo-controlled trial conducted in a total of 34 sites in the United States and the United Kingdom, with 212 enrolled patients, randomized 1:1 to receive either twice daily 900 mg BNC210 as a monotherapy (n=106) or placebo (n=106) for 12 weeks. The trial met its primary endpoint of change in Clinician-Administered PTSD Scale for DSM-5 ("CAPS-5") total symptom severity score from baseline to Week 12 (p=0.048). A statistically significant change in CAPS-5 score was also observed at Week 4 (p=0.016) and at Week 8 (p=0.015). Treatment with BNC210 also showed statistically significant improvement both in clinician-administered and patient self-reporting in two of the secondary endpoints of the trial. Specifically, BNC210 led to significant improvements at Week 12 in depressive symptoms (p=0.041) and sleep (p=0.039) as measured by Montgomery-Åsberg Depression Rating Scale ("MADRS") and Insomnia Severity Index (ISI), respectively. BNC210 also showed signals and trends across visits in the other secondary endpoints including the clinician and patient global impression - symptom severity ("CGI-S", "PGI-S", respectively) and the Sheehan Disability Scale ("SDS"). In July 2024, we announced a positive outcome of an End-of-Phase 2 meeting with FDA that provides a potential path to New Drug Application ("NDA") submission for BNC210 for PTSD that alongside the positive Phase 2b ATTUNE trial includes a single additional Phase 3 trial. This Phase 3 trial will evaluate two dose levels of BNC210 in a 12-week randomized, double-blind, placebo-controlled trial with a 52-week open-label extension. Start-up activities for a planned Phase 3 trial of BNC210 in PTSD are underway. We plan to initiate the Phase 3 trial in PTSD in the second half of 2025, contingent upon having sufficient capital on hand. Although the FDA has denied our initial Breakthrough Therapy designation application, we are considering a rebuttal in the future. The approval process for the BNC210 PTSD program is not expected to be impeded, as we have already received Fast-Track designation for both the PTSD and SAD programs.

We have completed our Phase 2 PREVAIL trial for BNC210 for the acute treatment of SAD. While PREVAIL narrowly missed its primary endpoint, as measured by the change from baseline to the average of the Subjective Units of Distress Scale ("SUDS") scores during a 5-minute Public Speaking Challenge in the BNC210-treated patients when compared to placebo, the December 2022 topline data readout revealed encouraging trends in the prespecified endpoints. The findings did indicate a consistent trend toward improvements across primary and secondary endpoints and a favorable safety and tolerability profile consistent with previously reported results. These results supported a post-hoc in-depth analysis of the full dataset to better understand the potential of the drug and guide late-stage trial design. In October 2023, we announced a positive outcome of an End-of-Phase 2 meeting with FDA that enables advancement of BNC210 into Phase 3 studies in SAD. Start-up activities for a planned Phase 3 trial of BNC210 in SAD are underway. In July 2024, we announced the initiation of patient screening for the Phase 3 AFFIRM-1 trial evaluating the safety and efficacy of BNC210 for the acute, as-needed treatment of SAD. AFFIRM-1 targets enrollment of 330 adult patients with SAD at clinical sites in the United States. It is a multi-center, double-blind, two-arm, parallel group, placebo-controlled trial. Participants will be randomized 1:1 to receive a single dose of 225 mg BNC210 or matched placebo about one hour before speaking in public. The primary endpoint will compare BNC210 to placebo using the SUDS to measure self-reported anxiety levels during a public speaking task. Secondary efficacy endpoints include the Clinical and Patient Global Impression ("CGI" and "PGI", respectively) scales and the State-Trait Anxiety Inventory ("STAI"). Topline results from the AFFIRM-1 trial are expected in the third quarter of 2025.

The Company's expertise in ion channels and approach to developing allosteric modulators have been validated through its strategic partnership with MSD for our α7 receptor positive allosteric modulators program, which targets a receptor that has garnered significant attention for treating cognitive deficits. This partnership enables us to maximize the value of its ion channel and chemistry platforms and develop transformative medicines for patients suffering from cognitive disorders such as Alzheimer's disease.

The above-stated overview is a summary, and not a complete statement on our Company, business, pipeline products or clinical trials. For a complete description of the Company and its business and product pipelines, as well as clinical trials and more, please read our annual report on form 10-K, filed with the Securities and Exchange Commission (the "SEC") on September 30, 2024, as well as any quarterly and current reports we have filed and will subsequently file with the SEC, which provides further updates on our company, the business, risk factors, financial performance and more, each of which is incorporated by reference in this registration statement.

Summary Risks Factors

Investing in our securities involves a high degree of risk. Below is a summary of certain factors that make an investment in our securities speculative or risky. Importantly, this summary does not address all of the risks that we face. Additional discussion of the risks summarized below, as well as other risks that we face, can be found under the heading "Risk Factors" contained in the prospectus supplement and in any free writing prospectuses we have authorized for use in connection with a specific offering, and under similar headings in the documents that are incorporated by reference into this prospectus.

- We are a clinical-stage biopharmaceutical company with no approved products. We have incurred significant operating losses since our inception and expect to incur significant losses for the foreseeable future. We may never generate any revenue or become profitable or, if we achieve profitability, we may not be able to sustain it.

- We will require substantial additional financing to achieve our goals, and a failure to obtain this necessary capital when needed on acceptable terms, or at all, could force us to delay, limit, reduce or terminate our product development programs, commercialization efforts or other operations.

- Preclinical and clinical drug development is a lengthy and expensive process, with an uncertain outcome. Our preclinical and clinical programs may experience delays or may never advance, which would adversely affect our ability to obtain regulatory approvals or commercialize our product candidates on a timely basis or at all, which could have an adverse effect on our business.

- If we experience delays or difficulties in the initiation, enrollment and/or retention of patients in clinical trials, our regulatory submissions or receipt of necessary regulatory approvals could be delayed or prevented.

- The trading price of our common stock has been and may remain volatile, and you may not be able to resell your common stock at or above the price you paid.

- An active trading market for our common stock may not be maintained or be liquid enough for you to sell your common stock quickly or at market price.

- Your right as a holder of our common stock to participate in any future preferential subscription rights offering or to elect to receive dividends in our common stock may be limited, which may cause dilution to your holdings.

- Our current or future product candidates may cause adverse or other undesirable side effects that could delay or prevent their regulatory approval, limit the commercial profile of an approved label or result in significant negative consequences following marketing approval, if any.

- We may have difficulties in attracting and retaining key personnel, and if we fail to do so our business may suffer.

- We depend on collaboration partners to develop and commercialize our collaboration product candidates, including Merck and Carina Biotech. If our collaboration partners fail to perform as expected, fail to advance our collaboration product candidates or are unable to obtain the required regulatory approvals for our collaboration product candidates, the potential for us to generate future revenue from such product candidates would be significantly reduced and our business would be significantly harmed.

- We currently rely, and expect to continue to rely, on third parties to conduct some or all aspects of our product manufacturing, research and preclinical and clinical testing, and these third parties may not perform satisfactorily.

- We may not be able to protect our intellectual property rights throughout the world.

Corporate Information

We are a Delaware company listed on the Nasdaq Global Market. Our registered office is located at 100 Summit Dr, Burlington, Massachusetts 01803, and our telephone number is (781) 439-5551. Our website address is *www.neuphoriatx.com.* The information contained in, or accessible through, our website does not constitute part of this prospectus.

As previously disclosed in a current report on Form 8-K, which was filed with the SEC on October 2, 2024, we and Bionomics entered into a Scheme Implementation Agreement to re-domicile from Australia to the U.S. State of Delaware pursuant to a Scheme of Arrangement under Australian law. Subsequently, as further disclosed in another current report on Form 8-K filed on November 8, 2024, we and Bionomics entered into an amendment to the Scheme Implementation Agreement to amend the exchange ratio of securities outstanding. On December 23, 2024, as disclosed in another current report on Form 8-K filed on the same day, the redomiciliation of Bionomics was implemented under Australian law in accordance with the Scheme Implementation Agreement, as amended. As a result of the redomiciliation, (i) Bionomics became our wholly-owned subsidiary; (ii) holders of ordinary shares of Bionomics received one share of our common stock for every 2,160 ordinary shares of Bionomics held on the Scheme record date; (iii) holders of Bionomics ADSs, with each ADS representing 180 ordinary shares of Bionomics, received one share of our common stock for every 12 ADSs held on the Scheme record date; and (iv) we became the successor issuer to Bionomics.

Since July 1, 2024, we have been reporting as a domestic U.S. issuer on SEC Forms 10-K, 10-Q and 8-K. Beginning December 24, 2024, we began reporting under our new name, Neuphoria Therapeutics Inc., and trading on the Nasdaq Global Market under the stock symbol NEUP.

Implications of Being an Emerging Growth Company

As a company with less than $1.235 billion in revenue during our last fiscal year, we qualify as an "emerging growth company" as defined in the Jumpstart Our Business Startups Act (the "JOBS Act"), enacted in April 2012. An emerging growth company may take advantage of reduced reporting requirements that are otherwise applicable to public companies. These provisions include, but are not limited to:

- not being required to comply with the auditor attestation requirements of Section 404 of the Sarbanes-Oxley Act of 2002, as amended (the "Sarbanes-Oxley Act");
- reduced disclosure obligations regarding executive compensation in our periodic reports (if any), proxy statements (if any) and registration statements; and
- exemptions from the requirements of holding a nonbinding advisory vote on executive compensation and stockholder approval of any golden parachute payments not previously approved.

We may take advantage of these provisions until the last day of our fiscal year following the fifth anniversary of our initial public offering. However, if certain events occur prior to the end of such five-year period, including if we become a "large accelerated filer," our annual gross revenues exceed $1.235 billion or we issue more than $1.0 billion of non-convertible debt in any three-year period, we will cease to be an emerging growth company prior to the end of such five-year period.

We have elected to take advantage of certain of the reduced disclosure obligations in this prospectus and in the registration statement of which this prospectus is a part and may elect to take advantage of other reduced reporting requirements in future filings. As a result, the information in this prospectus and that we provide to our stockholders in the future may be different than what you might receive from other public reporting companies in which you hold equity interests.

Recent Developments

Nasdaq Listing Compliance

On January 10, 2025, the Company received a letter from the Listing Qualifications Department of The Nasdaq Stock Market LLC stating that the Company had regained compliance with Nasdaq Listing Rule 5450(a)(1) (the "Minimum Bid Price Requirement") by maintaining a minimum closing bid price of the Company's common stock (the "Common Stock") of $1.00 or greater per share for ten (10) consecutive business days, from December 24, 2024 through January 8, 2025, and that the Minimum Bid Price Requirement matter is now closed.

Quarterly Financial Update

We have not finalized our financial statements for the quarter ended December 31, 2024. Based upon our current preliminary estimates and information available to us as of the date of this amended prospectus supplement, we expect to report and file our form 10-Q for the period ended December 31, 2024 on or by February 14, 2025.

In addition, we expect to report that we had net cash, cash equivalents and restricted cash of approximately $4.3 million as of December 31, 2024.

The estimates of our financial results for the quarter ended December 31, 2024 and our cash and cash equivalents as of December 31, 2024 are preliminary and actual amounts that we report will be subject to our financial closing procedures and any final adjustments that may be made prior to the time that our financial results for the year ended June 30, 2025 are finalized and filed with the Securities and Exchange Commission. The preliminary financial information included herein has been prepared by and is the responsibility of our management. Our auditor, Wolf & Company, P.C., has not audited, reviewed, compiled, or applied agreed-upon procedures with respect to the preliminary financial information and does not express an opinion or any other form of assurance with respect thereto. As we complete our financial closing procedures and finalize our financial results for the six-months ended December 31, 2024, we will be required to make significant judgments in a number of areas. While we are currently unaware of any items that would require us to make adjustments to the financial information set forth above, it is possible that we may identify such items and that any resulting changes could be material. Accordingly, undue reliance should not be placed on these preliminary estimates. These preliminary estimates are not necessarily indicative of any future period and should be read together with "Risk Factors, and our financial statements and related notes included elsewhere or incorporated by reference in this amendment, the prospectus supplement and the accompanying prospectus.

The foregoing summary of recent developments is not complete and is not intended to be comprehensive. For additional material information about the Company, our business, operations, board, management and risk factors and more, all of which are incorporated by reference into this amendment and the prospectus supplement, you should carefully review our annual report on Form 10-K, our quarterly reports on Form 10-Q, our Current Reports on Form 8-K and our proxy statements filed on Form 14A, in each case as amended and supplemented. You may obtain copies of those documents as described below under the heading "Where You Can Find More Information" and "Incorporation of Certain Information by Reference" in the prospectus supplement.

THE OFFERING

Common Stock offered by us	Shares of our common stock having an aggregate offering price of up to $3,592,560, or up to 677,841 shares, assuming sales at a price of $5.30 per share, which was the closing price of our common stock on the Nasdaq on January 31, 2025. The actual number of shares issued will vary depending on the sales price under this offering.
Manner of offering	"At the market offering" that may be made from time to time through our sales agent, H.C. Wainwright & Co., LLC. See "Plan of Distribution" contained in the prospectus supplement.
Use of proceeds	We intend to use the net proceeds from this offering, if any, together with our existing cash and cash equivalents, to fund our pipeline development, to maintain our working capital, and for general corporate purposes.
Risk factors	You should read the "Risk Factors" section of the prospectus supplement, and as also incorporated by reference herein and therein, for a discussion of factors to consider carefully before deciding to invest in our common stock.
Listing	Our common stock is listed on the Nasdaq Global Market under the symbol "NEUP."