NEWS RELEASE

Lantern Pharma Announces Public Release of Transformative, Advanced AI Module for Blood-Brain Barrier Permeability Prediction, predictBBB.ai™

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- Industry-Leading Platform Achieves 94% Accuracy with Real-Time Machine Learning, Providing Open-Access to Critical CNS Drug Development Technology
- Additional Predictive, Analytic and Descriptive Modules are Planned for Release Leveraging Lantern's Large-Scale Molecular Features Data Lake and Proprietary Ensemble Algorithmic Approach

DALLAS--(BUSINESS WIRE)-- Lantern Pharma Inc. (NASDAQ: LTRN), a pioneering artificial intelligence company transforming oncology drug discovery and development, today announced the public release of its AI module for predicting blood-brain barrier (BBB) permeability of small molecules with unprecedented accuracy and scalability – predictBBB.ai™. This critical advancement addresses one of pharmaceutical development's most persistent challenges—that only 2-6% of small-molecule drugs can successfully cross the blood-brain barrier—while establishing new industry benchmarks for computational drug discovery platforms.

The transformative technology leverages billions of molecular feature data points across millions of compounds within Lantern's proprietary molecular features data lake, enabling real-time ensemble algorithm processing that delivers 94% prediction accuracy with 95% sensitivity and 89% specificity. This represents a fundamental breakthrough in computational approaches to the development of molecules that need to reach the central nervous system (CNS), particularly significant given that **the BBB technologies market is projected to expand from $1.4 billion in 2023 to $9.85 billion** by 2032, reflecting urgent clinical demand for innovative and accessible

solutions.

Establishing New Performance Standards Through Advanced, AI-Driven Computational Methodologies

Lantern's BBB prediction module demonstrates exceptional technical superiority within the rapidly evolving AI drug discovery landscape. The platform currently **holds five of the top eleven positions on the Therapeutic Data Commons Leaderboard**, establishing clear technological leadership over competitive solutions including academic models and existing hard-to-access commercial platforms. Lantern's ensemble methodology incorporating advanced molecular representation techniques, synthetic data augmentation, and proprietary feature engineering delivers superior performance through real-time processing capabilities that can analyze molecular structures instantaneously upon input. Detailed review of the algorithms and feature processing along with a demo of predictBBB™ can be accessed at **www.predictBBB.ai** and a **white paper providing details** into the development, training and overall architecture can also be accessed.

"This public release has the potential to be a paradigm shift in how pharmaceutical organizations and researchers approach CNS drug development," stated Panna Sharma, Chief Executive Officer of Lantern Pharma. "Our technology transforms what has historically been one of drug discovery's critical bottlenecks into a competitive advantage. By democratizing access to industry-leading BBB prediction capabilities through our freemium approach, we're enabling researchers worldwide to accelerate therapeutic development while building strategic partnerships that drive innovation."

Comprehensive Market Validation and Strategic Commercial Positioning

The **broader AI drug discovery technology market's expansion to $20.3 billion** by 2030 underscores the critical importance of specialized computational tools and platforms for pharmaceutical development. Additionally, the consolidation trend exemplified by **Recursion Pharmaceuticals' $688 million acquisition of Exscientia** reflects a trend towards more comprehensive AI platforms over point solutions. Lantern's strategic positioning with both predictBBB.ai and the RADR AI platform addresses this dynamic through integrated capabilities that extend beyond BBB prediction to encompass dozens of additional molecular and clinical predictions and analytics critical to drug development success. The RADR™ platform and **predictBBB.ai**™ have been used in the advancement of several clinical stage molecules for both Lantern Pharma and its collaborators including **Actuate Therapeutics** and the CNS oncology programs for **Starlight Therapeutics**.

Revolutionary Technical Architecture Enabling Unprecedented Scalability

The platform's foundational architecture represents years of systematic innovation in computational drug discovery

methodologies. Built upon Lantern's comprehensive molecular features data lake containing billions of data points across millions of compounds, the system employs sophisticated ensemble algorithms that process molecular SMILES inputs through real-time analysis combining multiple machine learning approaches including logistic regression, random forest, support vector machines, and deep neural networks. Lantern's technical differentiation through proprietary feature engineering, advanced ensemble methodologies, and real-time processing capabilities positions the platform to capture market share and utility within this expanding and needed category of AI driven drug development. Lantern's commercial-grade platform combines superior performance with enterprise-ready scalability and integration capabilities essential for pharmaceutical workflow implementation.

Strategic Freemium Model Accelerating Global Adoption and Partnership Development

The public release employs an innovative freemium strategy designed to accelerate adoption while creating pathways for strategic collaborations across the pharmaceutical ecosystem. This approach enables researchers to access foundational BBB prediction capabilities while demonstrating the platform's comprehensive analytical power through progressively advanced features and functionality that are planned for future deployment. **The rising adoption of subscription-based AI platforms for drug discovery** validates the potential of this commercial model's market alignment, while Lantern's unique combination of proven performance, extensive molecular data foundation, and rapid feature deployment capabilities differentiates the offering from traditional licensing approaches.

"Our freemium strategy reflects deep understanding of how pharmaceutical organizations evaluate and adopt AI based computational tools," continued Sharma. "By providing immediate access to industry-leading capabilities while continuously expanding functionality, we're building relationships that evolve naturally into strategic partnerships focused on accelerating therapeutic development across multiple disease areas."

Expanding Platform Capabilities Through Rapid Module Deployment

The BBB prediction module represents the inaugural release within Lantern's comprehensive computational drug discovery platform roadmap. **Recent advances in molecular property prediction using large language models** and machine learning demonstrate the expanding possibilities for AI-driven pharmaceutical development. Lantern's systematic approach to future module development and deployment will leverage the same foundational molecular data lake and ensemble methodologies that power the BBB prediction system, enabling rapid deployment of additional predictive capabilities addressing dozens of molecular properties critical to successful drug development. These forthcoming modules will encompass predictive, analytic and integrative tools for both specialized therapeutic area applications and general-purpose insights critical for most oncology drug development, creating a comprehensive platform for AI-driven, computational drug discovery.

Transformative Impact on Central Nervous System Therapeutic Development

The technology's release addresses critical unmet needs within CNS drug development, where traditional approaches face failure rates 50% higher than other therapeutic areas with development costs exceeding those of cardiovascular therapeutics by 30%. By enabling accurate prediction of BBB permeability before expensive preclinical and clinical testing, the platform fundamentally transforms pharmaceutical development economics while accelerating therapeutic innovation for neurological disorders, brain cancers, and other CNS conditions.

Integration with Lantern's RADR® AI platform enables comprehensive molecular assessment that extends beyond BBB permeability to encompass broader drug development considerations, creating synergistic analytical capabilities that enhance overall therapeutic development success rates. This integrated approach positions pharmaceutical partners to optimize compound selection, reduce development timelines, and improve probability of clinical success across CNS and oncology therapeutic programs.

Patent Protection and Competitive Differentiation

"We're witnessing unprecedented demand for AI-driven solutions that deliver measurable impact on pharmaceutical development success rates," noted Sharma. "Our BBB prediction module establishes the foundation for deeper partnerships that leverage our comprehensive platform capabilities to accelerate therapeutic development across diverse disease areas while maintaining the highest standards of scientific rigor and predictive accuracy."

The technology benefits from comprehensive intellectual property protection through Lantern's PCT patent application (PCT/US2024/019851), which received favorable search reports indicating no significant prior art. This strengthens the platform's competitive positioning while providing pharmaceutical partners confidence in the technology's proprietary nature and long-term viability.

The patent protection extends 20 years from filing date with expedited review initiated in the United States, ensuring market deployment advantages while protecting the innovative methodologies that enable superior predictive performance. This intellectual property foundation supports sustainable competitive advantages essential for long-term partnership development and platform expansion.

Future Collaborations & predictBBB.ai Enhancements

Lantern Pharma continues to advance predictBBB.ai through planned feature enhancements and expanded analytical capabilities while actively pursuing strategic partnerships with organizations committed to transforming CNS drug development. The company welcomes discussions with potential collaborators across pharmaceutical,

biotechnology, and academic sectors who share Lantern's vision of accelerating therapeutic innovation through advanced AI technologies.

About Lantern Pharma:

Lantern Pharma (NASDAQ: LTRN) is an AI company transforming the cost, pace, and timeline of oncology drug discovery and development. Our proprietary AI and machine learning (ML) platform, RADR®, leverages over 100 billion oncology-focused data points and a library of 200+ advanced ML algorithms to help solve billion-dollar, real-world problems in oncology drug development. By harnessing the power of AI and with input from world-class scientific advisors and collaborators, we have accelerated the development of our growing pipeline of therapies that span multiple cancer indications, including both solid tumors and blood cancers and an antibody-drug conjugate (ADC) program. Our lead development programs include a Phase 2 clinical program and multiple Phase 1 clinical trials. Our AI-driven pipeline of innovative product candidates is estimated to have a combined annual market potential of over $15 billion USD and have the potential to provide life-changing therapies to hundreds of thousands of cancer patients across the world.

Please find more information at:

- Website: **www.lanternpharma.com**
- PredictBBB: **www.predictBBB.ai**
- LinkedIn: **https://www.linkedin.com/company/lanternpharma/**
- X: @lanternpharma

Forward-Looking Statements

This press release contains forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Securities Exchange Act of 1934, as amended. These forward-looking statements include, among other things, statements relating to: future events or our future financial performance; the potential advantages of our RADR® or predictBBB.ai platform in identifying drug candidates and patient populations that are likely to respond to a drug candidate; our strategic plans to advance the development of our drug candidates and antibody drug conjugate (ADC) development program; estimates regarding the development timing for our drug candidates and ADC development program; expectations and estimates regarding clinical trial timing and patient enrollment; our research and development efforts of our internal drug discovery programs and the utilization of our RADR® or predictBBB.ai platforms to streamline the drug development process; our intention to leverage artificial intelligence, machine learning and genomic data to streamline and transform the pace, risk and cost of oncology drug discovery and development and to identify patient populations that would likely respond to a drug candidate; estimates regarding patient populations, potential markets and potential market sizes; sales

estimates for our drug candidates and our plans to discover and develop drug candidates and to maximize their commercial potential by advancing such drug candidates ourselves or in collaboration with others. Any statements that are not statements of historical fact (including, without limitation, statements that use words such as "anticipate," "believe," "contemplate," "could," "estimate," "expect," "intend," "seek," "may," "might," "plan," "potential," "predict," "project," "target," "model," "objective," "aim," "upcoming," "should," "will," "would," or the negative of these words or other similar expressions) should be considered forward-looking statements. There are a number of important factors that could cause our actual results to differ materially from those indicated by the forward-looking statements, such as (i) the risk that we may not be able to secure sufficient future funding when needed and as required to advance and support our existing and planned clinical trials and operations, (ii) the risk that observations in preclinical studies and early or preliminary observations in clinical studies do not ensure that later observations, studies and development will be consistent or successful, (iii) the risk that our research and the research of our collaborators may not be successful, (iv) the risk that we may not be successful in licensing potential candidates or in completing potential partnerships and collaborations, (v) the risk that none of our product candidates has received FDA marketing approval, and we may not be able to successfully initiate, conduct, or conclude clinical testing for or obtain marketing approval for our product candidates, (vi) the risk that no drug product based on our proprietary RADR® AI or predictBBB.ai platform has received FDA marketing approval or otherwise been incorporated into a commercial product, and (vii) those other factors set forth in the Risk Factors section in our Annual Report on Form 10-K for the year ended December 31, 2024, filed with the Securities and Exchange Commission on March 27, 2025. You may access our Annual Report on Form 10-K for the year ended December 31, 2024, under the investor SEC filings tab of our website at **www.lanternpharma.com** (**http://www.lanternpharma.com/**) or on the SEC's website at **www.sec.gov** (**http://www.sec.gov/**). Given these risks and uncertainties, we can give no assurances that our forward-looking statements will prove to be accurate, or that any other results or events projected or contemplated by our forward-looking statements will in fact occur, and we caution investors not to place undue reliance on these statements. All forward-looking statements in this press release represent our judgment as of the date hereof, and, except as otherwise required by law, we disclaim any obligation to update any forward-looking statements to conform the statement to actual results or changes in our expectations.

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