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

FORM 8-K

CURRENT REPORT
Pursuant to Section 13 or 15(d) of the Securities Exchange Act of 1934

Date of Report (Date of earliest event reported): May 9, 2023

Lantern Pharma Inc.

(Exact name of registrant as specified in its charter)

Delaware	**001-39318**	**46-3973463**
(State or Other Jurisdiction of Incorporation)	(Commission File Number)	(IRS Employer Identification No.)

1920 McKinney Avenue, 7th Floor Dallas, Texas	**75201**
(Address of Principal Executive Offices)	(Zip Code)

(972) 277-1136
(Registrant's telephone number, including area code)

Check the appropriate box below if the Form 8-K filing is intended to simultaneously satisfy the filing obligation of the registrant under any of the following provisions (see General Instruction A.2. below):

☐ Written communications pursuant to Rule 425 under the Securities Act (17 CFR 230.425)

☐ Soliciting material pursuant to Rule 14a-12 under the Exchange Act (17 CFR 240.14a-12)

☐ Pre-commencement communications pursuant to Rule 14d-2(b) under the Exchange Act (17 CFR 240.14d-2(b))

☐ Pre-commencement communications pursuant to Rule 13e-4(c) under the Exchange Act (17 CFR 240.13e-4(c))

Securities registered pursuant to Section 12(b) of the Act: Common Stock

Title of each class	**Trading Symbol**	**Name of each exchange on which registered**
Common Stock, $0.0001 par value	LTRN	The Nasdaq Stock Market

Indicate by check mark whether the registrant is an emerging growth company as defined in Rule 405 of the Securities Act of 1933 (§230.405 of this chapter) or Rule 12b-2 of the Securities Exchange Act of 1934 (§240.12b-2 of this chapter).

Emerging growth company ☒

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act. ☒

Item 2.02 Results of Operations and Financial Condition.

On May 9, 2023, Lantern Pharma Inc. (the "Company") will issue a press release announcing its financial results for the first quarter endecMarch 31, 2023. A copy of the press release is furnished as Exhibit 99.1 to this Current Report on Form 8-K and is incorporated herein by reference.

The information in this Item 2.02, including Exhibit 99.1 hereto, shall not be deemed "filed" for purposes of Section 18 of the Securities Exchange Act of 1934, as amended (the "Exchange Act"), or otherwise subject to the liabilities of that section, nor shall it be deemed incorporated by reference in any filings under the Securities Act of 1933, as amended, or the Exchange Act, regardless of any general incorporation language in such filings, unless expressly incorporated by specific reference in such filing.

Item 7.01 Regulation FD Disclosure.

On May 9, 2023, the Company will utilize a presentation to assist with the Company's discussions during a conference call and live webinar hosted by the Company to discuss financial and operating results for the first quarter ended March 31, 2023. A copy of the presentation is furnished as Exhibit 99.2 to this Current Report on Form 8-K and is incorporated herein by reference.

The information in this Item 7.01, including Exhibit 99.2 hereto, shall not be deemed "filed" for purposes of Section 18 of the Securities Exchange Act of 1934, as amended (the "Exchange Act"), or otherwise subject to the liabilities of that section, nor shall it be deemed incorporated by reference in any filings under the Securities Act of 1933, as amended, or the Exchange Act, regardless of any general incorporation language in such filings, unless expressly incorporated by specific reference in such filing.

Item 9.01 Financial Statements and Exhibits.

(d) Exhibits.

Exhibit No.	**Exhibit Description**

99.1	Press Release dated May 9, 2023 announcing financial results for quarter ended March 31, 2023.
99.2	Presentation relating to May 9, 2023 conference call and live webinar to discuss financial and operating results for quarter ended March 31, 2023.
104	Cover Page Interactive Data File (formatted as Inline XBRL and contained in Exhibit 101).

SIGNATURES

Pursuant to the requirements of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned hereunto duly authorized.

Lantern Pharma Inc.,
A Delaware Corporation

Dated: May 9, 2023

By: */s/ David R. Margrave*
David R. Margrave, Chief Financial Officer

Exhibit 99.1

Lantern Pharma Reports First Quarter 2023 Financial Results and Operational Highlights

- Dosed first patient in the Phase 2 Harmonic™ clinical trial; a study for the unique population of non-small lung cancer patients who are never-smokers and who make up 15-20% of all lung cancer cases.
- Submission of the IND application for LP-184 to the US Food and Drug Administration (FDA) is anticipated this week; a first-in-human Phase 1 clinical trial for LP-184, in genomically defined solid tumors, is targeted to launch in mid-2023.
- Completion of IND-enabling studies for LP-284 is anticipated for mid-2023; a first-in-human Phase 1 clinical trial for LP-284, in multiple non-Hodgkin's lymphomas, is targeted to launch in the second half of 2023.
- Received a notice of allowance from the United States Patent and Trademark Office (USPTO) for a composition of matter patent for LP-284.
- Developed industry-leading AI algorithms to predict the blood-brain-barrier permeability of any compound; the algorithms have been fully incorporated into Lantern's AI platform RADR® increasing its functionality.
- Established an additional RADR® collaboration with TTC Oncology to help advance their Phase 2 ready drug candidate TTC-352 in ER+ breast cancer.
- $51.5 million in cash, cash equivalents, and marketable securities as of March 31, 2023.
- Lantern has a cash runway into 2025.
- Conference call scheduled for 4:30 p.m. ET / 1:30 p.m. PT today.

DALLAS—(Business Wire)—Lantern Pharma Inc. (NASDAQ: LTRN), a clinical-stage biopharmaceutical company using its proprietary RADR® artificial intelligence ("AI") and machine learning ("ML") platform to transform the cost, pace, and timeline of oncology drug discovery and development, today announced operational highlights and financial results for the first quarter ended March 31, 2023.

"This quarter we continued to execute our mission of transforming the oncology drug discovery and development process using our industry-leading AI platform RADR®. We are deploying AI at a massive scale - think millions of simultaneous instances of competing and synergistic algorithms - to determine drug and cancer correlations that would be far too complex and time-consuming for any team of humans to fully analyze, let alone replicate. AI is enabling us to understand and predict drug-cancer interactions, create new drug programs, and discover cancer biology insights at a cost and timeline that was unimaginable in the near past, and Lantern Pharma is at the forefront of this transformative approach," stated Panna Sharma Lantern's CEO and President.

"As part of our team's relentless efforts to advance RADR®, we recently developed top-ranked and highly accurate algorithms to predict any compound's blood-brain-barrier (BBB) permeability, which is one of the major obstacles to developing effective brain cancer drugs. Continued innovations like this will position us for additional high-value biopharma collaborations and will also advance our own AI-powered pipeline of brain and CNS cancer drug candidates," continued Sharma.

"In addition to our pioneering work transforming oncology drug discovery and development with AI, we continue to progress our drug candidates into and through their clinical development. In March, we announced the dosing of the first patient in our Phase 2 Harmonic clinical trial for never-smokers with NSCLC and anticipate enrollment will accelerate as we expand our sites across the US. Our team has been unrelenting in their work to advance both LP-184 and LP-284 into first-in-human clinical trials this year. This week, we anticipate submitting our IND application to the FDA for LP-184's first-in-human trial for advanced solid tumors and brain cancers. On average, we have been able to advance our newly developed drug programs from initial AI insights to first-in-human clinical trials in 2-3 years and at a cost of around $1.0-2.0 million USD per program - both metrics that are completely unheard of in oncology drug discovery," stated Sharma.

Highlights of AI-Powered Pipeline:

- **LP-184** – Anticipate submitting the investigational new drug (IND) application for LP-184 to the US Food and Drug Administration (FDA) this week. Lantern is targeting to launch a Phase 1A basket trial for LP-184 in mid-2023 for multiple recurrent brain cancers and solid tumors with unmet clinical needs. Indications for the trial are anticipated to include advanced high-grade gliomas/glioblastoma (GBM), brain metastases, pancreatic cancer, and other solid tumor types with DNA damage response deficiencies. Globally, the aggregate annual market potential of LP-184's target indications is estimated to be approximately $11.0-13.0 billion, consisting of $5.0-6.0 billion for CNS cancers and $6.0-7.0 billion for solid tumors.

- **LP-300** – Recently dosed the first patient in the Phase 2 Harmonic™ clinical trial that is assessing the effect of LP-300 in combination with standard-of-care chemotherapy in never-smoker patients with relapsed non-small cell lung cancer (NSCLC). Across the five Harmonic™ clinical trial sites in the US, over a dozen additional potential patients have been pre-screened and are being monitored for possible enrollment. Multiple additional trial sites across the US are expected to be activated by mid-2023 to bolster patient recruitment and enrollment. In the US, there are approximately 20,000-40,000 never-smokers with NSCLC diagnosed annually, representing an estimated annual market potential of $1.5-2.0 billion. Additional information on the Harmonic™ trial can be found at the Harmonic™ website and the clinicaltrials.gov website.

- **LP-284** – Completion of the LP-284 IND enabling studies is anticipated for mid-2023. The first-in-human Phase 1 clinical trial launch is targeted for the second half of 2023 for B-cell non-Hodgkin's lymphomas (NHL), where LP-284 has shown nanomolar potency across multiple in vitro and in vivo studies, including mantle cell lymphoma (MCL), double hit lymphoma (DHL), and other NHL cancer subtypes. Nearly all MCL patients relapse from the current MCL standard-of-care agents and there is an urgent and unmet need for novel improved therapeutic options for these patients. In the US and Europe, MCL and DHL are diagnosed in approximately 9,000 patients each year and have an estimated annual market potential of $1.2 billion.

Formation of Starlight Therapeutics:

- Lantern recently formed a wholly-owned subsidiary, Starlight Therapeutics Inc. ("Starlight"), for the clinical development of drug candidate LP-184's central nervous system (CNS) and brain cancer indications – including glioblastoma (GBM), brain metastases (brain mets.), and several rare pediatric CNS cancers. Starlight will refer to the molecule LP-184, as it is developed in CNS indications, as "STAR-001".

- The clinical development of STAR-001 in CNS cancers beyond the Phase 1A trial will be conducted exclusively by Starlight. Following the launch of Starlight, Lantern will continue to advance LP-184's preclinical and clinical development for non-CNS indications (including pancreatic cancer and other solid tumors) and will also provide RADR® AI-driven bioinformatic and computational biology support to Starlight.

RADR® Platform Growth and Development:

- Developed top-ranked AI algorithms to predict any compound's blood-brain barrier (BBB) permeability. The AI algorithms, which have been fully integrated into RADR®, have 89-92% accuracy, have been optimized to rapidly generate predictions in approximately one minute, and are highly scalable to screen thousands of compounds simultaneously. The BBB prevents an estimated 98% of drugs from entering the brain and is a major limitation to developing drugs for brain and CNS cancers. Lantern's AI-driven approach offers a rapid and highly-accurate alternative for predicting a drug's BBB permeability compared to conventional wet lab approaches.

- Breakthrough RADR® advancements were presented at the AACR annual meeting in collaboration with Actuate Therapeutics. The AACR poster presented data demonstrating that RADR® algorithms had an 88% accuracy in predicting responders and non-responders in Actuate Therapeutics' Phase 1 clinical trial for their drug candidate, elraglusib. These patient response predictions are anticipated to be leveraged for patient selection in Actuate's upcoming late-stage clinical trials for elraglusib.

- Lantern recently established a new RADR® and AI-driven collaboration with TTC Oncology to enhance the development of TTC's Phase 2 ready drug candidate TTC-352. TTC-352 is a novel, first- and best-in-class selective human estrogen receptor (ER) partial agonist (ShERPA) for the treatment of patients with metastatic ER+ breast cancer. The initial aims of the collaboration will be to identify biomarker or gene signatures to power potential patient selection for an upcoming TTC-352 Phase 2 clinical trial and to discover additional treatment indications for TTC-352. Under the terms of the collaboration, Lantern is receiving an exclusive right to license TTC-352, including any collaboration intellectual property (IP), during an exclusive option period.

Other Operational Highlights

- Lantern received a notice of allowance from the United States Patent and Trademark Office (USPTO) for the composition of matter patent, no. 17/192,838, covering the molecule LP-284, including claims covering the new molecular entity. Lantern expects the resulting LP-284 patent will be Orange Book-listable with an anticipated expiration of early 2039.

- At the 2023 AACR annual meeting, Lantern scientists presented new preclinical data highlighting how LP-184's unique synthetic lethality mechanism of action is being leveraged as a single agent as well as in combination with the PARP inhibitor (PARPi), Olaparib, for the potential treatment of multiple cancer types that are deficient in DNA damage response (DDR). The poster also highlighted additional results demonstrating that as a single agent, LP-184 has significantly higher potency than Olaparib across multiple preclinical cancer models deficient in DDR including pancreatic, prostate, and non-small cell lung cancer models.

First Quarter 2023 Financial Overview:

- **Balance Sheet**: Cash, cash equivalents, and marketable securities were approximately $51.5 million as of March 31, 2023, compared to approximately $55.2 million as of December 31, 2022. The quarterly cash burn rate continues to reflect our capital-efficient, collaborator-centered business model.

- **R&D Expenses**: Research and development expenses were approximately $2.6 million for the quarter ended March 31, 2023, compared to approximately $2.7 million for the quarter ended March 31, 2022. Research and development expenses for the quarter ended March 31, 2022 included a non-recurring escrow release payment of approximately $459,000.

- **G&A Expenses**: General and administrative expenses were approximately $1.7 million for the quarter ended March 31, 2023, compared to approximately $1.4 million for the quarter ended March 31, 2022.

- **Net Loss**: Net loss was approximately $3.9 million (or $0.36 per share) for the quarter ended March 31, 2023, compared to a net loss of approximately $4.1 million (or $0.38 per share) for the quarter ended March 31, 2022.

Earnings Call and Webinar Details:

Lantern will host its first quarter 2023 earnings call and webinar today, Tuesday, May 9, 2023 at 4:30 p.m. ET.

- https://us06web.zoom.us/webinar/register/2016825185534/WN_jlzd9TfkQMmU5eUH_gYfVw
- Related presentation materials will be accessible at: https://ir.lanternpharma.com
- A replay of the first quarter earnings call and webinar will be available at https://ir.lanternpharma.com.

About Lantern Pharma:

Lantern Pharma 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 25 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 including eleven cancer indications and an antibody-drug conjugate (ADC) program. On average, our newly developed drug programs have been advanced from initial AI insights to first-in-human clinical trials in 2-3 years and at approximately $1.0-2.0 million per program.

Our lead development programs include two Phase 2 clinical programs and multiple upcoming Phase 1 clinical trials anticipated for 2023. We have also established a wholly-owned subsidiary, Starlight Therapeutics Inc., to focus exclusively on the clinical execution of our promising therapies for CNS and brain cancers, many of which have no effective treatment options. 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.

Contact:

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Investor Relations Associate
ir@lanternpharma.com

Please find more information at:
Website: www.lanternpharma.com
LinkedIn: https://www.linkedin.com/company/lanternpharma/
Twitter: @lanternpharma
Lantern Pharma Newsletter – The Spark: Sign-up here

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® 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 and ADC 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® platform 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 and ADC candidates and to maximize their commercial potential by advancing such 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 impact of the COVID-19 pandemic, (ii) the risk that our research and the research of our collaborators may not be successful, (iii) 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, (iv) the risk that no drug product based on our proprietary RADR® AI platform has received FDA marketing approval or otherwise been incorporated into a commercial product, and (v) those other factors set forth in the Risk Factors section in our Annual Report on Form 10-K for the year ended December 31, 2022, filed with the Securities and Exchange Commission on March 20, 2023. You may access our Annual Report on Form 10-K for the year ended December 31, 2022 under the investor SEC filings tab of our website at www.lanternpharma.com or on the SEC's website at 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.

Lantern Pharma Disclosure Channels to Disseminate Information:

Lantern Pharma's investors and others should note that we announce material information to the public about our company and its technologies, clinical developments, licensing matters and other matters through a variety of means, including Lantern Pharma's website, press releases, SEC filings, digital newsletters, and social media, in order to achieve broad, non-exclusionary distribution of information to the public. We encourage our investors and others to review the information we make public in the locations above as such information could be deemed to be material information. Please note that this list may be updated from time to time.

First Quarter 2023
Operating & Financial Results Conference Call / Webinar

May 9th, 2023
4:30 PM Eastern Time

Lantern Pharma NASDAQ :LTRN

Forward Looking Statements

This presentation 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® 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 and ADC 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® platform 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 and ADC candidates and to maximize their commercial potential by advancing such 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 impact of the COVID-19 pandemic, (ii) the risk that our research and the research of our collaborators may not be successful, (iii) 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, (iv) the risk that no drug product based on our proprietary RADR® AI platform has received FDA marketing approval or otherwise been incorporated into a commercial product, and (v) those other factors set forth in the Risk Factors section in our Annual Report on Form 10-K for the year ended December 31, 2022, filed with the Securities and Exchange Commission on March 20, 2023. You may access our Annual Report on Form 10-K for the year ended December 31, 2022 under the investor SEC filings tab of our website at www.lanternpharma.com or on the SEC's website at 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 presentation 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.

Contents

Speakers

Panna Sharma

Chief Executive Officer, President and Director

David Margrave

Chief Financial Officer

Host

Nicole Leber

Investor Relations

Using AI, Lantern is Transforming Drug Discovery Timelines and Cost

Lantern has launched **9 programs** in two years, and is anticipating launching Multiple Phase 1 trials in 2023

Lantern's Drug Development Model

Large Scale/Multi-omics Oncology Data

Proprietary AI platform RADR®

Accelerated timeline and reduced cost

Transforming Early-Stage Discovery & Development

Traditional Model		Lantern's Model
3 – 5 + Years	Reduces **Significant** Time & Cost	**2** Years
$10 – 50 + Million		**$1-5** Million

*"In around **two years**, Lantern has progressed its GBM program from initial RADR® insights, to wet lab validation, to late stage IND enabling studies - significantly cutting typical drug development timelines and cost"*

(Biopharmatrend, 2022)

Sharpening Later-Stage Clinical Trials

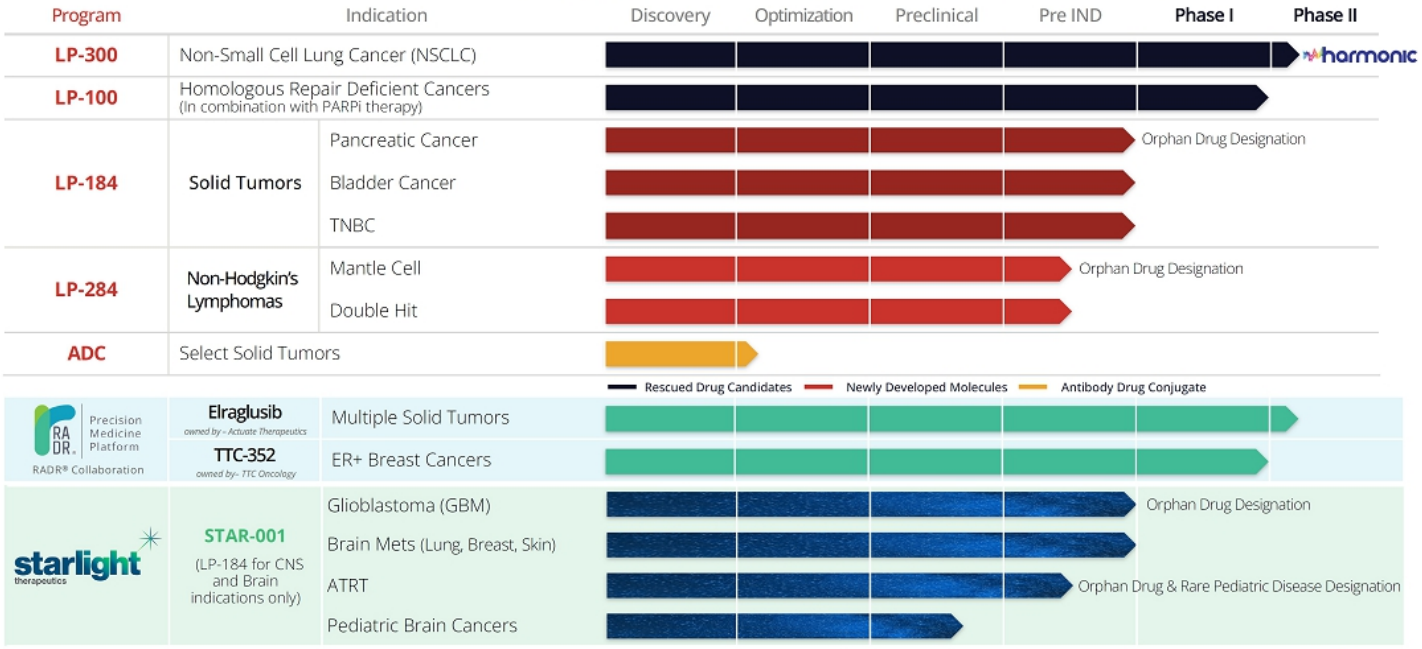
Traditional Model		Lantern's Model
6 – 12 + Years	Reduces **Significant** Time & Cost	**3-5** Years
$100 – 500 + Million		**$25-100** Million

*"**AI-driven patient stratification** helps to focus clinical trials with potentially fewer and more select patients, which are more likely to respond, ultimately saving time and money"*

(Panna Sharma)

Lantern's Diverse & Unique AI Driven Pipeline of Drug Programs

Lantern has 14 disclosed and collaborative drug programs including the Phase 2 Harmonic™ trial



First Quarter 2023 Highlights

RADR® AI Platform Updates

- Developed industry-leading AI algorithms to predict any compound's BBB permeability
- Breakthrough AI algorithms developed with Actuate Therapeutics to accurately predict patient response
- RADR® continues rapid data growth & advances in functionality; expect to reach 50 bn data points in 2023
- Advancing AI-powered antibody-drug conjugate (ADC) product development roadmap

LP-300 and Harmonic™ Trial

- First patient dosed in March 2023
- Five clinical trial sites activated across twelve locations (NY, CA, IL, OH, TX) and multiple additional sites anticipated
- Actively screening patients for potential trial enrollment
- Launched first-of-their-kind iPhone apps for patients, physicians, and caregivers
- Engaging advocacy groups for increased patient awareness

LP-184 for Solid Tumors

- Filing of the IND application anticipated in early May
- Phase 1 clinical trial anticipated in mid-2023
- Presented poster at AACR annual meeting on the synthetic lethality of LP-184 across multiple cancers
- Exploring combination regimens with other FDA approved agents

LP-284 for Non-Hodgkin's Lymphomas

- Completion of IND enabling studies anticipated mid-2023
- Submission of the IND application and launch of Phase 1 clinical trial targeted for second half of 2023
- Granted composition of matter patent allowance by USPTO

Financial Updates

- $51.5 million of cash, cash equivalents, and marketable securities as of March 31, 2023
- Lantern has operating capital into 2025

RADR® is Lantern's AI and Machine-Learning Platform that Powers Oncology Drug Discovery and Development

Precision Medicine Platform

Response **A**lgorithm for **D**rug Positioning & **R**escue

A proprietary integrated data analytics, experimental biology, oncology-focused, machine-learning-based platform focused on drug development

Today **25+ Billion** → By the end of 2023 **50+ Billion**

Data points from oncology focused real-world patient and clinical data and preclinical studies

80%+ Prediction Success

130K+ Patient Records

154+ Drug-tumor interactions

200+ Advanced ML Algorithms

RADR®'s Multi-Faceted AI Modules

- **Discover Mechanism of Action of Any Compound or Drug**
- **Identify and Prioritize a Compound's Disease Indications or Subtypes**
- **Determine Optimal Drug Combinations to Improve Therapeutic Potential**
- **Generate Machine Learning-Driven Biomarker Signatures for Clinical Trial Patient Selection**
- **Characterize Specialized Attributes of a Molecule -** Including Predicting Blood Brain Barrier Permeability

RADR® Solves one of the Most Challenging Problems in Brain Cancer Drug Discovery – Predicting any Compound's Blood Brain Barrier Permeability

What is the Blood-Brain-Barrier (BBB)?

Blood-brain-barrier (BBB) is a highly selective border that can prevent drugs from entering brain tissues. The BBB prevents an estimated **98%** of drugs from entering the brain, which presents **a major hurdle** for developing drugs to treat brain and central nervous system (CNS) cancers.

Lantern Developed Industry Leading and Top Ranked AI Algorithms to Predict BBB Permeability of Any Compound

TOP 4 Best performing BBB prediction algorithms by The Therapeutic Commons (TDC)

89-92% Highly accurate BBB permeably predictions

Ultra Fast Prediction generation time in ~1 minute

Scalable Capable of rapidly screening thousands of compounds simultaneously

BBB drug prediction challenge conducted by Therapeutics Data Commons (TDC),

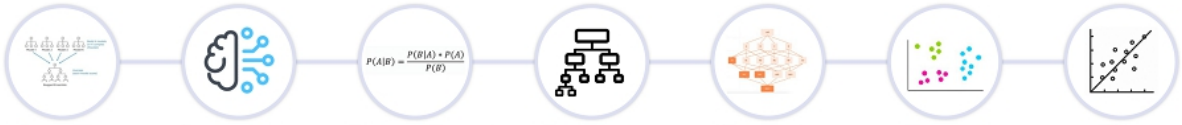
Leaderboard

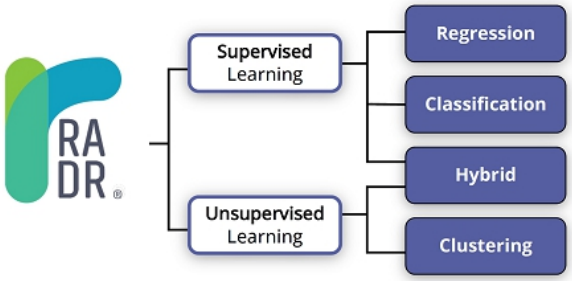
Rank	Model	Contact	Link	#Params	AUROC ↑
1	Lantern RADR Ensemble	Rick Fontenot	GitHub, Paper	267,439	0.962 ± 0.003
2	Lantern RADR Logistic Regression	Rick Fontenot	GitHub, Paper	456	0.956 ± 0.006
3	Lantern RADR Deep Neural Network	Rick Fontenot	GitHub, Paper	266,881	0.949 ± 0.004
4	Lantern RADR Random Forest	Rick Fontenot	GitHub, Paper	319	0.928 ± 0.002
5	ZairaChem	Gemma Turon	GitHub, Paper	N/A	0.910 ± 0.024

Lantern's AI BBB permeability prediction algorithms were evaluated and scored in the BBB drug prediction challenge conducted by Therapeutics Data Commons (TDC), a coordinated initiative to evaluate AI capabilities across therapeutic modalities and stages of discovery.

RADR®'s Library of Over 200+ Advanced Algorithms Powers its Drug Development Capabilities

Example RADR® Algorithms





Examples

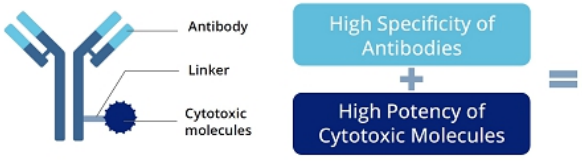
- Predicting drug sensitivity values, e.g. IC50
- Predicting blood brain barrier (BBB) permeability of a compound
- Predicting synergy values by combining compounds
- Identifying patient populations that can be targeted through a MoA
- Stratifying patients as responder, partial-responder, or non-responder
- Biomarker pattern-based patient clustering
- Predicting outcomes for companion diagnostic usage in a clinical trial

- Diversity of algorithms allow us to handle various input data types and solve different biological problems
- Lantern has filed patents for ensemble algorithms in cancer drug development

ADCs are one of the Fastest Growing Drug Segments and can be Developed Faster and More Effectively with AI

What are Antibody Drug Conjugates (ADCs)?

Antibody drug conjugates (ADCs) are highly specific cancer-targeted antibodies linked to potent anti-tumor small molecules and designed for the treatment of cancer



Antibody-directed killing of cancer cells, with the potential for **reduced damage** for normal cells

Rapidly growing global ADC market

currently valued at **$4+ billion**

projected value by 2027 **$14+ billion**

RADR® has the potential to assist in advancing ADC drug candidates from the discovery phase to first-in-human clinical trials in approximately **2 years or less** by ...

Precision Medicine Platform

1. **Significantly enhancing the selection of optimal combination ADC components including:** Targeted antibodies, Antibody linkers, and Cytotoxic payloads
2. **Predicting ADC antibody targeting, or immunogenicity**
3. **Determining ADC biomarker signatures to predict patient selection**

The Harmonic™ Trial for Never Smoker Patients with NSCLC

harmonic **Phase 2**

Non-Small Cell Lung Cancer | Never Smokers | **90** Patients | Two arm, Open-label, Randomized Trial | Multi-Site

Major Updates

- **First patient dosed in March 2023**
- Activated 5 sites across 12 different locations in the US:
  - Gabrail Cancer Center
  - Northwest Oncology
  - New York Cancer and Blood Specialists
  - Texas Oncology
  - Cancer and Blood Specialty Clinic

- Multiple additional patients + sites anticipated to be enrolled in Q2

Additional Value Drivers

1 Harmonic™ iPhone App

First of their kind **iPhone apps launched** for the Harmonic™ clinical trial

- The new Harmonic™ trial apps provide physicians, patients, caregivers, and the cancer community with mobile access to up-to date information

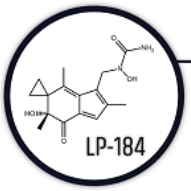
2 Liquid Biopsies

Trial will collect liquid biopsies and acquire genomic/ transcriptomic data from patients. Will represent one of the largest biomarker studies done on the never-smoker population

Liquid biopsies taken at 4 time points

Potential Future Clinical Trial Design & Companion Dx

LP-184 has Blockbuster Potential Across Multiple Cancers as a Single Agent or in Combination Therapy



Solid Tumors

DDR Deficient Tumors Including:

- Pancreatic Cancer
- Bladder Cancer
- Breast Cancer
- Lung Cancer

$6-7 billion
Global annual market potential

Phase 1 trial in 2023*

Q2 2023	2023
IND application to be filed with the FDA	Phase 1 Trial Launch

Anticipated Timeline

World-class collaborators

JOHNS HOPKINS MEDICINE | Danish Cancer Society | NIH NATIONAL CANCER INSTITUTE | FOX CHASE CANCER CENTER TEMPLE HEALTH

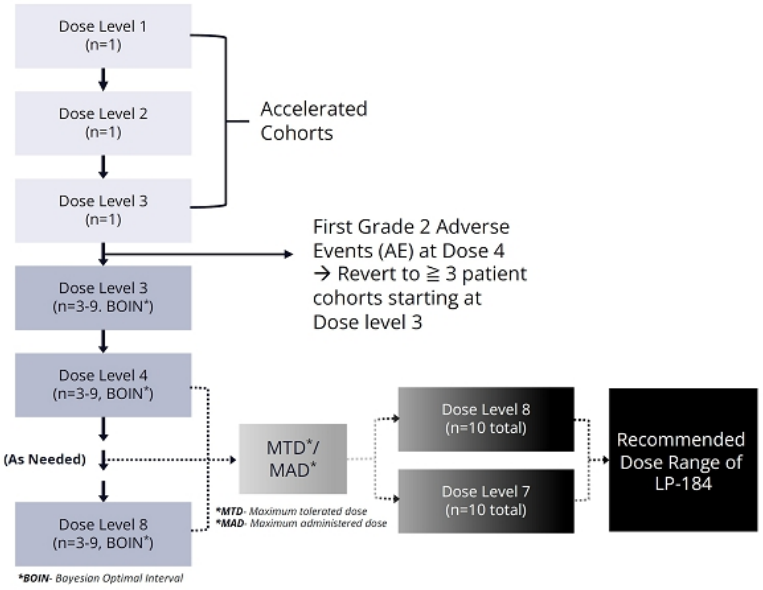
Program Highlights

1. **Unique Mechanism of Action:**
   - Synthetic lethality
     - Overexpression of PTGR1
     - Deficiencies in **D**NA **D**amage **R**epair (DDR) pathway
2. **Nanomolar Potency:**
   - Low nanomolar anti-cancer potency, healthy cells largely unaffected at these concentrations
3. **Strong Growing IP Estate:**
   - 10+ issued or pending patents & patent applications
   - Extensive portfolio filings in major global markets
   - Includes applications expiring in 2041 or later, if granted
4. **FDA Orphan Drug Designation**
   - Pancreatic cancer
   - **Increases commercial protection and value**
5. **Actively Exploring Combination Therapies:**
   - FDA Approved Agents – Spironolactone, Olaparib
   - Other modalities - Radiation Therapy

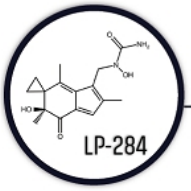
LP-184 Clinical Trial Updates and Design of Phase 1A Trial

LP-184 Phase 1A Clinical Trial Updates & Design

- **Anticipated Phase 1A Clinical Trial Dates**
  - IND application submission – Mid-May 2023
  - Study-start up – Q2 2023
  - 1st patient dosed – Summer 2023
- **Clinical Trial Design**
  - Bayesian optimal interval **(BOIN)** design
  - Anticipated starting dose of 0.015 mg/kg, based off IND enabling studies in dogs.
  - Targeting up to 30-35 patients
  - Future clinical trial sites anticipated at top comprehensive centers in the US:
    - Fox Chase Cancer Center
    - Johns Hopkins
    - Multiple additional sites



LP-284 was Developed from RADR® Insights to Late-Stage IND Enabling Studies in Less Than 2 Years for Non-Hodgkin's Lymphomas



LP-284 for non-Hodgkin's B-cell lymphomas

- Mantle Cell Lymphoma
- Double Hit Lymphoma

$1.2 billion
U.S. & Europe
annual market potential

Program Highlights

- LP-284 has nanomolar potency against several aggressive non-Hodgkin's lymphomas (NHL) including mantle cell and double hit
- In-vivo LP-284 can rescue tumors resistant to MCL standard-of-care agents Ibrutinib and Bortezomib
- Enhanced potency when used in combination with other approved agents like Spironolactone
- FDA granted Orphan Drug Designation for mantle cell lymphoma
- Results from preclinical studies have been published at ASH 2021, ASH 2022, and SOHO 2022
- Received notice of allowance from the USPTO for the composition of matter patent, no. 17/192,838, covering the molecule LP-284

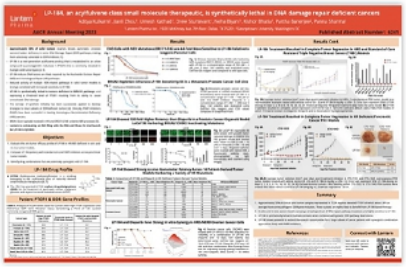
Phase 1 Trial Launch in 2023*

Q2 2023	Q3 2023	2023
Complete IND enabling studies and file IND application with the FDA		Phase 1 Trial Launch

Anticipated Timeline

Presented Multiple Posters at the AACR Annual Meeting 2023

Posters highlighted RADR® advancements for patient response prediction and LP-184's synthetic lethality MoA

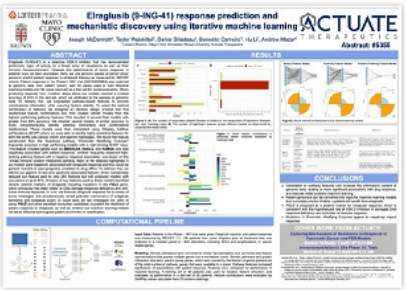


American Association for Cancer Research

LP-184, an acylfulvene class small molecule therapeutic, is synthetically lethal in DNA damage repair deficient cancers

Aditya Kulkarni, Jianli Zhou, Umesh Kathad, Drew Sturtevant, Neha Biyani Kishor Bhatia, Partha Banerjee, Panna Sharma

Click the image to view the full poster



American Association for Cancer Research

Elraglusib (9-ING-41) response prediction and mechanistic discovery using iterative machine learning

Joseph McDermott, Taylor Weiskittel, Daniel Billadeau, Benedito Carneiro, Hu Li, Andrew Mazar

Click the image to view the full poster

Financial Updates Q1 2023

Solid financial position and capital efficiency fuel continued growth and give Lantern cash runway into 2025

Summary Results of Operations

	Three Months Ended March 31, (unaudited) 2023	2022
Operating expenses:		
General and administrative	$ 1,733,321	$ 1,406,160
Research and development	2,552,947	2,660,237
Total operating expenses	4,286,268	4,066,397
Loss from operations	(4,286,268)	(4,066,397)
Interest + Other income, net	418,503	(55,377)
NET LOSS	$ (3,867,765)	$ (4,121,774)
Net loss per common share, basic and diluted	$ (0.36)	$ (0.38)
Weighted Avg. Common Shares Outstanding - Basic and Diluted	10,857,040	10,875,777

Balance Sheet Highlights & Summary

	03/31/2023 (unaudited)	12/31/2022
Cash, Cash Equivalents & Marketable Securities	$51,540,051	$55,196,085
Prepaid Expenses & Other Current Assets	$3,086,331	$2,985,472
Total Assets	$55,509,317	$58,836,321
Total Liabilities	$2,933,819	$2,798,297
Total Stockholders' Equity	$52,575,498	$56,038,024

"We believe our solid financial position will fuel continued growth and evolution of our RADR® AI platform, accelerate the development of our portfolio of targeted oncology drug candidates and allow us to introduce additional targeted product and collaboration opportunities in a capital efficient manner."

2023 Objectives

A Transformational year for Lantern

- Advance enrollment of **The Harmonic™ Trial** & increase patient/clinician awareness
- Launch clinical trials for LP-184 and LP-284
- Progress LP-184 (STAR-001) towards Ph. 1 / 2 pediatric clinical trial, including ATRT
- Advance ADC preclinical development to support future Phase 1 launch and/or partnership
- Explore combinations for LP-100, LP-184, LP-284, and LP-300 with other existing approved drugs
- Expand RADR® AI platform to 50 billion datapoints
- Establish additional RADR® based collaborations with companies and research partners
- Explore licensing and partnership opportunities with biopharma companies
- Continue disciplined fiscal management

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