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): November 8, 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 November 8, 2023, Lantern Pharma Inc. (the "Company") will issue a press release announcing its financial results for the third quarter ended September 30, 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 November 8, 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 third quarter ended September 30, 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 November 8, 2023 announcing financial results for quarter ended September 30, 2023.
99.2	Presentation relating to November 8, 2023 conference call and live webinar to discuss financial and operating results for quarter ended September 30, 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: November 8, 2023

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

Exhibit 99.1

Lantern Pharma Reports Third Quarter 2023 Financial Results and Operational Highlights

- Received IND clearance from FDA to initiate Phase 1 clinical trial for **LP-284**, a first-in-human trial for advanced, refractory non-Hodgkin's lymphomas (NHL).
- Dosed initial patient in Phase 1 with **LP-184**, a clinical trial for multiple advanced solid tumors that are refractory to standard-of-care therapies.
- Progressed Phase 2 **LP-300** Harmonic™ clinical trial towards enrollment in East Asian countries where 30-35+% of all lung cancer cases occur in never-smokers with NSCLC; continued expansion of additional clinical trial sites in the US and increased focus on recruitment activity with advocacy groups.
- Developed initial proof-of-concept and preclinical evidence for a **novel cryptophycin-based ADC** (antibody-drug conjugate); initial data is planned to be shared in January 2024.
- Furthered development of Lantern's **AI platform, RADR®**, to include modules for the streamlined development of ADCs and the prediction of drug combinations with existing approved checkpoint inhibitors.
- Approximately **$45 million** in cash, cash equivalents, and marketable securities as of September 30, 2023, is anticipated to provide a cash runway into at least Q3 of 2025.
- The conference call and webcast are scheduled for **today, Wednesday, at 4:30 p.m. ET** / 1:30 p.m. PT.

DALLAS—(Business Wire)—Lantern Pharma Inc. (NASDAQ: LTRN), an artificial intelligence ("AI") company developing targeted and transformative cancer therapies using its proprietary RADR® AI and machine learning ("ML") platform with multiple clinical-stage drug programs, today announced operational highlights and financial results for the third quarter ended September 30, 2023.

"Lantern had a very productive and efficient third quarter where the team made excellent and continued progress across our lead clinical programs, launched a new program into the clinic, and accelerated our efforts to ensure that our AI platform for cancer drug development, RADR®, maintains its industry-leading position. We now have three active clinical programs that we are confident will make significant strides in Q4 and throughout 2024 – with multiple readouts expected during 2024. In addition, we continued to maintain a financially disciplined operation that will allow us to achieve milestones in both our drug programs and our AI platform over the next several years. Our RADR® AI platform is revolutionizing the way we understand and predict drug-cancer interactions, enabling us to advance our newly developed drug programs from initial AI insights to first-in-human clinical trials in 2 to 3 years and at a cost of roughly $1 to 2.5 million per program - a milestone unheard of in the realm of oncology drug discovery," said Panna Sharma, CEO of Lantern Pharma.

Sharma continued, "This past quarter we launched another first-in-human, Phase 1 program, with LP-284, a synthetically lethal small-molecule, in refractory NHL where there is significant patient need for improved therapies. Therapies that can work with proven monotherapy efficacy and in combination with existing standard-of-care agents are critically needed in cancers where relapse from existing treatments can be a dire consequence. Computational and AI-driven approaches are increasing their ability to predict meaningful and clinically relevant combination regimens for cancer, and our team continues to increase the value of our platform in this regard while helping to also de-risk and sharpen the focus of our existing clinical drug candidates. Our leadership in the innovative use of AI and machine learning to transform costs and timelines in the development of precision oncology therapies should yield significant returns for investors and patients as our industry matures and adopts an AI-centric approach to drug development."

Highlights of AI-Powered Pipeline:

- **LP-284** – Launched the first-in-human Phase 1 clinical trial with LP-284 targeting recurrent non-Hodgkin's lymphomas (NHL). 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 advanced NHL cancer subtypes with DNA damage response deficiencies, notably those with compromised functioning of the ataxia-telangiectasia mutated (ATM) gene due to mutations or deletions.

  In xenograft PDX models of high-grade B cell lymphomas (HGBL), LP-284 showed synergistic and significantly enhanced anti-cancer activity when used in combination with rituximab. In *in-vivo* PDX models, the combined synergy of rituximab with LP-284 was 63% more effective in destroying HGBL tumors—93% tumor growth inhibition with both rituximab and LP-284 versus 57% tumor growth inhibition with rituximab alone. Rituximab is a standard-of-care approved therapy used in a wide range of B-cell cancers and non-Hodgkin's lymphomas. Lantern plans to release additional details and data on this set of results with LP-284 in this setting in the coming month.

  Nearly all MCL, DHL, and HGBL patients relapse from the current 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, DHL, and HGBLs are diagnosed in 16,000-20,000 patients each year and have an estimated annual market potential of over USD 3+ billion.

- **LP-184** – Dosed the first patient in Phase 1A clinical trial – a first-in-human Phase 1 basket trial across multiple solid tumor indications that are advanced and refractory to existing standard-of-care therapies. The trial is anticipated to enroll patients that have relapsed/refractory advanced solid tumors, such as pancreatic cancer, glioblastoma (GBM), brain metastases (brain mets.), lung, triple-negative breast cancer, and multiple other solid tumor types with DNA damage response deficiencies. Lantern expects to continue Phase 1 enrollment throughout the remainder of 2023 and the first half of 2024 across a growing number of US clinical trial sites, including Fox Chase Cancer Center and Johns Hopkins Medicine.

  The dosage and safety data obtained in the Phase 1 trial will be used to advance the central nervous system (CNS) indications for a future Phase 2 trial to be sponsored by Lantern's wholly-owned subsidiary, Starlight Therapeutics. Globally, the aggregate annual market potential of LP-184's target indications is estimated to be approximately $11+ billion, consisting of $5+ billion for CNS cancers and $6+ billion for solid tumors.

- **LP-300** – Activated additional sites in the US which will increase the potential for dosing additional patients in the Phase 2 Harmonic™ trial during 2023. The Harmonic trial 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). In addition to the dosed patients, more than two dozen potential patients have been pre-screened and are being monitored for possible enrollment during Q4 across 10 clinical sites in the US. The Company is also actively advancing the Harmonic™ clinical trial to countries in Asia that are known to have a significantly higher incidence of never-smokers with NSCLC – Taiwan, Japan, and South Korea. In these countries, the incidence of never-smokers with NSCLC is double or higher than that of patients in the US.

  Dr. Joseph Treat MD of Fox Chase Cancer Center has been appointed the lead principal investigator of the Harmonic™ study. Dr. Treat is a leading expert in lung malignancies, including NSCLC in never smokers, and has dedicated his career, since 1991, to serving patients with lung cancer.

  Globally, never-smokers with NSCLC are a growing population of patients and do not respond well to PD-1/PD-L1-based therapies, leaving them with reduced treatment options. In the US, there are approximately 20,000-40,000 never-smokers with NSCLC diagnosed annually, representing an estimated US annual market potential of $1.5 billion and a global estimated annual market potential of over $2.6 billion. Additional information on the Harmonic™ trial can be found at the Harmonic™ website and clinicaltrials.gov.

RADR® Platform Growth and Development:

- RADR® continues to advance in size, scope, and capabilities and is also progressing towards becoming a standard for AI-driven drug development in oncology – for both early-stage development and later-stage patient biomarker and combination therapy identification. RADR® has now surpassed 36 billion oncology-focused datapoints and is projected to reach over 50 billion datapoints by the end of 2023. The scope of RADR®'s data has broadened with a strategic focus on additional classes of compounds, including antibodies, checkpoint inhibitors, and DNA-damaging agents. Additionally, data from clinical studies such as those being obtained from liquid biopsy, and data from preclinical combination studies that aim to define drug interaction and optimal dosage are being incorporated into the datapoints and data sets powering RADR®.

- These datapoints, the associated advancements in automation, along with algorithms and code comprise a functional module and have advanced RADR®'s drug development capabilities. Key modules that are being advanced are those for 1) predicting patient responses and identifying optimal combination regimens for immuno-oncology (IO) drugs such as immune checkpoint inhibitors, 2) predicting the BBB permeability, with 89% to 92% accuracy, of any compound at a scale and speed that allows the analysis of tens of thousands of compounds a day, and 3) accelerating the design and development of drug-conjugate templates for next-generation antibody-drug conjugates (ADCs) that have increased potential for improved safety and efficacy. These 3 additional modules exemplify the type of rapid and meaningful progress the RADR® platform is expected to make over the next several quarters as it aims to improve the speed and reduce the costs and risks associated with creating cancer medicines.

Starlight Therapeutics:

- In Q1 2023, Lantern 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 GBM, 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".

- Lantern expects to recruit additional management focused on Starlight operations during Q4, 2023. Lantern has also begun discussions with leading clinicians and key opinion leaders at CNS-focused cancer centers to serve as clinical trial sites for planned upcoming clinical trials in adult and pediatric CNS cancers.

Additional Operational Highlights:

- During the 3rd quarter of 2023, Lantern filed 4 new patent applications for LP-184 and LP-284 relating to breast, liver, and blood cancers and an additional application directed to lyophilized formulations of these molecules.

- New data and scientific findings along with AI platform updates to be presented at several upcoming conferences:

  SNO (Society for Neuro-Oncology) 28th Annual Meeting and Education Day in Vancouver, Canada

  - **Date:** November 17, 2023, 10:55a-11:05a PST
  - **Presentation Title:** *LP-184, an MGMT-agnostic small molecule, has potent synergy with Spironolactone to effectively inhibit orthotopic GBM xenograft tumors*
  - **Presenter:** **Dr. John Laterra** (clinician-scientist collaborator from Johns Hopkins Medicine & Kennedy Krieger Institute)

Bengaluru Tech Summit 23 in Bengaluru, India

- ➢ **Date:** December 1, 2023, 12p-12:50p IST
- ➢ **Presentation Topic:** *Biotech Future Forward – Pharma 4.0 & How AI is changing the playing field in Biopharma*
- ➢ **Presenter:** **Panna Sharma** (President & CEO)

5th Annual CNS Drug Delivery Summit in Boston, MA

- ➢ **Date:** December 5, 2023 at 1:30p EST
- ➢ **Presentation Topic:** *Leveraging AI & Machine Learning to Accelerate the Development of CNS & Brain Cancer Molecules*
- ➢ **Presenter:** **Kishor Bhatia, Ph.D.** (CSO)

Third Quarter 2023 Financial Overview:

- **Balance Sheet:** Cash, cash equivalents, and marketable securities were approximately $44.9 million as of September 30, 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 $2.2 million for the quarter ended September 30, 2023, compared to approximately $0.7 million for the quarter ended September 30, 2022. R&D expenses for the 3rd quarter of 2022 were significantly reduced, by $0.9 million, due to a one-time payment received from a service provider to resolve a difference of views regarding the service agreement.

- **G&A Expenses:** General and administrative expenses were approximately $1.3 million for the quarter ended September 30, 2023, compared to approximately $1.4 million for the quarter ended September 30, 2022.

- **Net Loss:** Net loss was approximately $3.2 million (or $0.29 per share) for the quarter ended September 30, 2023, compared to a net loss of approximately $2.3 million (or $0.21 per share) for the quarter ended September 30, 2022.

Earnings Call and Webinar Details:

Lantern will host its third quarter 2023 earnings call and webinar today, November 8, 2023, at 4:30 p.m. ET.

- https://us06web.zoom.us/webinar/register/8716986910268/WN_9BISSepwSbeLD4x9Wgi_eA#/registration
- Related presentation materials will be accessible at: https://ir.lanternpharma.com
- A replay of the third quarter earnings call and webinar will be available at https://ir.lanternpharma.com

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 36 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. 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 - 2.5 million per program.

Our lead development programs include a Phase 2 clinical program and multiple Phase 1 clinical trials. We have also established a wholly-owned subsidiary, Starlight Therapeutics, 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:

Investor Relations
ir@lanternpharma.com

Please find more information at:

- Website: www.lanternpharma.com
- LinkedIn: https://www.linkedin.com/company/lanternpharma/
- X: @lanternpharma
- 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 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 biomarker 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 our research and the research of our collaborators may not be successful, (ii) 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, (iii) 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 (iv) 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.

Exhibit 99.2

Third Quarter 2023
Operating & Financial Results Conference Call / Webinar

November 8th, 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 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 biomarker 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 our research and the research of our collaborators may not be successful, (ii) 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, (iii) 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 (iv) 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
CEO and President

David Margrave
CFO

Lantern is Transforming Drug Discovery Timelines & Costs with AI

AI insights and biomarkers can increase the odds of clinical trial success by **12X***

(*Parker et al., 2021)

RADR® can **predict and stratify real-world patients** for clinical trials with **88% accuracy**

Lantern can **compress the timeline** of early-stage drug development by **70%** and **reduce the cost** by **80%**

Lantern has launched **10 new programs in 2 years**, and has active ongoing ph.1 and ph.2 clinical trials

LANTERN'S DRUG DEVELOPMENT MODEL AND OBJECTIVES

Large Scale/Multi-omics Oncology Data

Proprietary AI platform RADR®

Accelerated timelines; reduced costs and risks

Lantern's diverse & unique AI-driven pipeline of 13 lead drug programs including the Phase 2 Harmonic™ trial and RADR® collaborations

2023 3rd Quarter Highlights

1 of 2

Lantern Pharma

NASDAQ: LTRN

- ✓ Received IND clearance from FDA to initiate **Phase 1 clinical trial for LP-284**, a first-in-human trial for advanced, refractory **non-Hodgkin's lymphomas** (NHL).
- ✓ Dosed initial patient in **Phase 1 with LP-184,** a clinical trial for multiple advanced **solid tumors** that are refractory to standard-of-care therapies.
- ✓ Progressed **Phase 2 LP-300 Harmonic™ clinical trial** towards enrollment in East Asian countries where 30-35+% of all lung cancer cases occur in never-smokers with NSCLC; continued expansion of additional clinical trial sites in the US and increased focus on recruitment activity with advocacy groups.

2023 3rd Quarter Highlights

2 of 2

Lantern Pharma

NASDAQ: LTRN

- ✓ Developed initial proof-of-concept and preclinical evidence with our collaborators for **a novel cryptophycin-based ADC** (antibody-drug conjugate); initial data is planned to be shared in January 2024.
- ✓ Furthered development of Lantern's **AI platform, RADR®**, to include modules for the streamlined development of ADCs and the prediction of ideal drug combinations with existing approved checkpoint inhibitors.
- ✓ Approximately **$45 million** in cash, cash equivalents, and marketable securities as of September 30, 2023, anticipated to provide a cash runway into at least Q3 of 2025.

Financial Updates Q3 2023

Solid financial position and capital efficiency fuel continued growth anticipated to provide a cash runway into at least Q3 of 2025

Summary Results of Operations

	Three Months Ended September 30, (unaudited) 2023	2022
Operating expenses:		
General and administrative	$ 1,313,727	$ 1,442,961
Research and development	2,209,894	702,296
Total operating expenses	3,523,621	2,145,257
Loss from operations	(3,523,621)	(2,145,257)
Interest + Other income, net	362,171	(119,424)
NET LOSS	$ (3,161,450)	$ (2,264,681)
Net loss per common share, basic and diluted	$ (0.29)	$ (0.21)
Weighted Avg. Common Shares Outstanding - Basic and Diluted	10,857,366	10,838,888

Balance Sheet Highlights & Summary

	09/30/2023 (unaudited)	12/31/2022
Cash, Cash Equivalents & Marketable Securities	$44,925,580	$55,196,085
Prepaid Expenses & Other Current Assets	$2,500,401	$2,985,472
Total Assets	$47,771,508	$58,836,321
Total Liabilities	$2,359,828	$2,798,297
Total Stockholders' Equity	$45,411,680	$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."

LP-284: Ph. 1 trial launched in Q4 for recurrent NHLs with scarce therapeutic options & market potential of $4+ billion in annual global sales

First-In-Human Trial for **LP-284**

Phase 1

Non-Hodgkin's Lymphomas

$4.0Bn

Estimated global annual market potential in NHL

375k

Estimated global annual patients in NHL

Q2 2023 — Completed IND enabling studies

Sep 2023 — IND application cleared by FDA

Q4 2023 — Launched phase 1 trial

Recent Highlights

- Received notice of allowance from the USPTO for the composition of matter patent, no. 17/192,838, covering the molecule LP-284, extending commercial protection into early **2039**

Program Highlights

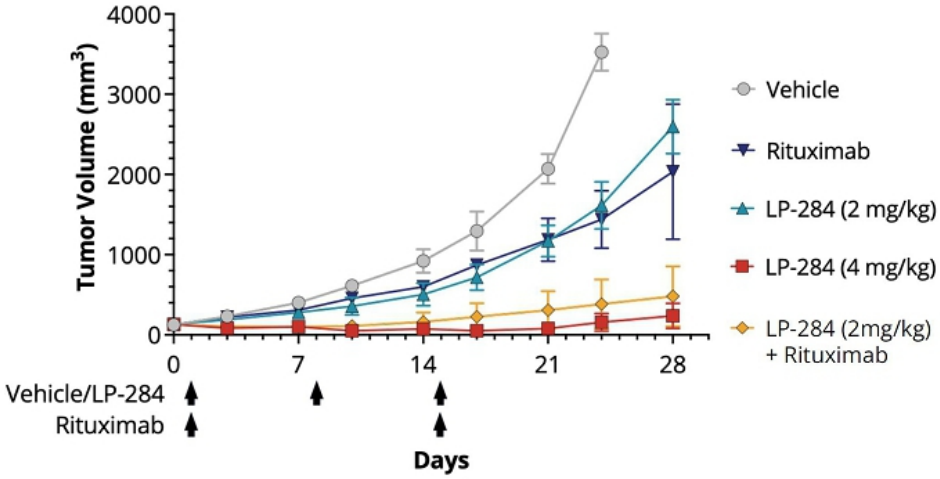
- LP-284 has nanomolar potency against several aggressive non-Hodgkin's lymphomas (NHL) including mantle cell and double hit lymphomas
- FDA granted Orphan Drug Designation for mantle cell lymphoma
- In-vivo LP-284 can rescue tumors resistant to MCL standard-of-care agents Ibrutinib and Bortezomib
- Enhanced potency when used in combination with other approved agents like Spironolactone

Preclinical Data on Combination Therapy – LP-284

LP-284 was highly synergistic when used in combination with rituximab in HGBL xenograft models

High Grade B-cell Lymphoma (HGBL) Tumor Volumes in Mice LP-284 – in combination with rituximab

HGBL have universally poor prognosis after chemotherapy, such as EPOCH, Hyper CVAD, and CODOX-M/IVAC - all are given with Rituximab. Novel agents are critically needed for more effective treatments in HGBL



LP-284 treatment led to **near complete tumor growth** inhibition and showed synergistic effects with the FDA-approved agent rituximab

At half of the optimal dose (2mg/kg v. 4mg/kg) **LP-284 when combined with rituximab led to a 63% improvement** in anti-cancer activity (as measured by tumor volumes) versus rituximab alone

- Rituximab alone = 57% TGI
- LP-284+ Rituximab = 93% TGI

Results presented at: soho2023 ELEVENTH ANNUAL MEETING

Phase 1A dose-escalation safety study of LP-184 for patients with locally advanced or metastatic solid tumors or unresectable or recurrent glioblastoma multiforme (GBM) and other high-grade gliomas

Annual US Market Potential: $14+ Billion
(DDR Deficient Solid Tumors)

Trial Updates

- Trial launched and multiple US sites activated
- First patient dosed in September 2023
- Multiple additional sites across the US including industry-leading institutes like Fox Chase Cancer Center to be enrolled

Future Directions

- Following determination of the maximum tolerated dose (MTD) and/or recommended phase 2 dose (RP2D), the dose will be confirmed prior to initiating enrollment in Phase 1B
- **Potential future studies: Phase 2 in GBM (through Starlight) and Phase 1b/2 in other solid tumors** to be initiated after determination of MTD

LP-184: Launched Phase 1 basket trial for a blockbuster molecule with a market potential of $14+ billion in annual sales

First-In-Human Trial for **LP-184**

Phase 1A

Solid Tumors

Brain & CNS Cancers

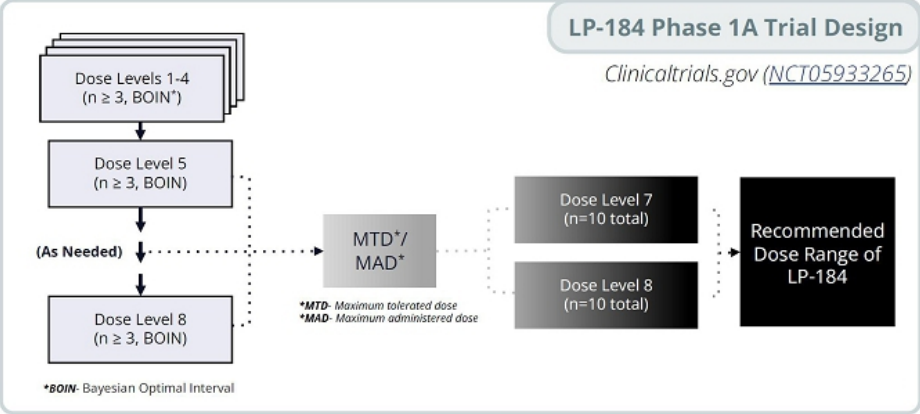
30-35

Patients expected to be enrolled

June 2023 — IND application cleared by FDA

July 2023 — Trial launch and initial sites activated

Sep 2023 — First patient dosed



Harmonic™: Accelerating recruitment efforts for a growing indication with limited treatment options and an annual global market potential of $2.6+ bn

harmonic

Phase 2

Non-Small Cell Lung Cancer

Never Smokers

90

Patients

Two arm, Open-label, Randomized Trial

Multi-Site

1 in 6

lung cancer deaths will occur in patients that are **never smokers with NSCLC**

20,000-40,000

never smokers will be diagnosed with NSCLC each year

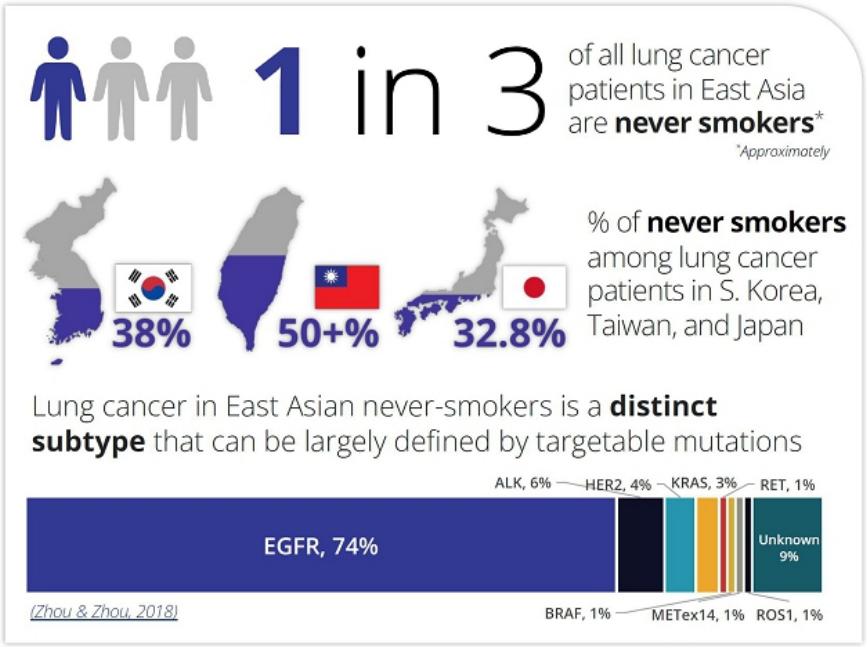
Cancer.gov

Annual Market Potential (global) : $2.6+ Billion

Trial Updates

- **Dr. Joseph Treat, MD of Fox Chase Cancer Center**: appointed lead principal investigator for the Harmonic™ study
- Initial patients dosed in first half of 2023, enrollment anticipated to last 18-24 months
- Multiple additional patients and sites across the US anticipated to be enrolled during remainder of 2023
- Expanding trial to Asia (South Korea, Japan, and Taiwan) in countries with a higher incidence of NSCLC in never smokers

Expanding the Phase 2 Clinical Trial to East Asia: Boosting Patient Enrollment in Countries with High Incidences of NSCLC in Never Smokers



Highlights

- Expanding trial to South Korea, Taiwan, and Japan
- East Asian populations have higher rates of NSCLC never smoker population of EGFR and TKI mutations

Q4 2023 — Regulatory and Country Submissions

Q1+Q2 2024* — Launch the Harmonic™ trial in South Korea, Taiwan and Japan

*anticipated

Initiated RADR® collaboration w/ Bielefeld Univ. to develop breakthrough cryptophycin ADCs - an entirely new treatment modality

Rapidly growing global ADC market

currently valued at

$4+ billion

projected value by 2027

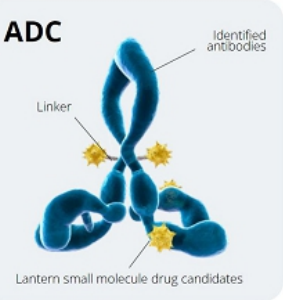
$14+ billion

UNIVERSITÄT BIELEFELD

MAGIC BULLET :: Reloaded

Led by **Professor Norbert Sewald, Ph.D.**

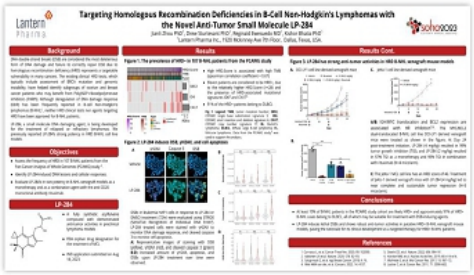
- **RADR® ADC module** will be leveraged to develop novel and potent cryptophycin-ADCs
- **Lantern received exclusive worldwide option** to license IP from Bielefeld University related to, or generated from, collaboration



Collaboration Updates

- Successful generation of cryptophycin conjugated ADC with a drug antibody ratio (DAR) ranging between 2 to 8
- Cryptophycin-ADCs exhibited in vitro sensitivity across six cancer indications
- This data provides a rationale for further development as one of our future clinical candidates, allowing us to rapidly move to preclinical toxicology studies
- Ongoing discussion for potential development using cryptophycins in conjunction with two of the highly ranked targets from the RADR® AI platform development module

Recent Posters Highlighting the Strong Validation of RADR® Insights, De-risking the Development of Lantern's Drug Candidates

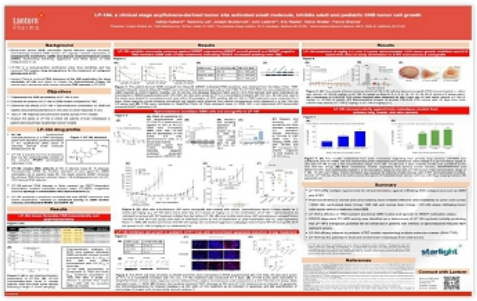


soho2023
ELEVENTH ANNUAL MEETING

Soho 2023 Annual Meeting

Targeting homologous recombination deficiencies in B-cell non-Hodgkin's lymphomas with the novel anti-tumor small molecule LP-284

September, 2023



SNO Society for NeuroOncology

ASCO AMERICAN SOCIETY OF CLINICAL ONCOLOGY
KNOWLEDGE CONQUERS CANCER

SNO/ASCO CNS Cancer Conference

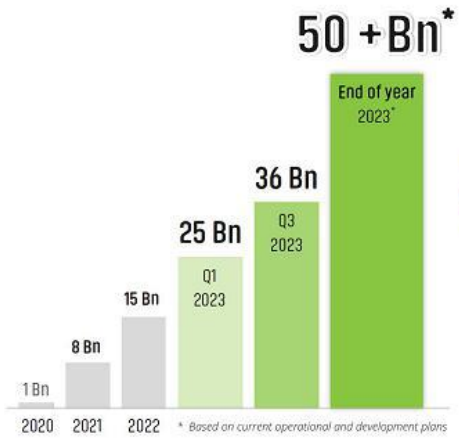
LP-184, a clinical stage acylfulvene-derived tumor site activated small molecule, inhibits adult and pediatric CNS tumor cell growth

August, 2023

RADR®'s expansion of size, scope, and capabilities continues to push the boundary of AI for oncology drug discovery and development

SCALE

50 billion oncology-focused datapoints by end of 2023



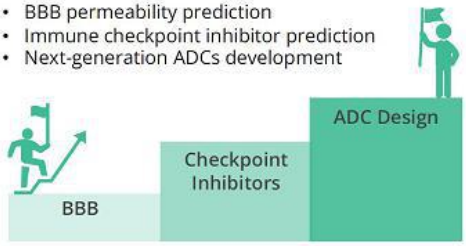
SCOPE

- Additional classes of compounds including antibodies, checkpoint inhibitors, DNA damaging agents, and ADCs

IO drugs | ADCs | DNA damaging agents

CAPABILITIES

- BBB permeability prediction
- Immune checkpoint inhibitor prediction
- Next-generation ADCs development



Lantern Pharma's Proactive Engagement in Patient Outreach Initiatives

Past Events

Glioblastoma Awareness Day
Social media campaign
July 2023

GO2 for Lung Cancer 5K Run in LA
Sponsor
October 2023

World Lung Cancer Day
White ribbon building @ Plano office
August 2023

BOHKY White Ribbon 5K Run
Sponsor
October 2023

Upcoming Event

HOPE 4 ATRT RALLY
Dr. Reggie Ewesuedo (VP, Clinical Development) presenting / attending
November 10th, 2023

*"We are committed to including patients in our mission to develop cancer drugs **faster, cheaper, and with greater precision**. By actively engaging with patient advocacy groups, we are more effective in working towards the goal of **driving awareness** and improving our understanding of the clinical need, while **building stronger connections** with the cancer community."*

2023-24 Objectives

A **Transformational** Year for Lantern

TOP TEN

- Continue disciplined fiscal management
- Explore licensing and partnership opportunities with biopharma companies
- Establish additional RADR® based collaborations with corporate and research partners
- Accelerate enrollment of **The Harmonic™ Trial** & advance towards enrollment in Asia
- Advance phase 1A basket clinical trial for LP-184 & achieve dosing levels for future phases
- Advance first-in-human clinical trial for LP-284 in NHL
- Progress Starlight Therapeutics towards Ph. 1 / 2 adult & pediatric clinical trials
- Further ADC preclinical and IND development to support future Phase 1 launch and/or partnership
- Develop combination programs for LP-184, LP-284, and LP-300 with existing approved drugs
- Expand RADR® AI platform to 50+ billion datapoints

Lantern Pharma

NASDAQ: LTRN

IR Contact:
IR@lanternpharma.com
1-972-277-1136

www.lanternpharma.com

@LanternPharma

Sign up for the spark Newsletter

https://lantern-pharma.read.axioshq.com/signup/lantern-pharma-newsletter

CONNECT WITH US