First Quarter 2025
Operating & Financial Results Conference Call / Webinar

May 15th, 2025
9AM Eastern Time

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 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 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 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

2025 1st Quarter Highlights

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Lantern Pharma®

NASDAQ: LTRN

- ✓ **Completion of LP-184 Phase 1a** clinical trial with 62-65 patients enrolled across a range of solid tumors expected by end of June 2025.
- ✓ **Additional patient data readout** from the HARMONIC™ Trial evaluating LP-300 in never-smokers with non-small cell lung cancer anticipated in **Q3 2025**, including initial readout for patients from the Asian expansion cohort.
- ✓ **Strengthened AI intellectual property** portfolio with PCT publication of proprietary blood-brain barrier penetration prediction patent application; **favorable PCT search report** indicated no significant prior art.
- ✓ **Expanded RADR® platform with innovative AI-powered module** to improve the precision, cost and timeline of antibody-drug conjugate **(ADC) development, integrating a multiomic approach using proprietary algorithms** to design and optimize target, payload, and tumor selectivity.

2025 1st Quarter Highlights

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Lantern Pharma®

NASDAQ: LTRN

- ✓ Planning **commercial availability and launch of select RADR® AI modules** for the scientific and research community to foster collaborative, **open-source innovation** in cancer drug development.
- ✓ Obtained further independent preclinical confirmation of **LP-184 hypersensitivity in rare pediatric brain tumors,** such as ATRT, by our collaborators at Johns Hopkins in support of **planned pediatric trial** in CNS tumors.
- ✓ Maintained **disciplined capital management,** with approximately **$19.7 million** in cash, cash equivalents, and marketable securities as of March 31, 2025, providing expected **operating runway through at least May 15, 2026.**

"This quarter represents a pivotal inflection point in our clinical and technological development. As we approach full enrollment in our LP-184 Phase 1a trial and prepare for an additional data readout for our LP-300 Harmonic Trial, including initial data from our Asian expansion cohort, we are positioning ourselves for productive discussions with potential biopharma partners. Simultaneously, our RADR® AI platform has reached a crucial development milestone with a broad and validated range of oncology drug development modules powered by hundreds of billions of datapoints. These advancements further validate our AI-driven approach to cancer drug development, which is focused on addressing real-world, unmet patient needs while establishing a clear pathway toward commercialization focused on delivering value to patients and shareholders."

Financial Updates Q1 2025

Summary Results of Operations

	Three Months Ended March 31, (unaudited) 2025	2024
Operating expenses:		
General and administrative	$ 1,510,077	$ 1,481,215
Research and development	3,263,955	4,250,786
Total operating expenses	4,774,032	5,732,001
Loss from operations	(4,774,032)	(5,732,001)
Interest + Other income, net	237,249	291,191
NET LOSS	**$** (4,536,783)	**$** (5,440,810)
Net loss per common share, basic and diluted	$ (0.42)	$ (0.51)
Weighted Avg. Common Shares Outstanding - Basic and Diluted	10,784,725	10,742,797

Balance Sheet Highlights & Summary

	03/31/2025 (unaudited)	12/31/2024
Cash, Cash Equivalents & Marketable Securities	19,721,651	24,013,063
Prepaid Expenses & Other Current Assets	1,101,725	1,234,566
Total Assets	21,096,335	25,571,792
Total Liabilities	4,319,850	4,384,018
Total Stockholders' Equity	16,776,485	21,187,774

Lantern's diverse & unique AI-driven pipeline of 11 drug programs including RADR® collaborations and Starlight Therapeutics

Lantern Pharma (NASDAQ: LTRN)

Lead Candidate	Indication	Discovery	Preclinical	Phase I	Phase II	Orphan Drug	Rare Pediatric	Fast Track
LP-300	Non-Small Cell Lung Cancer for Never Smokers				harmonic			
LP-184	Recurrent Advanced Solid Tumors (*Pancreatic, TNBC, Bladder, & Other Solid Tumors*)					● ** for Pancreatic, MRT, RMS, HB, HGG*	● ** for MRT, RMS & HB*	● ** for TNBC*
LP-284	Recurrent Non-Hodgkin's Lymphomas (*Mantle cell, Double-hit lymphomas, & HGBL*)					● **for Mantle Cell & HGBL*		
ADC	Select Solid Tumors							

RADR® Collaborations

Elraglusib *owned by – Actuate Thera.*	Multiple Solid Tumors	Collaboration partner	ACTUATE THERAPEUTICS
TTC-352 *owned by– TTC Oncology*	ER+ Breast Cancers	Collaboration partner	ttc oncology
XCE853 *owned by – Oregon Thera.*	Protein Disulfide Isomerase (PDI) Inhibitor	Collaboration partner	OREGON THERAPEUTICS
ADC	Cryptophycin Conjugate for Solid Tumors	Collaboration partner	UNIVERSITÄT BIELEFELD

Starlight's pipeline is focused on multiple CNS indications in both adult and pediatric patients

Starlight Therapeutics

ADULT CNS CANCERS

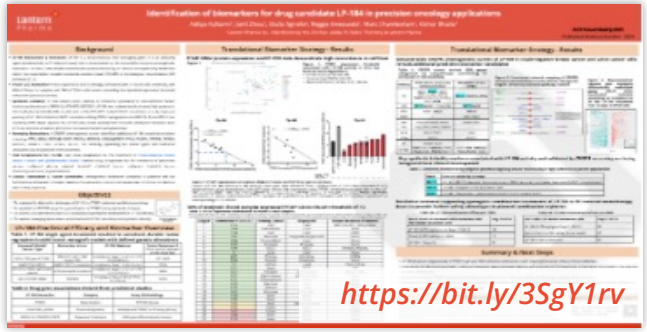
Lead Candidate	Indication	Discovery	Preclinical	Phase I	Phase II	Orphan Designation	RPDD	Fast Track
STAR-001	First Recurrent Glioblastoma*					●		●
	Newly Diagnosed MGMT Unmethylated Glioblastoma**					●		●

* *Multiple GBM patients have been enrolled in the ongoing Phase 1a being conducted by Lantern Pharma*
** *Investigator led trial*

PEDIATRIC CNS CANCERS

STAR-001	Phase 1a monotherapy including ATRT, DIPG and Medulloblastoma					● *for ATRT	● *for ATRT	
	Phase 1b combination select pediatric CNS cancers							

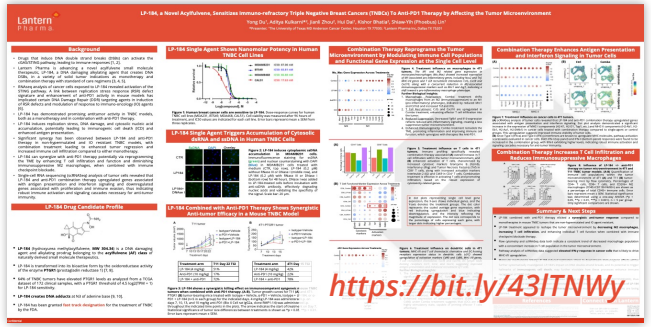
Recent publications highlighting the clinical value of RADR® in the development of Lantern's drug candidates



POSTER | AACR ANNUAL MEETING 2025

Identification of biomarkers for drug candidate LP-184 in precision oncology applications

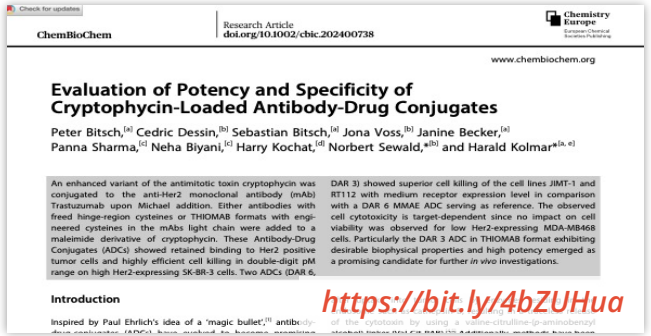
AACR American Association for Cancer Research®



POSTER | AACR IMMUNO-ONCOLOGY CONFERENCE 2025

LP-184, a Novel Acylfulvene, Sensitizes Immuno-refractory Triple Negative Breast Cancers (TNBCs) to Anti-PD1 Therapy by Affecting the Tumor Microenvironment

AACR IO
DISCOVERY AND INNOVATION IN CANCER IMMUNOLOGY: REVOLUTIONIZING TREATMENT THROUGH IMMUNOTHERAPY



PUBLICATION | CHEMBIOCHEM JOURNAL

Evaluation of Potency and Specificity of Cryptophycin-Loaded Antibody-Drug Conjugates

ChemBioChem
An Official Journal of the EFMC

2025 Objectives

A Breakthrough Year for Lantern

TOP TEN

- Complete Phase 1a clinical trial for LP-184; pursue Phase 1b/2 and investigator led trial(s)
- Advance enrollment in first-in-human clinical trial for LP-284 in NHL + other cancers
- Report initial clinical data for Asian cohort in the Harmonic™ Trial and updates on the US patient population
- Progress and monetize Starlight Therapeutics towards planned Phase 1 / 2 adult & pediatric clinical trials
- Expand and commercialize RADR® AI platform and launch initial modules as open-source AI agents
- Further ADC preclinical and IND development to support future Phase 1 launch and/or partnership opportunities
- Explore licensing and partnership opportunities with biopharma companies
- Develop and communicate combination programs and trials for Lantern's portfolio with existing FDA approved drugs
- Continue efficient internal clinical operations capabilities
- Maintain disciplined fiscal management and pursue additional funding opportunities

Lantern Pharma®

NASDAQ: LTRN

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