Fourth Quarter & Year-end 2024
Operating & Financial Results Conference Call / Webinar

March 27th, 2025
4:30 PM 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

2024 4th Quarter Highlights

1 of 4

Lantern Pharma®

NASDAQ: LTRN

- ✓ **HARMONIC™ trial** lead-in cohort delivered impressive **86% clinical benefit rate and 43% objective response rate** in never-smoker NSCLC patients, with current expansion cohort reinforcing these positive trends as enrollment accelerates in **Japan and Taiwan**, where 33-40% of NSCLC cases occur in never-smokers, positioning Lantern for multiple clinical readouts in 2025.

- ✓ **LP-184** received **two U.S. FDA Fast Track Designations in 2024 for Glioblastoma and Triple Negative Breast Cancer**, plus three additional Rare Pediatric Disease Designations, strengthening future market potential across multiple high-need indications with multi billion U.S. dollar market potential.

2024 4th Quarter Highlights

2 of 4

Lantern Pharma®

NASDAQ: LTRN

- ✓ Successfully dosed multiple patient cohorts in **Phase 1A clinical trials for both LP-184 and LP-284**, advancing these synthetic lethal drug candidates toward drug concentration levels that may show therapeutic efficacy in several cancers of high unmet patient need and with **multiple orphan and fast track FDA designations.**

- ✓ Demonstrated **LP-184 synergy with checkpoint inhibitors in TNBC** through **MD Anderson collaboration**, demonstrating ability to transform immunologically "cold" tumors into "hot" tumors by reshaping the tumor microenvironment and modulating T-cell activity in preclinical models.

2024 4th Quarter Highlights

3 of 4

Lantern Pharma®

NASDAQ: LTRN

- ✓ Starlight Therapeutics unveiled **recurrent GBM trial design for STAR-001 at SNO 2024**, featuring innovative **STAR-001+spironolactone combination** regimen that leverages synthetic lethality; assembled world-class **Scientific Advisory Board** from Johns Hopkins, UCSF, and Memorial Sloan Kettering.

- ✓ Showcased **industry-leading capabilities in CNS therapeutic development using AI** with patent-pending **BBB permeability prediction algorithm** with unprecedented performance – five of the top eleven rankings on Therapeutic Data Commons leaderboard and processing capabilities of 100,000 molecules per hour at industry-leading accuracy rates.

2024 4th Quarter Highlights

4 of 4

Lantern Pharma®

NASDAQ: LTRN

- ✓ Unveiled innovative **AI-powered ADC development module** that identified 82 promising targets and 290 target-indication combinations and potentially **reducing development timelines by 30-50% and preclinical costs by up to 60%** compared to traditional ADC development.

- ✓ The **RADR® AI platform** surpassed **100 billion oncology-specific data points** in 2024, accelerating precision drug development initiatives including biomarker discovery and signature creation, identification of mechanisms of action and synergistic combination regimens, ADC optimization, and continuing to power collaborations with emerging oncology companies and centers.

- ✓ Approximately **$24 million** in cash, cash equivalents, and marketable securities as of December 31, 2024.

“With three clinical precision oncology programs actively enrolling patients and critical data milestones on the horizon, we are at the forefront of using AI to transform the cost, pace, and timeline of oncology drug development. Lantern is a leader in the development of tech-bio to deliver the next generation of cancer medicines, where success is defined by both AI-driven progress and meaningful patient outcomes,”

Summary Results of Operations

	Three Months Ended December 31,		Year Ended December 31,	
	2024	**2023**	**2024**	**2023**
Operating expenses:				
General and administrative	$ 1,626,878	$ 1,304,127	$ 6,090,747	$ 5,983,255
Research and development	4,269,521	3,573,257	16,125,690	11,894,315
Total operating expenses	5,896,399	4,877,384	22,216,437	17,877,570
Loss from operations	(5,896,399)	(4,877,384)	(22,216,437)	(17,877,570)
Interest + Other income, net	21,199	691,463	1,435,224	1,916,036
NET LOSS	**$** (5,875,200)	**$** (4,185,921)	**$** (20,781,213)	**$** (15,961,534)
Net loss per common share, basic and diluted	$ (0.54)	$ (0.39)	$ (1.93)	$ (1.47)

Balance Sheet Highlights & Summary

	December 31, 2024	December 31, 2023
Cash and Marketable Securities	$24,013,063	$41,302,672
Prepaid Expenses & Other Current Assets	$1,234,566	$2,038,653
Total Assets	**$25,571,792**	**$43,647,616**
Total Liabilities	**$4,384,018**	**$2,739,682**
Total Stockholders' Equity	**$21,187,774**	**$40,907,934**

Shares Outstanding

LANTERN PHARMA INC. (LTRN)	December 31, 2024
Common Shares Outstanding	10,784,725
Warrants	70,000
Options (Employees, Management and Directors)	1,245,694
Fully Diluted Shares Outstanding	**12,100,419**

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							

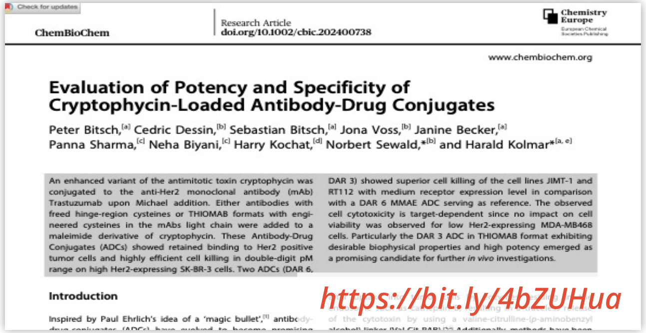
Eleven FDA designations demonstrate our data-driven, AI-enabled approach to transformative drug development & strengthen our commercial value

FDA

11 designations

Designation	Candidate	Indication	Date
Fast Track Designation	LP-184	Glioblastoma	Sep. 2024
	LP-184	Triple Negative Breast Cancer	Dec. 2024
Orphan Drug Designation	LP-184	Pancreatic Cancer	Aug. 2021
	LP-184	Glioblastoma	Aug. 2021
	LP-184	Malignant Glioma	Aug. 2021
	LP-284	Mantle Cell Lymphoma	Jan. 2023
	LP-284	High Grade B-Cell Lymphoma	Nov. 2023
Orphan and Rare Pediatric Disease Designation	LP-184	ATRT	Jan. 2022
	LP-184	Malignant Rhabdoid Tumors	Sep. 2024
	LP-184	Rhabdomyosarcoma	Sep. 2024
	LP-184	Hepatoblastoma	Sep. 2024

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


Check for updates

ChemBioChem

Research Article
doi.org/10.1002/cbic.202400738

Chemistry Europe
European Chemical Societies Publishing

www.chembiochem.org

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

Peter Bitsch,[a] Cedric Dessin,[b] Sebastian Bitsch,[a] Jona Voss,[b] Janine Becker,[a] Panna Sharma,[c] Neha Biyani,[c] Harry Kochat,[d] Norbert Sewald,*[b] and Harald Kolmar*[a, e]

An enhanced variant of the antimitotic toxin cryptophycin was conjugated to the anti-Her2 monoclonal antibody (mAb) Trastuzumab upon Michael addition. Either antibodies with freed hinge-region cysteines or THIOMAB formats with engineered cysteines in the mAbs light chain were added to a maleimide derivative of cryptophycin. These Antibody-Drug Conjugates (ADCs) showed retained binding to Her2 positive tumor cells and highly efficient cell killing in double-digit pM range on high Her2-expressing SK-BR-3 cells. Two ADCs (DAR 6, DAR 3) showed superior cell killing of the cell lines JIMT-1 and RT112 with medium receptor expression level in comparison with a DAR 6 MMAE ADC serving as reference. The observed cell cytotoxicity is target-dependent since no impact on cell viability was observed for low Her2-expressing MDA-MB468 cells. Particularly the DAR 3 ADC in THIOMAB format exhibiting desirable biophysical properties and high potency emerged as a promising candidate for further *in vivo* investigations.

Introduction

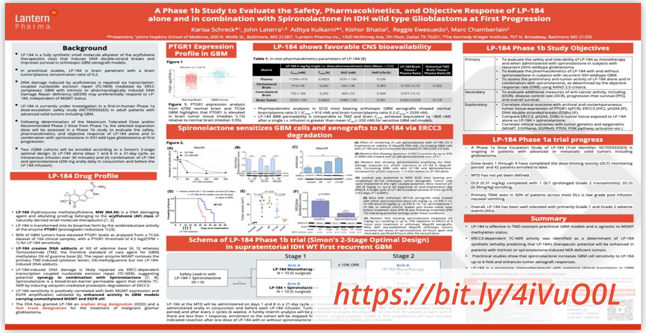
Inspired by Paul Ehrlich's idea of a 'magic bullet',[1] antibody-

https://bit.ly/4bZUHua

PUBLICATION | CHEMBIOCHEM JOURNAL

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

ChemBioChem
An Official Journal of the EFMC

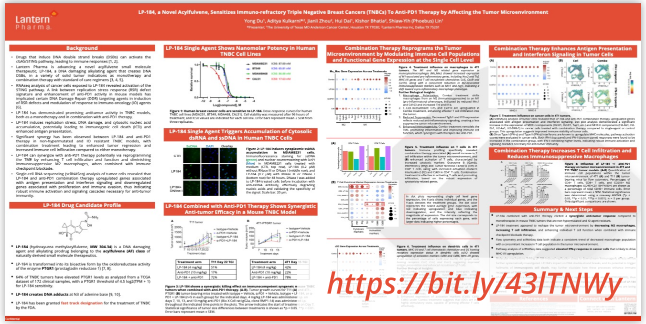


Lantern Pharma
A Phase 1b Study to Evaluate the Safety, Pharmacokinetics, and Objective Response of LP-184 alone and in combination with Spironolactone in IDH wild type Glioblastoma at First Progression
Karisa Schreck*1, John Laterra1,3 Aditya Kulkarni*2, Kishor Bhatia2, Reggie Ewesuedo2, Marc Chamberlain2
Background
PTGR1 Expression Profile in GBM
LP-184 shows favorable CNS bioavailability
LP-184 Phase 1b Study Objectives
Spironolactone sensitizes GBM cells and xenografts to LP-184 via ERCC3 degradation
LP-184 Phase 1a trial progress
LP-184 Drug Profile
Summary
Schema of LP-184 Phase 1b trial (Simon's 2-Stage Optimal Design) in supratentorial IDH WT first recurrent GBM
https://bit.ly/4iVuO0L

POSTER | SNO ANNUAL MEETING 2024

A Phase 1b Study to Evaluate the Safety, Pharmacokinetics, and Objective Response of LP-184 alone and in combination with Spironolactone in IDH wild type Glioblastoma at First Progression

SNO
Society for NeuroOncology



Lantern Pharma
LP-184, a Novel Acylfulvene, Sensitizes Immuno-refractory Triple Negative Breast Cancers (TNBCs) To Anti-PD1 Therapy by Affecting the Tumor Microenvironment
Yong Du1, Aditya Kulkarni*2, Jianli Zhou2, Hui Dai1, Kishor Bhatia2, Shiaw-Yih (Phoebus) Lin1
Background
LP-184 Single Agent Shows Nanomolar Potency in Human TNBC Cell Lines
Combination Therapy Reprograms the Tumor Microenvironment by Modulating Immune Cell Populations and Functional Gene Expression at the Single Cell Level
Combination Therapy Enhances Antigen Presentation and Interferon Signaling in Tumor Cells
LP-184 Drug Candidate Profile
https://bit.ly/43ITNWy

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

AACR American Association for Cancer Research®

2025 Objectives

A Breakthrough Year for Lantern

TOP TEN

- Complete Phase 1a clinical trial for LP-184; pursue Phase 1b and investigator led trial(s)
- Advance enrollment in first-in-human clinical trial for LP-284 in NHL + other cancers
- Accelerate enrollment of **The Harmonic™ Trial** in targeted sites in Asia
- Progress Starlight Therapeutics towards planned Phase 1b / 2 adult & pediatric clinical trials
- Expand RADR® AI platform and develop additional monetizable collaborations
- Further ADC preclinical and IND development to support future Phase 1 launch / partnership opportunities
- Explore licensing and partnership opportunities with biopharma companies
- Develop combination programs for LP-184, LP-284, and LP-300 with existing approved drugs
- Continue efficient internal clinical operations capabilities
- Maintain disciplined fiscal management and pursue additional funding opportunities

Lantern Pharma®

NASDAQ: LTRN

CONNECT WITH US

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

www.lanternpharma.com

@LanternPharma

linkedin.com/company/lanternpharma

starlight therapeutics

CONNECT WITH US

IR Contact:
IR@starlighttthera.com

www.starlightthera.com

@Starlight_Thera

linkedin.com/company/starlightthera