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 7, 2024

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.)							
	of incorporation)	rile Number)	identification No.)							
	1920 McKinney Avenue, 7th Floor Dallas, Texas		75201							
	(Address of Principal Executive Offices	s)	(Zip Code)							
		(972) 277-1136								
	(F	Registrant's telephone number, including area	code)							
	propriate box below if the Form 8-K filing is interaction A.2. below):	ended to simultaneously satisfy the filing obligation	gation of the registrant under any of the following provisions (see							
☐ Written o	communications pursuant to Rule 425 under the Se	ecurities Act (17 CFR 230.425)								
☐ Soliciting	Soliciting material pursuant to Rule 14a-12 under the Exchange Act (17 CFR 240.14a-12)									
☐ Pre-com	Pre-commencement communications pursuant to Rule 14d-2(b) under the Exchange Act (17 CFR 240.14d-2(b))									
☐ Pre-com	□ Pre-commencement communications pursuant to Rule 13e-4(c) under the Exchange Act (17 CFR 240.13e-4(c))									
Securities reg	istered pursuant to Section 12(b) of the Act: Com	non 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							
	neck mark whether the registrant is an emerging g Exchange Act of 1934 (§240.12b-2 of this chapte		Securities Act of 1933 (§230.405 of this chapter) or Rule 12b-2 of							
			Emerging growth company ⊠							
If an emergin	g 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 sta	andards provided pursuant to Section 13(a) of the	Exchange Act. ⊠								
Item 7.01 Re	gulation FD Disclosure.									
On Novembe	r 7 2024 the Company utilized a presentation to	o assist with the Company's discussions duri	ng a conference call and live webinar hosted by the Company to							
discuss financ	, , , , , , , , , , , , , , , , , , , ,	1 2	tion is furnished as Exhibit 99.1 to this Current Report on Form 8-							
		1 H . 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1								
"Exchange A	ct"), or otherwise subject to the liabilities of that	t section, nor shall it be deemed incorporated	Section 18 of the Securities Exchange Act of 1934, as amended (the 1 by reference in any filings under the Securities Act of 1933, as ssly incorporated by specific reference in such filing.							
Item 9.01 Fir	nancial Statements and Exhibits.									
(d) Exhibits.										
Exhibit No.	Exhibit Description									
99.1	Presentation relating to November 7, 2024 confe	erence call and live webinar discussing financi	al and operating results for quarter ended September 30, 2024.							
104	Cover Page Interactive Data File (formatted as I									

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 7, 2024

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

Third Quarter 2024 Operating & Financial Results Conference Call / Webinar

November 7th, 2024 4:30 PM Fastern Time





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 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 our research and the research of our collaborators may not be successful, (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 we may not be able to secure sufficient future funding when needed and as required to advance and support existing and planned clinical trials and operations, (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, 2023, filed with the Securities and Exchange Commission on March 18, 2024. You may access our Annual Report on Form 10-K for the year ended December 31, 2023 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.



2024 3rd Quarter Highlights

1 of 3



- Lantern is advancing three Al-guided precision-oncology drug candidates in active Phase 1 and Phase 2 clinical trials, while evaluating additional ADC-based preclinical molecules for development.
- ✓ Preliminary patient data and clinical readouts for the Phase 2 LP-300 Harmonic™ Trial showed an 86% clinical benefit rate in the initial 7 patient lead-in cohort, and additional patients continue to be enrolled in the US.
- ✓ The Harmonic™ Trial has been expanded to both Japan and Taiwan with an expected 10 sites in East Asia; 5 in each country where the population of never-smokers is 33 to 35 percent of new cases in NSCLC.

2024 3rd Quarter Highlights

 $2_{\rm of}3$



- ✓ Phase 1 clinical trials for both synthetic lethal drug candidates, LP-184 and LP-284, continue to advance with no dose-limiting toxicities observed in any of the patient cohorts enrolled and over 50 patients dosed to-date across both trials*.
- LP-184, which will be developed as STAR-001 for CNS and other neuro-oncology indications, received Fast Track
 Designation in Glioblastoma (GBM) from the FDA.
- ✓ Patients with recurrent GBM have been enrolled in the LP-184 Phase 1a trial at 2 academic centers, including Johns Hopkins, and 1 community site; the data will help guide later stage clinical development planned to be sponsored by Starlight Therapeutics during early 2025.

* As of September 30, 2024

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2024 3rd Quarter Highlights

 $3_{\rm of}3$



- Biomarker analysis for PTGR1 expression using qPCR for the first 7 cohorts of patients enrolled in the Phase 1a LP-184 clinical trial has begun, and will help guide the advancement of PTGR1 as a key RNA biomarker that can guide patient response prediction.
- ✓ Three U.S. FDA Rare Pediatric Disease Designations were granted to LP-184 in three ultra rare children's cancers.
- ✓ Three scientific publications in Q3 including: a peer-reviewed paper regarding the unique Al-powered module for ADC development as part of the RADR® platform; and findings presented at conferences regarding the ongoing development of the synthetically-lethal drug candidates at the Immuno-Oncology Summit for LP-184 and The Society of Hematologic Oncology for LP-284.
- ✓ Approximately \$28.1 million in cash, cash equivalents, and marketable securities as of September 30, 2024.

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Financial Updates Q3 2024

hree Months End (unau 2024	ded Se udited)			09/30/2024 (unaudited)	12/31/2023
			Cash, Cash Equivalents & Marketable Securities	\$ 28,053,765	\$ 41,302,672
1,462,930	\$	1,313,727	Prepaid Expenses & Other Current Assets	1,867,195	2,038,653
3,716,646		2,209,894	Total Assets	30,293,264	43,647,616
5,179,576		3,523,621	Total Liabilities	3,695,043	2,739,682
(5,179,576)		(3,523,621)	Total Stockholders' Equity	\$ 26,598,221	\$ 40,907,934
673,879		362,171			
(4,505,697)	\$	(3,161,450)	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.		,
(0.42)	\$	(0.29)			allow us to
10,763,351		10,857,366			
	3,716,646 5,179,576 (5,179,576) 673,879 (4,505,697) (0.42)	3,716,646 5,179,576 (5,179,576) 673,879 (4,505,697) \$ (0.42) \$	3,716,646 2,209,894 5,179,576 3,523,621 (5,179,576) (3,523,621) 673,879 362,171 (4,505,697) \$ (3,161,450) (0.42) \$ (0.29)	3,716,646 2,209,894 Total Assets 5,179,576 3,523,621 Total Liabilities (5,179,576) (3,523,621) Total Stockholders' Equity 673,879 362,171 (4,505,697) \$ (3,161,450)	3,716,646 2,209,894 Total Assets 30,293,264 5,179,576 3,523,621 Total Liabilities 3,695,043 (5,179,576) (3,523,621) Total Stockholders' Equity \$ 26,598,221 673,879 362,171 (4,505,697) \$ (3,161,450) (0.42) \$ (0.29) We believe our solid financial position continued growth and evolution of our platform, accelerate the development of our platform accelerate the development o

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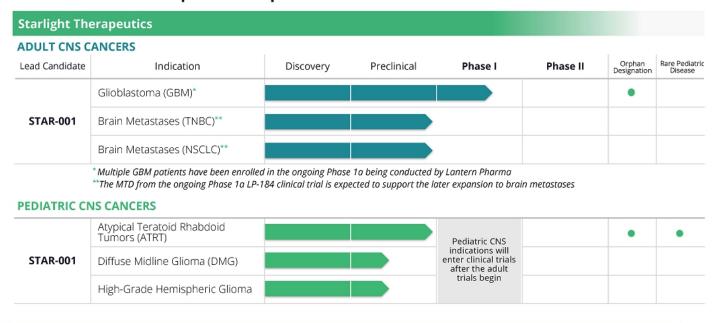
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Lantern's diverse & unique Al-driven pipeline of 11 drug programs including RADR® collaborations and Starlight Therapeutics



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





Synthetic lethal drug candidates, LP-184 & LP-284, continue to advance with no dose-limiting toxicities observed in any of the patient cohorts

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Lantern Pharma





40-50 Patients expected to be enrolled

Annual US market potential in DDR deficient solid tumors

Multi-Site

- · Trial launched and multiple US sites activated, including Fox Chase Cancer Center
- Cohort 9* dosed with no dose-limiting toxicity observed
- Patients with recurrent GBM have been enrolled at 2 academic centers, including Johns Hopkins, and 1 community site



Phase 1a



Patients expected

to be enrolled



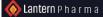
- · Trial launched and multiple sites activated in the US
- Cohort 4* dosed with no dose-limiting toxicity observed

*As of September 30, 2024

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



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



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The Harmonic[™] Phase 2 trial for LP-300

Accelerating recruitment efforts for a growing indication with limited treatment options



Global Phase 2





90

Patients

Two arm, Open-label,

101

wo arm, Open-label, Multi-Site Randomized Trial in US & Asia

| Trial Design

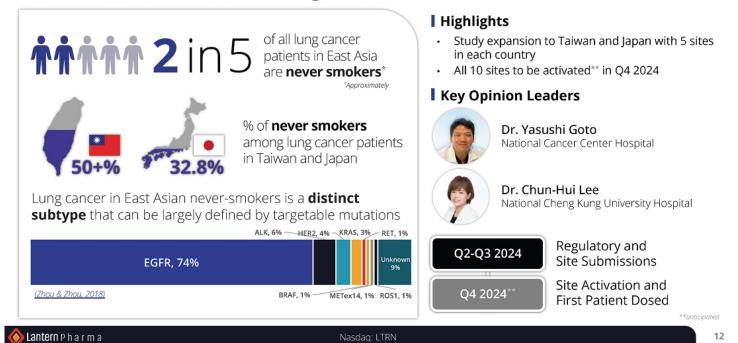


Primary Outcomes: Overall and progression free survival

I Trial Updates

- Preliminary patient data and clinical readouts released showing an 86% clinical benefit rate in the initial 7 patient safety lead-in cohort
- Initial patients dosed in first half of 2023
- Multiple additional patients and sites across the US anticipated to be enrolled during Q4 2024

Expanding the phase 2 clinical trial to east Asia: boosting patient enrollment in countries with high incidences of NSCLC in never smokers



Advancing the development of enhanced durability and efficacy of responses with LP-184: identifying the best combination agents

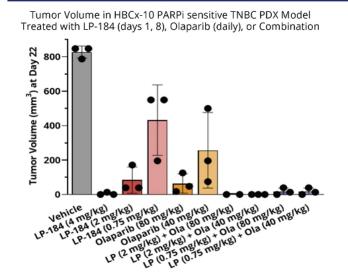
- Combination therapies can further expand clinical opportunities and increase the therapeutic window of success
- Understanding how best to leverage Mechanism of Action and gene dependencies of drugs to allow identification of optimal combinatorial agents
- Understanding indication, overlapping toxicities and how to administer the combinations is necessary to designing clinical trials

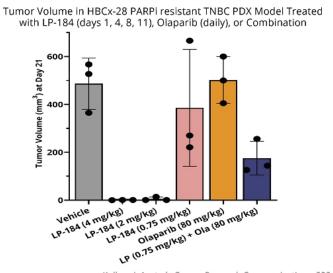
Collaborators



LP-184 and olaparib combination achieves 3 to 14-fold greater tumor regression compared to olaparib alone in TNBC PDX models

Efficacious tumor regression is achieved using 5x lower doses of LP-184 in combination as compared to doses used as monotherapy



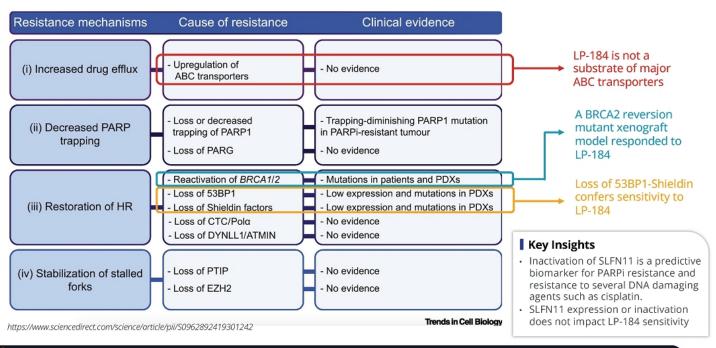


Kulkarni, A. et al., Cancer Research Communications, 2024

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LP-184 can combat PARPi resistance

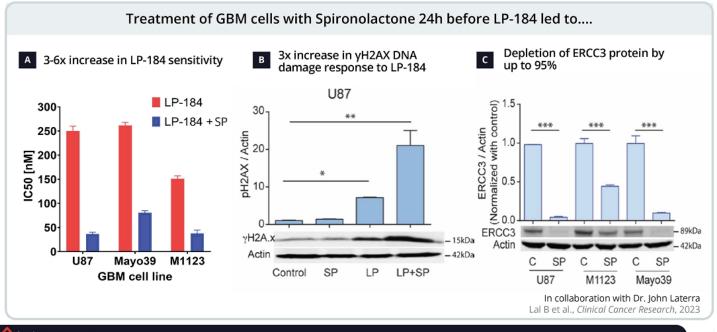


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Combination of spironolactone and LP-184 enhances anti-tumor efficacy in glioblastoma in vitro





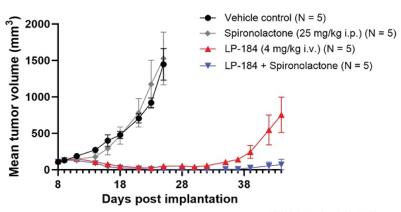
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Combination of spironolactone and LP-184 enhances anti-tumor efficacy in glioblastoma in vivo



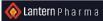
Complete tumor regression with prolonged duration of response



LP-184 dosing days 9, 11, 14, 16; SP dosing days 8, 9, 10, 11, 14, 15, 16, 17, 18.

- Spironolactone monotherapy had no effect on tumor growth compared with vehicle-treated controls in U87 subcutaneous xenografts
- Spironolactone treatment lead to depletion of ERCC3 protein and up to 6 fold increased sensitivity to LP-184 treatment
- LP-184 alone and combined with Spironolactone induced complete or near complete tumor regression
- Combining Spironolactone with LP-184 generated more durable responses with no tumor recurrence in 4 out of 5 animals

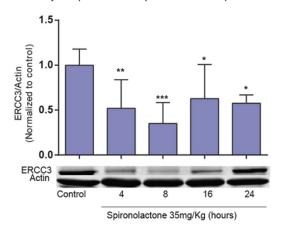
In collaboration with Dr. John Laterra Lal B et al., Clinical Cancer Research, 2023



Clinical practices for administering spironolactone with LP-184 in GBM trials: timing insights for optimal efficacy



Western blot shows kinetics of ERCC3 degradation and recovery reaching a maximum of 70% protein level depletion at 8 hours post administration

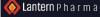


Mayo39 subcutaneous GBM bearing mice were administered SP (35mg/KG), ip, single injection.

Tissue samples were collected at 4, 8, 16 & 24 hours post injection.

- To optimize the administration of Spironolactone in combination with LP-184 for glioblastoma trials, the most practical and effective dosing schedule involves administering Spironolactone both the day before and the day of LP-184 administration
- This timing aligns with the data indicating that the expression of ERCC3 reaches its lowest point approximately 8 hours after Spironolactone administration in both subcutaneous and orthotopic GBM Models, supporting its effectiveness when given at this interval

In collaboration with Dr. John Laterra Lal B et al., Clinical Cancer Research, 2023

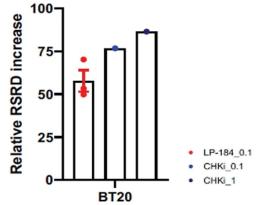


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LP-184 induces replication stress response defect similar to cell cycle checkpoint inhibitors in TNBC Cells



Cell Cycle Analysis of BT20 TNBC Cells Treated with LP-184 and CHKi Prexasertib



BT20 TNBC cells were treated with LP-184 (0.1 uM) or CHKi Prexasertib (0.1 uM and 1 uM) for 24h. Cells were fixed, stained with the DNA-binding dye propidium iodide, and analyzed by flow cytometry to determine the distribution across cell cycle phases. Percentage of cells remaining in S-phase arrest due to unresolved replication intermediates were compared across treatment conditions.

- Induction of replication stress response defects (RSRD) has been shown to enhance sensitivity to anti-PD-1 therapies
- LP-184 exhibits key features that support the induction of RSRD
- RPA exhaustion has been suggested by collaborative studies as a factor resulting in PARPi synergy
- 4. Accumulation of cytosolic DNA has been detected in LP-184 treated cells during quantitative measurements of double-strand breaks (DSBs)
- However it remains unclear whether LP-184 also triggers aberrant firing at the origin of replication

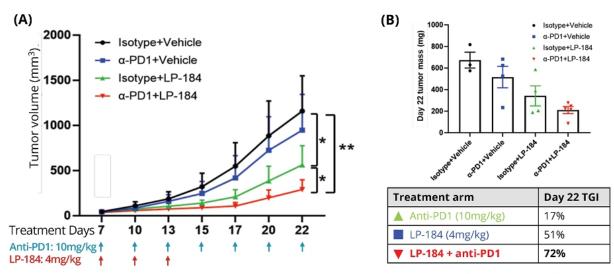
In collaboration with Dr. Shiaw-Yih Lin, MD Anderson Cancer Center



LP-184 demonstrates anti-tumor efficacy in mouse TNBC models and potential to sensitize tumors non-responsive to anti-PD1 therapy



T11 mouse TNBC tumors treated with LP-184 and anti-PD1 antibody



In collaboration with Dr. Shiaw-Yih Lin, MD Anderson Cancer Center

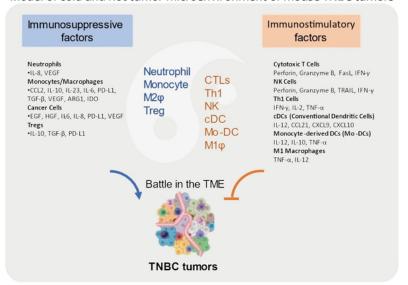
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LP-184 reshaped the tumor microenvironment by decreasing M2 macrophages (Pro-Antitumor profile) and increased T cell infiltration and T cell function when combined with ICB therapy



Model of cold and hot tumor microenvironment of mouse TNBC tumors



Relative to vehicle treatment:

- LP-184 decreased M2 macrophages by **50%**
- LP-184 increased T cell infiltration by 3 fold
- LP-184 enhanced expression of TNFa/ Perforin/ Granzyme by 1.5 fold

In collaboration with Dr. Shiaw-Yih Lin, MD Anderson Cancer Center

Lantern Pharma 2024 webinar series – Webinar Wednesdays – featuring world-class collaborators and researchers

I July Webinar Wednesday

August Webinar Wednesday

September Webinar Wednesday



Starlight Therapeutics - Born from AI, Lighting the Way in CNS Cancer Treatment



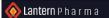
Harmonic Phase 2 Clinical Trial for Never Smokers with NSCLC - Preliminary Patient **Data and Clinical Readouts**



Childhood Cancer Awareness Month Webinar - LP-184 with Three additional RPDDs in rare children's cancers

Future Webinar Wednesdays

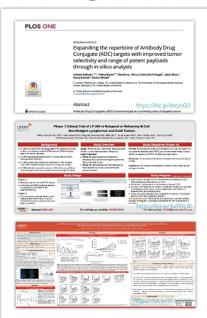
DEC 11th Power of Al in Drug Development – Predicting Blood Brain Barrier Permeability with RADR®



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Publications highlighting the clinical value of RADR® insights & de-risking the development of Lantern's drug candidates



PUBLICATION | PLOS ONE JOURNAL

Expanding the repertoire of Antibody Drug Conjugate (ADC) targets with improved tumor selectivity and range of potent payloads through in-silico analysis

PLOS ONE

POSTER | SOHO ANNUAL MEETING 2024

Phase 1 Clinical Trial of LP-284 in Relapsed or Refractory B-Cell Non-Hodgkin Lymphomas and Solid Tumors

SOHO MEETING

POSTER | IMMUNO-ONCOLOGY SUMMIT 2024

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



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2024-25 Objectives

A Breakthrough Year for Lantern

- Complete Phase 1a clinical trial for LP-184; commence Phase 1b and investigator led trial(s)
- Accelerate enrollment in first-in-human clinical trial for LP-284 in NHL + other cancers
- Commence enrollment of The Harmonic[™] Trial in targeted sites in Asia
- Progress Starlight Therapeutics towards planned Phase 1 / 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

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www.lanternpharma.com



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in linkedin.com/company/lanternpharma

