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): March 10, 2022

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 March 10, 2022, Lantern Pharma Inc. (the "Company") will issue a press release announcing its financial results for the fiscal year and fourth quarter ended December 31, 2021. 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 March 10, 2022, 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 fiscal year and fourth quarter ended December 31, 2021. 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 March 10, 2022 announcing financial results for fiscal year and quarter ended December 31, 2021.

99.2	Presentation relating to March 10, 2022 conference call and live webinar to discussfinancial and operating results for fiscal year and quarter ended December 31, 2021.
104	Cover Page Interactive Data File (embedded within the Inline XBRL document)

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: March 10, 2022

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

Lantern Pharma Reports Fourth Quarter and Fiscal Year 2021 Financial Results and Operational Highlights

- RADR®, Lantern's proprietary A.I. and machine learning platform, grew from 1.2 billion to over 18 billion data points, enhancing its precision, insights, and capabilities for oncology drug discovery
- Preparing for a 2022 launch of the Phase 2 trial for LP-300 in never smokers with NSCLC, which will be Lantern Pharma's second Phase 2 asset
- Received Orphan Drug Designations for LP-184 for multiple indications and a Rare Pediatric Disease Designation for ATRT, accelerating LP-184 towards IND submission and multiple Phase 1 clinical trials in 2022
- Expanded focus on leveraging RADR® for biopharma collaborations by increasing platform functionality, scale, and security
- Strengthened intellectual property estate with addition of 12 new patent applications
- $70.7 million of cash, cash equivalents and marketable securities as of December 31, 2021
- Announced share repurchase program with plans to acquire up to $7 million of common stock
- Conference call scheduled for 4:30 p.m. EST today

DALLAS, March 10, 2022 /PRNewswire/ -- Lantern Pharma Inc. (NASDAQ:LTRN), a clinical stage biopharmaceutical company using its proprietary RADR® artificial intelligence ("A.I.") and machine learning (ML) platform to transform the cost, pace, and timeline of oncology drug discovery and development, today announced financial results and operational highlights for the fourth quarter and fiscal year ended December 31, 2021.

"2021 was a transformational year for Lantern Pharma as we strengthened our financial position, significantly expanded our A.I. platform, and achieved multiple key clinical milestones that further advanced our oncology portfolio," stated Panna Sharma, President and CEO of Lantern Pharma. "Our proprietary RADR® A.I. platform surpassed 18 billion data points and grew over 1,000% in 2021, significantly exceeding our growth expectations. This further development of RADR® is enabling an acceleration of the insights that are powering development decisions for our drug candidates and also support evaluation of drugs and drug candidates of other biopharma companies."

"Across our entire portfolio of late-stage drug programs, we are progressing towards launching Phase 1 and Phase 2 clinical trials in 2022, including the Phase 2 trial for LP-300, The Harmonic™ Clinical Trial, for advanced non-small cell lung cancer in never smokers. Our dedicated team is focused on completing the requirements and details to launch these trials including IND-enabling studies and submissions, clinical site selections, and patient enrollment," stated Sharma.

Operational Highlights:

RADR® Platform Growth and Development

- Surpassed 18 billion data points for RADR® platform, a significant growth of more than 1,000% from year-end 2020; forecasting to reach more than 25 billion data points by year-end 2022.
- The ongoing growth of RADR® data points is expected to drive continual improvement in Lantern's ability to rapidly identify new indications, combination therapies, and mechanisms of action for Lantern's drug candidates.
- Expanding RADR's® capabilities with a focus on increasing the number of machine learning algorithms and self-learning algorithms.
- Lantern expects to continue to expand its focus on building biopharma collaborations to utilize and expand on the growth of RADR®.

Lantern's Portfolio of Targeted Therapies
Lantern Pharma is currently developing four drug candidates and an Antibody-Drug Conjugate (ADC) program across eight disclosed tumor targets, and several undisclosed targets. Lantern's portfolio currently includes:

- **LP-100** - is in a Phase 2 trial for the treatment of metastatic castration resistant prostate cancer (mCRPC). We are evaluating possibilities for further enrollment in the current Phase II trial as well as other potential clinical development opportunities. Lantern reacquired global rights to LP-100 in July 2021.
- **LP-300** - is preparing to enter a Phase 2 clinical trial, the Harmonic™ Clinical Trial, during 2022. The Harmonic™ trial will be a 90 patient, two-arm, open label clinical trial focused on never smoker patients with relapsed primary adenocarcinoma of the lung, a type of NSCLC.
- **LP-184** - is in preparation for potentially multiple Phase 1 clinical trial launches for genomically defined cancers, including pancreatic, glioblastoma multiforme (GBM), bladder and atypical teratoid rhabdoid tumors (ATRT).

  The FDA granted LP-184 Orphan Drug Designations for the treatment of pancreatic cancer, GBM, and ATRT and a Rare Pediatric Disease Designation for treatment of ATRT. These designations will assist the advancement of LP-184 towards clinical studies. Under the Rare Pediatric Disease Priority Review Voucher Program companies may be eligible to receive a priority review voucher if the product satisfies certain conditions, including receipt of regulatory marketing approval following required clinical testing. Vouchers may be sold or transferred to another sponsor, and past transfers of vouchers have occurred at average prices of more than $100 million.

- **LP-284** - is in preclinical development and has demonstrated potency at low nanomolar levels in hematological cancer cell lines, including lymphoma, multiple myeloma, and leukemia. LP-284's indications in hematological cancers are distinct from the indications targeted by LP-184 and were generated with the assistance of RADR® insights.

- **Antibody Drug Conjugate (ADC) Program** – we have selected and ranked multiple targeting antibodies of interest with potential to be linked to selected cytotoxic payloads. We are currently evaluating various cytotoxic agents and classes of agents to be used as ADC payloads.

World-Class Scientific Collaborations

- Expanded collaboration with the National Cancer Institute to accelerate the path to first in-human clinical trials for drug candidates LP-184 and LP-284.

- Entered collaboration with The Greehey Children's Cancer Research Institute (GCCRI) at University of Texas Health Science Center-San Antonio to expand Lantern's drug portfolio research into several additional pediatric cancers.

- Continued GBM & brain cancer collaboration with Johns Hopkins & Kennedy Krieger Institute to develop Phase 1 clinical design and further validate LP-184's ability to works independently of MGMT (a DNA repair enzyme) status.

- Expanded collaboration with Fox Chase Cancer Center in pancreatic cancers with a focus on clinical design and strategy for LP-184.

- Launched a research collaboration with The Danish Cancer Society Research Center to support development of drug candidates LP-100 and LP-184 in 9 solid tumor types that have a known deficiency in DNA repair mechanisms. LP-100 and LP-184 have both been shown to have a synthetically lethal impact on tumors deficient in DNA repair mechanisms.

Publications and Presentations

- Published two scientific articles in *Oncotarget* and *BMC Bioinformatics* highlighting the effectiveness of Lantern's drug candidate LP-184 in potential tumor indications.

- Presented positive preclinical data on the efficacy of LP-284 in hematologic cancers at the 63rd American Society of Hematology (ASH) Annual Meeting.

- Preclinical data supporting the effectiveness of LP-184 in select pancreatic cancers was presented at the American Association for Cancer Research (AACR) Virtual Special Conference.

- The effectiveness of LP-184 in multiple in vitro and in vivo Glioblastoma models was presented at the Society for Neuro-Oncology (SNO) 2021 Annual Meeting.

- On World Pancreatic Cancer Day, Lantern hosted a virtual KOL webinar on the potential of drug candidate LP-184 for pancreatic cancer.

Additional Highlights

- Strengthened intellectual property estate with 12 new patent applications, with the current total IP estate at over 80 active patents and patent applications across 14 patent families.

- Completed strategic hires to expand and strengthen Lantern's data science, research, management, and communications teams.

Financial Highlights:

- Raised gross proceeds of $69 million USD through January 2021 public offering and full exercise of underwriter's over-allotment option.

- Capital raised extends cash runway into 2025, allowing the Company to focus on efficiently developing its portfolio of promising oncology therapeutics.

- Authorized a share repurchase program to acquire up to $7 million of the Company's common stock. Repurchases of shares of common stock pursuant to the repurchase program amounted to $0.9 million during the quarter and year ended December 31, 2021 and an additional $2.2 million of repurchases from January 1, 2022 through March 1, 2022.

Fourth Quarter and 2021 Financial Overview:

- **Balance Sheet**: Cash, cash equivalents, and marketable securities were $70.7 million as of December 31, 2021, compared to $19.2 million as of December 31, 2020. The quarterly and annual cash burn for 2021 reflects our capital-efficient, collaborator-centered business model.

- **R&D Expenses**: Research and development expenses were $2.2 million and $7.6 million for the quarter and year ended December 31, 2021 compared to $1.4 million and $2.2 million for the quarter and year ended December 31, 2020, respectively. The annual increase was primarily attributable to increases in product candidate manufacturing related expenses of approximately $2.7 million, increases in research studies of approximately $0.8 million, increases in research and development payroll expenses of approximately $0.7 million, and an increase of $1.0 million related to the upfront payment to Allarity Therapeutics under the Allarity Asset Purchase Agreement, which was a nonrecurring expense.

- **G&A Expenses**: General and administrative expenses were $1.4 million and $5.0 million for the quarter and year ended December 31, 2021 compared to $1.6 million and $3.7 million for the quarter and year ended December 31, 2020, respectively. The annual increase was primarily attributable to increases in business and corporate development expense of approximately $0.4 million, increases in corporate insurance expense of approximately $0.6 million, and increases in legal and patent related expenses of approximately $0.4 million.

- **Net Loss**: Net losses were $3.5 million (or $0.31 per share) and $12.4 million (or $1.13 per share) for the quarter and year ended December 31, 2021, compared to a net loss of $2.9 million (or $0.47 per share) and $5.9 million (or $1.37 per share) for the quarter and year ended December 31, 2020, respectively.

2022 Key Objectives:

- Launch of **The Harmonic™ Trial** - Ph. 2 clinical trial for LP-300 in NSCLC
- Advance LP-100 clinical trial
- Launch Ph. 1 clinical trial for LP-184 in genomically-defined solid tumors
- Launch Ph. 1/2 clinical trial for LP-184 in GBM
- Progress LP-184 in ATRT towards Ph. 1/2 clinical trial
- Advance pediatric cancer drug development program
- Advance ADC preclinical studies to support future Phase 1 launch
- Explore potential combinations for LP-184, LP-284, & LP-300 with other existing approved drugs
- Strategically grow RADR® A.I. platform to 25 billion datapoints
- Explore licensing and partnership opportunities

2022 Outlook:

"During 2022 we expect to reach over 25 billion data points and also grow the methods and algorithms powering the analysis and insights of our RADR® platform. Our team has been developing machine learning modules and algorithms that enable a wide range of analysis, correlations and predictions that are central to cancer drug development," added Sharma. "These additions to our platform are cornerstone to the advancement of our programs, and we believe this will be clearly demonstrated this year as we launch multiple clinical trials, report new data, and expand our collaborations."

"Our team will continue to advance our portfolio and our platform along with the development of new drug programs which we will be able to accomplish through our significant cash position, our focused strategy of collaborations and our data-driven drug development model. We are looking forward to a year of significant value creation for cancer patients and investors alike as we transform and accelerate the drug development process in oncology."

Earnings Call and Webinar Details

Lantern will host its fourth quarter and fiscal year 2021 earnings call and webinar today, Thursday, March 10 at 4:30 p.m. ET.

- https://zoom.us/webinar/register/6316442460324/WN_IpjiP_QpT5ClHzrW1U7GwA
- Related presentation materials will be accessible at: https://ir.lanternpharma.com

Replay Details

- A replay of the 2021 earnings call and webinar will be available at www.ir.lanternpharma.com

Lantern's Investor Relations Contact

Nicole Leber
Investor Relations Associate
ir@lanternpharma.com
1-972-277-1136

About Lantern Pharma

Lantern Pharma (NASDAQ: LTRN) is a clinical-stage oncology-focused biopharmaceutical company leveraging its proprietary RADR® A.I. and machine learning platform to discover biomarker signatures that identify patients most likely to respond to its pipeline of genomically-targeted therapeutics. Lantern is currently developing four drug candidates and an ADC program across eight disclosed tumor targets, including two phase 2 programs. By targeting drugs to patients whose genomic profile identifies them as having the highest probability of benefiting from the drug, Lantern's approach represents the potential to deliver best-in-class outcomes.

Please find more information at:
Website: www.lanternpharma.com
LinkedIn: https://www.linkedin.com/company/lanternpharma/
Twitter: @lanternpharma

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; 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 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," "objective," "aim," "upcoming," "should," "will," "would," or the negative of these words or other similar expressions) should be considered forward-looking statements. There are a number of important factors that could cause our actual results to differ materially from those indicated by the forward-looking statements, such as (i) the impact of the COVID-19 pandemic, (ii) the risk that our research and the research of our collaborators may not be successful, (iii) the risk that none of our product candidates has received FDA marketing approval, and we may not be able to successfully initiate, conduct, or conclude clinical testing for or obtain marketing approval for our product candidates, (iv) the risk that no drug product based on our proprietary RADR® A.I. platform has received FDA marketing approval or otherwise been incorporated into a commercial product, and (v) those other factors set forth in the Risk Factors section in our Annual Report on Form 10-K for the year ended December 31, 2021, filed with the Securities and Exchange Commission on March 10, 2022. You may access our Annual Report on Form 10-K for the year ended December 31, 2021 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

Fourth quarter 2021 Operating & Financial Results Conference Call / Webinar

March 10th, 2022
4:30 PM Eastern Time

TODAY'S SPEAKERS

Panna Sharma
Chief Executive Officer, President and Director

David Margrave
Chief Financial Officer and Secretary

Dr. Kishor Bhatia
Chief Scientific Officer

Nicole Leber
Investor Relations

Forward Looking Statements

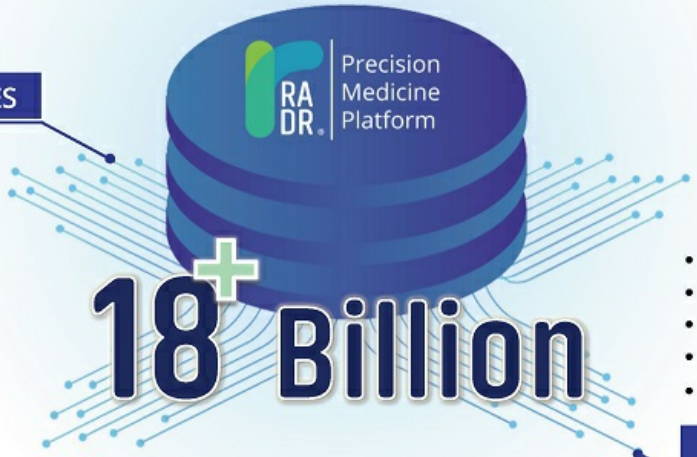
This presentation contains forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Securities Exchange Act of 1934, as amended. These forward-looking statements include, among other things, statements relating to: future events or 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; 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 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," "objective," "aim," "upcoming," "should," "will," "would," or the negative of these words or other similar expressions) should be considered forward-looking statements. There are a number of important factors that could cause our actual results to differ materially from those indicated by the forward-looking statements, such as (i) the impact of the COVID-19 pandemic, (ii) the risk that our research and the research of our collaborators may not be successful, (iii) the risk that we may not be able to successfully initiate, conduct, or conclude clinical testing for or obtain marketing approval for our product candidates; (iv) the risk that no drug product based on our proprietary RADR A.I. platform has received FDA marketing approval or otherwise been incorporated into a commercial product, and (v) those other factors set forth in the Risk Factors section in our Annual Report on Form 10-K for the year ended December 31, 2021, filed with the Securities and Exchange Commission on March 10, 2022. You may access our Annual Report on Form 10-K for the year ended December 31, 2021 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

RADR® Surpassed 18 billion datapoints this past month

NEW CANCER CATEGORIES

- Rare Solid Tumors
- Ultra Rare Cancers
- Pediatric Cancers
- Bladder Cancer
- CNS & Brain Cancers



- Immune Data
- Protein Data
- Hotspot Mutation Panels
- Methylome Data
- Epigenetic Data

NEW DATA TYPES

RA DR. Precision Medicine Platform

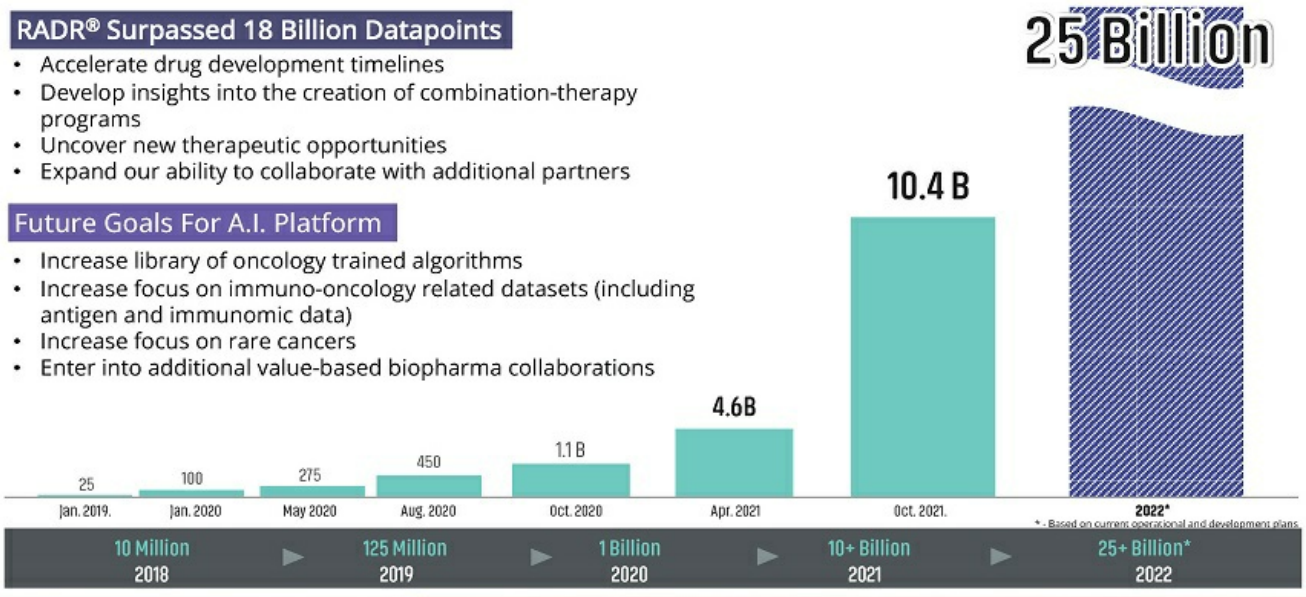
Expanding RADR® drives growth in our portfolio of therapies and potential collaborations with other biopharma companies

RADR® Surpassed 18 Billion Datapoints

- Accelerate drug development timelines
- Develop insights into the creation of combination-therapy programs
- Uncover new therapeutic opportunities
- Expand our ability to collaborate with additional partners

Future Goals For A.I. Platform

- Increase library of oncology trained algorithms
- Increase focus on immuno-oncology related datasets (including antigen and immunomic data)
- Increase focus on rare cancers
- Enter into additional value-based biopharma collaborations



What is RADR®

Response **A**lgorithm for
Drug Positioning & **R**escue

- A proprietary integrated data analytics, experimental biology, oncology-focused, machine-learning-based platform focused on drug development
- Leverages cutting edge machine-learning approaches and techniques to generate powerful data-driven insights
- Enables rapid informatics based hypothesis generation which can be validated in wet-lab
- Uses biology driven machine-learning algorithms to achieve higher prediction accuracy in real world settings
- A scalable, robust, expanding and replicable platform to support a range of drug development needs

Lantern leverages A.I. to reduce oncology drug development costs and improve the likelihood of success

Abandoned Drug Assets &
New Drug Development

- Drugs that fell short of statistical significance *or* abandoned by pharma / biotech companies in late stage trials despite tens to hundreds of millions spent on development, PK analysis, safety and efficacy studies
- Development of new compounds in drug classes that leverage our AI platform

RADR®

- Big data (genomic, clinical, response) assembled and analyzed
- Patient subgroups identified through machine learning and artificial intelligence
- Mechanisms of action clarified
- Potential combinations identified
- Potential for faster and more efficient path to relaunching in the clinical trial setting

Responders

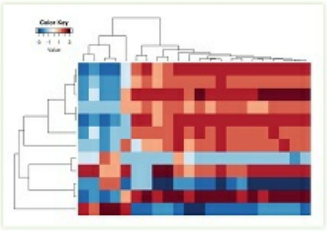
Non-Responders

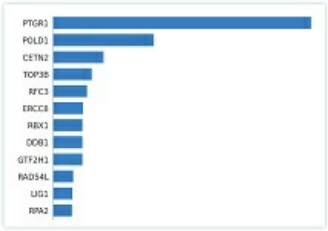
- Patient stratification based on A.I. enabled genomic biomarker discovery
- New patient populations for failed or abandoned drugs based on validated biomarker signatures
- Aimed to shorten time to market
- Designed to reduce risk in development
- Potential for orphan or fast track status
- New Chemical Entities designed and filed

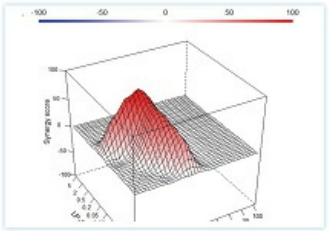
Potential to **shorten clinical development** by years,
save tens to hundreds of millions of dollars in cost and
substantially **de-risk drug development** versus the traditional model

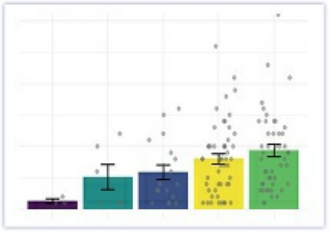
How RADR® is used by Lantern & our collaborators

Find Mechanism of Action	Derive ML-based signatures	Identify Drug Combinations	Identify new indications
Use RADR to find **potential Mechanism of Action (MoA)** of the Compound / Drug	RADR can derive Machine Learning based **gene signatures,** which can guide biomarker strategies & CDx (Companion Diagnostics)	Use different algorithms and methods from RADR to find **potential Drug combinations**	**Identify and prioritize** type/subtype of cancer for your compound with use of RADR









Lantern's unique & rapidly developing pipeline

Indication	Program	R&D	Preclinical	Phase I	Phase II	Phase III	
Prostate Cancer *(Metastatic Castration-Resistant Prostate Cancer)*	**LP-100** *(Irofulven)*						Initial 9 patients showed median overall survival **(mOS) of 12.5 months**
Non-Small Cell Lung Cancer *(Focused on Never-Smokers)*	**LP-300**			harmonic			Targeting sub-population in **Harmonic™ trial** NSCLC of Adenocarcinoma subtype
Pancreatic Cancer *(Identified by RADR® defined genomic signature)*	**LP-184**						Development Collaboration with - *Fox Chase Cancer Center*
CNS Cancers -Glioblastoma *(Predicted by RADR® and confirmed in in-vivo studies)*	**LP-184**						Development Collaboration with - *Johns Hopkins School of Medicine*
CNS Cancers - ATRT *(Predicted by RADR® and confirmed in in-vivo studies)*	**LP-184**						Development Collaboration with - *Johns Hopkins School of Medicine, GCCRI at University of Texas Health Science Center-San Antonio*
Hematologic Cancers *(Predicted by RADR® confirmed with in-vitro studies)*	**LP-284**						
Bladder Cancer *(Identified by RADR® defined genomic signature)*	**LP-184**						
Select Solid Tumors *(Multiple targeting antibodies of interest for linkage to selected cytotoxic payloads)*	***ADC Programs***						
Other Pediatric Cancers	**LP-184**						Development Collaboration with - *GCCRI at University of Texas Health Science Center-San Antonio*

Accelerated Development by Leveraging the RADR® A.I. platform

Over 80+ issued patents and pending applications across 14 patent families

Harmonic™ clinical trial – Phase 2 trial for LP-300

*"If lung cancer in never-smokers were a separate entity, it would be in the **top 10 cancers** in the U.S."*

Lung cancer is the **#1** **cause of death** among cancer patients in the US

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

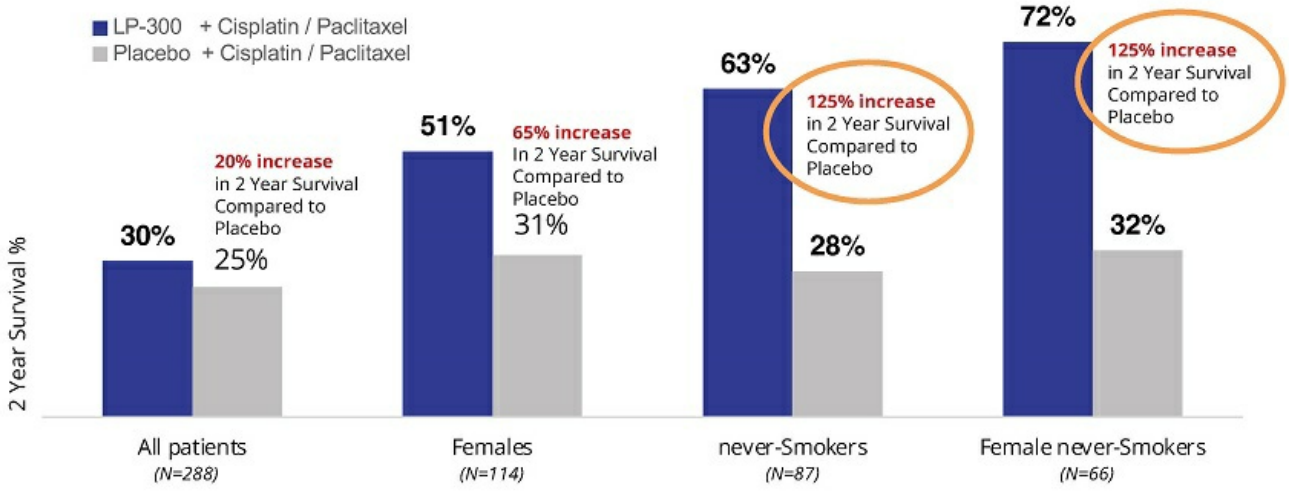
Cancer.gov

harmonic

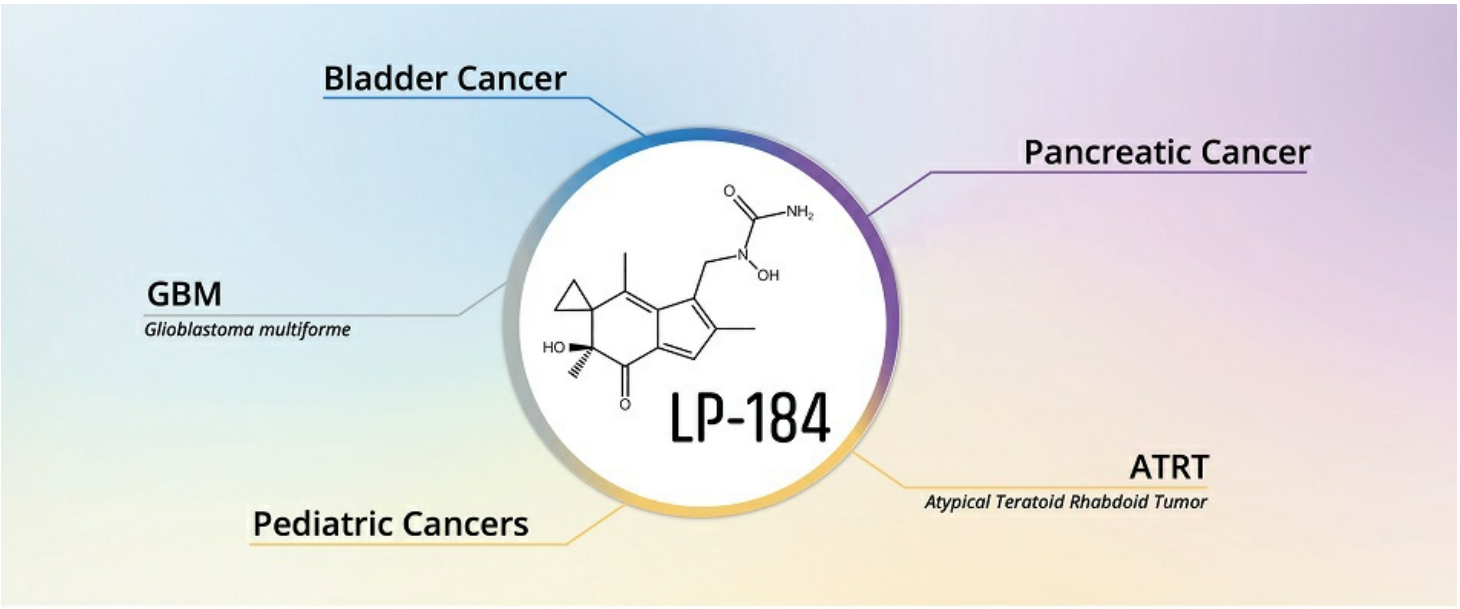
Harmonic™ clinical trial is a Phase 2, multi-center, study to evaluate Lantern's investigational drug LP-300. It is focused on treating **Never Smoker** patients with relapsed advanced primary adenocarcinoma of the lung, which is a type of non-small cell lung cancer (NSCLC).

- 90 patient, two-arm, open label trial
- trial focused on **Never Smoking** patients with relapsed primary adenocarcinoma of the lung, a type of NSCLC.
- In a subset of Never Smoker patients from a larger NSCLC trial, patients who received LP-300 with chemotherapy showed **increased overall and 2-year patient survival by 91% and 125%**, respectively.

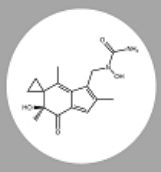
Lantern's precision oncology approach in the LP-300 Phase II trial builds on a prior Phase III trial that did not meet clinical efficacy endpoints but demonstrated survival benefit in a patient subgroup



Source: Phase 3 clinical trial, study ID DMS32212R, conducted by BioNumerik Pharmaceuticals - subpopulations receiving paclitaxel/cisplatin



- Granted **Orphan Drug Designation** for the treatment of Pancreatic Cancer, GBM and ATRT
- Granted **Rare Pediatric Disease Designation** for the treatment of ATRT
- Positive preclinical data for LP-184 in pancreatic cancer and GBM
- Currently conducting IND enabling studies to support IND submission in 2022



LP-184

Glioblastoma Multiforme (GBM)

12,914
Estimated new cases in the US in 2022

250,000
Estimated Global incidence in 2022

Recent Highlights

- In orthotopic GBM xenografts showed **significant tumor reduction and survival benefit** with LP-184 treatment
- **Combination** of spironolactone with LP-184 led to 3-6x enhancements in GBM sensitivity *in vitro*

Upcoming Milestones

- Evaluation of *in vivo* anti-tumor efficacy of **LP-184 + Spironolactone combination** in a subcutaneous xenograft tumor model of GBM
- **Protocol development** for a phase 0/2 clinical trial testing LP-184 in recurrent GBM/ MGMT unmethylated newly diagnosed GBM
- A publication showing LP-184 efficacy in GBM is being prepared for submission in collaboration with Dr. John Laterra

Publication/ Presentation

SNO Society for NeuroOncology
"LP-184, a novel alkylating agent, is effective in glioblastoma"

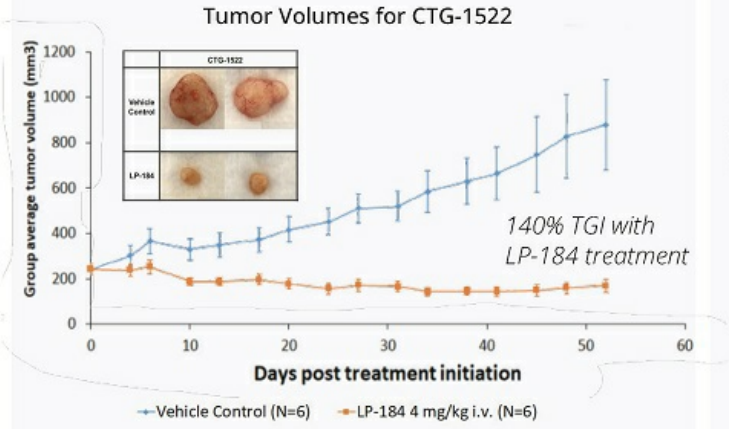
Journal of Clinical Oncology®
An American Society of Clinical Oncology Journal
"Glioblastoma Response to Blood-Brain-Barrier Permeable, MGMT-Agnostic Therapeutic LP-184 and Sensitization by Nucleotide-Excision Repair Deficiency." (submitted)

Collaboration

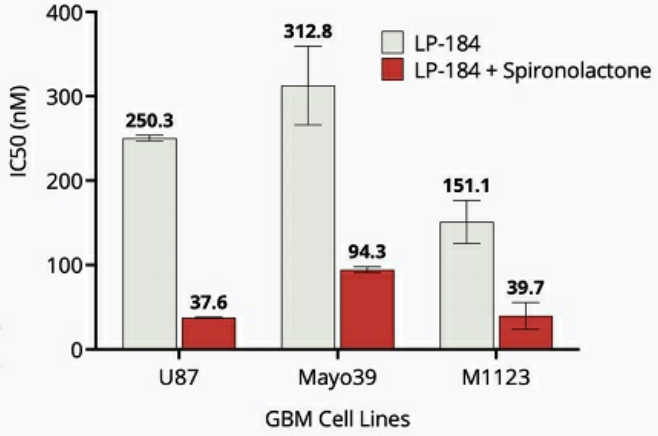
Kennedy Krieger Institute
JOHNS HOPKINS MEDICINE

Positive preclinical data in GBM

In-vitro Blood Brain Permeability of LP-184



Combination Therapy of LP-184 with Spironolactone



LP-184

Pancreatic Cancer

37,700
Estimated new cases in the US in 2021

460,000
Estimated Global incidence in 2021

Recent Highlights

- In HR deficient pancreatic cancer cell line, LP-184 combined with gemcitabine, irinotecan and oxaliplatin (part of the standard of care for pancreatic cancer) is **synergistic** over selected concentration ranges.
- Lantern hosted a **virtual KOL event** on the potential treatment of Pancreatic Cancer with LP-184, on World pancreatic cancer day

Upcoming Milestones

- Evaluation of *in vivo* anti-tumor efficacy of LP-184 in combination with (i) selected SOC chemotherapeutic agents (ii) radiation in xenograft models
- Complete **IND enabling studies** in first half of 2022
- Plan on **Phase 1 clinical trial** in second half of 2022

Publication/ Presentation

AACR American Association for Cancer Research

"LP-184, a novel alkylating agent, is highly effective in pancreatic cancers with DNA damage repair defects"

Journal of Clinical Oncology®
An American Society of Clinical Oncology Journal

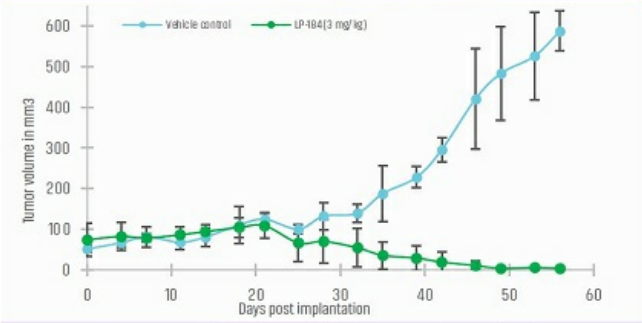
"Synthetic lethality of LP-184, a next generation acylfulvene, in ex vivo PDX models with homologous recombination defects"

Collaboration

Fox Chase Cancer Center
Temple Health

Positive preclinical data in pancreatic cancer

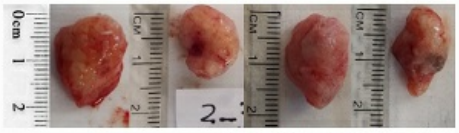
LP-184 in vivo response in a Capan-1 pancreatic cancer xenograft mouse model



Tumor growth inhibition of **109%** was observed with LP-184 treatment relative to control with dosing occurring weekly over an 8 week period

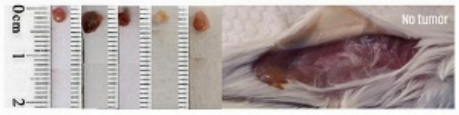
LP-184 demonstrated significant tumor shrinkage (146x) in in-vivo mice PDX models

Tumors From Vehicle Control Mice at the End of Study Period



Average tumor volume = 587 mm³

Tumors from LP-184 (3mg/kg) Treated Mice at the End of Study Period



Average tumor volume = 4 mm³

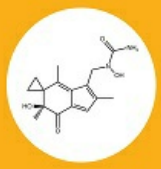
Preclinical data demonstrated that LP-184 demonstrated significant & rapid pancreatic tumor shrinkage, by **over 90%,** in *in-vivo* mouse models in 8 weeks.

In August 2021, the U.S. **FDA granted LP-184 Orphan Drug Designation (ODD)** for the treatment of Pancreatic Cancer

LP-184 synergistic combinations in pancreatic cancer cell lines

Cell line	NERD	HRD	LP-184 + combination agent	Bliss Synergy Score
Capan1	No	Yes	**Gemcitabine**	13.76
			5-Fluorouracil	10.53
			Irinotecan	16.50
			Oxaliplatin	15.42
Panc03.27	No	No	**Irinotecan**	12.00
			Oxaliplatin	12.09

Note: Bliss synergy score ranges from -100 to 100. A synergy score >10 generally indicates synergism.



LP-184

Atypical Teratoid Rhabdoid Tumor (ATRT)

60
Estimated new cases in the US annually

600
Total existing cases of ATRT in the US

Recent Highlights

- LP-184 for ATRT granted **Orphan Drug Designation** and **Rare Pediatric Disease Designation** by FDA
- ATRT is exceptionally sensitive to LP-184, with response positively correlated to loss of SWI/SNF proteins that cause rhabdoid tumors and are altered in 20% of all cancers

Upcoming Milestones

- Publications showing **enhanced LP-184 response** with spironolactone combination and the effectiveness of LP-184 in ATRT and other rhabdoid tumors are expected mid 2022
- Numerous Rhabdoid Tumors are believed to share ATRT sensitivity to LP-184 and **over 20 models** are being tested at UT Health, with Dr. Peter Houghton
- Protocol development for a **Phase 1 trial** in pediatric CNS cancers

Collaboration

JOHNS HOPKINS MEDICINE

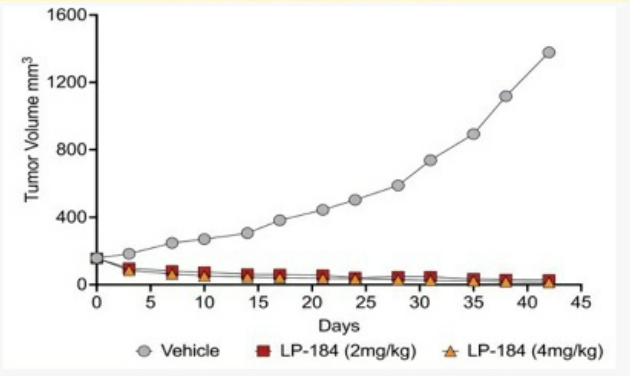
UT Health San Antonio
Greehey Children's Cancer Research Institute

Lantern Pharma.

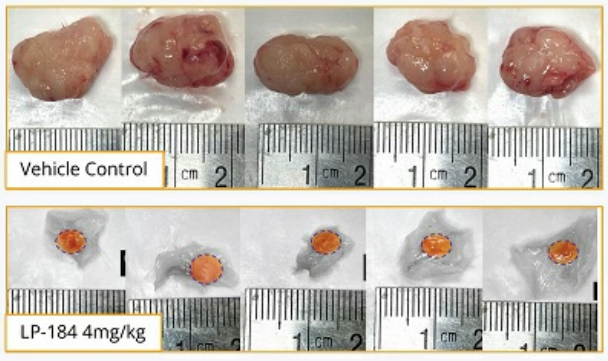
LP-184 is effective in a xenograft model of Atypical Teratoid / Rhabdoid Tumor (ATRT)

CHLA06 subcutaneous cell line derived xenograft model (SMARCB1 deletion, MYC elevation)

Tumor Volumes for CHLA-06



Representative terminal tumors



Orphan Drug Designation (ODD) and Rare Pediatric Disease Designation (RPDD) were granted by FDA for the use of LP-184 in ATRT treatment

ADC Program

Antibody Drug Conjugate (ADC) Program for Select Solid Tumors

Characteristics

High Specificity

ADCs take advantage of the high potency of cytotoxic payloads and the superior specificity of antibodies. The drug antibody conjugate thus maximizes efficacy and minimizes systemic toxicity

Growing

2 of the 4 largest oncology licensing deals in 2020 were for **ADC assets**
AstraZeneca licensed a Ph 1 ADC from Daiichi Sanko for *$6.0 billion*
Merck licensed a Ph2 ADC from Seagen for *$3.2 billion*

Highlights and Milestones

- Designing a library of ADC molecules for feasibility and preclinical studies
  - Library will be developed with both cleavable and non-cleavable linkers
  - Three potent payloads being considered
- Initial studies will focus on three potential antibodies to target **epithelial** and **lymphoid** tumors
- Lead candidates will be chosen based upon efficacy, toxicity, bystander effects and flexibility of payloads to achieve an acceptable range of DAR (Drug Antibody Ratio)

Lantern Pharma

Academic and research collaborations

NIH National Cancer Institute	LP-184 LP-284	Gene signature development and drug sensitivity prediction
Johns Hopkins Medicine	LP-184	Evaluation of efficacy of LP-184 in glioblastoma (GBM)
Fox Chase Cancer Center, Temple Health	LP-184	Determination of drug efficacy in pancreatic PDX tumor models
Georgetown University	LP-184	Evaluation of drug efficacy and sensitivity in prostate and pancreatic cancer organoid models and engineered pancreatic cancer cell lines
Danish Cancer Society | Research Center	LP-100 LP-184	Examine efficacy of Lantern's drug portfolio in common solid tumors that harbor DNA damage repair deficiency
UT Health San Antonio	LP-184 LP-284	Evaluation of drug efficacy in pediatric tumor models

Technology collaborations with Deep Lens and Code Ocean

deep lens

Strategic collaboration to accelerate patient enrollment for the Harmonic™ Clinical Trial for never-smokers with non-small cell lung cancer (NSCLC), utilizing LP-300 in combination with chemotherapy

CODE OCEAN

Strategic collaboration to to facilitate the accelerated development of RADR® while reducing development complexity and cost and increasing security and reproducibility

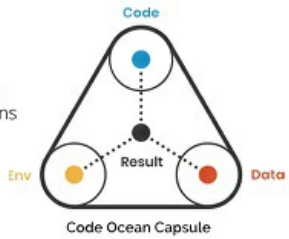
RADR® Precision Medicine Platform + VIPER

predict outcomes and response in specific patient subsets

accelerate the patient enrollment

Leveraging Code Ocean's *Compute Capsule* technology

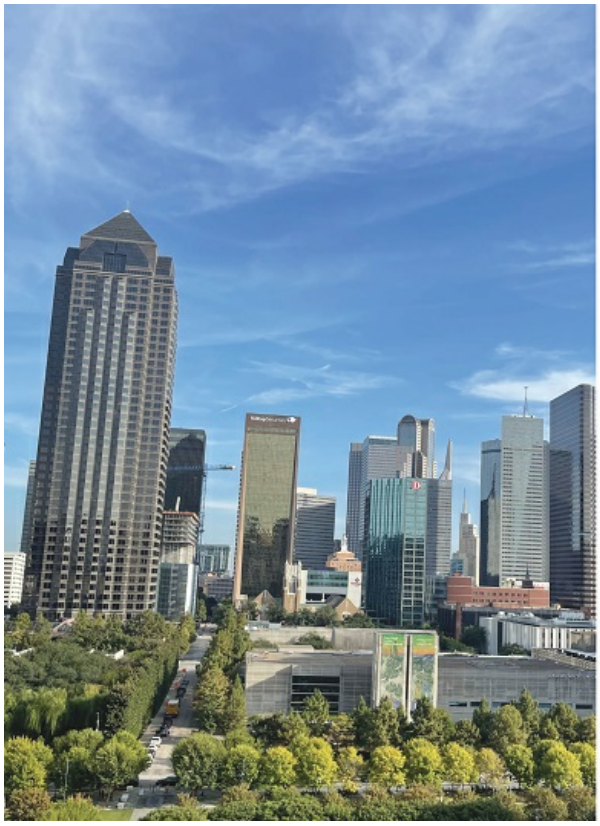
- further power RADR® platform for faster, more collaborative discoveries from billions of RADR data points, as well as data and insights from collaborators.
- manage our external data and code collaborators with ease



Code Ocean Capsule

*Help Patients to have access to the **right medicine** at the **right time***

*Further enhances our already established RADR® platform and provides **additional efficiencies** in terms of development time and cost.*



*"We believe our **solid financial position** will fuel continued growth and evolution of our RADR® A.I. 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.**"*

Contents

Summary results of operations

	Three Months Ended December 31, (Unaudited)		Year Ended December 31,	
	2021	**2020**	**2021**	**2020**
Operating expenses:				
General and administrative	1,348,983	1,547,675	5,020,928	3,664,965
Research and development	2,162,260	1,348,329	7,570,580	2,243,225
Total operating expenses	3,511,243	2,896,004	12,591,508	5,908,190
Loss from operations	**(3,511,243)**	**(2,896,004)**	**(12,591,508)**	**(5,908,190)**
Interest + Other income, net	(29,031)	-	228,479	-
NET LOSS	**$ (3,540,274)**	**$ (2,896,004)**	**$ (12,363,029)**	**$ (5,908,190)**
Net loss per common share, basic and diluted	$ (0.31)	$ (0.47)	$ (1.13)	$ (1.37)
Weighted avg. common shares outstanding - basic and diluted	11,403,339	6,219,871	10,904,927	4,304,918

Balance sheet highlights & summary

	12/31/2021	12/31/2020
Cash and Marketable Securities	**$ 70,725,447**	**$ 19,229,232**
Prepaid Expenses & Other Current Assets	$ 1,990,953	$ 1,007,690
Total Assets	**$ 73,950,477**	**$ 20,359,634**
Total Liabilities	**$ 2,379,057**	**$ 660,839**
Total Stockholders' Equity	**$ 71,571,420**	**$ 19,698,795**

Shares Outstanding

	December 31, 2021
LANTERN PHARMA INC. (LTRN)	
Common Shares Outstanding	11,088,835
Warrants	273,777
Options (Employees, Management and Directors)	890,826
Fully Diluted Shares Outstanding	**12,253,438**

Share repurchase program

$7,000,000 is authorized for share repurchase under the Company's share repurchase program implemented in 2021

Date	Shares Repurchased	Average Price	Total Paid *including Commissions*
FY 2021	121,490	$7.71	$939,666
January 1, 2022 – March 1, 2022	308,345	$6.97	$2,199,964
Total	**429,835**	**$7.18**	**$3,139,630**

Migrating to a hybrid work environment

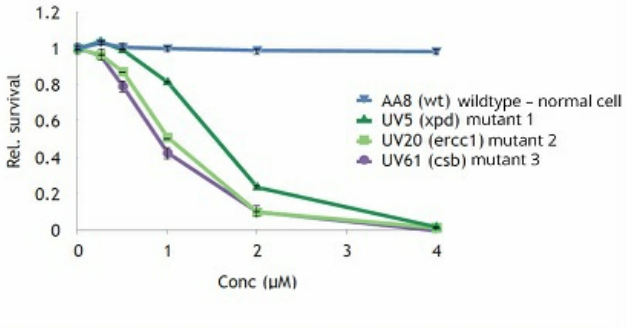
HYBRID WORK ENVIRONMENT

GROWING TEAM

Contents

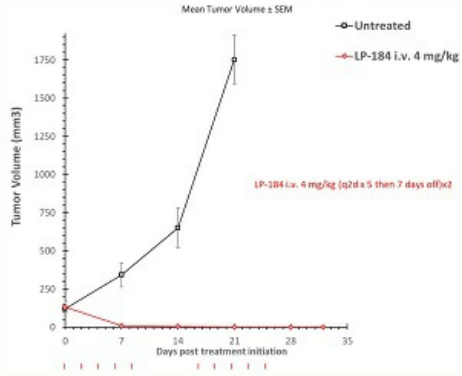
LP-184 shows exquisite sensitivity in NERD as well as HRD cancers !

LP-184 in NERD cancers

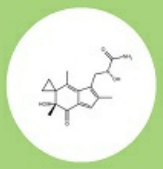


Mutant cell lines deficient in the Nucleotide Excision Repair (NER) pathway were **more sensitive to LP-184** than the parent cell line

LP-184 in HRD cancers



LP-184 treatment resulted in **complete tumor regression** in a PDX model of TNBC that is HR deficient and resistant to PARP inhibitors and doxorubicin/ cyclophosphamide



LP-284

Mantle Cell Lymphoma

4,200

2014 Estimated new cases in the US

14,000

2017 estimated Global incidence number

Recent Highlights

- Showed **nanomolar potency** in a variety of hematological cancer cells including in mantle cell lymphoma, double-hit lymphoma, Burkitt's lymphoma, multiple myeloma, chronic myeloid leukemia, and acute lymphocytic leukemia
- Presented at the 63rd **ASH meeting and Exposition**: chemical biology and experimental therapeutics

Upcoming Milestones

- Investigate LP-284's potency in ***in vivo*** **Mantle Cell Lymphoma** models
- Validate **molecular biomarkers** (unpublished data) that predict LP-284 sensitivity
- Examine LP-284's toxicity in animals

Publication/ Presentation

American Society of Hematology

"The Positive Enantiomer of a Novel Chiral DNA Alkylating Agent Exhibits Nanomolar Potency in Hematologic Cancers"

Jianli Zhou, Ph.D., Lantern Pharma

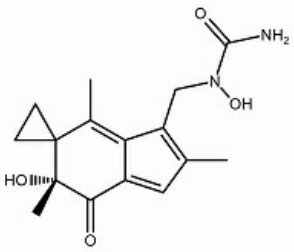
Collaboration

NIH NATIONAL CANCER INSTITUTE

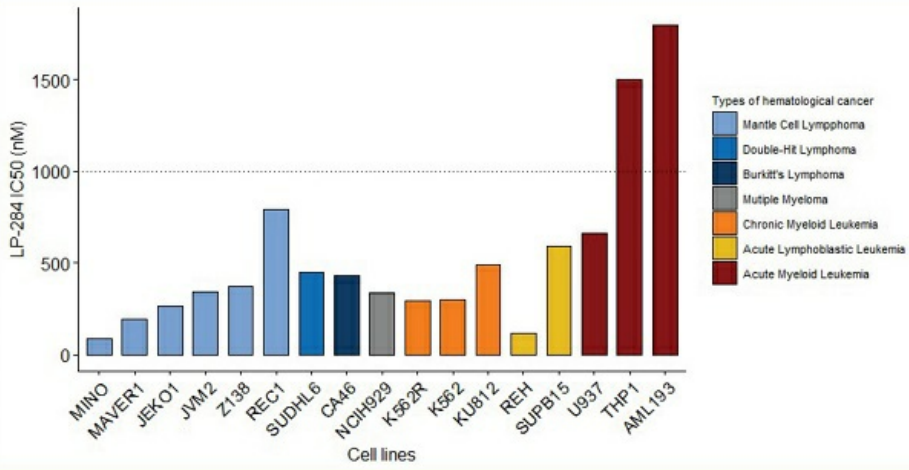
Lantern Pharma.

LP-284 demonstrated distinct anti-tumor activity in hematologic cancer cells

LP - 284



- LP-284 is a synthetic molecule belonging to the new generation of acylfulvenes, a family of naturally derived anti-cancer drug candidates.
- LP-284 is the stereoisomer (enantiomer) of LP-184.



LP-284 exhibited **nanomolar potency** in mantle cell lymphoma, double-hit lymphoma, Burkitt's lymphoma, multiple myeloma, chronic myeloid leukemia, and acute lymphocytic leukemia

2022 Objectives

A Transformational year for Lantern

- Launch of **The Harmonic™ Trial** - Ph. 2 clinical trial for LP-300 in NSCLC
- Advance LP-100 clinical trial
- Launch Ph. 1 clinical trial for LP-184 in genomically-defined solid tumors
- Launch Ph. 1/2 clinical trial for LP-184 in GBM
- Progress LP-184 in ATRT towards Ph. 1/2 clinical trial
- Advance pediatric cancer drug development program
- Advance ADC preclinical studies to support future Phase 1 launch
- Explore potential combinations for LP-184, LP-284 & LP-300 with other existing approved drugs
- Strategically grow RADR® A.I. platform to 25 billion datapoints
- Explore licensing and partnership opportunities

Contents

Lantern Pharma

www.lanternpharma.com

@LanternPharma

Nasdaq: LTRN

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