First Quarter 2022
Operating & Financial Results Conference Call / Webinar

May 3rd, 2022
4:30 PM Eastern Time

Lantern Pharma

NASDAQ :LTRN

Forward-Looking Statements

This presentation contains forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Securities Exchange Act of 1934, as amended. These forward-looking statements include, among other things, statements relating to: future events or our future financial performance; the potential advantages of our RADR® platform in identifying drug candidates and patient populations that are likely to respond to a drug candidate; our strategic plans to advance the development of our drug candidates and antibody drug conjugate (ADC) development program; estimates regarding the development timing for our drug candidates and ADC development program; 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

Speakers

Panna Sharma

Chief Executive Officer,
President and Director

Dr. Kishor Bhatia

Chief Scientific Officer

David Margrave

Chief Financial Officer

Host

Nicole Leber

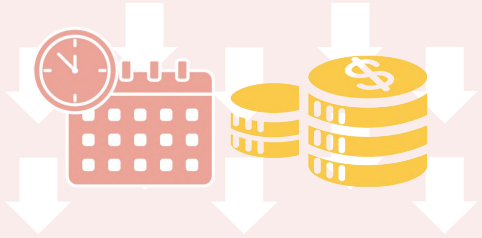
Investor Relations

Lantern Pharma

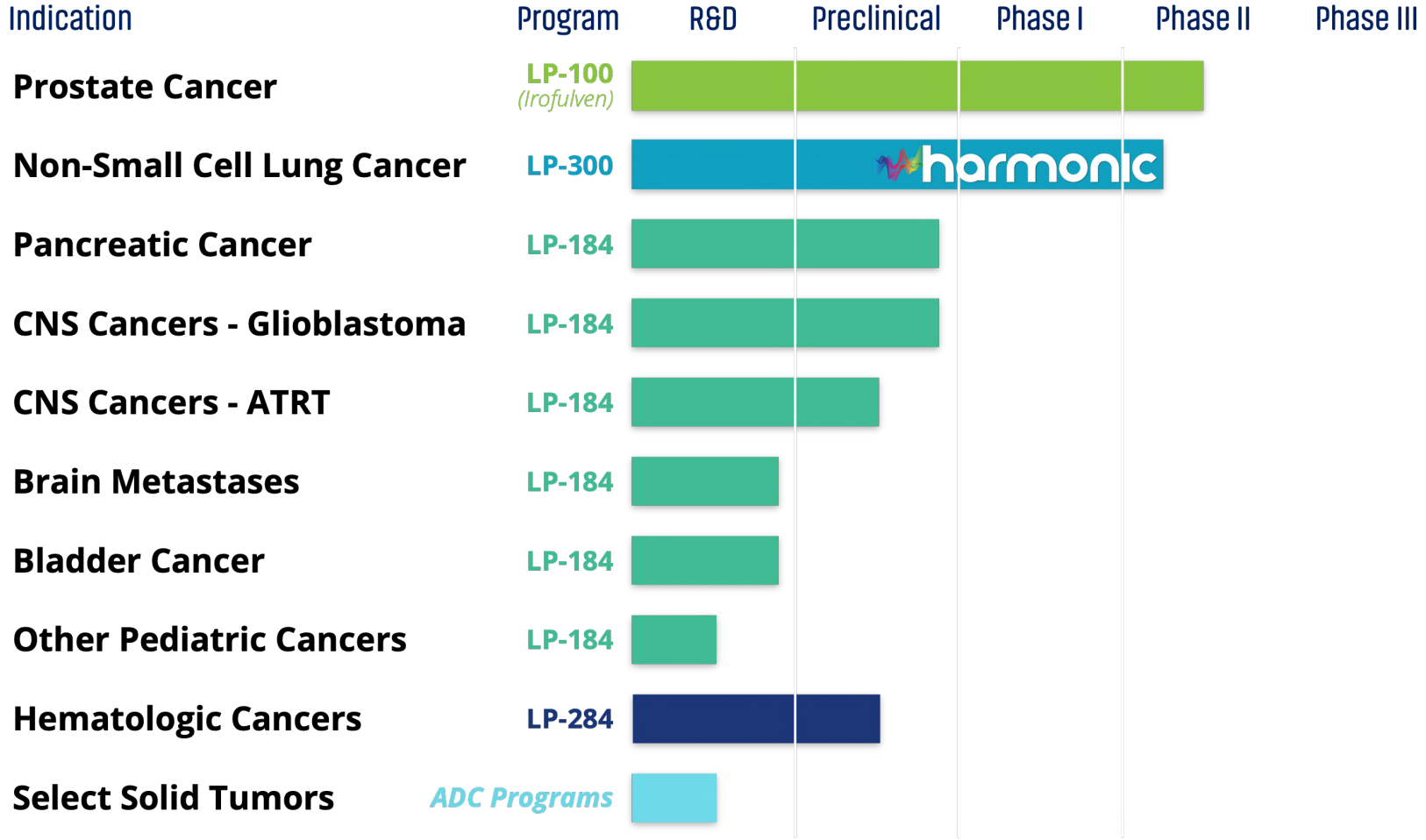
Leveraging A.I. to reduce oncology drug development costs and improve the likelihood of success

Abundance of data

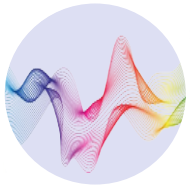
Proprietary A.I. platform RADR®



Accelerated timeline and reduced cost



First Quarter 2022 Highlights



Harmonic™ Trial

- Submitted IND amendment including a finalized clinical study protocol to the FDA in mid-April for Phase 2 trial
- 1st patient anticipated in Summer 2022

LP-184

- IND enabling studies progressing
- IND submission targeted in Q3 2022

Brain Metastases

- Presented poster and findings at AACR
- Pursuing new indication for LP-184 in a market with significant unmet clinical need

Synthetic Lethality

- Evidence of a synthetic lethal relationship between LP-184 and NERD and HRD tumors

Australia Operation

- Actively conducting multiple studies in Australia under Lantern Australian subsidiary
- Takes advantage of R&D tax incentive program

RADR® Expansion

- RADR® has surpassed 20 billion datapoints
- Pursuing additional biopharma collaborations

Share Repurchases

- Announced extension of existing share repurchasing program

Pediatric Cancer

- Initiated work with Greehey Children's Cancer Institute at UT Health San Antonio
- Early preclinical efficacy seen in initial studies

Harmonic™ Clinical Trial – Phase 2 Trial for LP-300

harmonic

Total expected patients
90 Patients

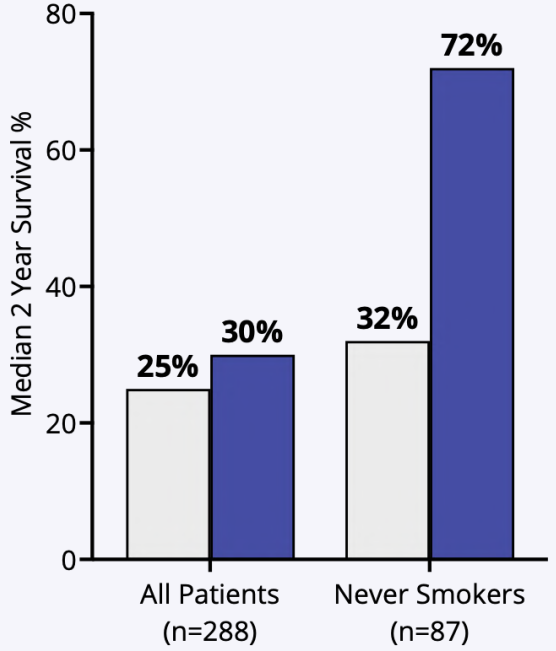
Total expected sites
15-20 Sites

Estimated first patient enrollment
Summer 2022

- Harmonic™ clinical trial is a Phase 2, multi-center study to evaluate Lantern's investigational drug LP-300
- 90 patient, two-arm, open label, randomized trial
- randomization in a 2:1 allocation ratio to one of two arms
- Trial is focused on **never smoker** patients with relapsed primary adenocarcinoma of the lung, a type of NSCLC (Non-Small Cell Lung Cancer)

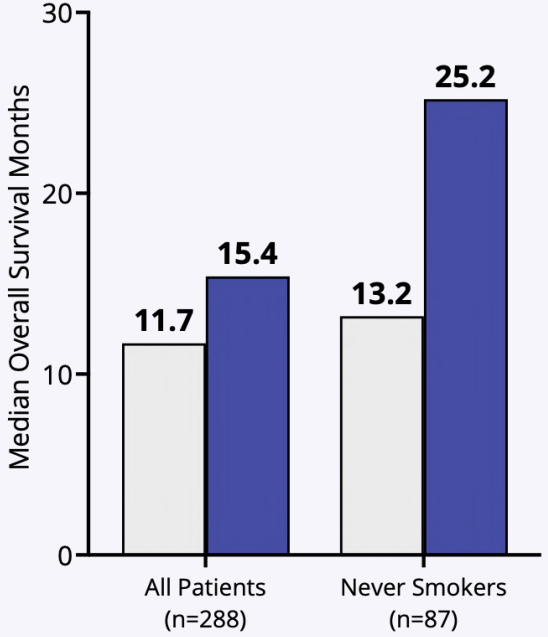
2 Year Survival

+125% median survival increase



Overall Survival

+91% median survival increase



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.

LP-184 IND enabling studies

Completed

Study Type	Method	Results
Dog non-GLP tox study	NOAEL 0.3mg/kg for repeat weekly dosing (days 1, 8 and 15)	At NOAEL in dogs LP-184 PK parameters measured on dosing days 1 and 15 showed ○ t1/2 = 40-50 min ○ Cmax = 800 nM ○ Tmax = 5 min ○ At 0.3mg/kg some hematotoxicity observed in form of decreased counts of blood lymphocytes
Analytical Method Development	Completed LC-MS method development for rat/ dog plasma, and matrix/ storage/ pH/ freeze-thaw stability; precision & accuracy	Standard curve: 1 - 200 ng/mL; QC levels: 1, 3, 75, 180, 200 ng/mL

Ongoing

Study Type	Method	Expected completion
Analytical Method Validation	30-day stability protocols	June 2022
Dog GLP 3	weekly doses (0.2, 0.4 and 0.6mg/kg)	Early June 2022

Expected

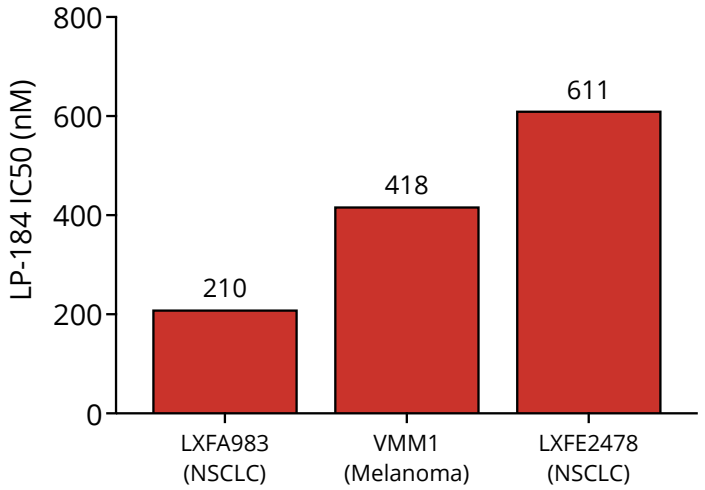
In vitro efficacy of our drug candidate LP-184 in brain metastases (mets.),

LP-184 is 6X more potent than early generation EGFR TKIs in brain metastasis models from primary lung cancer

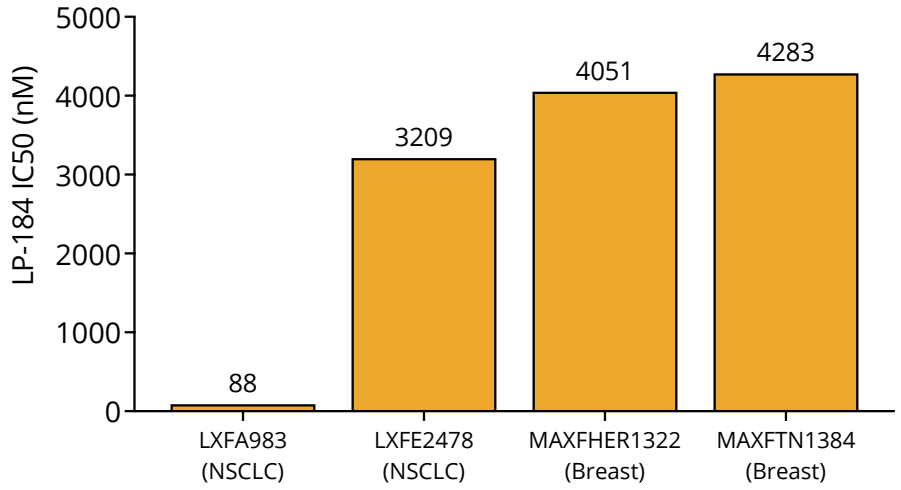
Unmet Clinical Need in Brain Metastases

- Brain metastases in the U.S. occur in **10-30% of all cancer cases** and are diagnosed in over **100,000 patients** each year.
- There is an **urgent and unmet clinical need** for novel therapies for brain mets due to a current lack of novel agents that can cross the blood brain barrier (BBB).

Estimated
$9 Billion
US Market Potential



2D Brain Metastases Cell Lines
(Primary Tumor Type)



3D Brain Metastases Cell Lines
(Primary Tumor Type)

- LP-184 has activity in the **primary and secondary cancers AND crosses the BBB.**
- Efficacy of LP-184 may extend beyond primary brain cancers to **other solid tumors that have metastasized to the brain** as evidenced by in vitro efficacy in brain mets. cell lines.
- LP-184 demonstrated anti-tumor activity in brain metastases cell models **from lung, skin, and breast cancers.**
- Data supports continued development of LP-184 in these **CNS cancer indications**

Lantern established an Australian subsidiary

Established Australia subsidiary to take advantage of Australia's Research & Development Tax Incentive

Lantern Pharma Australia Pty Ltd, a Lantern subsidiary, was established in Australia in September 2021

Subsidiary will allow:

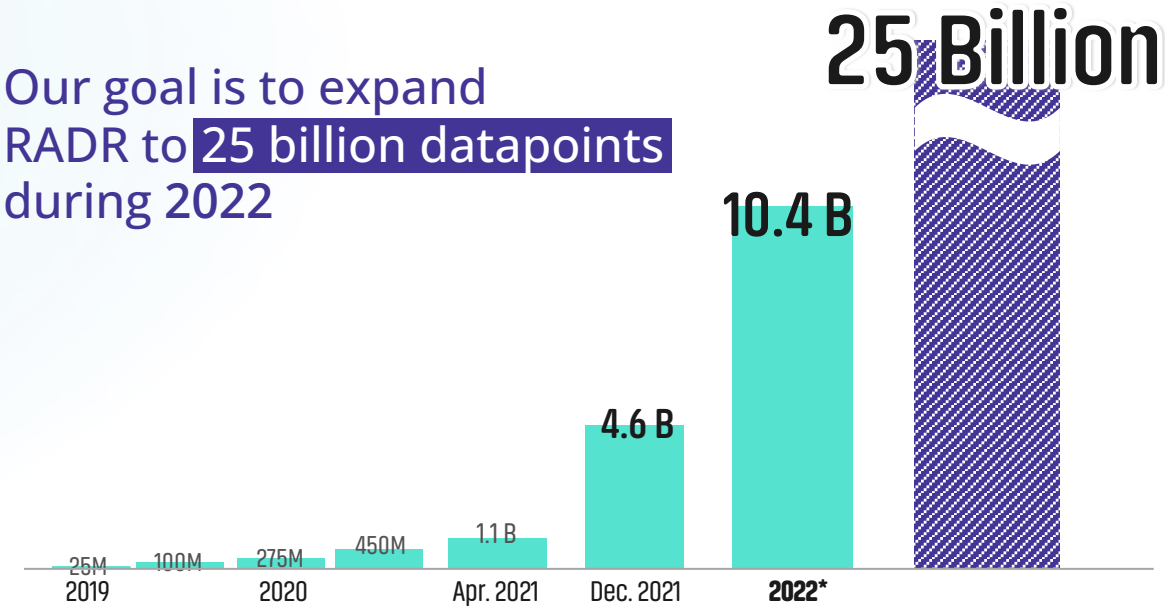
- Lantern to take advantage of Australia's R&D Tax Incentive program, which provides tax offsets for eligible R&D expenditures
- Lantern to conduct preclinical and IND enabling studies, many of which are already underway
- Increases financial flexibility and improves capital efficiency for ongoing R&D activity

RADR® Surpassed 20 Billion Datapoints

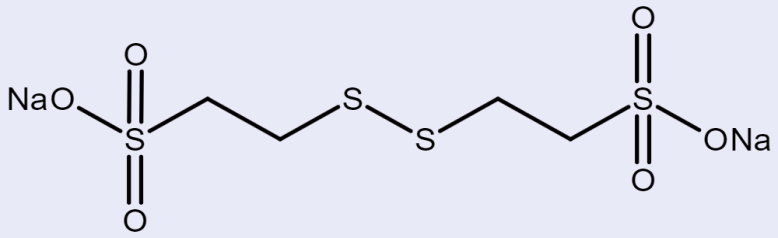
Future Goals For A.I. Platform

1. Focus on automation of data acquisition
2. Improve data user interface to other analytical tools and containers
3. Improve tagging of metadata
4. Enter into additional value-based biopharma collaborations

Our goal is to expand RADR to **25 billion datapoints** during 2022



LP-300 Mechanism of action



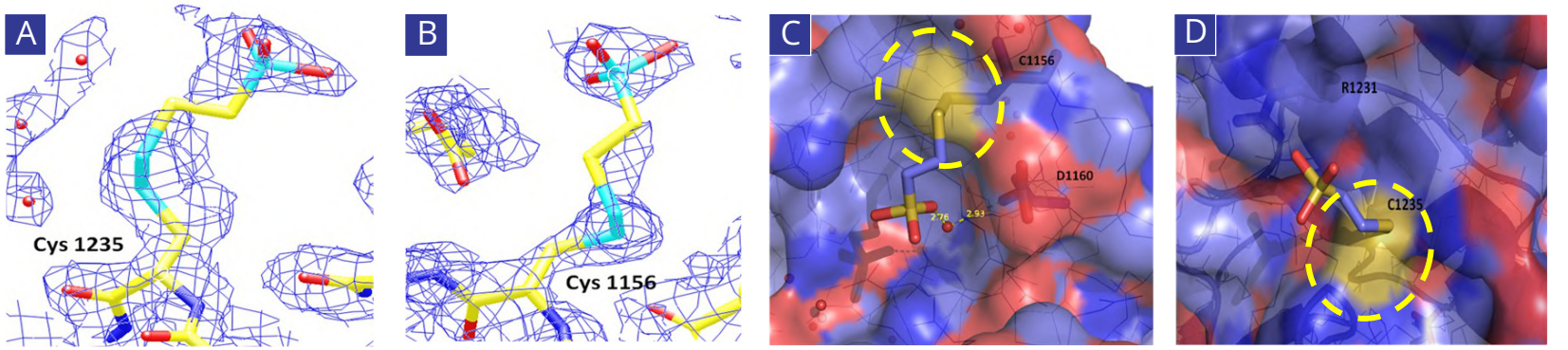
LP-300 molecule

LP-300

- LP-300 in previous clinical trials has been well tolerated in around **1,000 people**.
- 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.

Protein Degradation

LP-300 can degrade NSCLC proteins such as EGFR, ALK and ROS via cysteine modification



Electron density maps showing LP-300-derived adducts on ALK

Panel A: LP-300 adduct at Cys 1235
Panel B: LP-300 adduct at Cys 1156
Panel C: Molecular surface of ALK with the LP-300-derived adduct at Cys 1156 (***yellow highlight***)
Panel D: Binding site of the LP-300-derived adduct at Cys 1235 (***yellow highlight***)

Target Modulation

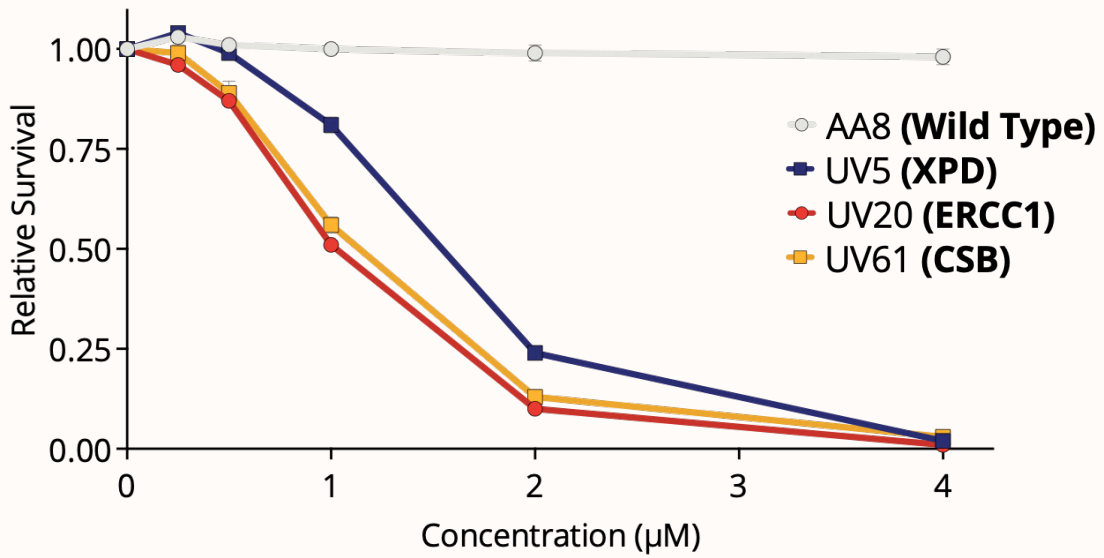
LP-300 modulates targets within key signaling pathways in NSCLC

LP-300 modulates :

- Receptor Tyrosine Kinases involved in proliferation/ survival signaling pathways (**EGFR, ALK, ROS1**)
- Enzymes critical for DNA synthesis and repair (**ERCC1, RNR1, RNR2**)
- Enzymes and proteins important in regulating cellular redox status (**TRX, PRX, GRX, PDI**)

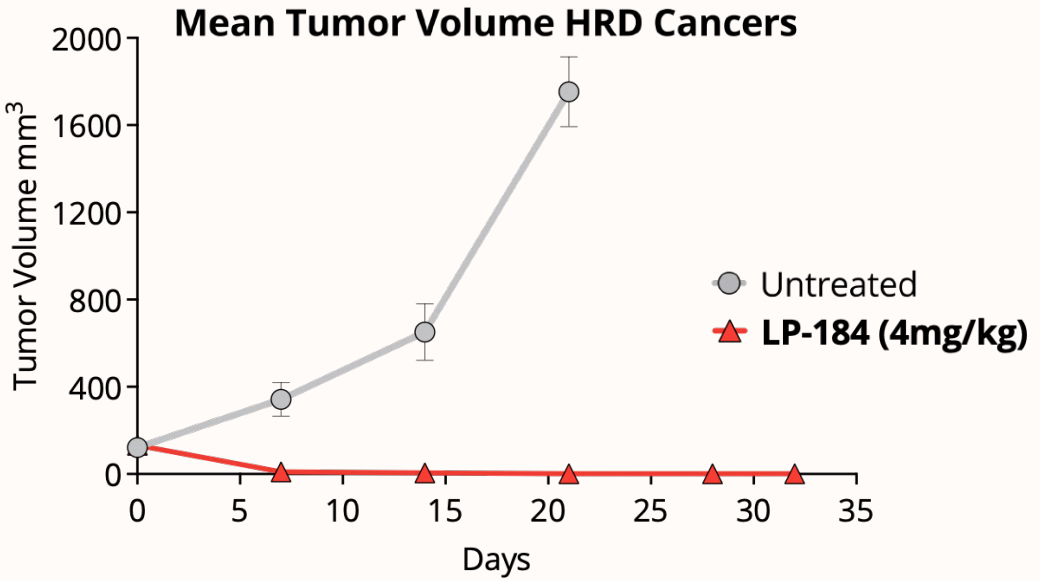
LP-184 shows exquisite sensitivity in NERD as well as HRD cancers

LP-184 in NERD cancers



- **NERD** tumors are nucleotide excision repair deficient tumors whose phenotype is a result of mutations in genes responsible for excision DNA repair- these include but not limited to- **ERCC1, ERCC3, ERCC4, ERCC5, ERCC6, RAD50, ATR, ATM, MRE, CSB, XPD** etc.
- 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



- **HRD** are Homologus recombination deficient tumors and carry mutations in genes such as **BRCA1, BRCA2, PALB2, BRIP1, FANCA**, etc.
- 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

Financial Update Q1 2022

Summary Results of Operations

	Three Months Ended March 31, (unaudited) 2022	2021
Operating expenses:		
General and administrative	1,406,160	1,173,258
Research and development	2,660,237	1,279,037
Total operating expenses	4,066,397	2,452,295
Loss from operations	**(4,066,397)**	**(2,452,295)**
Interest + Other income, net	(55,377)	-
NET LOSS	**$ (4,121,774)**	**$ (2,452,295)**
Net loss per common share, basic and diluted	$ (0.38)	$ (0.24)
Weighted Avg. Common Shares Outstanding - Basic and Diluted	10,875,777	10,074,623

Balance Sheet Highlights & Summary

	(unaudited) 3/31/2022	12/31/2021
Cash and Marketable Securities	**$ 65,216,479**	**$ 70,725,447**
Prepaid Expenses & Other Current Assets	$ 2,446,679	$ 1,990,953
Total Assets	**$ 68,402,517**	**$ 73,950,477**
Total Liabilities	**$ 3,087,145**	**$ 2,379,057**
Total Stockholders' Equity	**$ 65,315,372**	**$ 71,571,420**

> *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.***

LTRN Share Information

March 31, 2022

LANTERN PHARMA INC. (LTRN)	
Common Shares Outstanding	10,830,947
Warrants	177,998
Options (Employees, Management and Directors)	890,826
Fully Diluted Shares Outstanding	**11,899,771**

Date	Shares Repurchased	Average Price	Total Paid including Commission
FY 2021	121,490	$7.71	$939,666
Three months ended March 31, 2022	353,667	$6.86	$2,482,286
Total	**475,157**	**$7.08**	**$3,421,952**

Up to $7 Million is authorized for repurchase under Lantern's repurchase program, of which approximately $3.6 Million remains available for future purchases.

Maria Maccecchini, Ph.D. was nominated for election to Lantern's Board of Directors

New Director Nominee

Maria L. Maccecchini, Ph.D.
Founder, President, Chief Executive Officer, and director of Annovis Bio (NYSE: ANVS)

Dr. Maccecchini will be presented alongside a slate of five existing Directors at Lantern's upcoming **Annual Meeting** to be held on **June 8, 2022.**

Upcoming Events

MAY

9 — 9th Drug Discovery Strategic Summit
9th Drug Discovery Strategic Summit
Speaker: **Kishor Bhatia**

13 — SIC2022 STRATEGIC INVESTMENT CONFERENCE
Strategic Investment Conference
Speaker: **Panna Sharma**

18 — med.ventures
MedVentures Conference 2022
Speaker: **Panna Sharma**

19 — hubXchange
Augmented intelligence in drug discovery Xchange east coast,
Speaker: **Panna Sharma**

23 — Bioinformatics Strategy Meeting East Coast USA 2022
Bioinformatics Strategy Meeting
East Coast USA 2022
Speaker: **Panna Sharma**

JUNE

7 — LD MICRO® COVERING THE UNDISCOVERED
LD Micro Invitational
Speaker: **Panna Sharma**

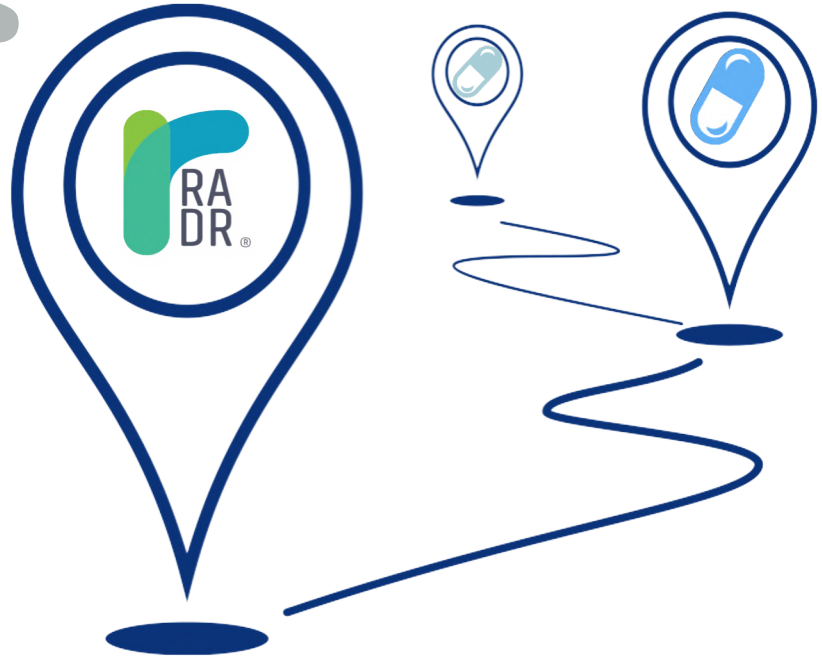
JULY

11 — WORLD OrphanDrug Congress USA 2022
World Orphan Drug
Congress USA 2022
Speaker: **Panna Sharma**

Key Corporate Objectives and Milestones

2022 Objectives and Milestones

- Launch of **The Harmonic™ Trial** - Ph. 2 clinical trial for LP-300 in NSCLC
- Advance LP-100 clinical development
- Launch Ph. 1 clinical trial for LP-184 in genomically defined solid tumors
- Design Ph. 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-100, 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



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