Third quarter 2021 Operating & Financial Results Conference Call / Webinar

November 1st, 2021
4:30 PM Eastern

TODAY'S SPEAKERS

Panna Sharma

Chief Executive Officer,
President and Director

David Margrave

Chief Financial Officer
and Secretary

Dr. Kishor Bhatia

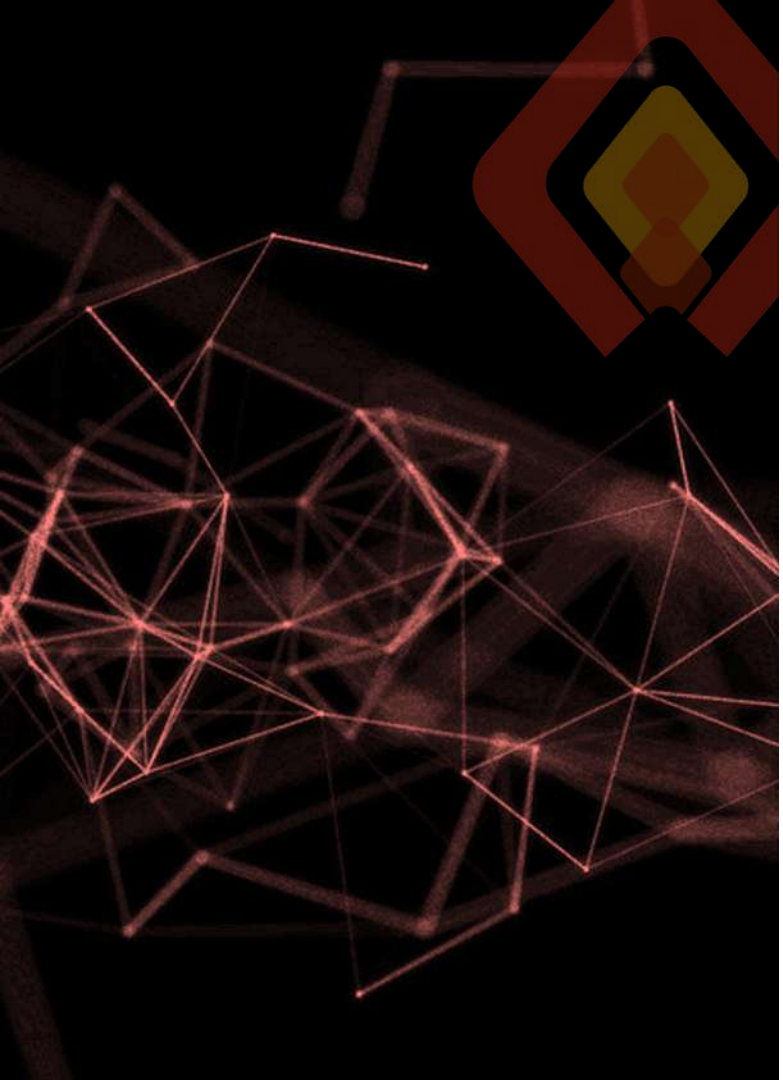
Chief Scientific Officer

Nicole Leber

Finance and
Administration

Forward Looking Statements

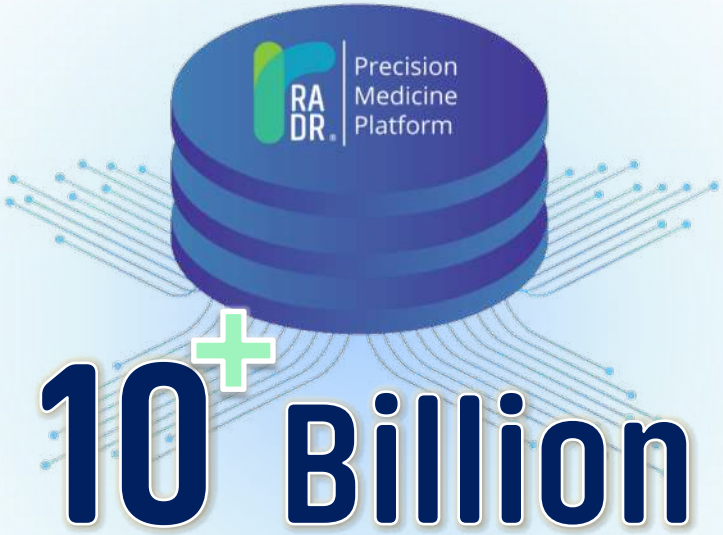
This presentation contains forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Securities Exchange Act of 1934, as amended. These forward-looking statements include, among other things, statements relating to: future events or 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," "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 we may not be able to successfully initiate, conduct, or conclude clinical testing for or obtain marketing approval for our product candidates; (iii) 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 (iv) those other factors set forth in the Risk Factors section in our Annual Report on Form 10-K for the year ended December 31, 2020, filed with the Securities and Exchange Commission on March 10, 2021. You may access our Annual Report on Form 10-K for the year ended December 31, 2020 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

A quarter of meaningful progress for Lantern Pharma on multiple fronts

RADR® Surpassed 10 billion datapoints this past month

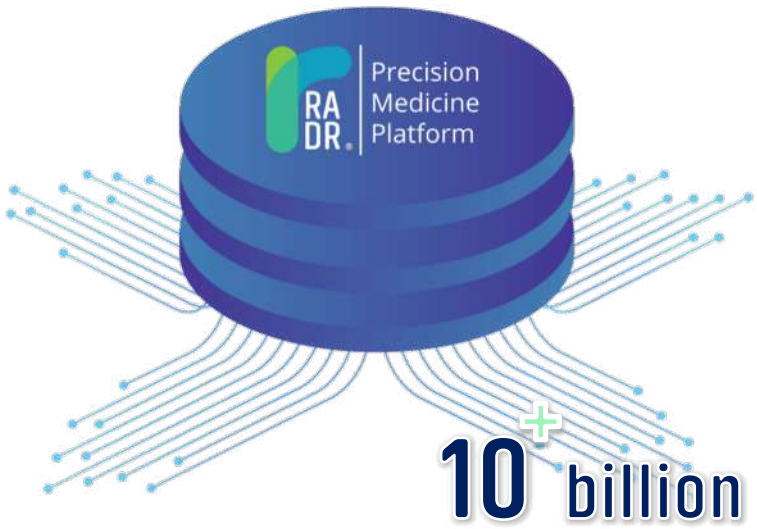


(x10 increase since Nov. 2020)

- accelerate drug development **timelines**
- uncover **new** therapeutic opportunities
- develop insights into the creation of **combination-therapy** programs
- expand our ability to **collaborate** with additional partners

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

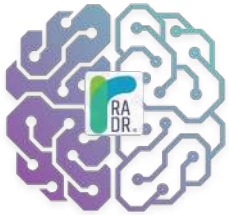
3rd Quarter 2021 and Subsequent Highlights

- Achieved over *10 billion data points* on our A.I. platform, RADR®
- LP-184 granted Orphan Drug Designation for the treatment of pancreatic cancer, glioblastoma multiforme (GBM) and other malignant gliomas by the U.S. Food and Drug Administration (FDA)
- Announced positive preclinical data in GBMwith LP-184 and expanded GBM research collaboration with Johns Hopkins
- Presentated at the AACR Virtual Special Conference on the effectiveness of LP-184 in pancreatic cancers
- Presented positive preclinical data for LP-184 in pancreatic cancers that have either high levels of PTGR1 expression or deficiencies/mutations in DNA damage repair genes
- Confirmed LP-184 efficacy in the nanomolar range in the ultra-rare brain cancer, Atypical Teratoid Rhabdoid Tumor (ATRT)
- Advanced two new undisclosed programs on rare cancers which are expected to advance into preclinical indications during 2022
- Entered strategic collaboration with Deep Lens
- Entered into a strategic collaboration with Code Ocean

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

Abandoned Drug Assets & New Drug Development

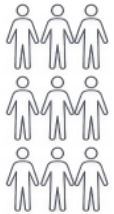
- Drugs that fell short of statistical significance *or* abandoned by pharma / biotech companies in late stage trials despite tens to hundreds of millions spent on development, PK analysis, safety and efficacy studies
- Development of new compounds in drug classes that leverage our AI platform



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



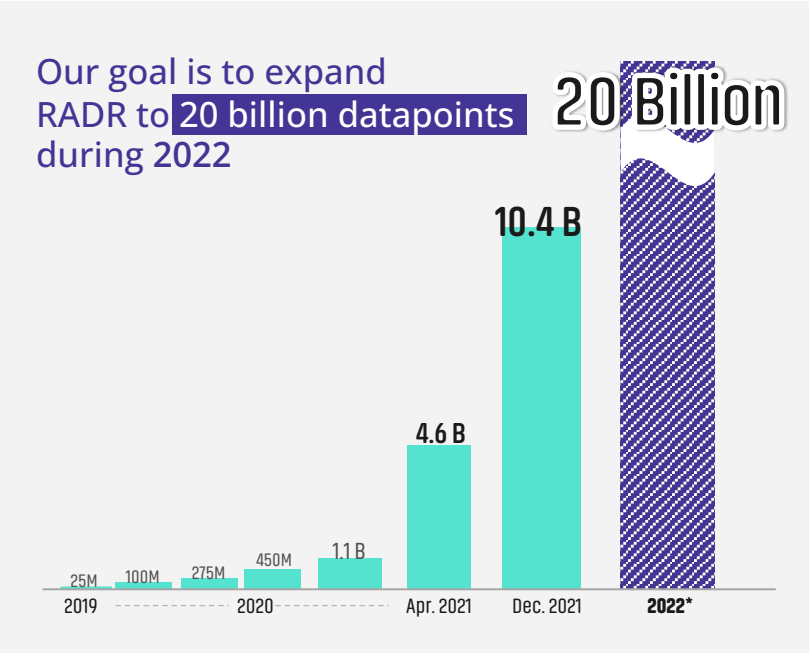
Non-Responders

- 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

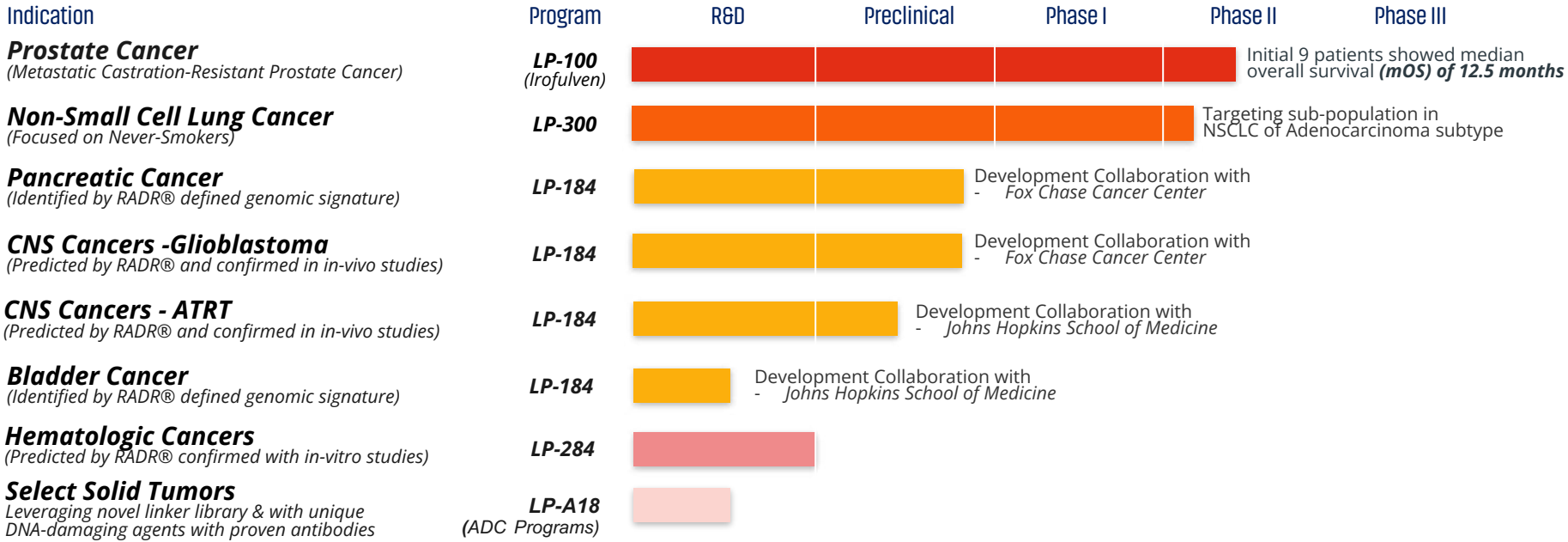
RADR® Precision Medicine Platform

We plan on continuing *further data expansion* by incorporating and curating additional datasets from proprietary studies and public data sources and further automating the evolution of RADR's library of algorithms. Additionally, Lantern will be augmenting the 10.4 billion datapoints with additional data from *immuno-oncology related studies and trials.*



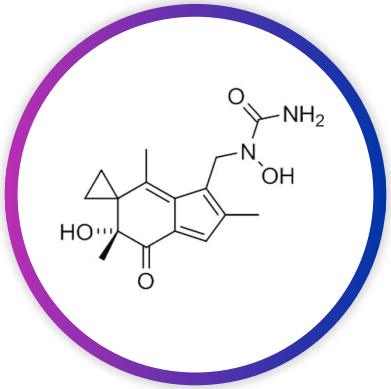
*We believe our growing A.I. platform will be pivotal in uncovering potential **new therapeutic opportunities** and developing insights into the creation of **combination-therapy programs**, both internally and through third-party collaborations.*

Lantern's Unique & Rapidly Developing Pipeline



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

Over 90+ issued patents and pending applications across 14 patent families



LP-184

Positive preclinical data in pancreatic cancer

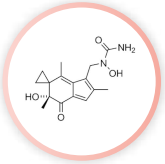
Highlights

- Granted *Orphan Drug Designation* by FDA
- *Positive preclinical data* in pancreatic cancers that have either high levels of PTGR1 expression or deficiencies/mutations in DNA damage repair genes
- Presented at the *AACR Virtual Special Conference*: Pancreatic Cancer

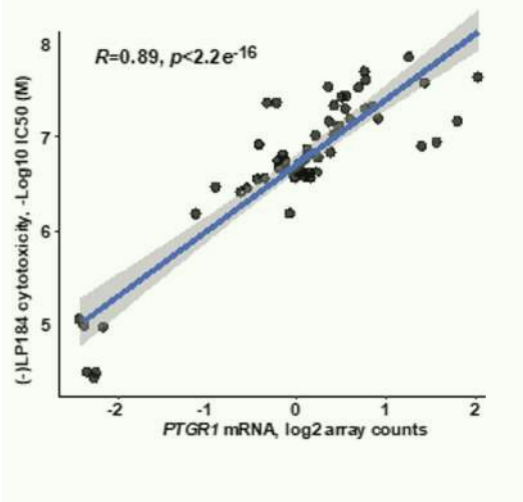
Upcoming Milestones

- Initiate *Investigational New drug (IND)* and Phase 1 human trial
- Host virtual *Key Opinion Leader (KOL)* event on LP-184 for the treatment of pancreatic cancer with Dr. Igor Astsaturov and Dr. Kishor G. Bhatia on November 18th, 2021, World Pancreatic Cancer Day

As predicted by RADR ®, LP-184 cytotoxic activity is driven by PTGR1

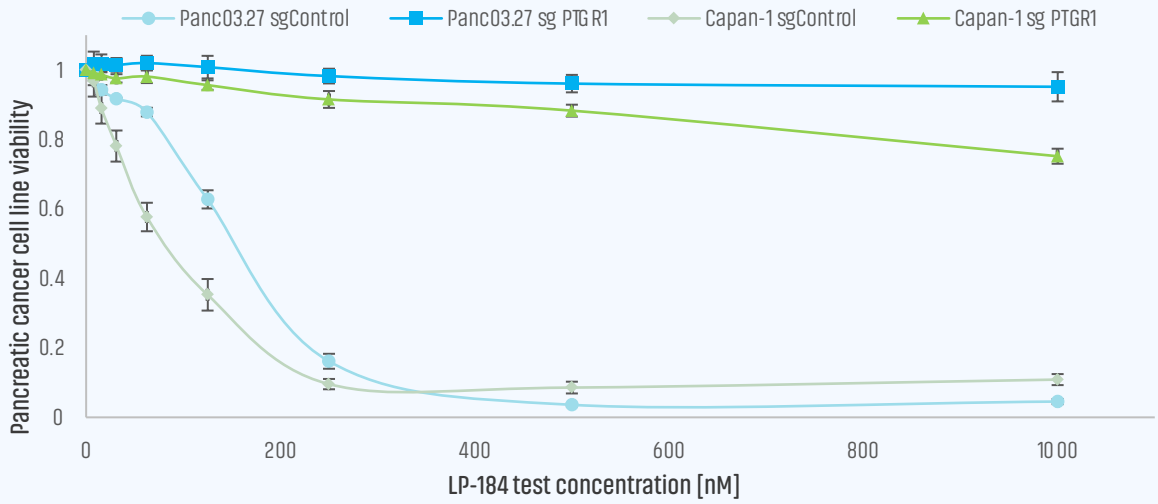


RADR Insight *(in-silico)*



LP-184 activity **positively correlates** with PTGR1 transcript levels in the NCI60 cancer cell line panel

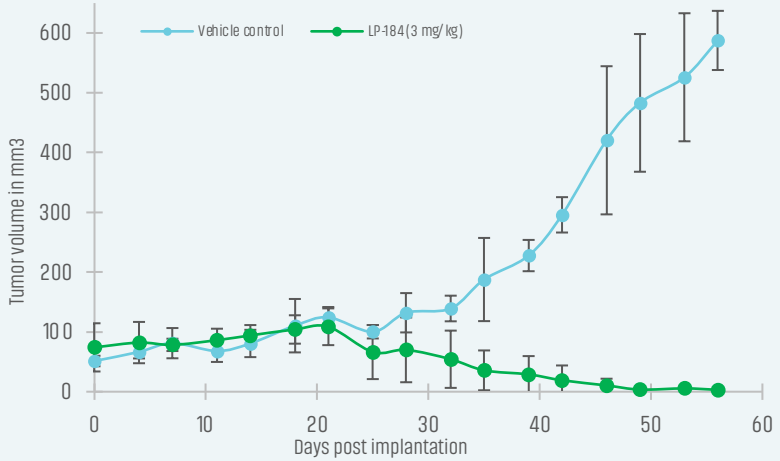
In-vitro Gene Editing Studies *(CRISPR)*



CRISPR-mediated depletion of PTGR1 expression in a pancreatic cancer cell line (Panc03.27) is sufficient to **fully diminish LP-184 activity**. This confirms the strict dependency of LP-184 cytotoxicity on PTGR1 expression

Positive Preclinical Data in Pancreatic Cancer

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



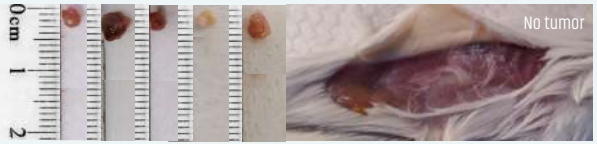
Tumor growth inhibition of ***109%*** was observed with LP-184 treatment relative to control with dosing occurring weekly over an 8 week period

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 mm^3

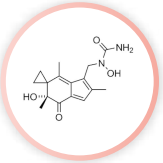
Tumors from LP-184 (3mg/kg) Treated Mice at the End of Study Period

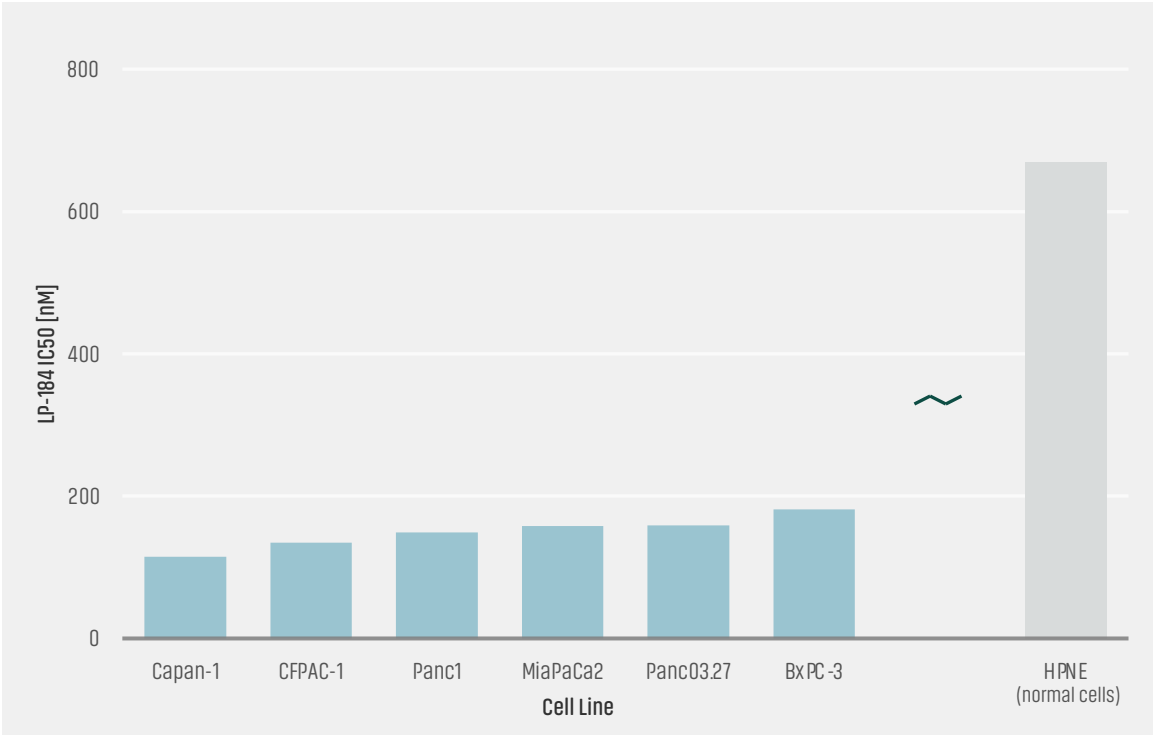


Average tumor volume = 4 mm^3

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

LP-184 shows nanomolar in vitro potency in pancreatic cancer cell lines





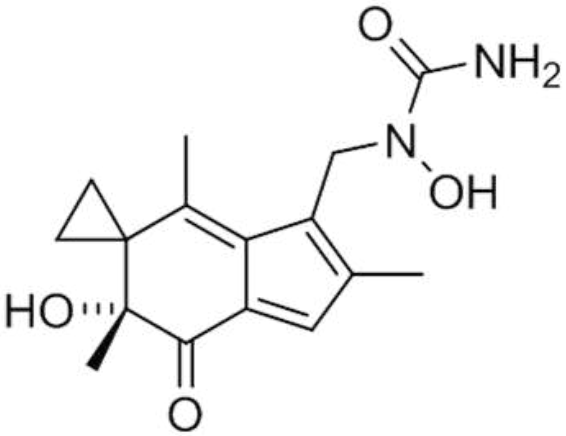
Drug / Compounds	***Range of IC50 [nM]*** across 6 cancer cell lines	***Median IC50 [nM]***
LP-184	100 - 200	154
Gemcitabine	30 - 1,000	149
Irinotecan	3,000 - 70,000	12,052
5-Fluorouracil	30,000 - 300,000	72,747

LP-184 IC50 in the ***normal(non-cancerous) pancreatic epithelial cell HPNE line***: 670 nM

LP-184 Anticipated Upcoming Milestones

- In discussions on the design of ***first-in-human clinical studies*** for LP-184 in collaboration with Dr. Igor Astsaturov and other key opinion leaders in the pancreatic cancer treatment landscape.

- Initiate ***IND application*** enabling animal studies later this year, and Phase 1 human trials following the filing of a future IND application



KOL event on Nov. 18th , World Pancreatic Cancer day

Virtual Key Opinion Leader(KOL) event on LP-184 for the treatment of pancreatic cancer

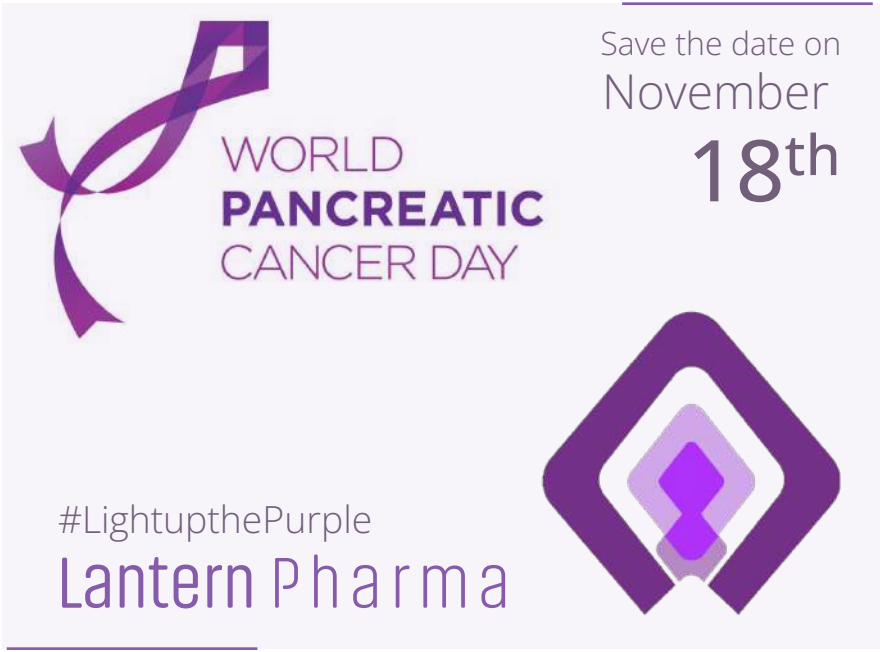
Speakers

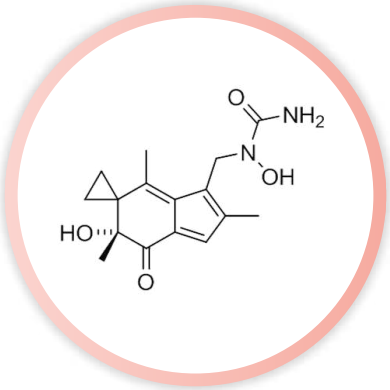
Dr. Igor Astsaturov

Co-leader of the Marvin & Conchetta Greenberg Pancreatic Cancer Institute at Fox Chase Cancer Center

Dr. Kishor G. Bhatia

Chief Scientific Officer of Lantern Pharma





LP-184

Positive preclinical data in Glioblastoma(GBM)

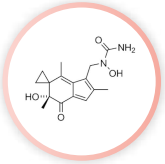
Highlights

- Completed a *successful preclinical study* demonstrating the ability of LP-184 to inhibit tumor growth and improve survival in animal studies of glioblastoma (GBM)
- Based on the encouraging results of the study, Lantern **extended and expanded** its collaborative agreement with *Kennedy Krieger* Institute and *Johns Hopkins*

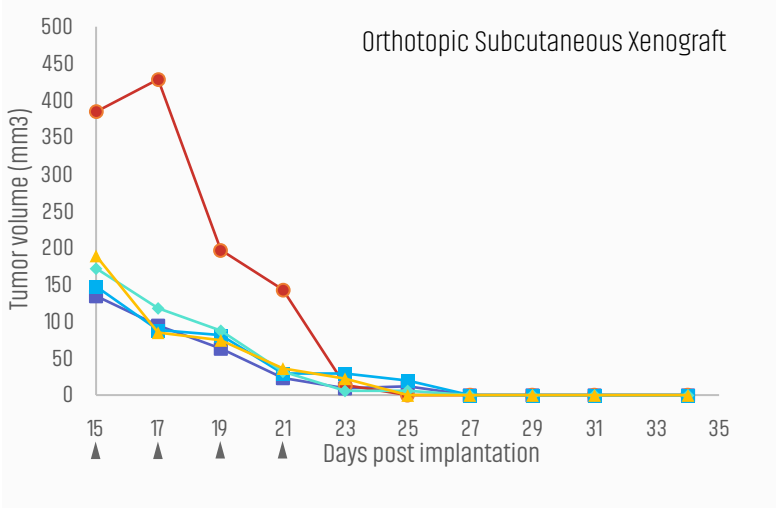
Upcoming Milestones

- Share detailed scientific results from LP-184 collaborative research program in GBM after presentation at *Society of Neuro Oncology conference* November 18-21 in Boston, MA
- Launch *Phase 1/2 clinical trial* for LP-184 in GBM

LP-184 shows complete tumor regression in mice implanted with Glioblastoma in multiple models

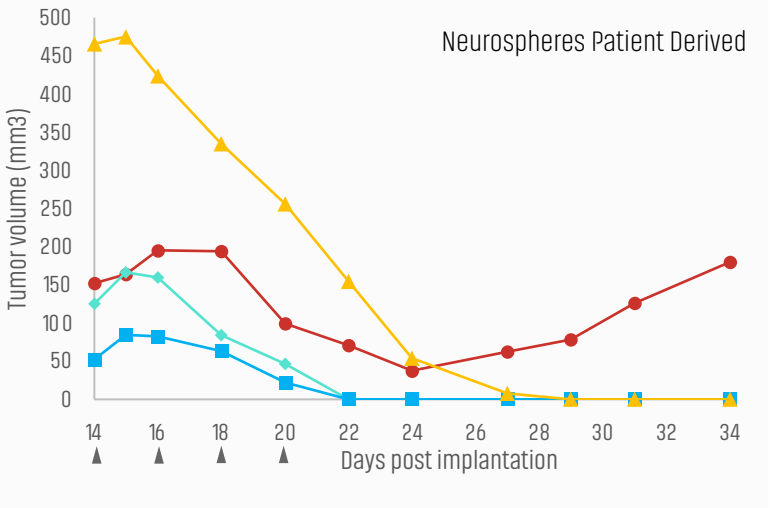


U87-MG GBM Model



- Complete Regression
- No measurable tumors 12 days post final dosing (33 days after implantation)

M1123 GBM Model



- Complete regression during dosing
- 3 out of 4 mice showed no tumor growth after final dosing

Antibody-drug Conjugates (ADC)
- an area of increasing future focus of Lantern Pharma

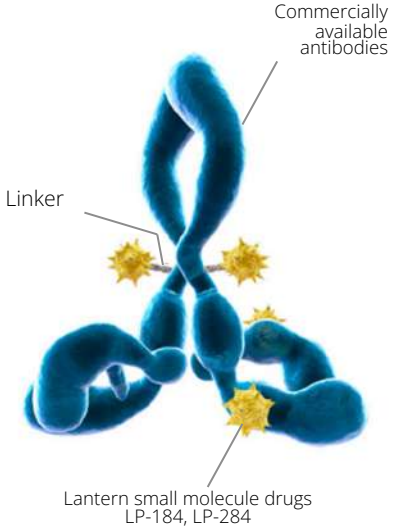
Antibody-Drug Conjugates (ADCs) novel class of highly potent biological drugs conjugate a cytotoxic drug with a monoclonal antibody (mAb) through an applicable linker

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

"ADC's ability to harness mAb specificity and target the delivery of a cytotoxic agent to the tumor may significantly enhance both mAb and drug activities."

Stephen C et al.
Current Opinion in Chemical Biology- Elsevier
06/2010



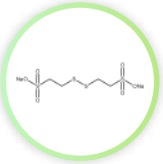
Growing

- 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*

"With so many ADCs in clinical development and the unprecedented approvals of the past year, it's clear that ADCs will continue to be a critical part of the therapeutic armamentarium against cancer"

Dr. Amita Patnaik
FRCPC, of START Center for Cancer Care

Collaboration with Deep Lens A.I. Clinical Trial Machine, VIPER



Lantern Pharma X DeepLens	strategic collaboration to accelerate patient enrollment for Phase 2 clinical trial for never-smokers with non-small cell lung cancer (NSCLC), utilizing LP-300 in combination with chemotherapy

RADR Precision Medicine Platform + VIPER

predict outcomes and response in specific patient subsets

accelerate the patient enrollment

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

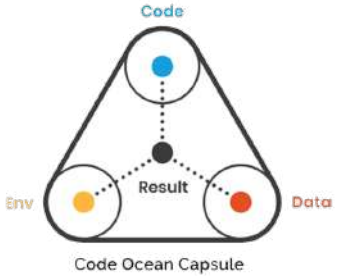
Collaboration with Code Ocean's Compute Capsule

Lantern Pharma X Code Ocean	strategic collaboration to to facilitate the accelerated development of RADR® while reducing development complexity and cost and increasing security and reproducibility

CODE OCEAN

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

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

Anticipated Upcoming Milestones

- Host virtual *Key Opinion Leader (KOL)* event on LP-184 for the treatment of pancreatic cancer on World Pancreatic Cancer Day
- Planned launch of 90 patient Phase 2 clinical trial in the US for LP-300 in NSCLC focused on never-smokers that are chemo naïve and failed/relapsed on TKI therapy
- Share detailed results from LP-184 research program in GBM after presentation at Society of Neuro Oncology conference
- Share results for LP-184 in pancreatic, bladder, GBM, ATRT and other tumors over the next several months
- Launch Phase 1 clinical trial for LP-184 in solid tumors
- Launch Phase 1/2 clinical trial for LP-184 in GBM
- Progress LP-184 in ATRT towards Phase 1/2 clinical trial
- Launch IND enabling studies for ADC program
- Explore potential combinations for LP-184 and LP-300 with other existing approved drugs
- Strategically grow RADR® A.I. platform to 20 billion datapoints, including continued expansion in additional rare cancers
- Explore biopharma licensing and partnership opportunities

Contents

Summary Results of Operations

	Three Months Ended September 30, (Unaudited)		Nine Months Ended September 30, (Unaudited)	
	2021	***2020***	***2021***	***2020***
Operating expenses:				
General and administrative	1,184,486	1,100,719	3,671,945	2,117,290
Research and development	2,964,391	600,769	5,408,320	894,896
Total operating expenses	4,148,877	1,701,488	9,080,265	3,012,186
Loss from operations	***(4,148,877)***	***(1,701,488)***	***(9,080,265)***	***(3,012,186)***
Interest income	77,219	-	125,108	-
Other income, net	17,679	-	132,402	-
NET LOSS	***$ (4,053,979)***	***$ (1,701,488)***	***$ (8,822,755)***	***$ (3,012,186)***
Net loss per common share, basic and diluted	$ (0.36)	$ (0.27)	$ (0.82)	$ (0.82)
Weighted Avg. Common Shares Outstanding - Basic and Diluted	11,186,259	6,217,577	10,818,201	3,661,942

Balance Sheet Highlights & Summary

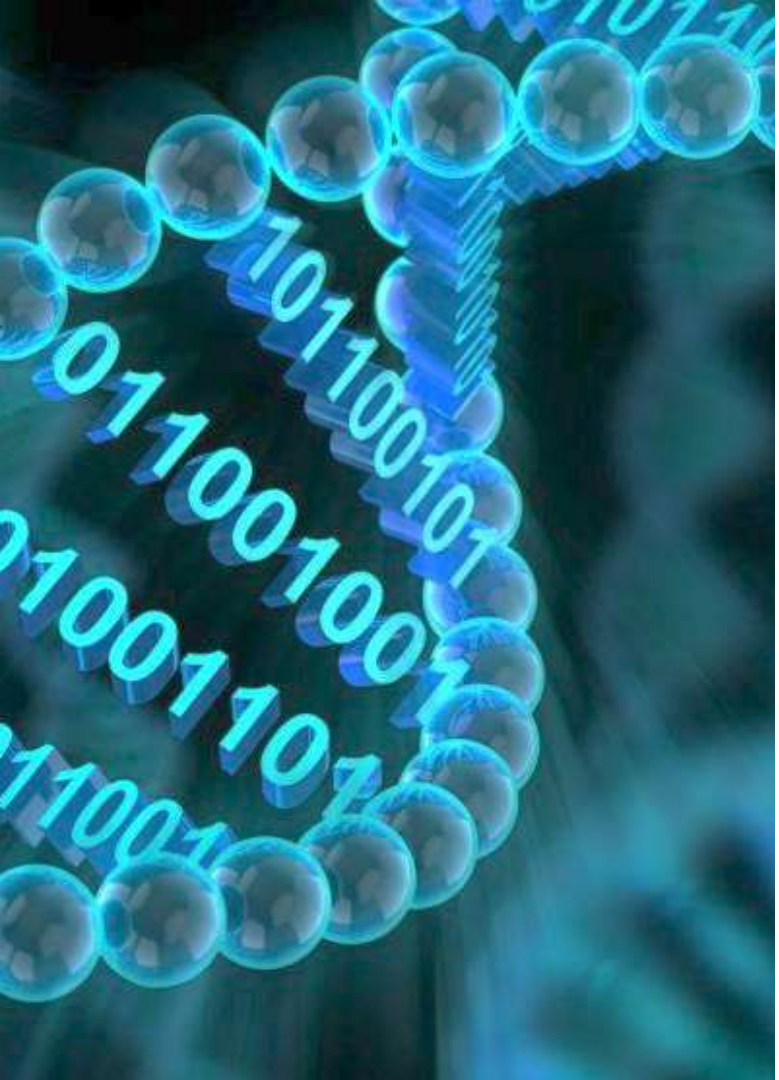
	9/30/2021 (unaudited)	**12/31/2020**
Cash, Cash equivalents and Marketable Securities	***$ 73,832,553***	***$ 19,229,232***
Prepaid Expenses & Other Current Assets	$ 2,504,089	$ 1,007,690
Total Assets	***$ 77,606,197***	***$ 20,359,634***
Total Liabilities	***$ 1,877,623***	***$ 660,839***
Total Stockholders' Equity	***$ 75,728,574***	***$ 19,698,795***

Shares Outstanding

September 30, 2021

LANTERN PHARMA INC. (LTRN)	
Common Shares Outstanding	11,186,999
Warrants	298,204
Options (Employees, Management and Directors)	801,588
Fully Diluted Shares Outstanding	***12,286,791***

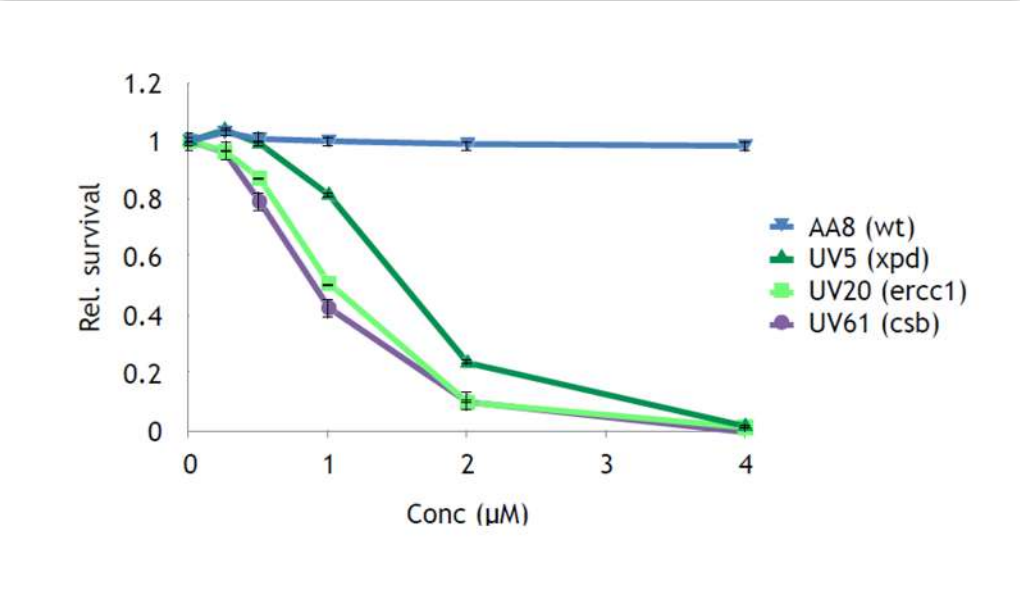
*We believe our **solid financial position** will fuel continued growth and evolution of our RADR® A.I. platform, accelerate the development of our portfolio of targeted oncology drug candidates and allow us to introduce additional targeted product and collaboration opportunities in **a capital efficient manner.***



Contents

LP-184 and LP-284 targets NER deficient cells

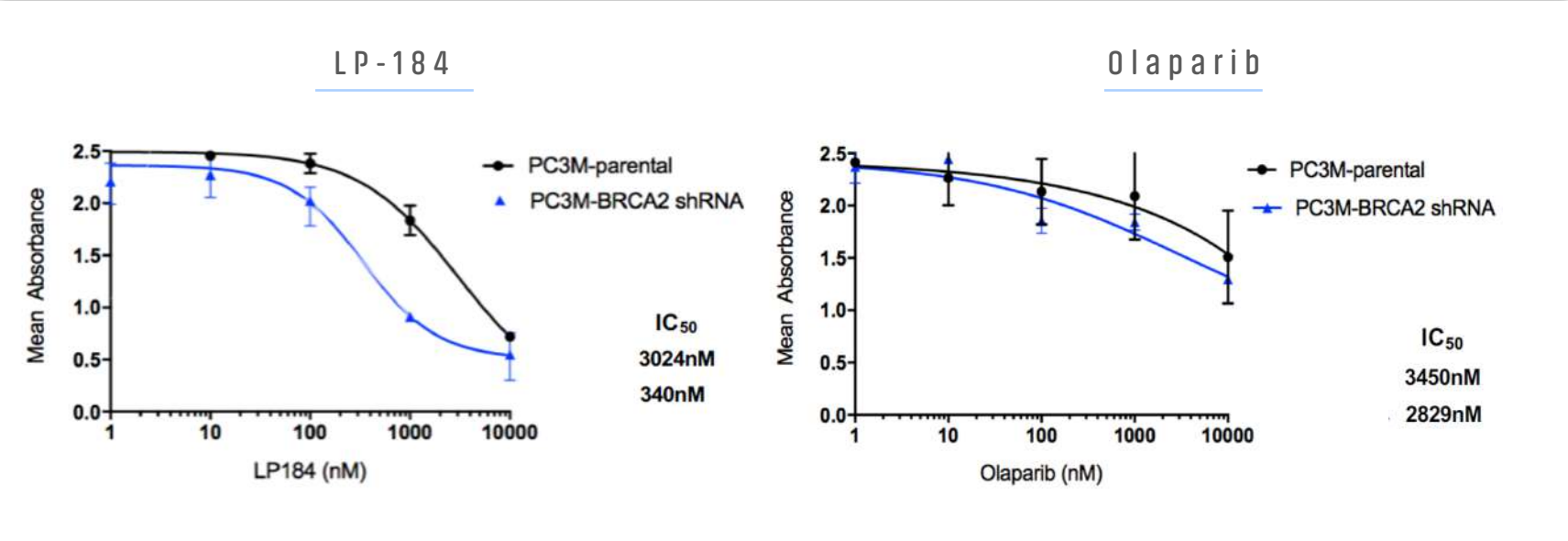
Mutant cell lines deficient in the Nucleotide Excision Repair (NER) pathway were more sensitive to LP-184/ LP-284 than the parent cell line



LP-184 is effective in multiple HR deficient prostate cancer models

PC3M metastatic prostate cancer cell line

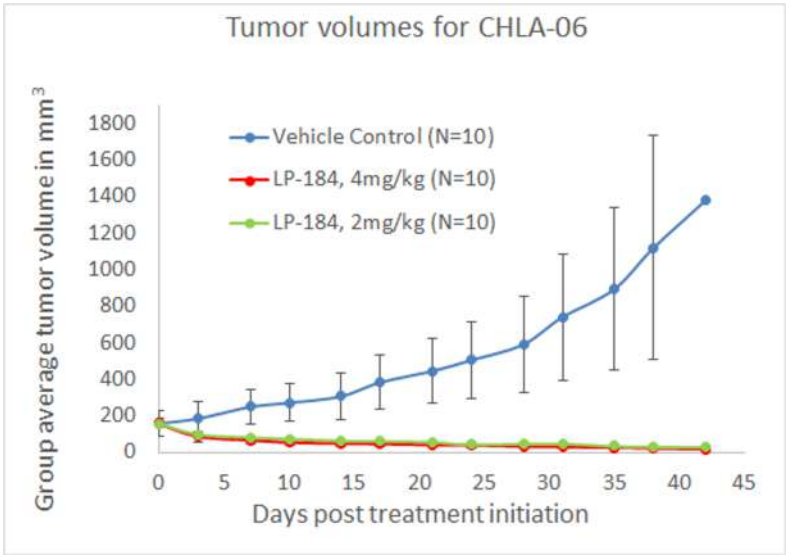
LP-184 and PARP inhibitor Olaparib are equipotent in vitro in the parental PC3M cell line.
LP-184 is 8X more active than Olaparib in the BRCA2 depleted PC3M line.

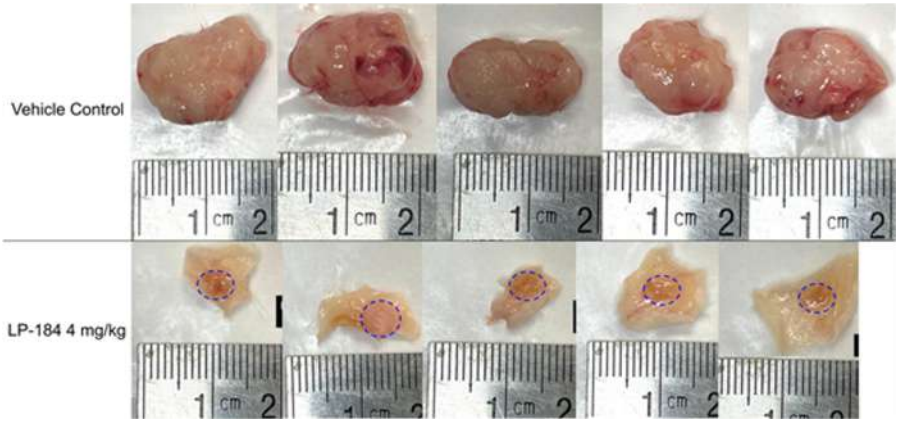


LP-184 is effective in a xenograft model of Atypical Teratoid/ Rhabdoid Tumor (ATRT)

Orphan Drug Designation (ODD) and Rare Pediatric Disease Designation (RPDD) applications submitted for the use of LP-184 in ATRT treatment

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





Representative terminal tumors

LP-184 CNS Bioavailabiity

BBB quantification parameter	Assay/ system	LP-184	TMZ
BBB permeability probability score	admetSAR2 *in silico*	0.9694	0.9879
Apparent permeability after 30 minutes	Neuromics BBB 3D assay *in vitro*	1.53E-04 cm/s	1.72E-04 cm/s
Brain: plasma ratio	SCID mice *in vivo*	0.11	0.11 – 0.29

2022

A **Transformational** year for Lantern

- Launch of multiple human clinical trials over the next 12 months
- Ongoing growth of our RADR platform – Reach 20 billion datapoints during 2022.
- With our network of strategic collaborators and recent additions to our team, we believe we are very well positioned with all members passionately invested and focused on developing drugs that benefit patients, while bringing them to market faster and at a lower cost.
- Looking forward, we intend to explore licensing and collaboration opportunities with our portfolio and with our RADR platform.

Contents

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