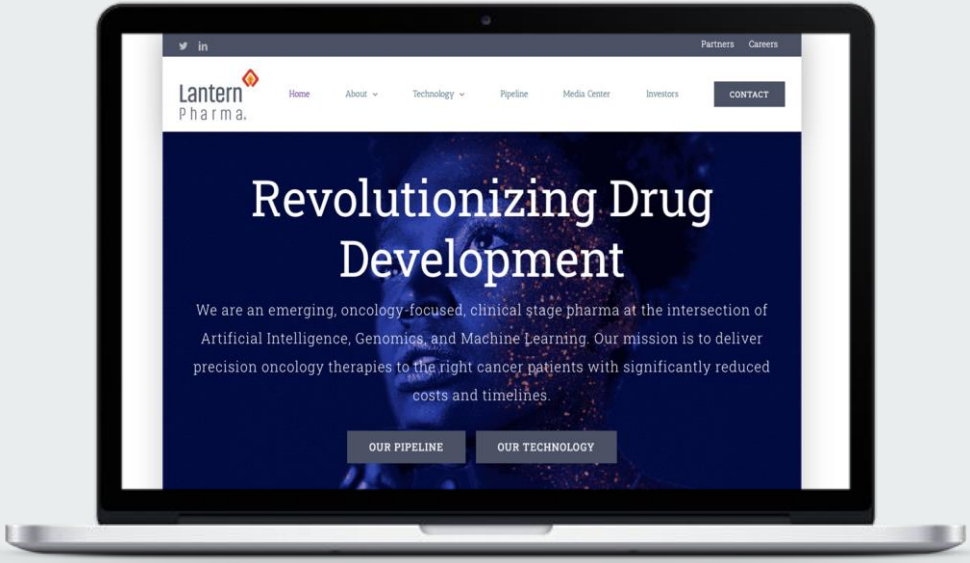
Lantern Pharma®

Fourth Quarter and Fiscal Year End 2020

Operating & Financial Results Conference Call



https://ir.lanternpharma.com/

March 10, 2021
4 PM Eastern

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," "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.

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KEY TOPICS

1. Business Overview & Background
   Panna Sharma, CEO
2. Financial Results & Highlights
   David Margrave, CFO
3. Business Updates
   Panna Sharma, CEO
4. Milestones
   Panna Sharma, CEO
5. Q&A Session

Lantern leverages A.I. to rescue and develop cancer therapies and has the potential to transform the cost, risk and timeline of drug development

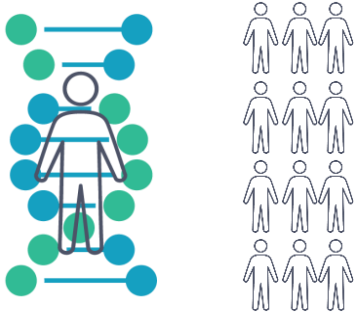
Failed or Abandoned Drug Assets & New Drug Development

Drugs that have failed clinical trials *or* have been abandoned by pharma and biotech companies in late stage trials

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

Lantern's Unique & Rapidly Developing Pipeline

Indication	Drug	R&D	Preclinical	Phase I	Phase II	Phase III
Prostate Cancer *Successfully partnered & out-licensed To Allarity Therapeutics*	**LP-100** (Irofulven)					
Non-Small Cell Lung Cancer *(Focused on Never-Smokers)*	**LP-300**					*Targeting a sub-population in NSCLC of Adenocarcinoma subtype*
Solid Tumors *(Location agnostic tumors identified by RADR® defined genomic signature)*	**LP-184**				*Development collaborations with:* • *Georgetown University* • *Fox Chase Cancer Center*	
Glioblastoma & Other CNS Cancers *(Responsiveness predicted by RADR® and confirmed in wet-lab studies)*	**LP-184**			*Development collaborations with:* • *Johns Hopkins School of Medicine*		
Select Solid Tumors	**ADC Programs**	*Focused on leveraging novel linker library* • *Use with proven antibodies that target specific cancer subtypes with novel payloads*				

Accelerated Development by Leveraging the RADR® A.I. Platform
70+ issued patents and pending applications across 14 patent families

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Milestones Attained Since June 2020 IPO

Drug Development Achievements

- Expanded pipeline from 3 drug candidates in 4 tumor targets to 7 disclosed targets
- Initiated Antibody Drug Conjugate ("ADC") platform
- Grew RADR® A.I. platform to over 1.2 billion datapoints, ~5x from IPO
- Published multiple peer-reviewed publications
- Advanced LP-300 in NSCLC towards a planned launch of a Phase 2 trial in Q3 2021

Operational Achievements

- Established manufacturing network for the company's pipeline of targeted drug candidates
- R&D and CRO collaborations
- Collaborations with recognized KOLs in prostate, pancreatic and CNS cancers
- Over 15 new patent applications
- Expanded data sciences and research teams

Financial Highlights

- Completed $26.3 million IPO on June 15, 2020
- Completed $69.0 million follow-on public offering in January 2021
- Extended cash runway through mid-2025, allowing the company to focus developing our portfolio of oncology therapeutics

Summary Results of Operations

	Three Months Ended December 31, (Unaudited)		Year Ended December 31,	
	2020	**2019**	**2020**	**2019**
Operating expenses:				
General and administrative	1,547,675	497,700	3,664,965	1,475,000
Research and development	1,348,329	177,468	2,243,225	953,185
Total operating expenses	2,896,004	675,167	5,908,190	2,428,185
NET LOSS	**$ (2,896,004)**	**$ (675,167)**	**$ (5,908,190)**	**$ (2,428,185)**
Net loss per common share, basic and diluted	$ (0.47)	$ (0.34)	$ (1.37)	$ (1.23)
Weighted Avg. Common Shares Outstanding - Basic and Diluted	6,219,871	1,978,269	4,304,918	1,978,269

Balance Sheet Highlights & Summary

	12/31/2020	12/31/2019
Cash	**$ 19,229,232**	**$1,232,030**
Prepaid Expenses & Other Current Assets	$1,007,690	788
Total Assets	**$ 20,359,634**	**$ 1,432,576**
Total Liabilities	**$ 660,839**	**$ 489,292**
Total Stockholders' Equity	**$ 19,698,795**	**$ 943,284**

Cash position does not include $69.0 million (gross) raised in the January 20, 2021 follow-on public offering.

Follow-On Offering – January 20, 2021

4,928,571 shares at $14.00 per share
$68,999,994 Gross Proceeds

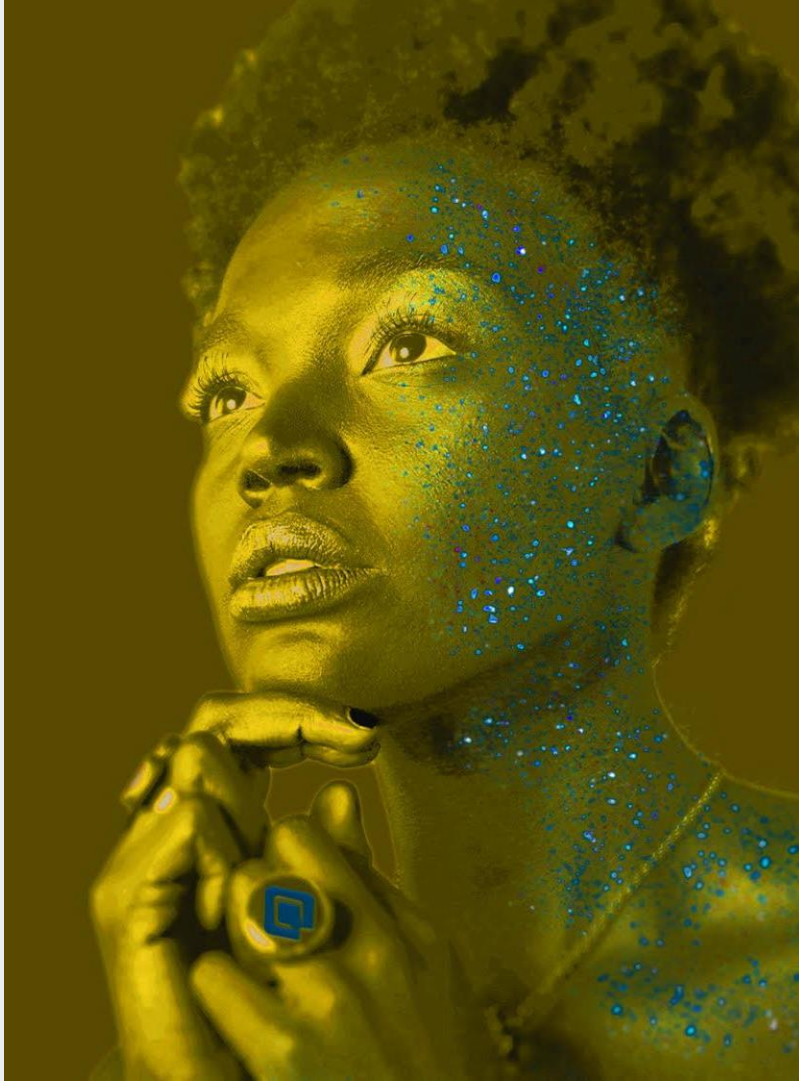
LANTERN PHARMA INC. (LTRN)	
Common Shares Outstanding	11,169,665
Warrants	305,294
Options (Employees, Management and Directors)	835,608
Fully Diluted Shares Outstanding	**12,310,567**

Entering "The Golden Age of A.I."

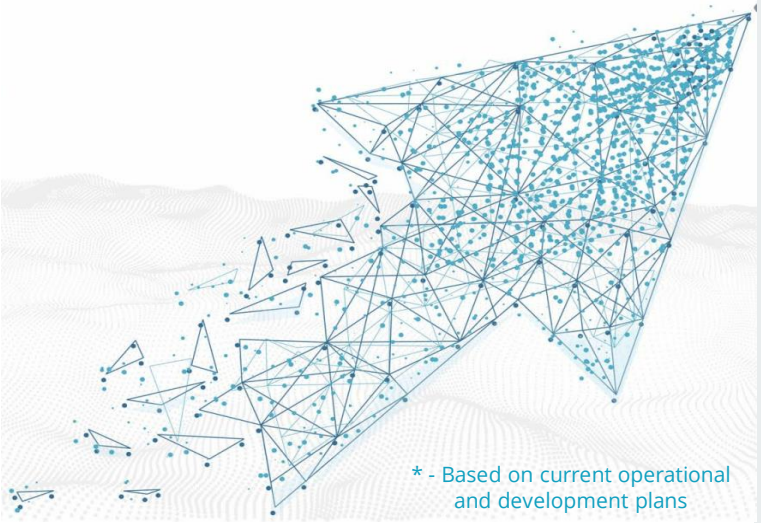
10 Mega-Trends Setting The Stage for A.I. Led Transformation in Drug Development & Medicine

- Large-scale, relevant and readily available data-sets
- Methods, technologies and algorithms that are massively scalable
- Computing, storage and transmission continue exponential advances
- Rapid rise of global talent and collaboration networks
- Tremendous increase in quality of biological data and methods
- Rise of sequencing as a highly available, on-demand, low-cost service
- Consumers willing to share personal data in near-time
- Industries that have an increasing impetus to transform
- New generation of investors demanding novel value creation
- Executives and entrepreneurs rewarded for rapid change

Lantern is at the forefront of this model of A.I. driven transformation in the area of personalized oncology drug development to drive value for cancer patients and our investors.



Precision Medicine Platform



* - Based on current operational and development plans

10 Million >	125 Million >	1 Billion >	3 Billion* >	6 Billion* >
2018	2019	2020	2021	2022

Curated Data Sources Include:

- *Historical Trials*
- *Proprietary Internal Studies*
- *Studies & Collaborations w/ Partners*
- *Active Clinical Trials*
- *Trials in adjacent drug classes and tumors*
- *Proprietary Sequencing Campaigns*
- *Proprietary Drug Sensitivity Studies*
- *Open Sources from Publications and Research*
- *Clinical Outcome & Lab Data From Select Groups*

The RADR® Platform Enables…

Scientific Value +

- Rapid identification of potential compounds to rescue and develop
- Improved and more nuanced understanding of responder groups, and non-responder groups based on biological networks
- Feedback for potential mechanisms to be exploited in target-based development activity

Patient Value +

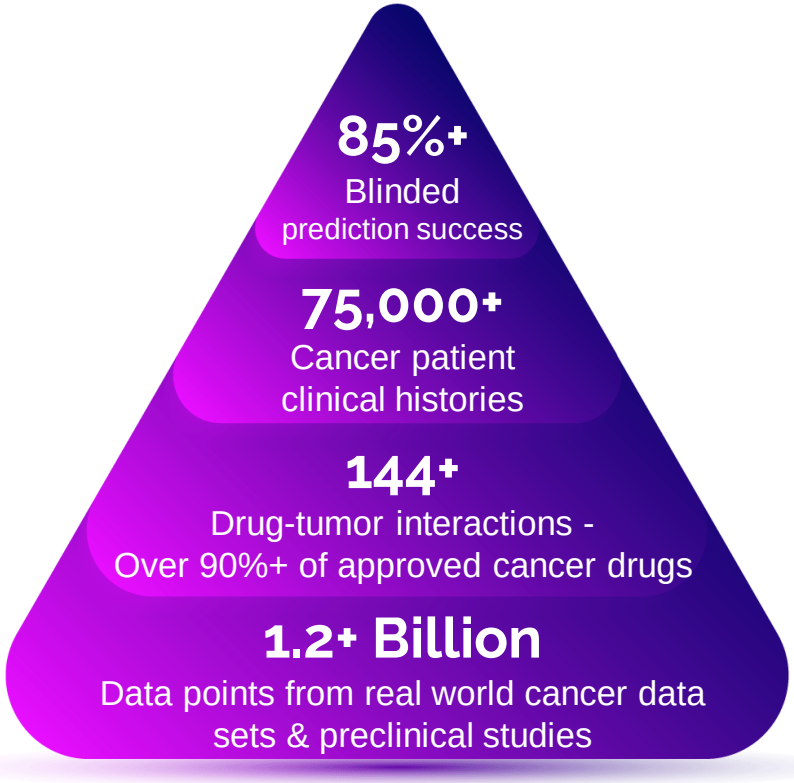
- More rapid entry into clinical trials and patient subgroups
- Robust companion diagnostics that can be used to accelerate trials and commercial traction
- Potential for improved patient outcomes with drastically reduced costs and economic burden

Precision Medicine Platform

RADR® rapidly identifies genetic & biomarker signatures for precision oncology drug development, clinical response prediction and CDx (companion diagnostic) enablement.

We continue to invest in the platform's functionality, scale, and volume of data.

RADR® Platform Key Features & Architecture



RADR® Platform Continues to Grow in Volume and Functionality

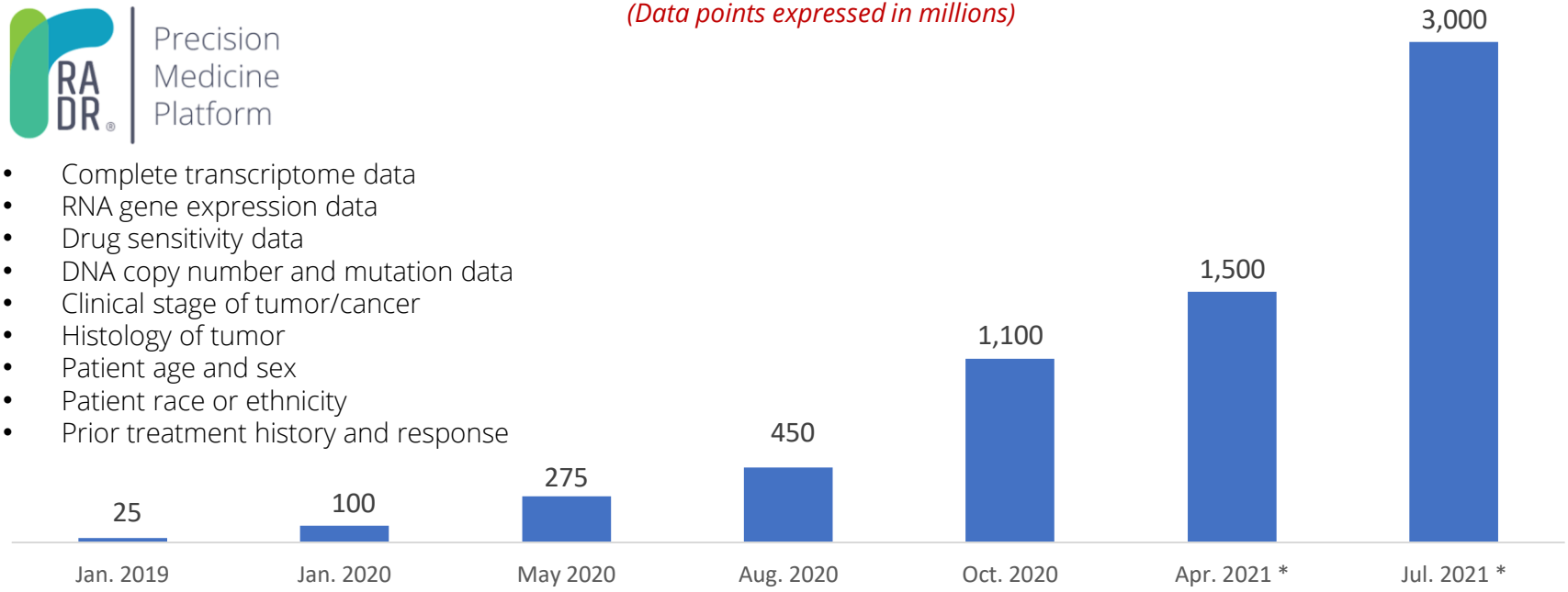
Growth in Data Drives Growth in Capabilities

The Data Powering our AI Platform is on pace to grow ~**120x** since January 2019

(Data points expressed in millions)

Precision Medicine Platform

- Complete transcriptome data
- RNA gene expression data
- Drug sensitivity data
- DNA copy number and mutation data
- Clinical stage of tumor/cancer
- Histology of tumor
- Patient age and sex
- Patient race or ethnicity
- Prior treatment history and response



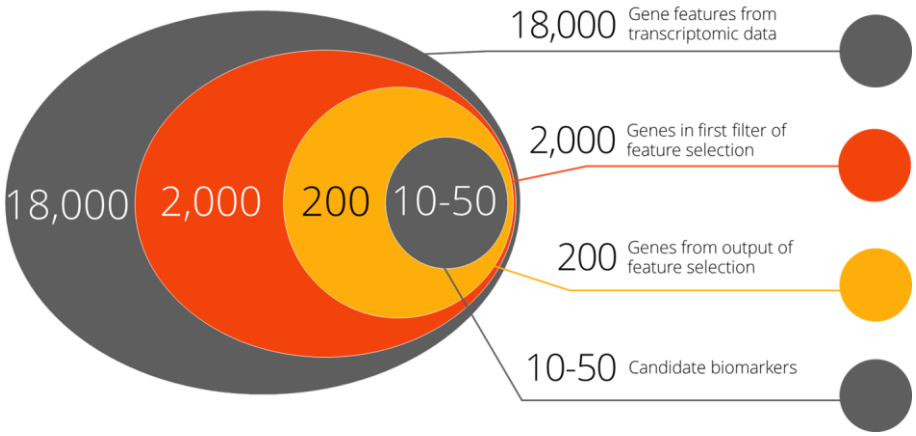
* Expected amount of data based on development plan and pipeline

Precision Medicine Platform

RADR® automates machine-learning approaches in generating a biomarker based response signature that can be **used throughout the lifecycle of therapy development:**

1. Preclinical modeling and studies
2. Clarifying mechanisms of action
3. Launching a robust companion diagnostic (CDx).
4. Identifying additional potential combination drugs or therapies

Biomarker Signature is Based on Statistical Significance and Biological Relevance



Output & Signature Development Process

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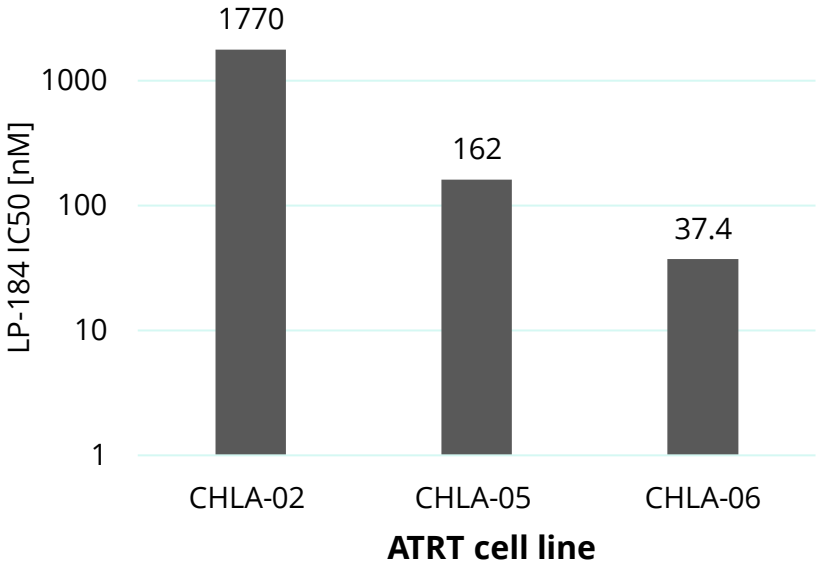
LP-184 Shows In Vitro Potency in ATRT Cancer

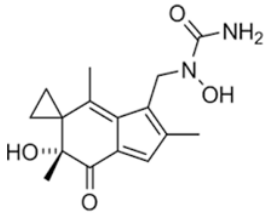
- Ultra-rare CNS cancer mostly occurring in children driven by SMARCB1 expression as predicted by RADR®
- Additional validation studies are anticipated in 2021 in collaboration with a leading cancer research center

LP-184 IC50 values in multiple ATRT cell lines suggest ability to potently kill these cancers



Collaboration Focused on Glioblastoma (GBM) for LP-184

Structure of LP-184



FOCUS:
This Johns Hopkins collaboration is focused on establishing LP-184 as a superior agent in GBM, as well as qualifying LP-184 for an orphan drug designation in this rare tumor type.

GOAL:
The goal of the collaboration is to demonstrate the efficacy of LP-184 in GBM regardless of its MGMT methylation status usually underlying standard or care refractoriness. Sensitivity correlations with IDH1 mutations and synergy with Temozolomide will also be evaluated. Initial results received in Q1, 2021.

LEAD INVESTIGATOR:
The research will be led by John Laterra, MD, Ph.D., a professor in the Department of Neurology, Neuroscience and Oncology at Johns Hopkins University School of Medicine and Kennedy Krieger Institute. He is the director of the Division of Neuro-Oncology in the Department of Neurology at Johns Hopkins. Dr. Laterra's laboratory focuses on the cellular and molecular biology of primary brain tumor malignancy, with the combined goals of defining basic mechanisms and translating these discoveries into experimental therapeutics. He is particularly interested in the molecular mechanisms of glioma cell growth and survival pathways, tumor-related angiogenesis, and the functioning of the blood-brain and blood-tumor barriers.

Key Value Building Objectives

Foundational Year
Advance Platform
Prepare Trial Launches
Prioritize Additional Compounds

2021

- Planned launch of Ph. 2 clinical trial for LP-300 in NSCLC (non-smokers) in 3Q'21
- Update on LP-100 Ph. 2 EU trial in mCRPC
- Grow RADR® A.I. platform to over 3 billion datapoints
- Identify antibody target and tumor for ADC program
- Results from preclinical work w/ LP-184 in pancreatic, prostate, GBM, ATRT and other tumors
- Launch initial ADC indications in pre-clinical
- Showcase RADR® A.I. platform and drug portfolio during "Lantern Investor Day"

Multiple Streams of Value Creation
Launch Multiple Precision Trials
Leverage Platform for Pharma Partners
Secure Additional Compounds

2022

- Launch Ph. 1 ADC program in solid tumors
- Launch Ph. 1 clinical trial for LP-184 in solid tumors
- Launch Ph. 1/2 clinical trial for LP-184 in GBM
- Progress LP-184 in ATRT towards Ph. 1/2 clinical trial
- Explore potential combinations for LP-184 & LP-300 with other existing approved drugs (inc. I-O agents)
- Strategically grow RADR® A.I. platform to 6 billion datapoints
- Licensing and partnership opportunities

Upcoming Conference & Presentation Schedule

3/9-10/2021	H.C. Wainwright & Co. Global Life Sciences Conference
3/24-25/2021	Benzinga Healthcare Conference
4/12-15/2021	Needham 20th Annual Healthcare Conference
5/4-5/2021	7th Annual Truist Securities 2021 Life Sciences Summit

Unless otherwise noted, all events are virtual and based on confirmed registration and subject to the policies of the event organizer.

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Q & A

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