Lantern Pharma

Company Overview

June 1, 2021

Leveraging A.I., Machine Learning & Genomics to Rescue, Reposition and Develop Targeted Cancer Therapies

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," "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.

Current oncology drug development is costly, risky, and inefficient … a perfect problem area for artificial intelligence & machine learning

Challenges in drug development …

3.3%[1]
Avg. success rate of oncology drugs

$2.8B[2]
R&D investment to bring new cancer to market 2009-2018

17,000+
Oncology trials conducted from 2001-2015

2X
Success rate of oncology trials using biomarker

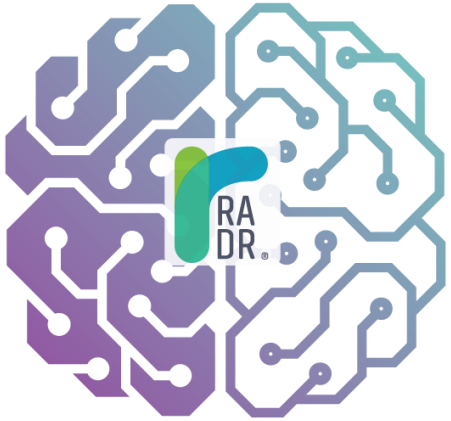
…are being met by data-driven, and A.I. approaches

Note 1: https://globalforum.diaglobal.org/issue/may-2019/what-are-the-chances-of-getting-a-cancer-drug-approved/
Note 2: https://www.biopharmadive.com/news/new-drug-cost-research-development-market-jama-study/573381/
Source: Wong CH et al.. *Biostatistics* (2018)

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

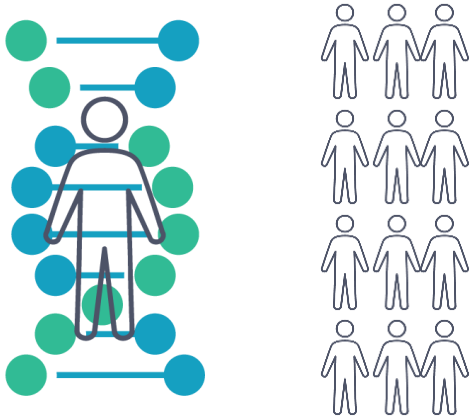
Failed or Abandoned Drug Assets

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



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

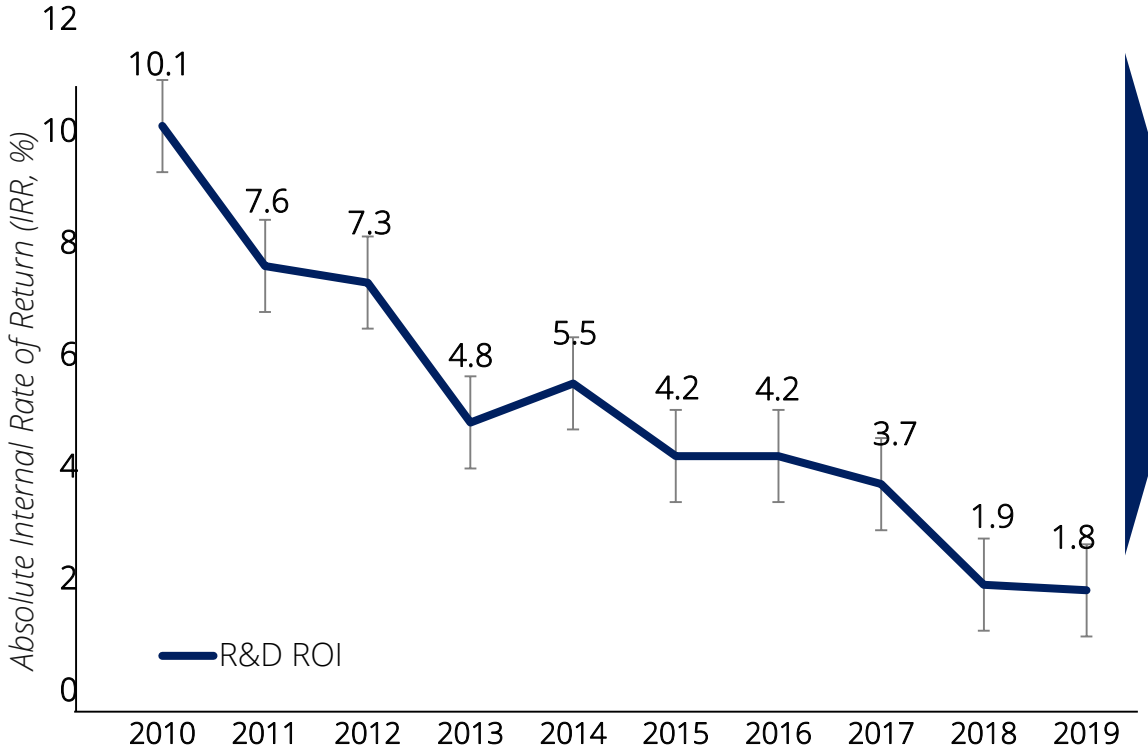


Responders Non-Responders

- 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

There is a critical need to rescue drugs that failed *or* bring abandoned therapeutic assets to market in order to create ROI for biopharma

ROI Among The Top 12 Pharma –
Continuous Decade of Decrease



Source: Deloitte research, 2019

1. "… low efficacies of cancer drugs might be attributed to the heterogeneity of the tested patient population, which essentially dilutes the strong therapeutic effect that a drug might have on a specific patient subgroup."

Thiebault Geoux, Ph.D.
Chemistry - Elsevier 11/9/2015

2. "The ever-increasing catalog of genetic changes involved in cancer development is fueling a new generation of targeted drugs that are designed to address specific weaknesses in tumor cells. But these drugs will only work in a subset of patients – creating a demand for genetic stratification.

Allison Halliday, Ph.D.
Cancer Research, 01/31/2020
Cancer Biomarkers: Powering Precision Medicine

RADR Precision Medicine Platform

- Our A.I. platform helps to solve these two central problems in oncology drug development with unprecedented speed and cost
- This allows us to increase the potential for success and improve trial design

Lantern's focus on oncology, and advancing the portfolio where we own the therapeutic rights makes us uniquely positioned and differentiated

Scalable, Unique Artificial Intelligence Platform – RADR®

- **4.6+ Billion** datapoints covering over **140+ drug/tumor** interactions
- Validated in multiple case studies with **over 80%+ blinded accuracy**
- Integration of **real-world, patient data** from thousands of patients
- Active **collaboration with NCI** in oncology therapeutics
- Use of **genomic, transcriptomic, clinical and drug sensitivity** data
- Guides development of **patient stratification and CDx** strategy
- Published posters and studies at **ASCO and AACR** (2018, 2019, 2020)
- Helped drive first **out-licensing deal for LP-100**
- **Helped identify ADC program for potential development**

Rapidly Accelerating Our Portfolio Value

1. Guided the genetic signature to determine patient response for LP-100 which was out-licensed within one year
2. Expanded support for LP-100 use in cancers with a DNA damage repair gene mutation (ERCC 2,6)
3. Uncovered potential mechanisms of action for LP-300 – which has shown notable and statistically significant results in prior trials, (with certain patient populations) but failed to meet broader endpoints
4. Highlighted potential pathways and genes involved in both the response to LP-184 and the biological mechanisms that are involved in activity across multiple tumors
5. Identified potential new candidates for rescue, refocusing and in-licensing – including ADC combinations

Major pillars of shareholder and patient value at Lantern Pharma

High-Performance, Rapidly Growing A.I. Platform

- ✓ Has generated several indications for new, genomically validated programs for LP-184
- ✓ Provided insights and targets for pursuit using an ADC approach
- ✓ Scaled 16x+ since IPO; additional multi-billion datapoint increase planned for 2021.
- ✓ Potential to significantly reduce the complexity, cost and timeline associated with drug development

Unique Portfolio of Clinical Stage Targeted Cancer Therapeutics

- ✓ Programs in Phase 2 in targeted cancer indications
- ✓ Unique, patented small molecules being developed with biomarker signatures
- ✓ Phase 2 in mCRPC (prostate)
- ✓ Phase 2 (planned Q3 2021) in NSCLC
- ✓ Targeted indications in GBM, Pancreatic and other solid tumors

Novel Highly Potent ADC Program

- ✓ Novel programs with patented compounds and unique linker technologies
- ✓ Optimized for portfolio of Lantern's DNA damaging compounds
- ✓ Leveraged RADR to identify ideal targets and cancers that can benefit from the combination
- ✓ Potential to partner early with pharma based on market and technology demand for ADC programs

Lantern Pharma

Types of data:

- 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, sex, race and ethnicity
- Prior treatment history and response

Sources of data:

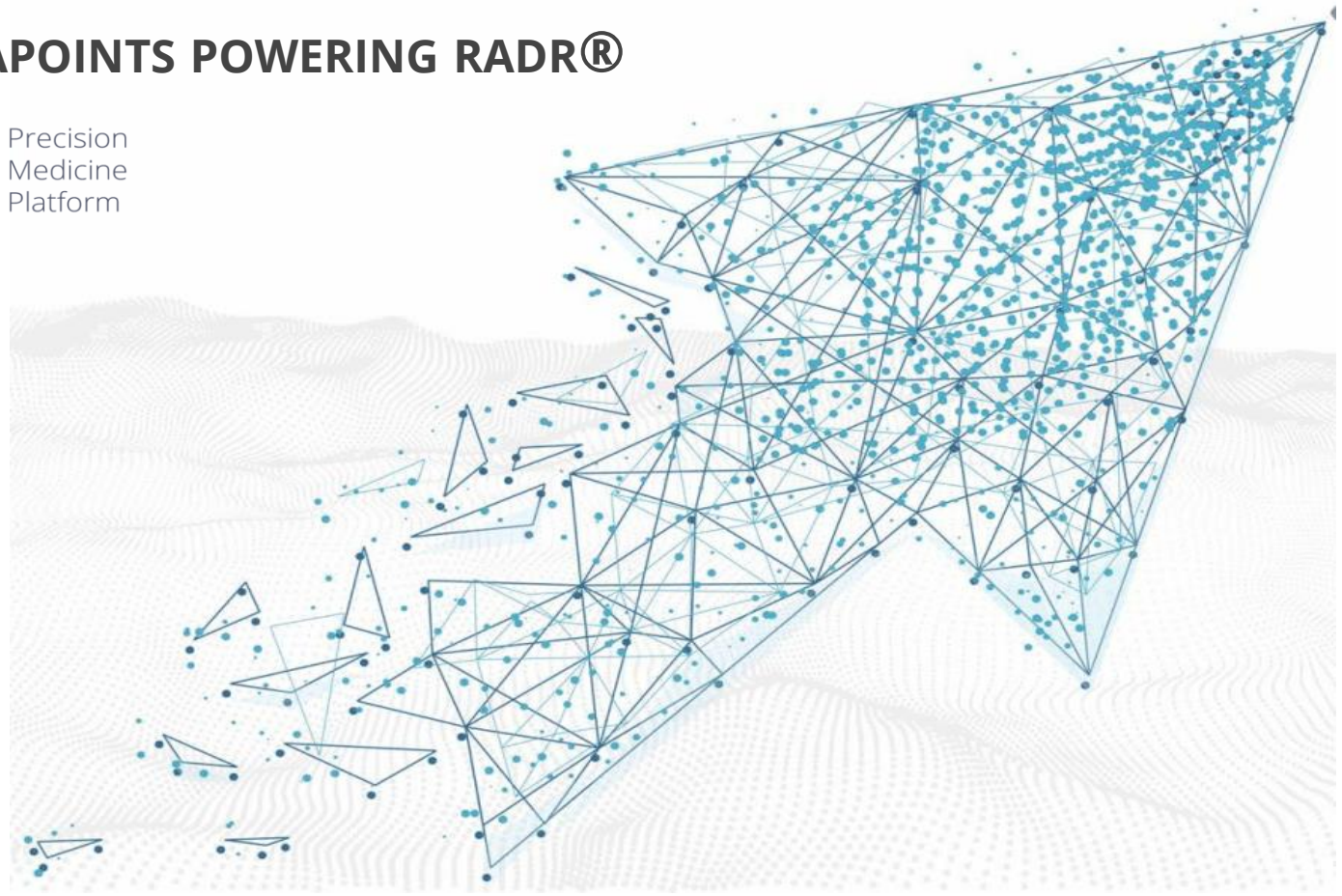
- Clinical history of the drug
- Published research (e.g., ASCO, journals)
- Proprietary sequencing studies
- Partnerships/Collaborations
- Public sources (e.g., NCI)

Extensively Curated & Scored

* Historical datapoints are approximate and based on end of year analysis
** Future datapoints are based on Company's product development plans

DATAPOINTS POWERING RADR®

RADR® Precision Medicine Platform



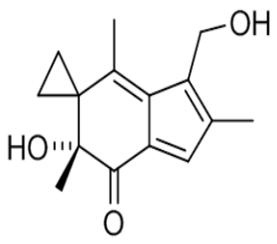
Patient Value

Clinical Value

10 Million >	125 Million >	1 Billion >	8 Billion >	15 Billion >
2018*	2019*	2020*	2021**	2022**

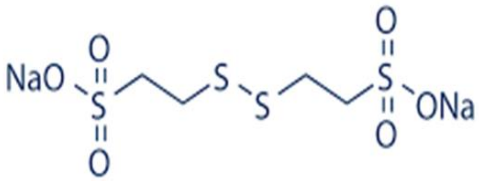
Overview of Lantern's Small Molecule Portfolio

LP-100, Irofulven



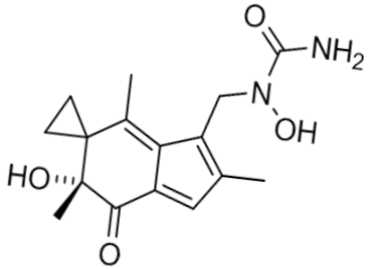
- DNA Damaging Agent
- Mediates cytotoxicity through multiple mechanisms such as DNA adduct formation, RNA polymerase stalling and redox protein modification
- Use in a precision medicine, genomic-signature guided Phase II trial (NCT03643107) for mCRPC
- Expansion potential for cancers with ERCC2/ERCC3 mutations (both germline and inherited)

LP-300



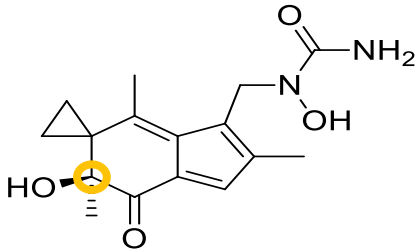
- Disulfide bond disrupting agent with cysteine modifying activity on select proteins (ALK) and modulator of protein function (EGFR, MET, ROS1)
- Chemosensitizer for combination therapies by inactivating proteins modulating cell redox status and drug resistance (TRX, GRX, PRX)
- Chemoprotectant activity that reduces toxicities associated with taxane/ platin-based chemotherapies

LP-184



- Novel DNA Damaging Agent - member of the acylfulvene prodrug class
- Favorable *in vitro* and *in vivo* efficacy across multiple tumors
- Broad anti-tumor agent that counteracts multi-drug resistance
- Nanomolar potency
- A.I. generated, validated and published gene signature for solid tumors
- Payload for ADC programs

LP-284



- Distinct compound with cancer cell-killing activity distinct from LP-184
- LP-284 is the stereoisomer (enantiomer) of LP-184 and a new chemical entity
- MoA related to DNA-damage and repair inhibition in cancer cells
- Currently being developed for activity in hematological cancers
- Potential ADC payload
- Multi-national patent applications on composition and manufacture filed

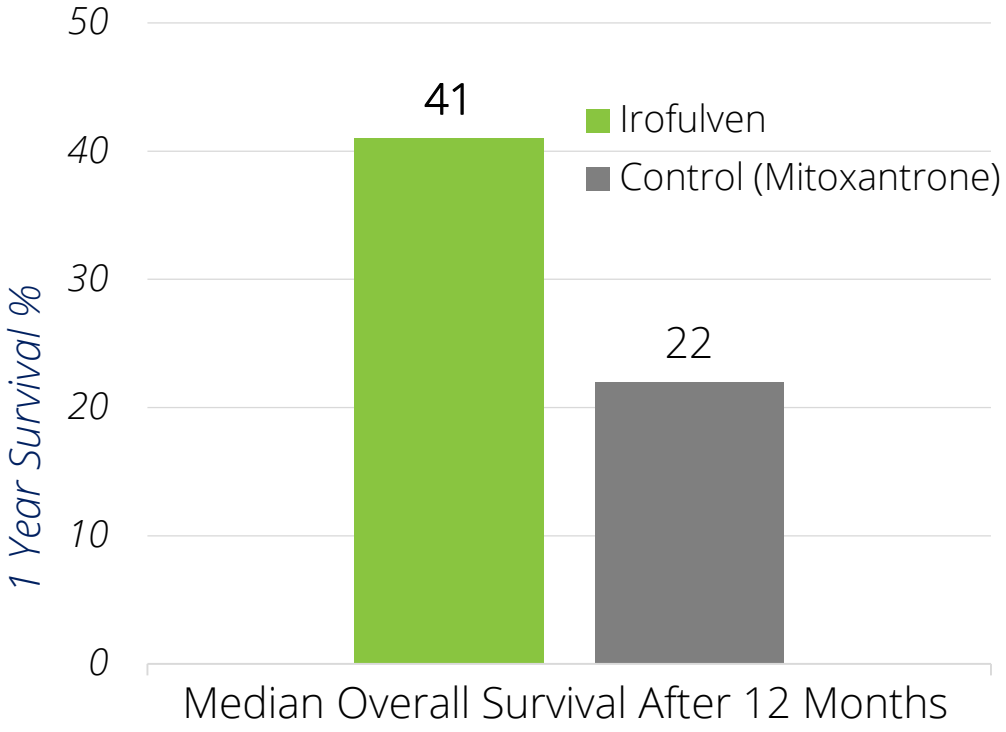
Lantern's Rapidly Developing Clinical Pipeline

Indication	Program	R&D	Preclinical	Phase I	Phase II	Phase III
Prostate Cancer *Successfully partnered & out-licensed*	**LP-100** (Irofulven)					**Outlicensed to Allarity Therapeutics**
Non-Small Cell Lung Cancer *(Focused on Non-Smokers)*	**LP-300**				**Targeting non-smokers with NSCLC of Adenocarcinoma subtype**	
Solid Tumors *(Location agnostic tumors identified by RADR® defined genomic signature)*	**LP-184**			**Development Collaborations:** - *Georgetown University – prostate cancer* - *Fox Chase Cancer Center – pancreatic cancer*		
Glioblastoma & ATRT *(Responsiveness predicted by RADR® and confirmed in wet-lab studies)*	**LP-184**		**Development Collaboration:** - *Johns Hopkins School of Medicine – CNS cancers*			
Hematologic Cancers *(Responsiveness predicted by RADR® confirmed with in-vitro studies)*	**LP-284**					
Solid Tumors *Leveraging novel linker library & with unique DNA-damaging agents with proven antibodies*	**ADC Programs** **LP-A18**		**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
Over 70 issued patents and pending applications across 14 patent families

LP-100 (Irofulven): Historical* phase II trial results in prostate cancer

Median 1 yr. survival was 86% greater in Irofulven in combination treated metastatic prostate cancer patients v. control



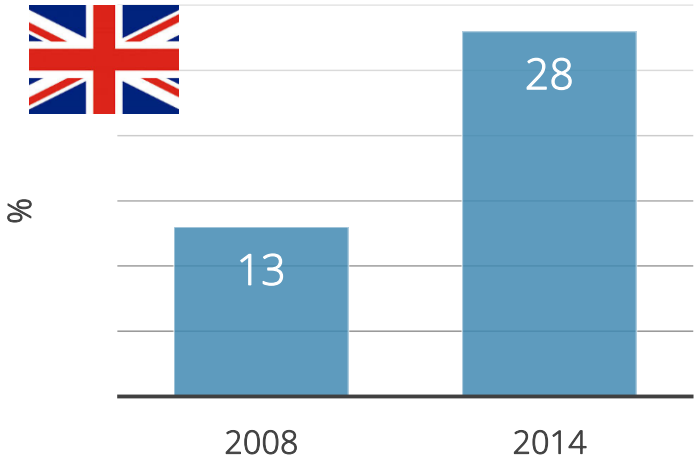
*Historical data from Hart et al., Randomized phase II trial of irofulven/prednisone, irofulven/capecitabine/prednisone, or mitoxantrone/prednisone in hormone refractory prostate cancer (HRPC) patients failing first-line docetaxel. European Journal of Cancer Supplements (2006)

Precision Phase II Trial & Current Status

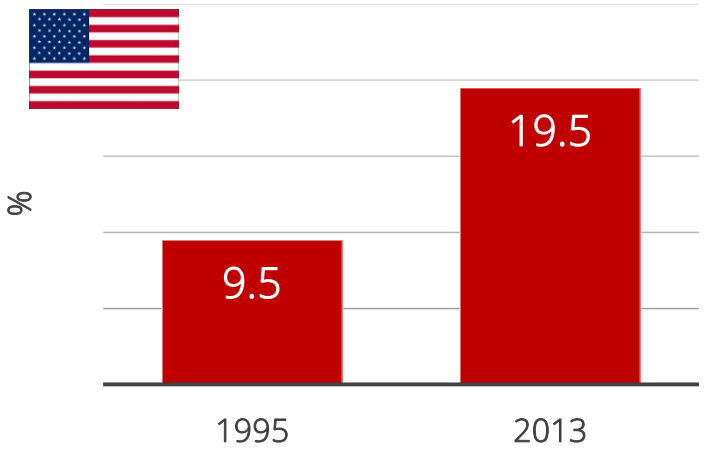
- Out-licensed to Allarity Therapeutics in 2016
- Allarity Therapeutics dosed first patient in Hormone Refractory Prostate Cancer (HRPC) in Q4 2018 in a Phase 2 trial using biomarker technology to ID and monitor patients
- Trial design estimates up to 27 patients to be enrolled
- Lantern Pharma can receive up to $14M or a specified percentage of future earnings from the sale or out-licensing of LP-100
- First patient dosed in mHRPC (metastatic, hormone-resistant prostate cancer) in Q4 2018 in a Phase II trial using biomarker screening technology on the tumor to select patients
- US patent directed to use of drug in combination with tumor biomarker signature (*filed by Allarity Therapeutics*) through 2036

Lung Cancer in Never-Smokers (LCINS) – a hidden but rising disease

Incidence of NSCLC in non-smokers in the U.K.*



Incidence of NSCLC in non-smokers in the USA*



*Proli C et al., ASCO 2015; Pelosof L et al., ASCO 2015

- **7th leading cause of death** among patients with solid tumors
- **More frequent in women** with ~2/3 of patients with no reported smoking history
- **Adenocarcinoma is the most common histology** accounting for ~60% of non-smoking NSCLC patients
- **20% to 25% of global lung cancer cases and deaths** occur among never-smokers
- **LP-300 patent application** for use in never-smoking NSCLC patients (potential protection until 2039)
- **Significant mutational difference** in LCINS v. Smokers – esp. in EGFR, TP53, STK11 and KRAS**

**Mutation frequency data compiled by Lantern Pharma from 6 studies

LP-300 in development for male and female never-smokers with NSCLC adenocarcinoma based on strong historical data & biomarker studies

Mechanism of action

- Disulfide bond disrupting agent
- Disrupts by covalently modifying cysteine
- Inhibits and modulates activity of proteins in NSCLC pathways (ALK, EGFR, MET, ROS1)

Prior Clinical Experience

- Prior history in 5 phase 1 and 5 phase 2 and 3 clinical trials in lung and breast cancers as a combination agent
- LP-300 has been administered to over 1,000 patients and has been generally well tolerated
- Prior studies did not stratify or select patients based on biomarker or smoking status

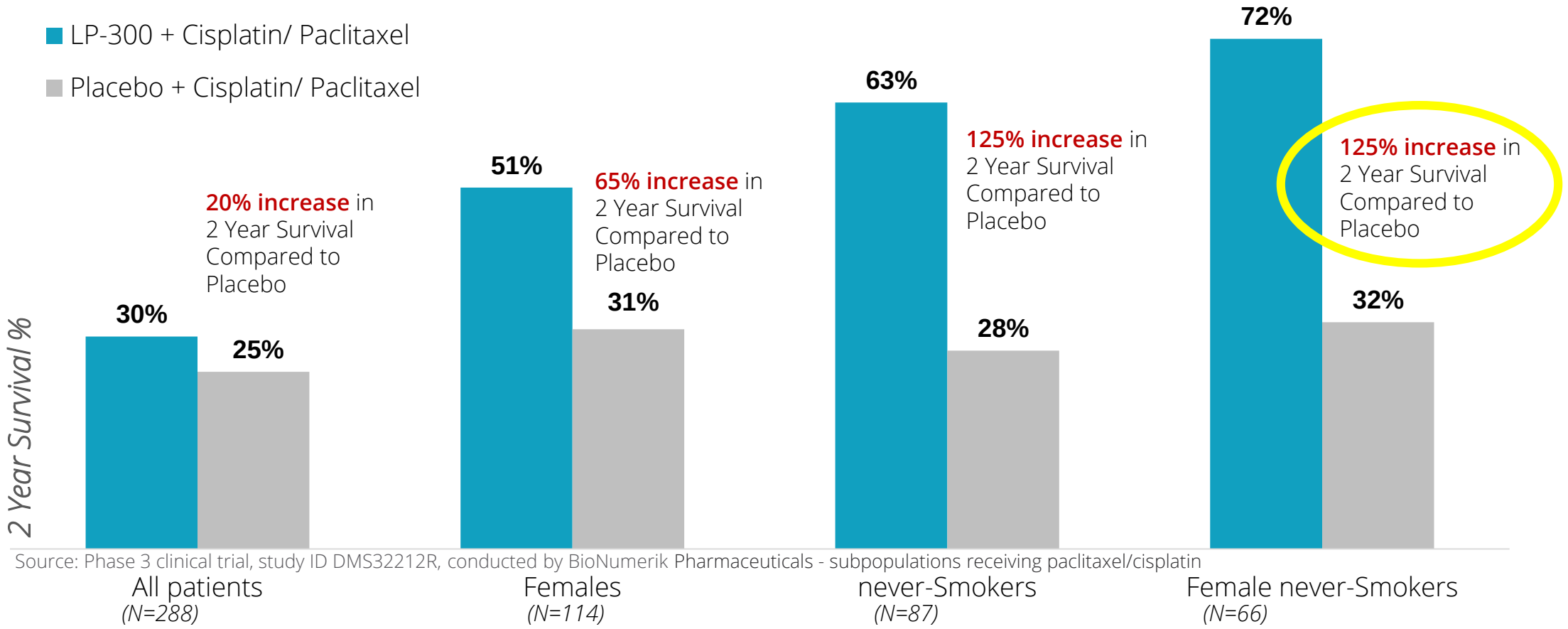
Current status

Fox Chase Cancer Center, Temple Health

RADR®

- Targeting never-smoker sub-population, as a potential target rare disease market
- Designing phase II clinical trial for use in non-smokers with NSCLC adenocarcinoma (planned launch Q3 2021)
- Exploring preclinical *in vivo* studies to characterize efficacy as a combination with approved targeted therapies
- Leveraging RADR® to develop biomarker signature that can be used to predict patients most likely to respond to combination therapy with LP-300

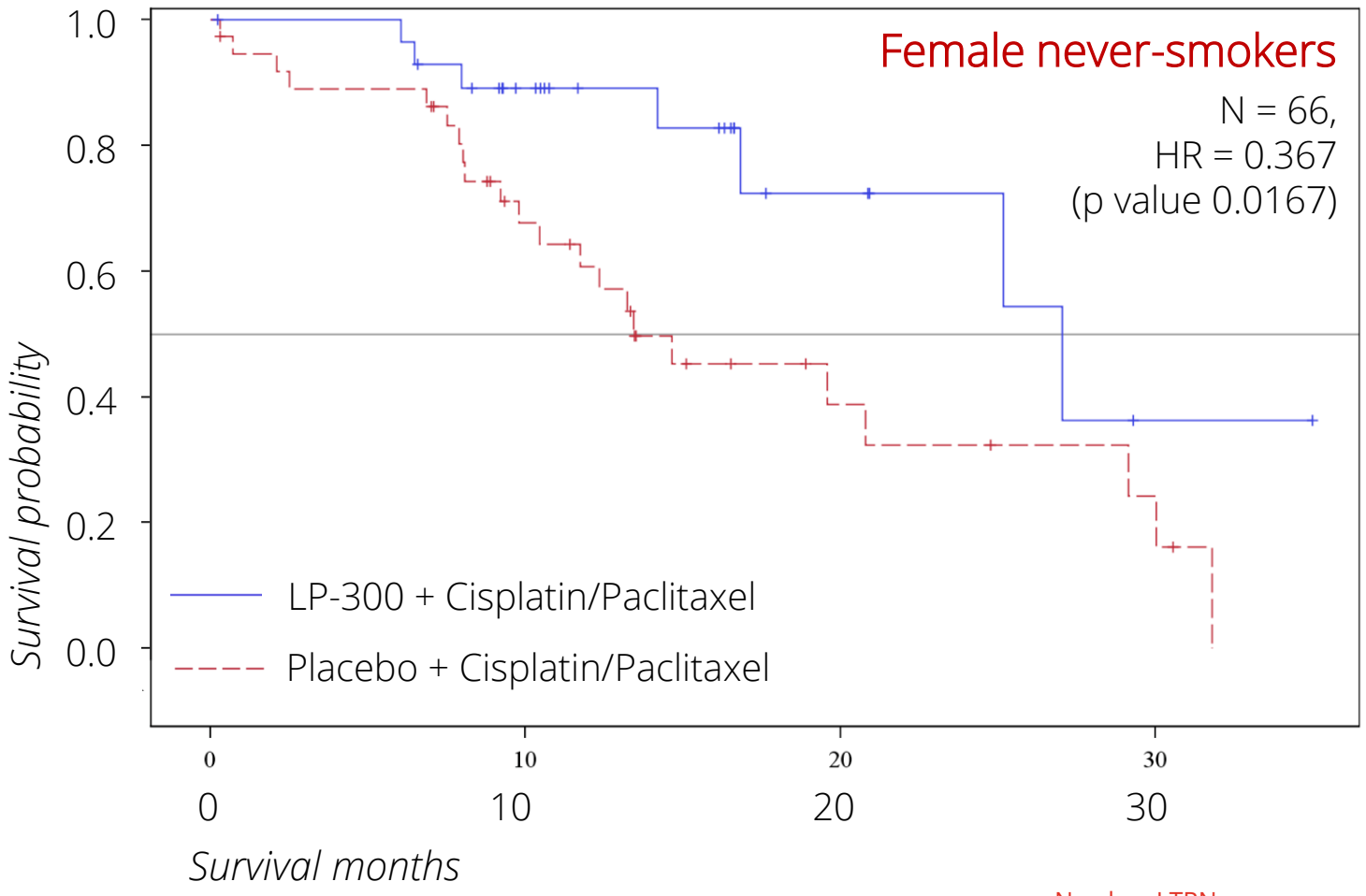
Lantern's precision oncology approach in the LP-300 Phase II trial will build on a prior Phase III trial that did not meet clinical efficacy endpoints but demonstrated survival benefit in a patient subgroup

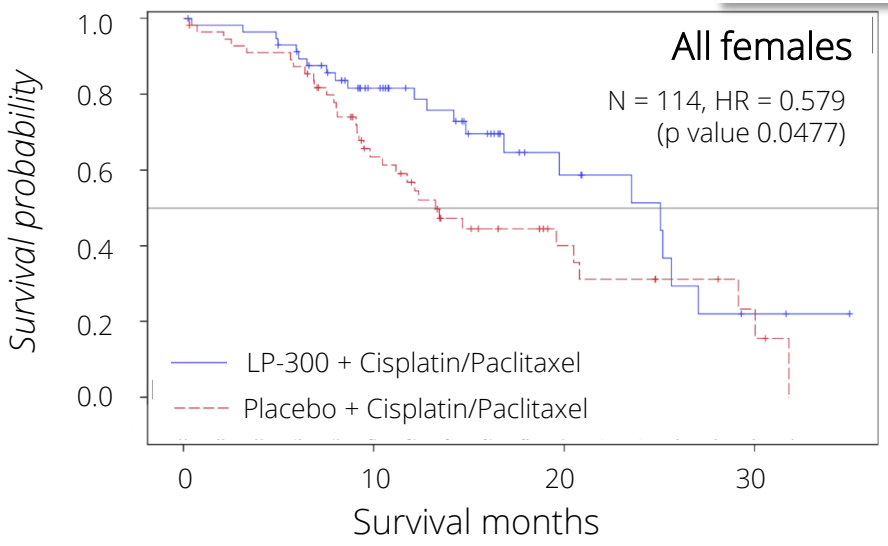


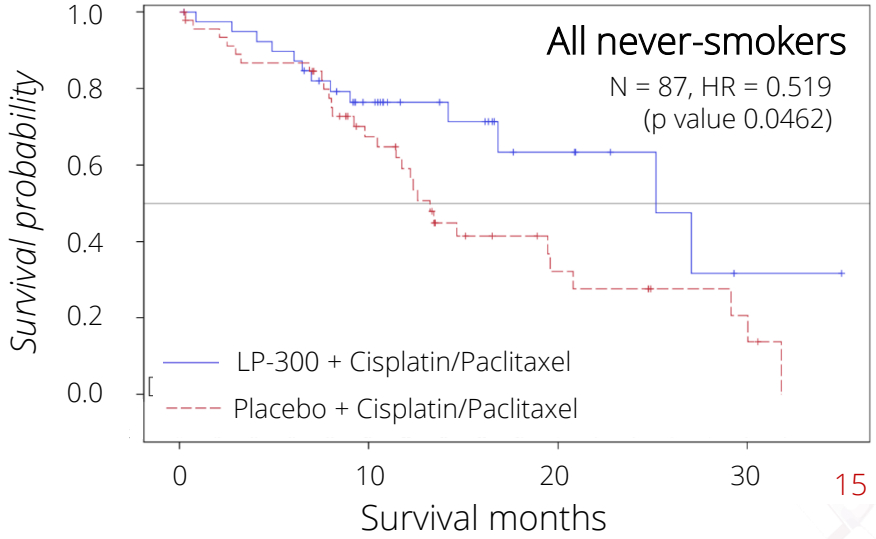
Source: Phase 3 clinical trial, study ID DMS32212R, conducted by BioNumerik Pharmaceuticals - subpopulations receiving paclitaxel/cisplatin

LP-300

Female never-smokers showed the clearest statistically significant positive outcome among subgroups in the LP-300 treatment arm in advanced adenocarcinoma patients in Phase III

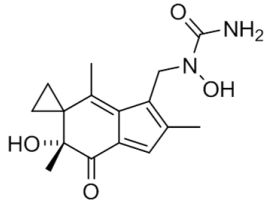






LP-184 for solid tumors and certain PTGR1 expressing cancers & ADC program

Unique Features



- Hydroxyurea Methylacylfulvene
- Nanomolar potency across multiple solid tumor (pancreas, prostate, liver) and glioblastoma cell lines
- Broad anti-tumor agent that counteracts multi-drug resistance and is independent of other mutations (p53, KEAP1)
- Favorable *in vitro* and *in vivo* efficacy allowing improved therapeutic index and pharmacokinetics
- Promising blood-brain-barrier (BBB) profile
- Key payload for ADC Program

Current status

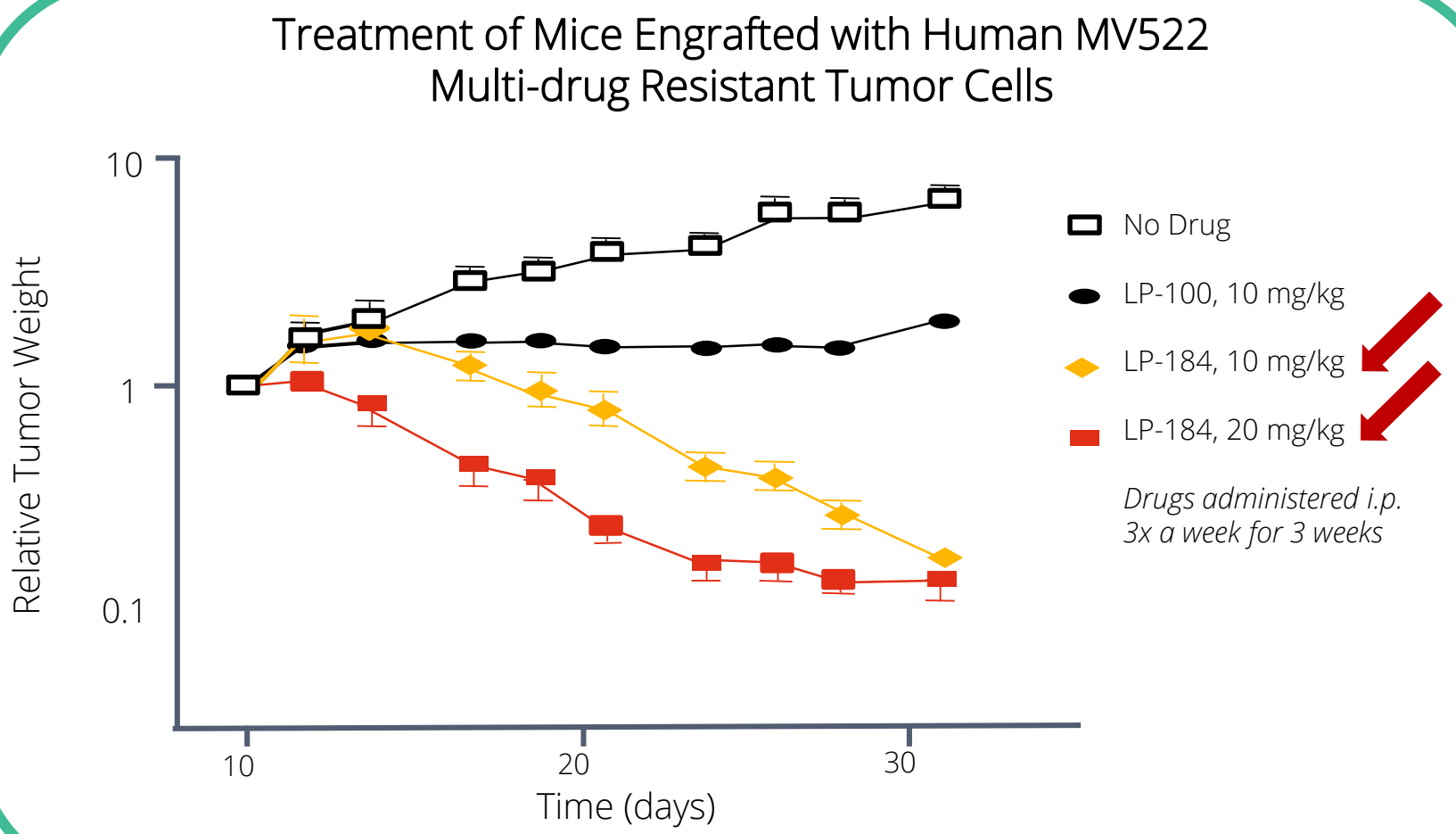
GEORGETOWN UNIVERSITY

JOHNS HOPKINS MEDICINE

FOX CHASE CANCER CENTER TEMPLE HEALTH

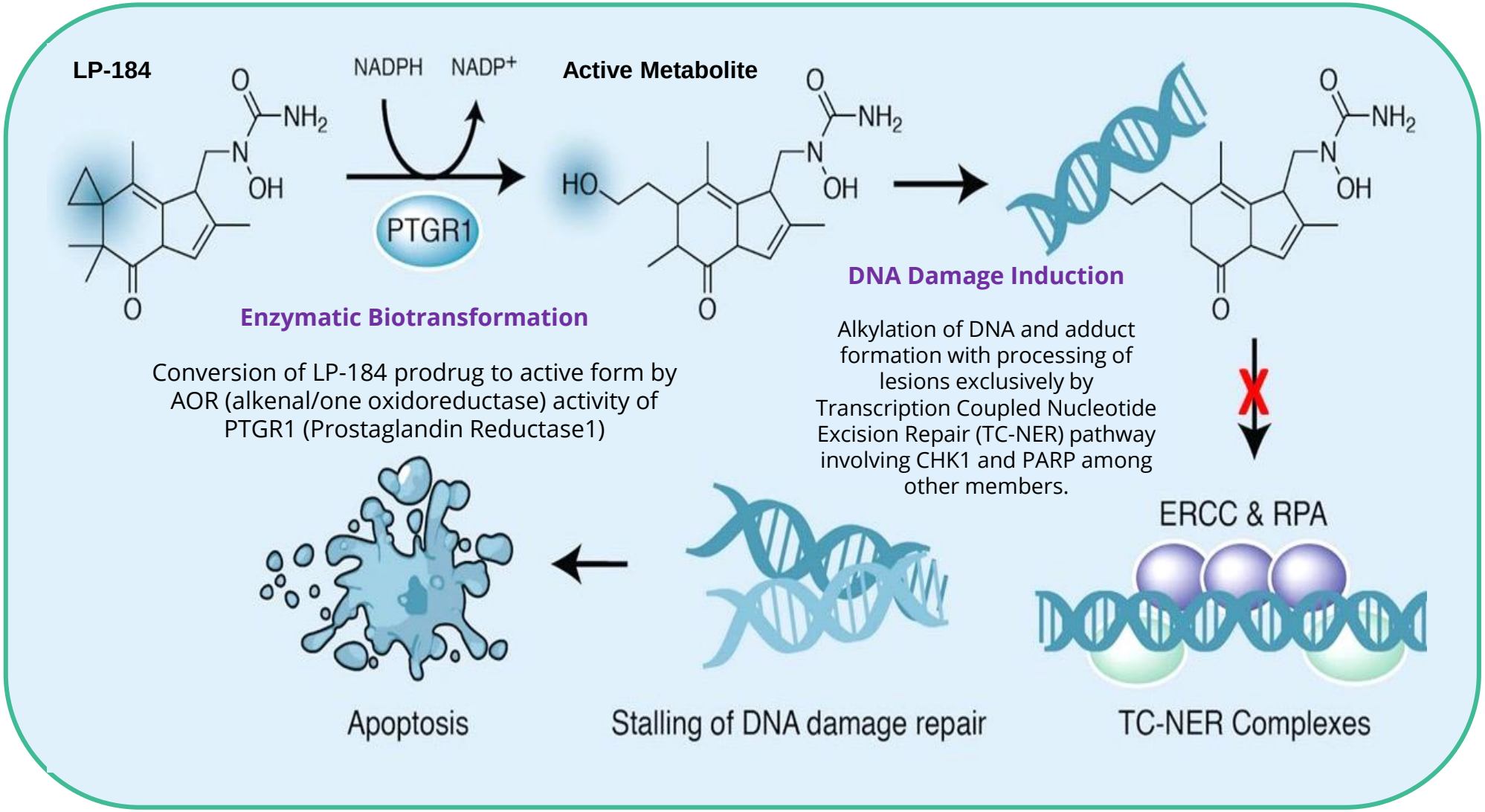
- Over 10 new patent filings in 1Q'21
- Wet lab validated 16 gene signature leveraging NCI Cell Miner platform from our collaboration
- Validated BBB permeability in both nuerospheres and wet-lab experiments
- Q4 '20 collaboration with Georgetown in prostate cancer
- Q4 '20 collaboration with Johns Hopkins in GBM
- Q3' 20 collaboration with Fox Chase to advance targeted use in molecularly defined types of pancreatic cancer.
- Q3 '20 established manufacturing for phase 1 clinical trials in GBM and solid tumors.

LP-184 treatment resulted in greater tumor regression in a mouse model with human cancer



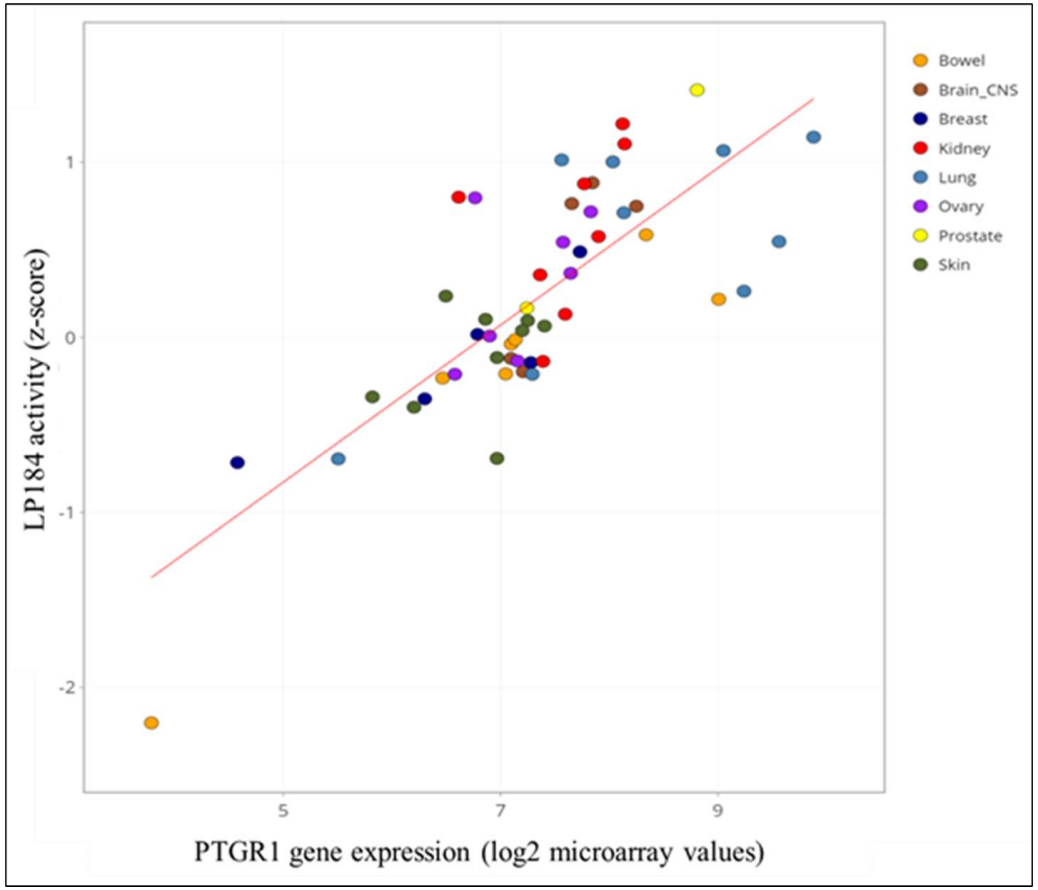
Source: Staake et al., Bioorganic & Medicinal Chemistry Letters (2016)

Proposed LP-184 mechanism of action based on acylfulvene drugs

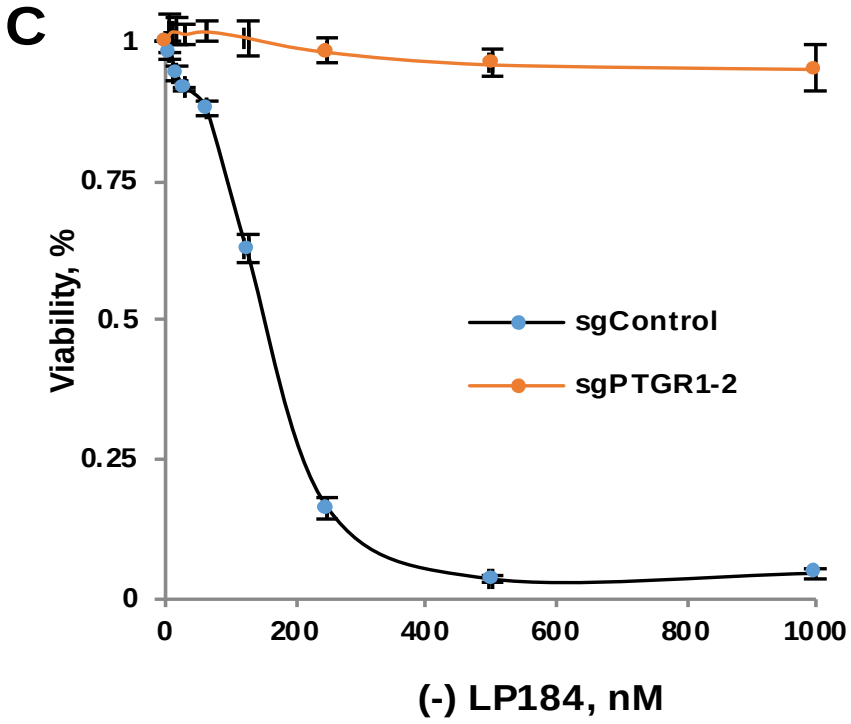


1. Potential synergistic drug combinations due to involvement w/ DNA repair pathway and supported by gene correlation studies
2. Approved drugs in certain drug classes have been identified to be synergistic with LP-184 when used in combination for cancer treatment

LP-184: High Positive Pan Tumor Correlation with PTGR1 Expression



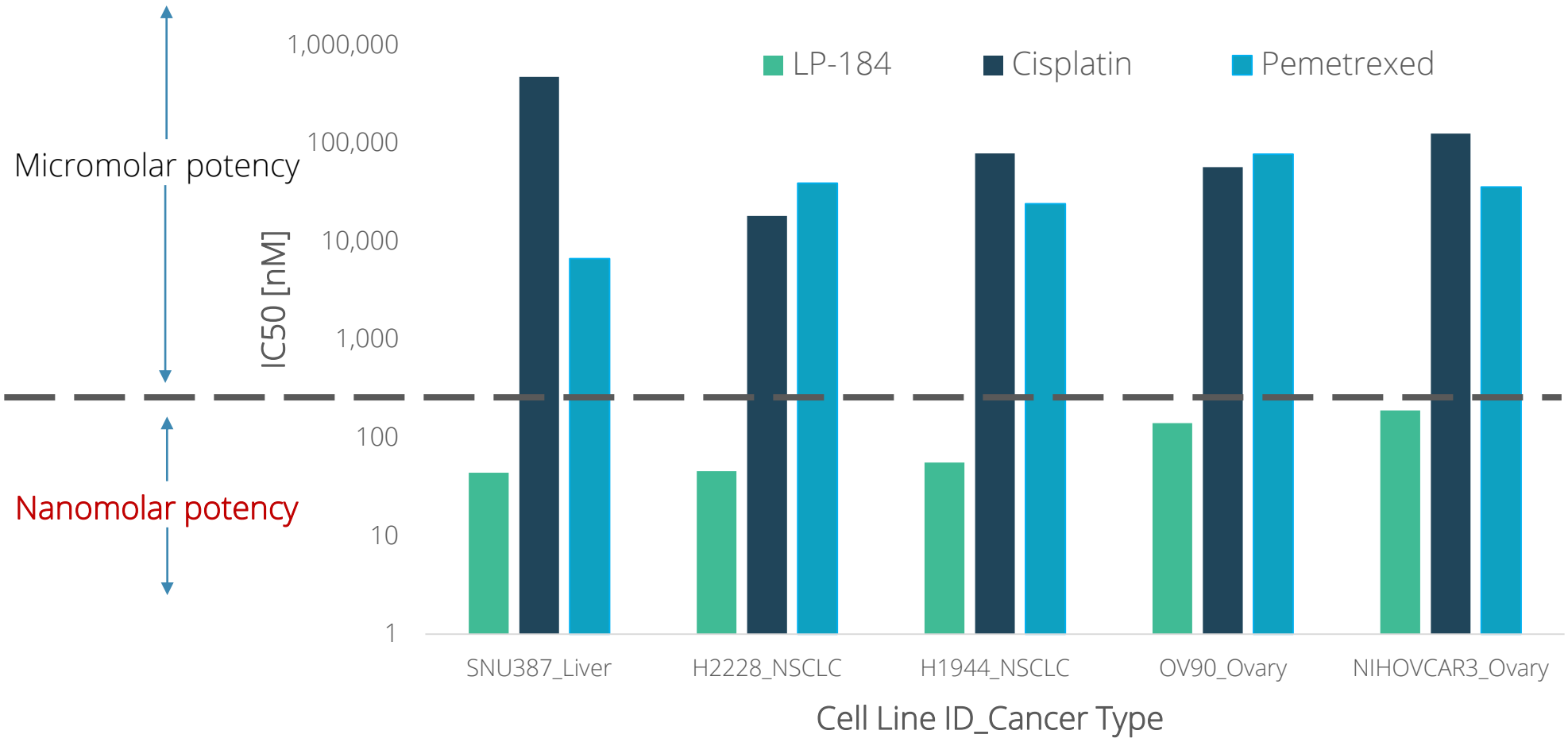
CRISPR-mediated stable suppression of PTGR1 expression in pancreatic cancer cell line is sufficient to fully diminish LP-184 activity



Tumors with highest potential based on PTGR1 expression and gene signature activity
Lung
Prostate
Kidney
Colon
Brain / CNS

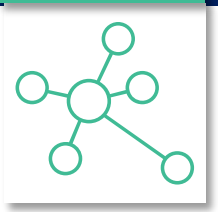
LP-184

LP-184 shows a 10x – 3,800x increase in *in vitro* potency over approved chemotherapeutics in various solid tumors

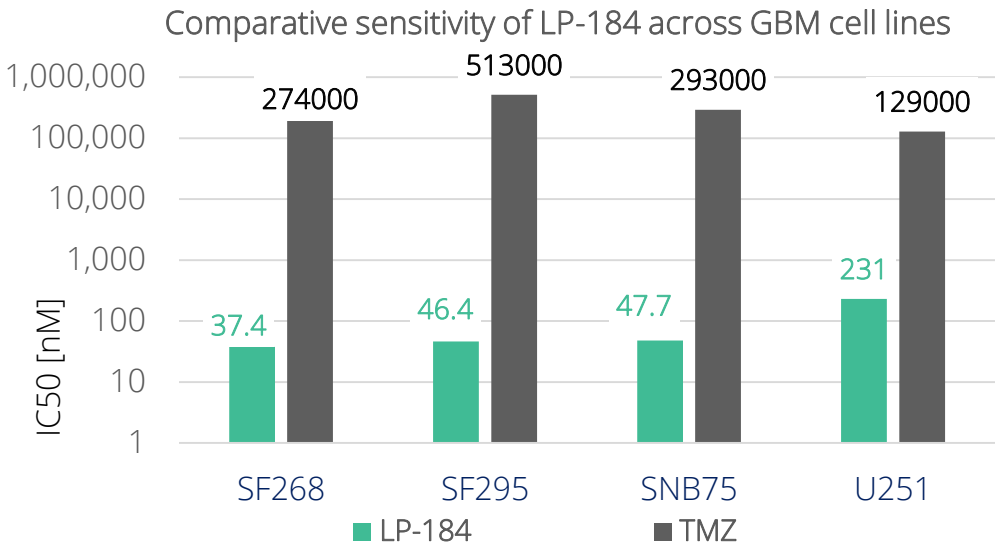


LP-184 IC50 data from Lantern generated data, Cisplatin and Pemetrexed IC50s from GDSC database

LP-184 shows significant promise for improving patient outcomes in Glioblastoma (GBM) – a rare cancer with median survival of < 1 year



500x – 13,000x increase in *in-vitro* potency over TMZ, (the current standard in GBM)



LP-184 has a favorable CNS drug profile – blood brain barrier (BBB) permeability

Molecule	BBB permeability probability score	Developmental stage
LP-184	0.9694	Preclinical
TMZ	0.9879	Approved
Carmustine	0.9533	Approved
Cilengitide	0.9362	Phase II

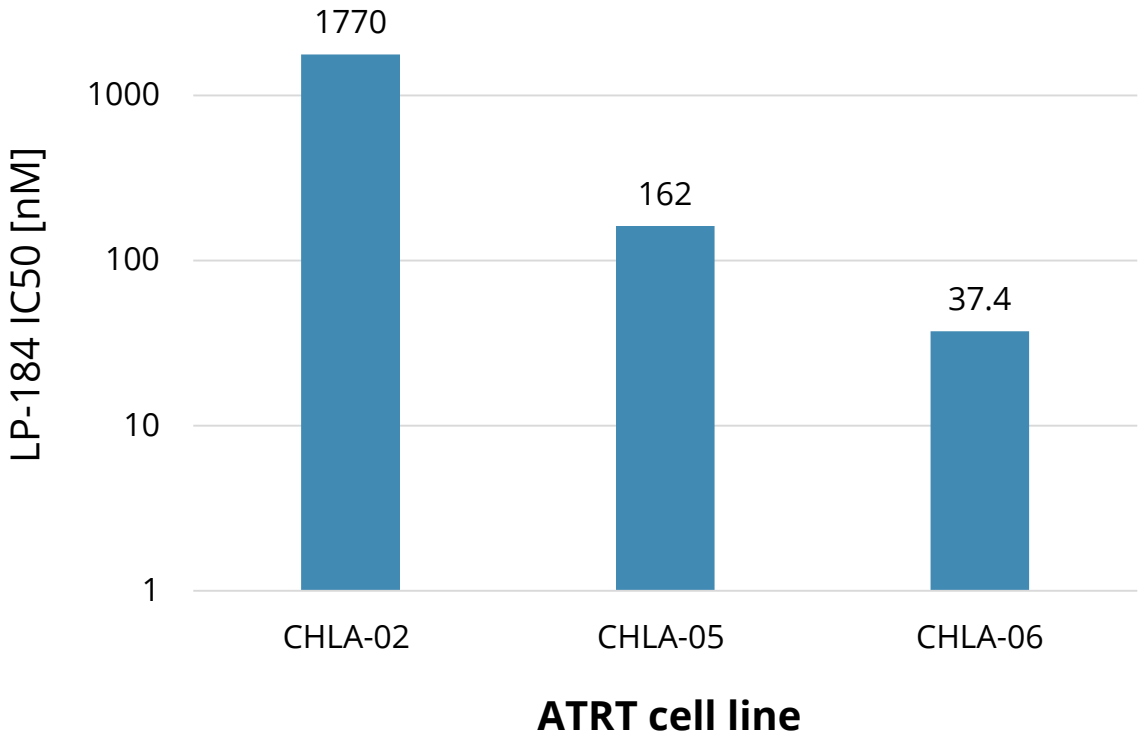
Using **admetSAR2**, a tool for evaluating chemical ADMET (absorption, distribution, metabolism, excretion - toxicity) properties

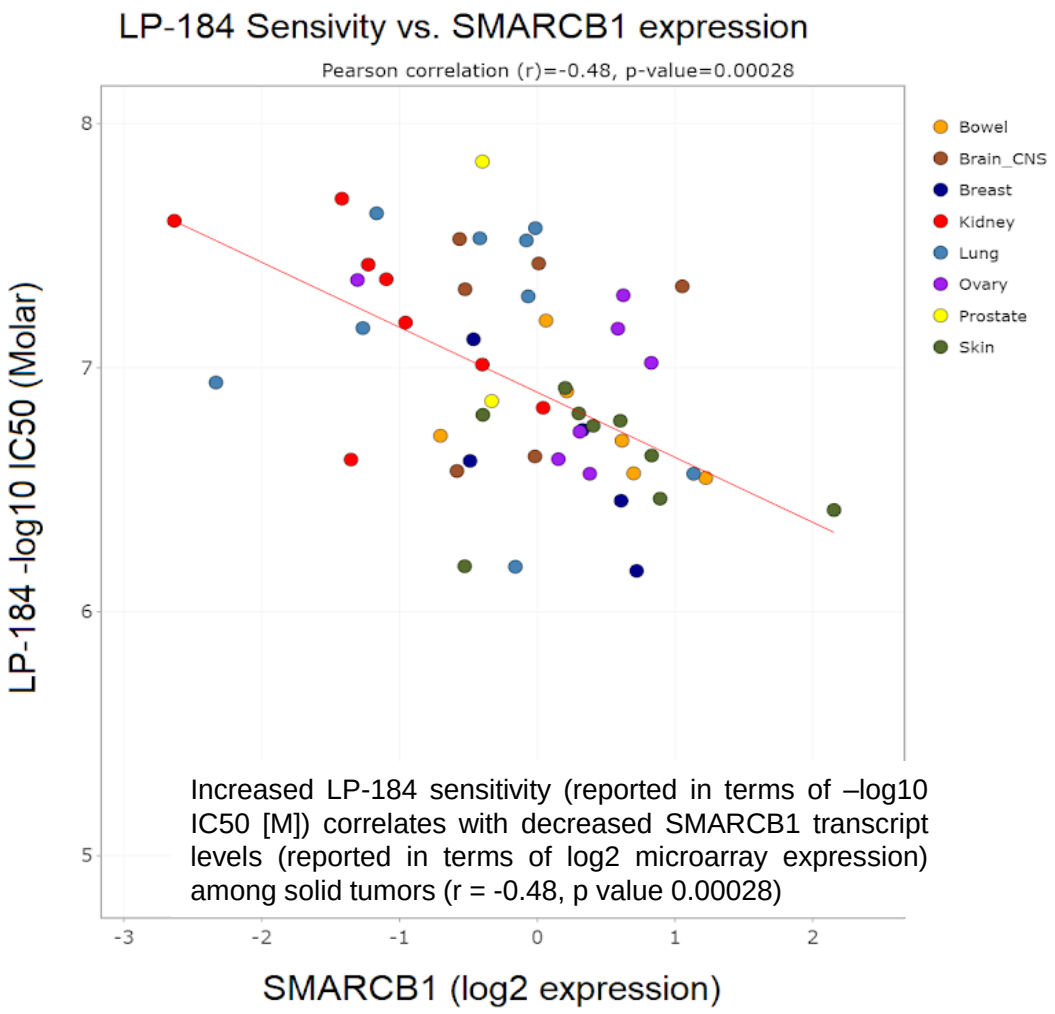
The **current standard** of care for GBM consists of de-bulking surgery followed by combined treatments with fractionated ionizing radiation (IR) and the DNA alkylating agent **temozolomide (TMZ) which less than 50% of patients respond to***

Source: Genes & Disease, Volume 3, Issue 3, Sep. 2016 0 pp. 198-210

LP-184 shows *in vitro* potency in ATRT - an ultra-rare CNS cancer mostly occurring in children driven by SMARCB1 expression as predicted by RADR

LP-184 IC50 values in multiple ATRT cell lines suggest that it is able to potently kill these cancers

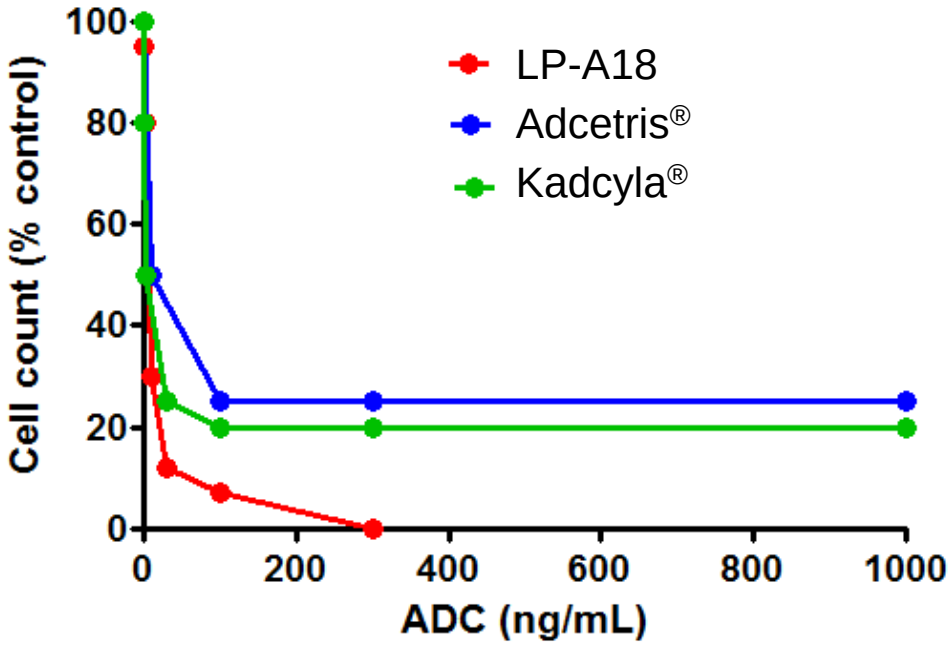




Increased LP-184 sensitivity (reported in terms of –log10 IC50 [M]) correlates with decreased SMARCB1 transcript levels (reported in terms of log2 microarray expression) among solid tumors (r = -0.48, p value 0.00028)

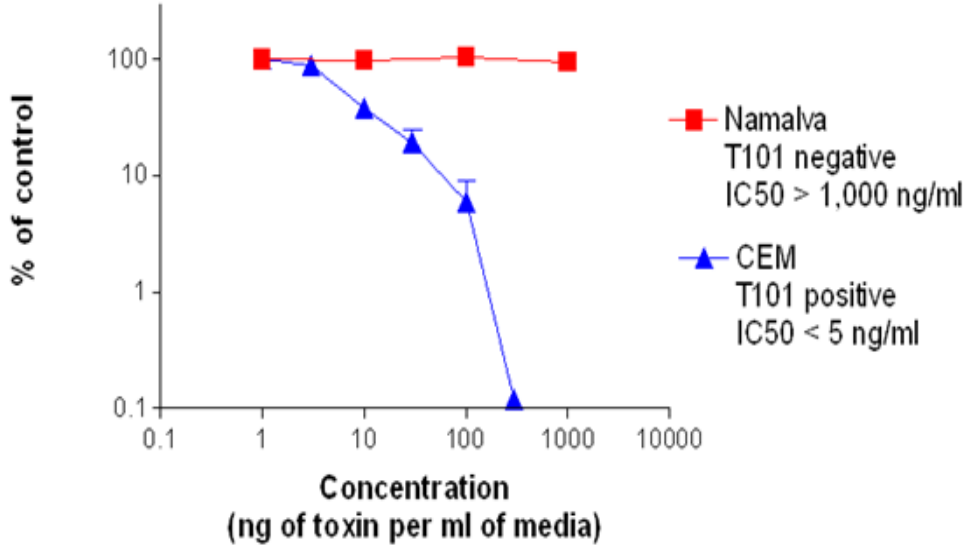
Initial data from ADC Program

LP-A18* v. other ADCs based on data submitted to FDA



LP-A18 has an LD50 of 7 nM versus IC50 2-7 nM for Adcetris® or Kadcyla®

Converted an antibody with no intrinsic biological activity to an ADC!



Toxin:Antibody ratio of 5:1; 4 hour exposure
Concentration is ng of toxin attached to antibody per mL of cell culture media

One can treat even MDR refractory leukemias (whether T-cell, B-cell, myeloid or myeloma leukemias)

RADR® - A robust and scalable platform for accelerating the development of targeted cancer therapy, precision trials and Companion Dx

Real World Applications

- Robust precision medicine/drug development
- Uncovering potential drug combinations
- Predicting synergy with Immuno-oncology agents
- Drug repositioning, revitalization & rescue
- Companion Dx development

Model Data Sets

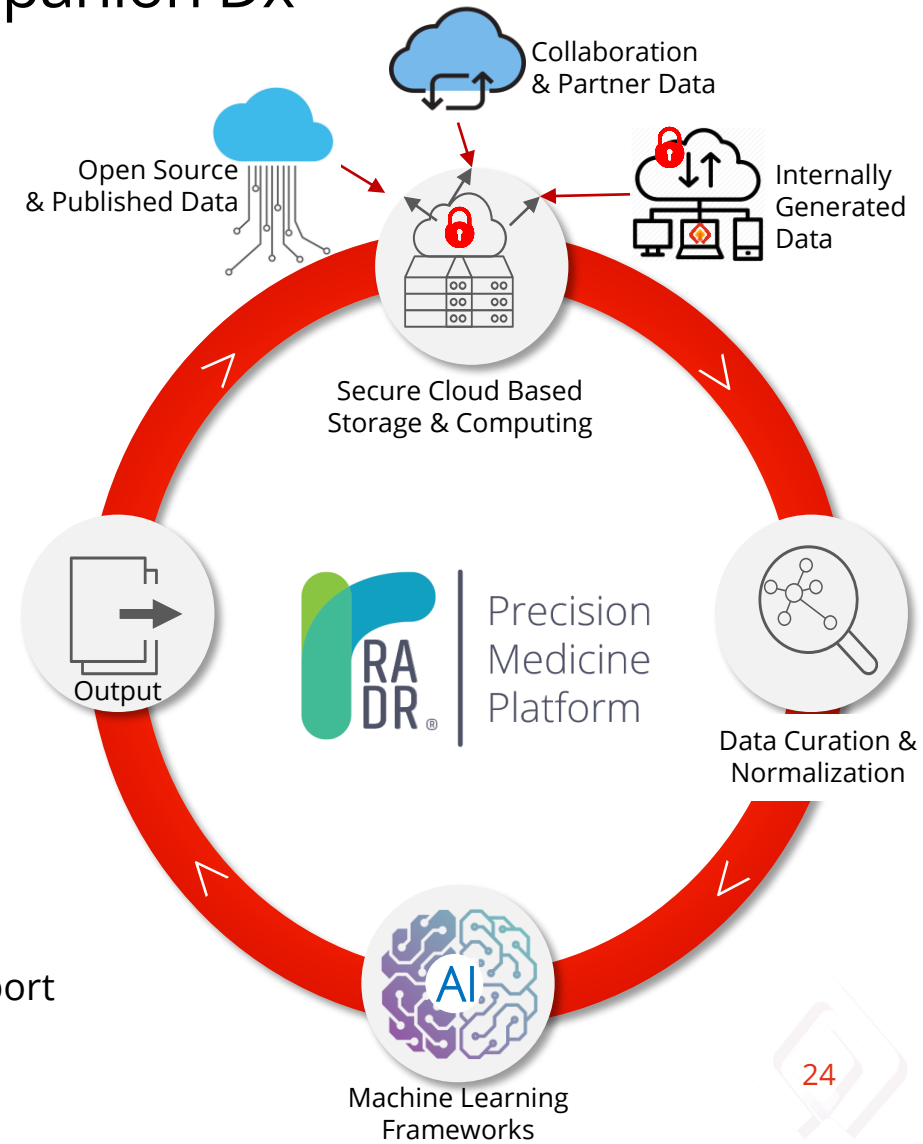
- > 4.6 Billion transcriptomic and drug sensitivity data points
- >144 drug-tumor interactions
- > 55,400 + real world patient data
- Using automation and AI to grow data-sets

Data Sources

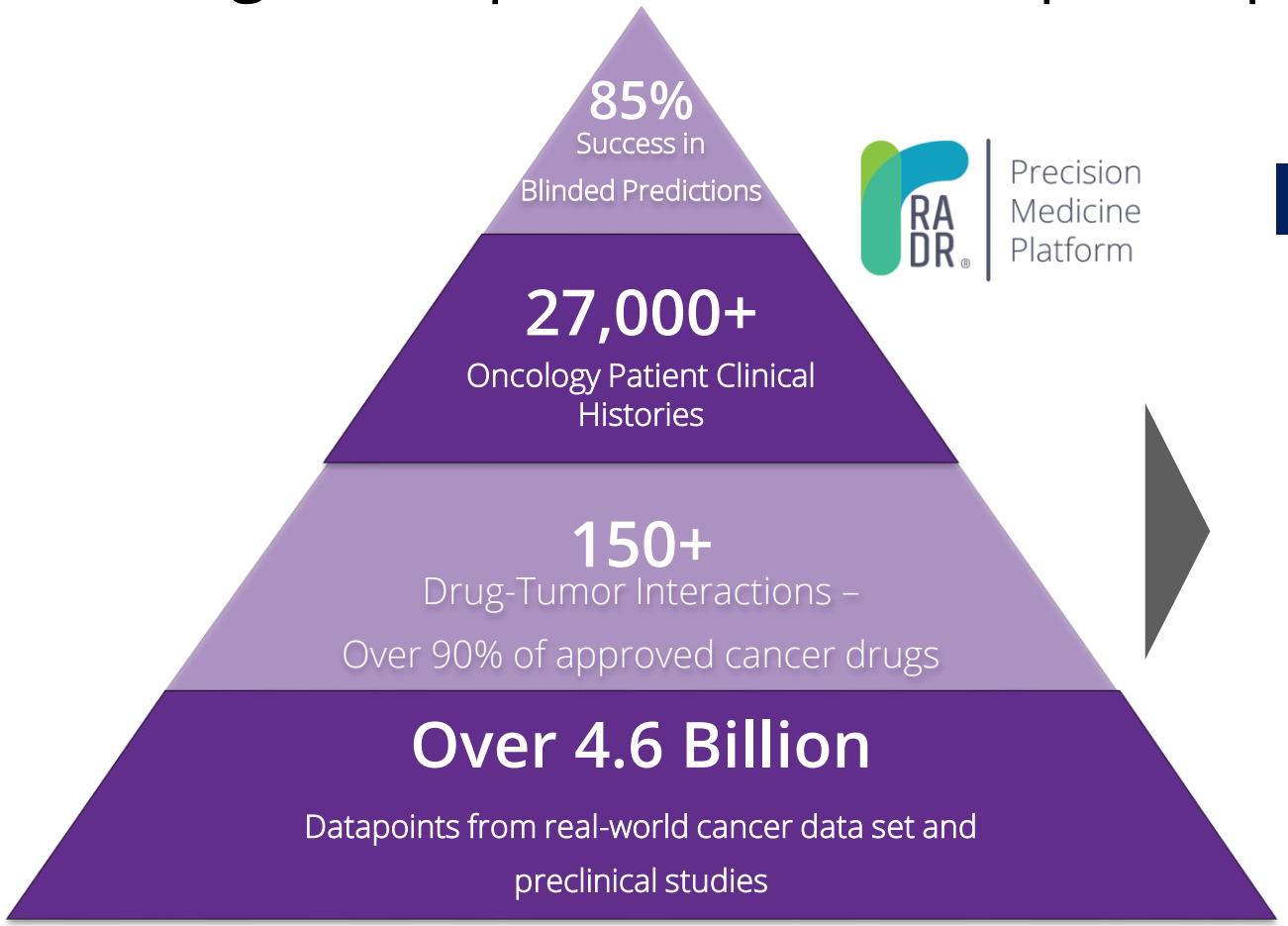
- Public Sources such as Gene Expression Omnibus (GEO), Cancer Cell Line Encyclopedia (CCLE), Genomics of Drug Sensitivity in Cancer (GDSC)
- Industry Data
- Proprietary Data

AI Methods Being Deployed

- Analytics: Integrated systems biology, statistical and descriptive analysis
- Machine Learning: Supervised ML (Neural Network & Support Vector), variations in established ML algorithms: XGBoost



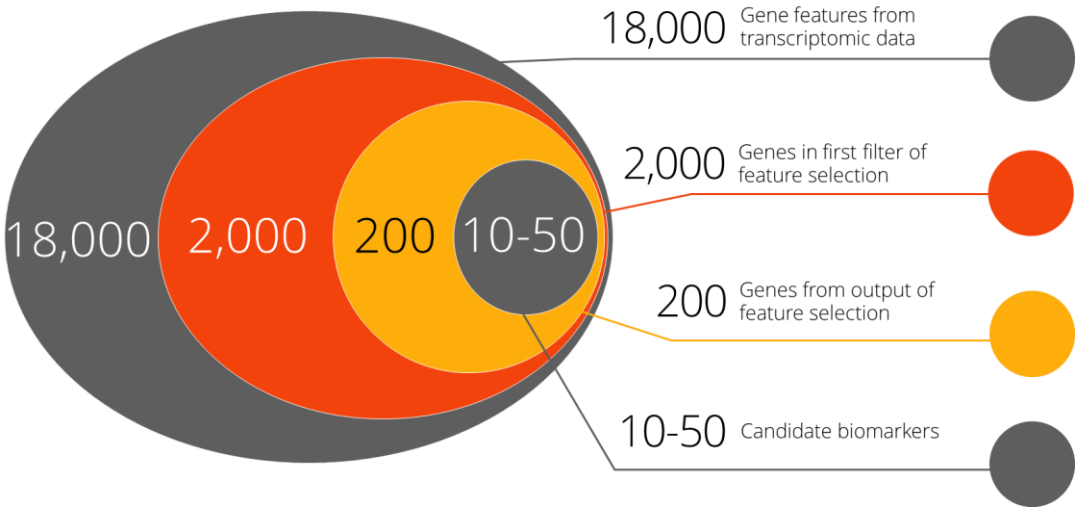
RADR® identifies genetic markers and signatures for precision oncology drug development, clinical response prediction and CDx enablement



RADR® Platform Continues to Grow in Volume & Functionality

RADR® Precision Medicine Platform

Output & Signature Development Process



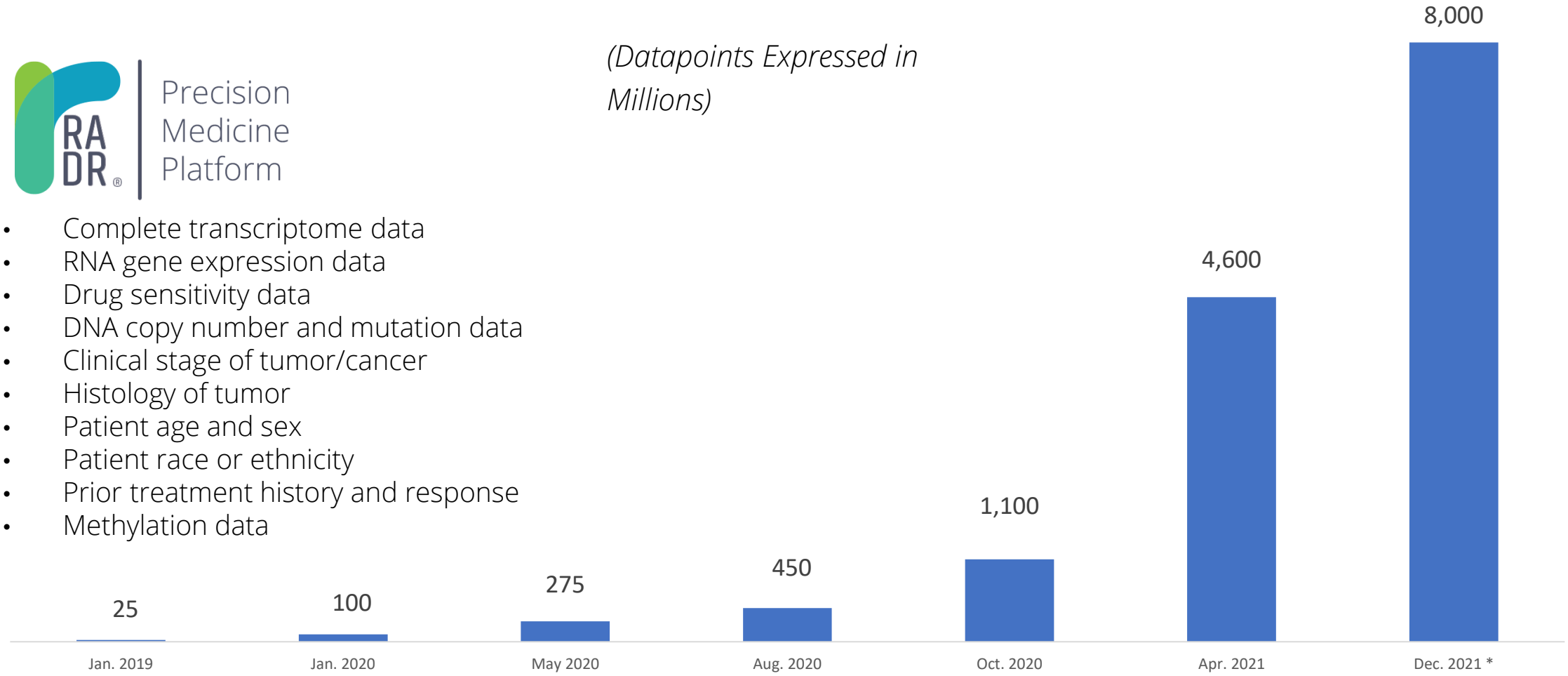
Growth in Data Drives Growth in Capabilities

16.7x growth Over Last 12 Months (May 2020 to May 2021)

RADR® Precision Medicine Platform

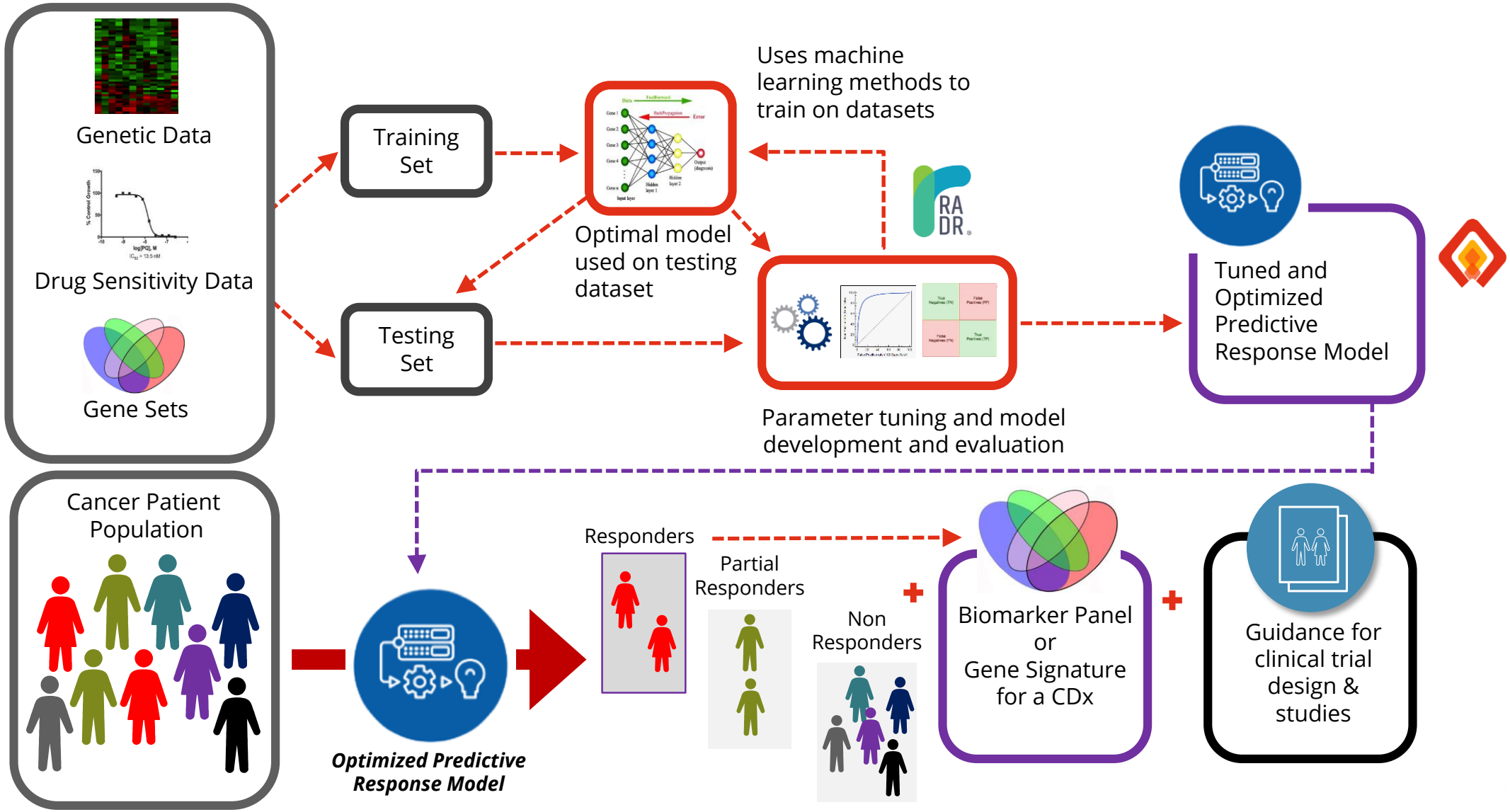
- Complete transcriptome data
- RNA gene expression data
- Drug sensitivity data
- DNA copy number and mutation data
- Clinical stage of tumor/cancer
- Histology of tumor
- Patient age and sex
- Patient race or ethnicity
- Prior treatment history and response
- Methylation data

(Datapoints Expressed in Millions)



* Expected amount of data based on development plan and pipeline

RADR® Workflow Details



Equity-Based Collaboration with Actuate Therapeutics that Leverages RADR®

ACTUATE THERAPEUTICS

Actuate Therapeutics, Inc. is a private clinical stage biopharmaceutical company focused on the development of compounds for use in the treatment of cancer, and inflammatory diseases leading to fibrosis.

Ft. Worth, TX & Chicago, IL

- Develop predictive model of sensitivity and a potential signature of biomarkers to identify response patients for 9-ING-41.
- 9-ING-41 is a widely researched GSK-3β inhibitor. There are multiple active oncology clinical trials in Phase I - II as monotherapy and in drug combinations.
- Lantern will be receiving equity in Actuate as part of the collaboration.

Our Intellectual Property Portfolio – Extensive and continually growing position of over 70 issued patents & patent applications across 14 patent families

70+ Issued Patents and Patent Applications

5 families	Drug Sensitivity & Response Signatures using Biomarkers
7 families	Methods of Use
2 families	Composition of Matter

LP-300
- In-licensed
- Internally developed

LP-184
- In-licensed
- Internally developed

LP-100
- In-licensed

RADR® Precision Medicine Platform

Studies & Collaborations With Top Tier Academic & Research Partners

Memorial Sloan Kettering Cancer Center

NIH NATIONAL CANCER INSTITUTE

FOX CHASE CANCER CENTER TEMPLE HEALTH

Georgetown University

JOHNS HOPKINS MEDICINE THE SIDNEY KIMMEL COMPREHENSIVE CANCER CENTER

Heavy investment & investor interest in A.I. driven drug development

Company	Investment	Valuation*	Pipeline Status
Lantern Pharma	Jun. 2020 IPO (NASDAQ: LTRN)	$169+ Million $69 M. follow-on 1/20/21	• Oncology focus - 7 programs (clinical & pre-clinical) • Ph. 2 – Prostate, Ph. 2 - NSCLC • ADC platform • 4 Pre-Clinical in Solid Tumors
RECURSION	April 2021 IPO (NASDAQ: RXRX)	$4,400+ Million ($436 M. raised at IPO)	• Various therapeutic areas • 3 INDs planned in 2022 • 37 programs in development by partners & internally
SCHRÖDINGER	Feb. 2020 IPO (NASDAQ: SDGR)	$4,300+ Million $232 M. raised at IPO	• 6 compounds in discovery • Small molecule oncology • Historically SaaS business model
BioXcel MEDICINES THROUGH INGENUITY	Mar. 2018 IPO (NASDAQ: BTAI)	$813+ Million $65 M. raised at IPO 3 subsequent rounds	• Ph. 3 – Neuro • Ph. 2 – Immuno Oncology
Atomwise Better medicines faster.	$123+ M. total Latest 08/2020 Series B	$500+ Million (estimate based on last round)	• Partners w/ academic, pharma and agrochemical firms. • No captive pipeline
BenevolentAI	$290+ M. total Latest 09/2019 private raise	~$1,100 Million (pre-money based on last round)	• Partners w/ academic and pharma • Tech and service provider

*Source: Crunchbase, Pitchbook and Bloomberg
* Valuations of public companies as of May 28, 2021

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 8 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 15 billion datapoints
- Licensing and partnership opportunities

Highly experienced in innovation for pharma, drug development & oncology

Management Team

Panna Sharma President & CEO

- *Former* President & CEO at Cancer Genetics (Nasdaq: CGIX)
- Led IPO, Private investment round and multiple global acquisitions
- Led CGIX to five years on Deloitte Fast 500
- Founder & CEO TSG Partners (Life Sciences Investment Bank & Strategy Consulting)
- Chief Strategy Officer, iXL (Nasdaq: IIXL)
- Analyst & Consultant, BankofAmerica, Putnam Investments, Interactive Solutions

Kishor Bhatia, Ph.D., FRC Path Chief Scientific Officer

A highly skilled scientist, inventor, manager, and administrator with over thirty years of experience building research programs and teams to create innovative treatments for cancer. Dr. Bhatia has expertise in DNA repair mechanisms, including contributions to understanding UV damage repair, the cloning of the PARP gene and its expression and the contribution of p53 gene in resistance to therapy.

Former:

- Director AIDS Malignancy Program. Office of HIV and AIDS Malignancy, National Cancer Institute
- Director, Cancer Children's Cancer Research Center, KFSHR&C, Riyadh
- Director, International Network for Cancer Treatment and Research, Brussels
- 1st to clone PARP gene involved in DNA damage
- Over 250 publications with global collaborators & researchers

David Margrave, J.D. Chief Financial Officer

- 20+ years of oncology focused management experience.
- Former President and as Chief Administrative Officer, BioNumerik Pharmaceuticals
- Expertise in biotech deal structuring, and corporate management
- Chairman of the Texas Healthcare and Bioscience Institute
- Chairman of the State of Texas Product Development & Small Business Incubator Board
- Univ. of Texas and Stanford graduate

Kerry Barnhart, Ph.D., V.P. of Clinical Development

Accomplished drug development professional and executive specializing in designing and directing oncology clinical programs from novel and breakthrough discoveries

Former:

- SVP of Development - CerRx
- President & CEO – Transmed Oncology
- President & CEO – Bradmer Pharma
- CSO, Aptamera
- B.S., M.S. – University of Arizona
- Ph.D. & Post Doctoral Studies – Cornell University Graduate School of Medicine, Memorial Sloan Kettering, Salk Institute & U.C. San Diego

Investment Highlights - Lantern Pharma has a unique, growing and validated foundation for the future of cancer therapy and patient care

Active drug rescue process and in the clinic with 2 compounds and accelerating additional compounds and combinations to clinical trials...potentially saving tens of millions and years of development

Multiple compounds in place with the potential for Orphan Disease Designation and LP-184 to be submitted for ODD in pancreatic and GBM which can help accelerate development

Growing A.I. based platform with clear roadmap to 6+ Bn. datapoints focused exquisitely on cancer therapeutic development and companion Dx in a high growth, high demand $4 Bn market

Proven and growing library of A.I. & machine-learning methodologies published at ASCO, AACR and used to generate novel IP & patents and accelerate discovery by potentially years

Focused on cancer drug market segments with clear clinical need, understood mechanisms, targeted patient populations that exceed 1 Million , and multi-billion USD in annual sales potential

Experienced and innovative management team w/ 60+ years experience in cancer and a passion to change the cost and outcome for cancer patients by using A.I. and genomics – *paradigm changing technologies*

A novel ADC platform with the potential to develop and out-license or partner ADC assets in early phases

Industry leading collaborations with National Cancer Institute, Georgetown, Johns Hopkins & Fox Chase Cancer Center

Lantern Pharma

Company Overview

Thank you!

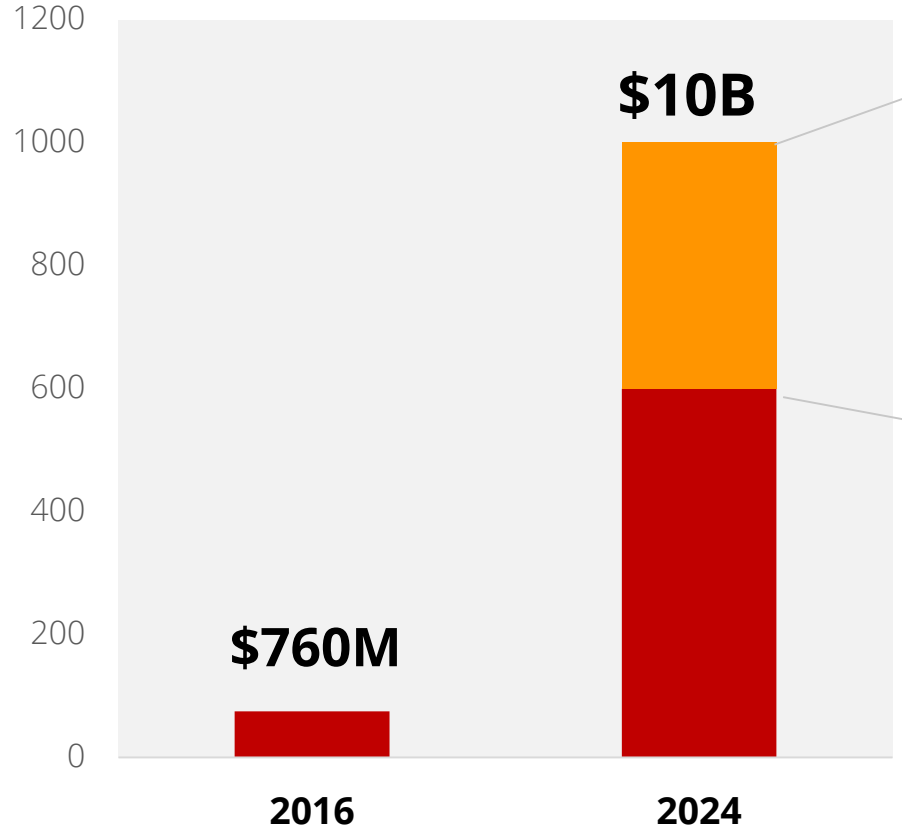
June 1, 2021

Appendix Items

- Global A.I. Healthcare and Drug Discovery Market
- Mega Trends Shaping the Future of Cancer Therapy
- Details on LP-184 results in ex vivo PDX models
- Source of Irofulven, LP-100
- Select recent publications and posters
- Cap Table
- Board of Directors – Biographical sketches

Drug discovery and development driven by A.I. is a rapidly growing market in response to fundamental shifts in the industry and a re-tooling of R&D

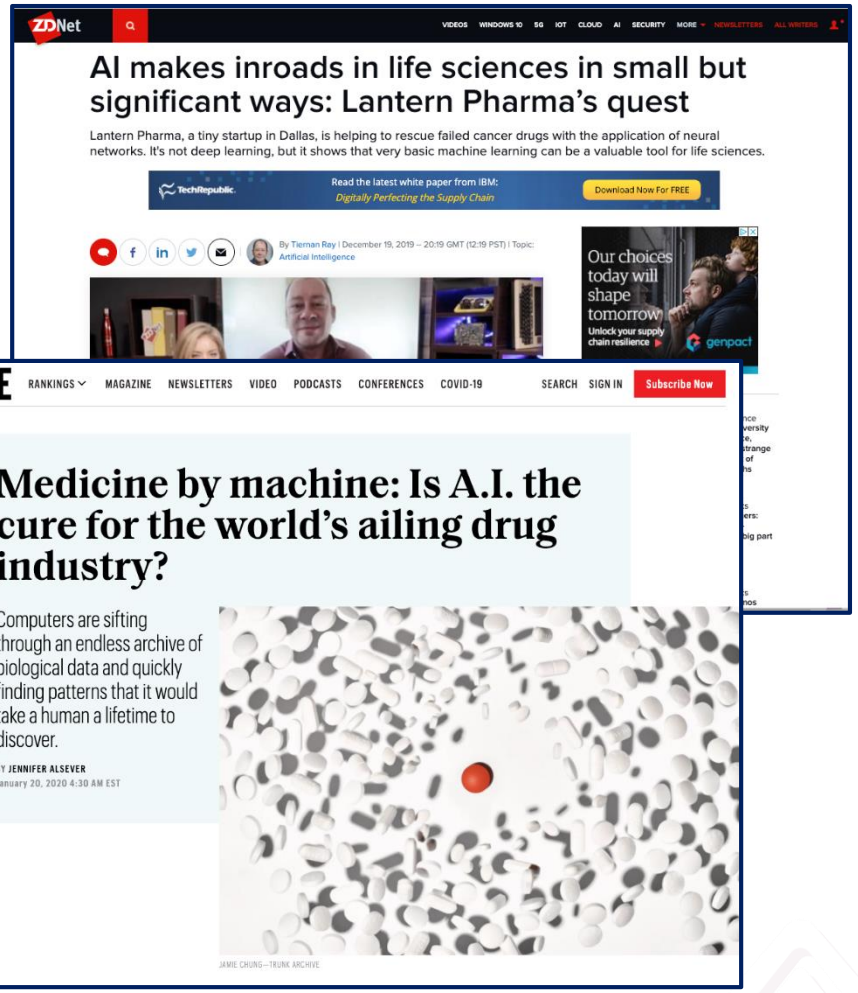
Global A.I. Healthcare Market*



~$4B

A.I.-driven Drug Discovery/ Development market in 2024

*Source: Biopharmatrend.com, PMLiVE, and Global Market Insights, Inc.



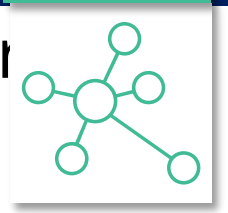
Images Sources: Lantern Pharma as featured in *ZDNet* & *Fortune*

Solving unmet needs and creating opportunities in personalizing cancer therapy by capitalizing on emerging technologies and industry trends

Mega Trends Shaping Drug Development

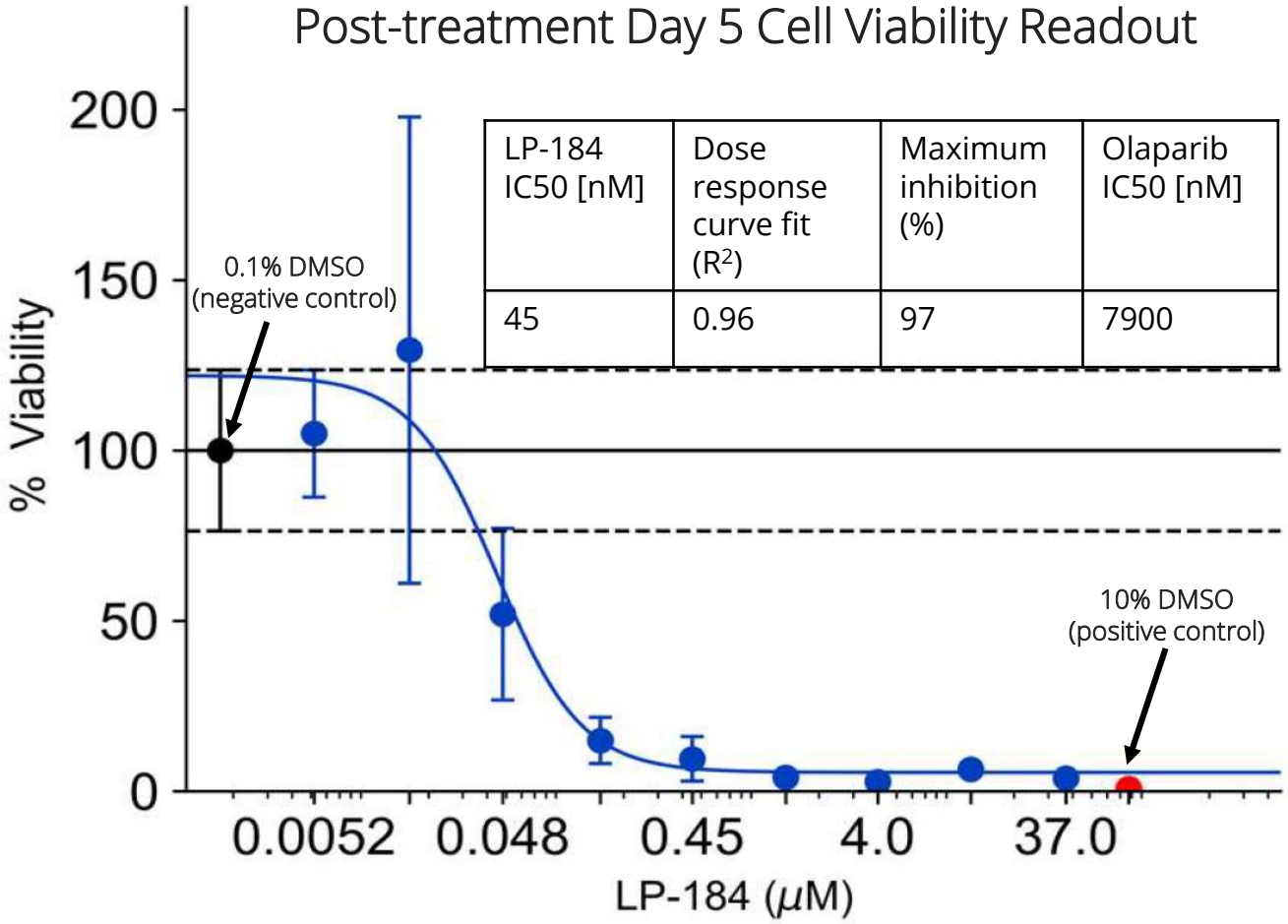
1. Increased access to validated genomic & biomarker data
2. Increased sharing and collaboration globally among research groups, industry consortiums and companies
3. Rapidly decreasing cost (and increasing quality) of sequencing and biomarker data and other health-monitoring data
4. Rapid evolution & implementation of A.I. and machine learning technologies
5. Availability of well tolerated and clinically active but failed or abandoned compounds
6. Economic pressure to reposition & rescue drug investments
7. Rising need to develop and manage combination and drug-resistance addressing therapies
8. Increasing use of precision medicine and genomics to identify, treat and manage patients

LP-184 is highly effective in *ex vivo* PDX models of DNA Damage Repair Deficient (HRD+) solid tumors



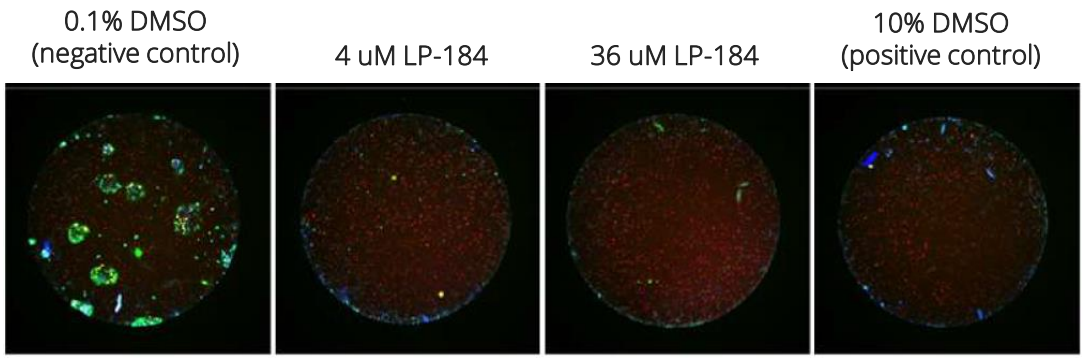
LP-184 response in a representative pancreatic cancer model with PARP1, ATR* and BRIP1 mutations

Post-treatment Day 5 Cell Viability Readout



LP-184 IC50 [nM]	Dose response curve fit (R^2)	Maximum inhibition (%)	Olaparib IC50 [nM]
45	0.96	97	7900

Post-treatment Day 5 Staining



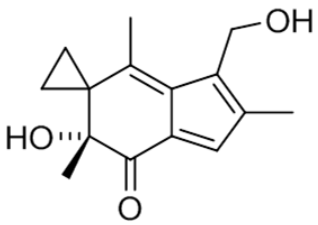
Hoechst (all nuclei)
CellTracker Green (live cells)
p-γH2A.X (DNA damage)
EdU (S phase of cell cycle)

Patient was a non-responder to 5-Fluorouracil/ Irinotecan/ Oxaliplatin combination

*high impact mutation

Irofulven, LP-100, is derived from the Jack O'Lantern mushroom

LP-100, Irofulven



- DNA Damaging Agent
- Derived from highly toxic substance found in Jack o'Lantern mushroom – Illudin S
- Company name "Lantern" is also derived from this origin of the compound
- LP-100 is a highly potent semi-synthetic derivative of the active toxic compound found in this fungi

Peer-Reviewed Publications That Further Validate RADR® A.I. Platform and LP-184

www.oncotarget.com Oncotarget, 2021, Vol. 12, (No. 8), pp: 791-806

Research Paper

The acylfulvene alkylating agent, LP-184, retains nanomolar potency in non-small cell lung cancer carrying otherwise therapy-refractory mutations

Aditya Kulkarni[1], Joseph Ryan McDermott[1], Umesh Kathad[1], Rama Modali[2], Jean-Philippe Richard[2], Panna Sharma[1] and Kishor Bhatia[1]

[1]Lantern Pharma, Inc., Dallas, TX 75201, USA

[2]REPROCELL USA Inc., Beltsville, MD 20705, USA

***Correspondence to**: Aditya Kulkarni, **email**: aditya@lanternpharma.com*

***Keywords**: non-small cell lung cancer; acylfulvene; alkylating agent; PTGR1; LP-184*

***Received**: January 11, 2021* ***Accepted**: March 29, 2021* ***Published**: April 13, 2021*

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ABSTRACT

More than 40% of non-small cell lung cancer (NSCLC) patients lack actionable targets and require non-targeted chemotherapeutics. Many become refractory to drugs due to underlying resistance-associated mutations. KEAP1 mutant NSCLCs further activate NRF2 and upregulate its client PTGR1. LP-184, a novel alkylating agent belonging to the acylfulvene class is a prodrug dependent upon PTGR1. We hypothesized that NSCLC with KEAP1 mutations would continue to remain sensitive to LP-184. LP-184 demonstrated highly potent anticancer activity both in primary NSCLC cell lines and in those originating from brain metastases of primary lung cancers. LP-184 activity correlated with PTGR1 transcript levels but was independent of mutations in key oncogenes (KRAS and KEAP1) and tumor suppressors (TP53 and STK11). LP-184 was orders of magnitude more potent *in vitro* than cisplatin and

Kathad *et al. BMC Bioinformatics* (2021) 22:102
https://doi.org/10.1186/s12859-021-04040-8

BMC Bioinformatics

RESEARCH ARTICLE Open Access

A machine learning-based gene signature of response to the novel alkylating agent LP-184 distinguishes its potential tumor indications

Umesh Kathad[1*], Aditya Kulkarni[1], Joseph Ryan McDermott[1], Jordan Wegner[1], Peter Carr[1], Neha Biyani[1], Rama Modali[2], Jean-Philippe Richard[2], Panna Sharma[1] and Kishor Bhatia[1]

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Session PO.ET06.03 - Novel Antitumor Agents

1249 - LP184, a novel alkylating agent, is efficacious in prostate cancer models with DNA damage repair defects

April 10, 2021, 8:30 AM - 11:59 PM Poster

Authors

Aditya Kulkarni, Partha Banerjee, Umesh Kathad, Kishor Bhatia, Panna Sharma. Lantern Pharma Inc., Dallas, TX, Georgetown University, Washington, DC

Disclosures

A. Kulkarni: ; Lantern Pharma. **P. Banerjee:** ; Georgetown University. **U. Kathad:** ; Lantern Pharma. **K. Bhatia:** ; Lantern Pharma. **P. Sharma:** ; Lantern Pharma.

Abstract

Prostate cancer (CaP) remains the most commonly diagnosed malignancy and the second leading cause of cancer related deaths in men in the US. While the 5-year survival rate for patients with localized CaP is over 99%, it is only 30% for patients with distant metastases. Despite impressive advances in the treatment of metastatic CaP with more efficacious inhibitors along the androgen/androgen receptor axis, eventual development of incurable metastatic Castration Resistant Prostate Cancer (mCRPC) is inevitable, necessitating the development of newer therapeutic strategies. Comprehensive evaluations of CaP genomes from localized and metastatic CaP have revealed that subsets harboring mutations in certain DNA Damage Repair Genes (DDRGs) account for up to 30% of patients. LP184, a novel alkylating agent belonging to the acylfulvene (AF) class is currently in preclinical development, having demonstrated appreciable anticancer activity in multiple prostate tumor models. LP184 exhibits nanomolar potency (20 - 350 nM) against widely used CaP cell lines in 2D culture while having reduced cytotoxicity in a non-tumor prostate epithelial cell line. In CaP cell lines, LP184 turned out equipotent as standard chemotherapeutic Docetaxel, 100-2000 times more potent than another alkylating agent

Additional Publications & Posters:
https://www.lanternpharma.com/science-and-publications/

Cap Table

LANTERN PHARMA INC. (LTRN)	
Common Shares Outstanding	11,181,447
Warrants	305,294
Options (Employees, Management and Directors)	823,826
Fully Diluted Shares Outstanding	**12,310,567**

Cap Table as of March 31, 2021

- Management and Directors own ~31% of fully diluted shares outstanding.
- Committed to creating enduring growth and value for LTRN shareholders.

Board of Directors

Jeff Donald Keyser, Ph.D., J.D., MPA
- Board Chairman
- Founder of Renibus Therapeutics and ZSPharma

Franklyn Prendergast, M.D., Ph.D.
Emeritus
- Board of Governors and Board of Trustees, Mayo Clinic
- Professor and Director –Mayo Clinic Comprehensive Cancer Center
- Emeritus Member of Eli-Lily Board of Directors
- Board of Directors, Lantern Pharma, Cancer Genetics, and TGEN
- Distinguished Alumnus Mayo Clinic

Vijay Chandru, Ph.D.
- Co-Founder, Chairman Scientific Advisory Board, Strand Life Sciences
- Fellow Indian Academies of Sciences and Engineering
- Technology Pioneer, World Economic Forum
- Co-Founder, Yantri Labs and other AI Compnies
- Research Professor: IISc, Purdue, MIT, UPenn, Stanford

David Silberstein, Ph.D., MPH
Former
- Director, Astra Zeneca
- Sr. Director, MedImmune
- Asst. Professor of Medicine, Harvard Medical School
- Currently Principal Investigator of an NCI funded clinical trial in patients with multiple brain metastases

Leslie (Les) W. Kreis
- Managing Partner & Co-Founder, BIOS Partners
- Principal & Founder, Steelhead Capital Management
- Co-Founder, Cowtown Angels
- Vice President, HRK Investments

Panna Sharma
- President & CEO, Lantern Pharma