Lantern Pharma®

Corporate Overview

November 2025

NASDAQ: LTRN

Forward Looking Statements

This presentation contains forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Securities Exchange Act of 1934, as amended. These forward-looking statements include, among other things, statements relating to: future events or our future financial performance; the potential advantages of our RADR® platform in identifying drug candidates and patient populations that are likely to respond to a drug candidate; our strategic plans to advance the development of our drug candidates and antibody drug conjugate (ADC) development program; estimates regarding the development timing for our drug candidates and ADC development program; expectations and estimates regarding clinical trial timing and patient enrollment; 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 patient populations, 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," "model," "objective," "aim," "upcoming," "should," "will," "would," or the negative of these words or other similar expressions) should be considered forward-looking statements. There are a number of important factors that could cause our actual results to differ materially from those indicated by the forward-looking statements, such as (i) the risk that we may not be able to secure sufficient future funding when needed and as required to advance and support our existing and planned clinical trials and operations, (ii) the risk that observations in preclinical studies and early or preliminary observations in clinical studies do not ensure that later observations, studies and development will be consistent or successful, (iii) the risk that our research and the research of our collaborators may not be successful, (iv) the risk that we may not be successful in licensing potential candidates or in completing potential partnerships and collaborations, (v) the risk that none of our product candidates has received FDA marketing approval, and we may not be able to successfully initiate, conduct, or conclude clinical testing for or obtain marketing approval for our product candidates, (vi) the risk that no drug product based on our proprietary RADR® AI platform has received FDA marketing approval or otherwise been incorporated into a commercial product, and (vii) those other factors set forth in the Risk Factors section in our Annual Report on Form 10-K for the year ended December 31, 2024, filed with the Securities and Exchange Commission on March 27, 2025. You may access our Annual Report on Form 10-K for the year ended December 31, 2024 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.

Lantern's AI platform, RADR®, is transforming the **cost, pace, and timeline** of cancer drug discovery and development

12
Lead drug programs* powered by AI

5
Clinical stage lead drug candidates*

100+
Issued patents & pending applications

$100M
Approximate total capital raised since 2019

2.5 years
Avg. time for new LTRN programs to Ph. 1 Trial

$2M
Avg. cost for new LTRN programs to Ph. 1 Trial

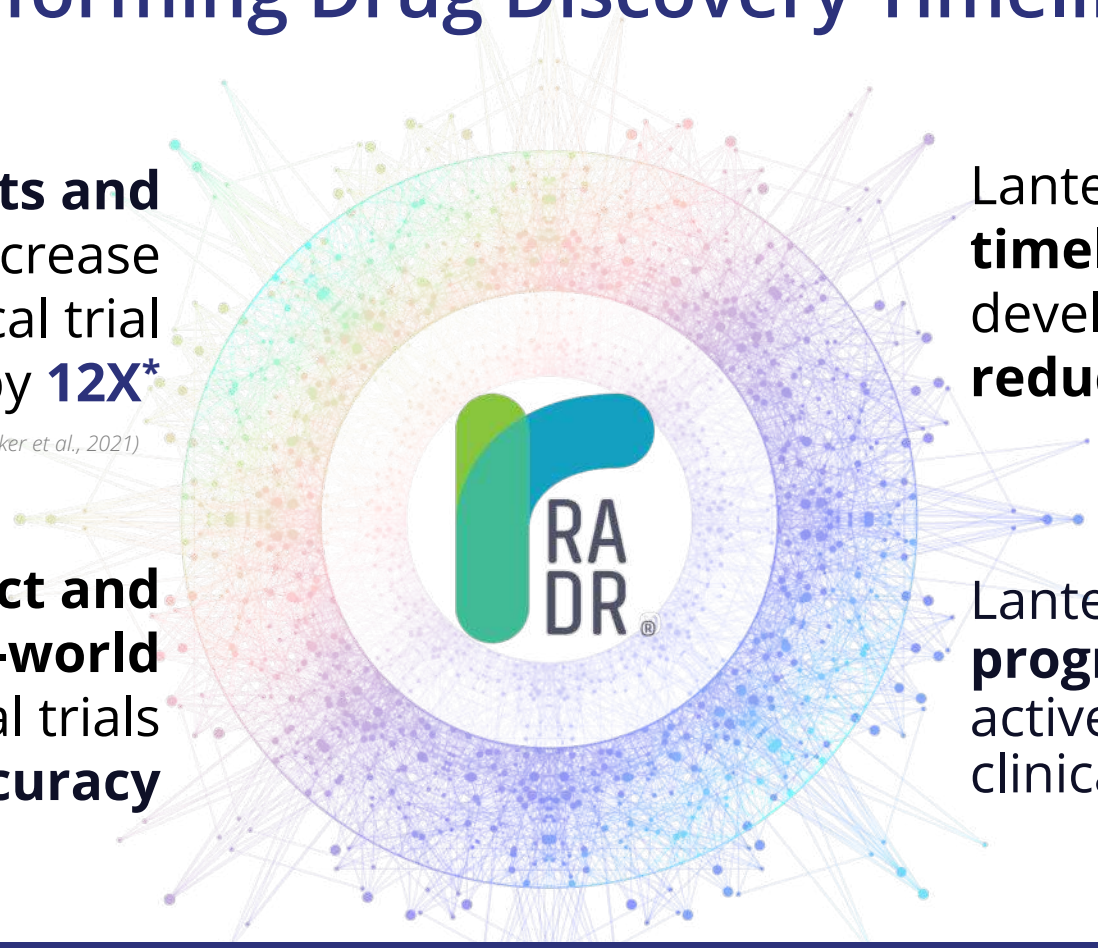
** Includes drug programs being developed in collaboration*

Lantern is Transforming Drug Discovery Timelines & Costs with AI

AI insights and biomarkers can increase the odds of clinical trial success by **12X***

*(*Parker et al., 2021)*

RADR® can **predict and stratify real-world patients** for clinical trials with **88% accuracy**



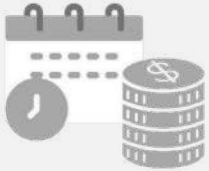
Lantern can **compress the timeline** of early-stage drug development by **70%** and **reduce the cost** by **80%**

Lantern has launched **10 new programs in 2 years**, and has active ongoing Ph.1 and Ph.2 clinical trials

LANTERN'S DRUG DEVELOPMENT MODEL AND OBJECTIVES

Large Scale/Multi-omics Oncology Data

Proprietary AI platform RADR®



Accelerated timelines; reduced costs and risks

Lantern's AI-Driven Business Model has Multiple Routes Towards Success

Areas of Focus | **Successes to Date**

AI Platform

1 Rescue & Reposition
Drug Candidates

Based on previous clinical data and observations, **LP-300 was rescued for never smokers with NSCLC** and is in a Phase 2 trial

2 Discover & Develop
New Molecules Including ADCs

LP-284's unique mechanism of action was predicted by RADR® and was **developed to Phase 1 trial** in 2 years

3 Accelerate & De-risk
Trials with Biopharma Partners

Predicting patient response with greater than **88% accuracy**, Lantern is accelerating the development of Elraglusib

Targeted Clinical Trials

By Lantern and/or other biopharma partners

High-value Partnering & Licensing Opportunities

With biopharma and tech companies

Lantern's Diverse & Unique AI Driven Pipeline of Drug Programs

Lantern has 10 disclosed drug programs including the Phase 2 Harmonic™ trial

Lantern Pharma (NASDAQ: LTRN)

Program	Indication	Discovery	Preclinical	Phase 1a	Phase 1b	Phase II	Orphan Designation	Rare Pediatric Disease	Fast Track
LP-300	Non-Small Cell Lung Cancer for Never Smokers					harmonic			
LP-184	Monotherapy & Combination w/ Olaparib for TNBC								●
	Combination w/ Immune Checkpoint Inhibitors for NSCLC								
	Advanced Bladder Cancer (Investigator led trial in Denmark)								
LP-284	Recurrent Non-Hodgkin's Lymphomas (*Mantle cell, Double-hit lymphomas*)						●		
ADC	Select Solid Tumors								

Starlight Therapeutics (Wholly Owned Subsidiary)

STAR-001 *(LP-184 for CNS and Brain Cancers Only)*	First Recurrent Glioblastoma in adults						●		●
	Newly Diagnosed MGMT Unmethylated Glioblastoma (investigator led trial)						●		●
	Phase 1a monotherapy including ATRT, DIPG and Medulloblastoma						●	●	
	Phase 1b combination select pediatric CNS cancers						●	●	

RADR® AI-Driven Strategic Collaborations

Collaborating with top-tier oncology innovators to unlock data-driven therapeutic breakthroughs

Collaborator	Program	Indication	Stage
ACTUATE THERAPEUTICS	**Elraglusib** (9-ING-41)	Multiple Solid Tumors	**Phase 2** Completed
OREGON THERAPEUTICS	**XCE853**	Protein Disulfide Isomerase (PDI) Inhibitor	Preclinical
ttc oncology™	**TTC-352**	ER+ Breast Cancers	Phase 1
UNIVERSITÄT BIELEFELD	**ADC**	Cryptophycin Conjugate for Solid Tumors	Preclinical

RADR® Precision Medicine Platform

A proprietary integrated experimental biology, oncology-focused, machine-learning-based drug development platform

200+ Billion*

Data points from oncology focused real-world patient and clinical data and preclinical studies

80%+
Prediction Success

130K+
Patient Records

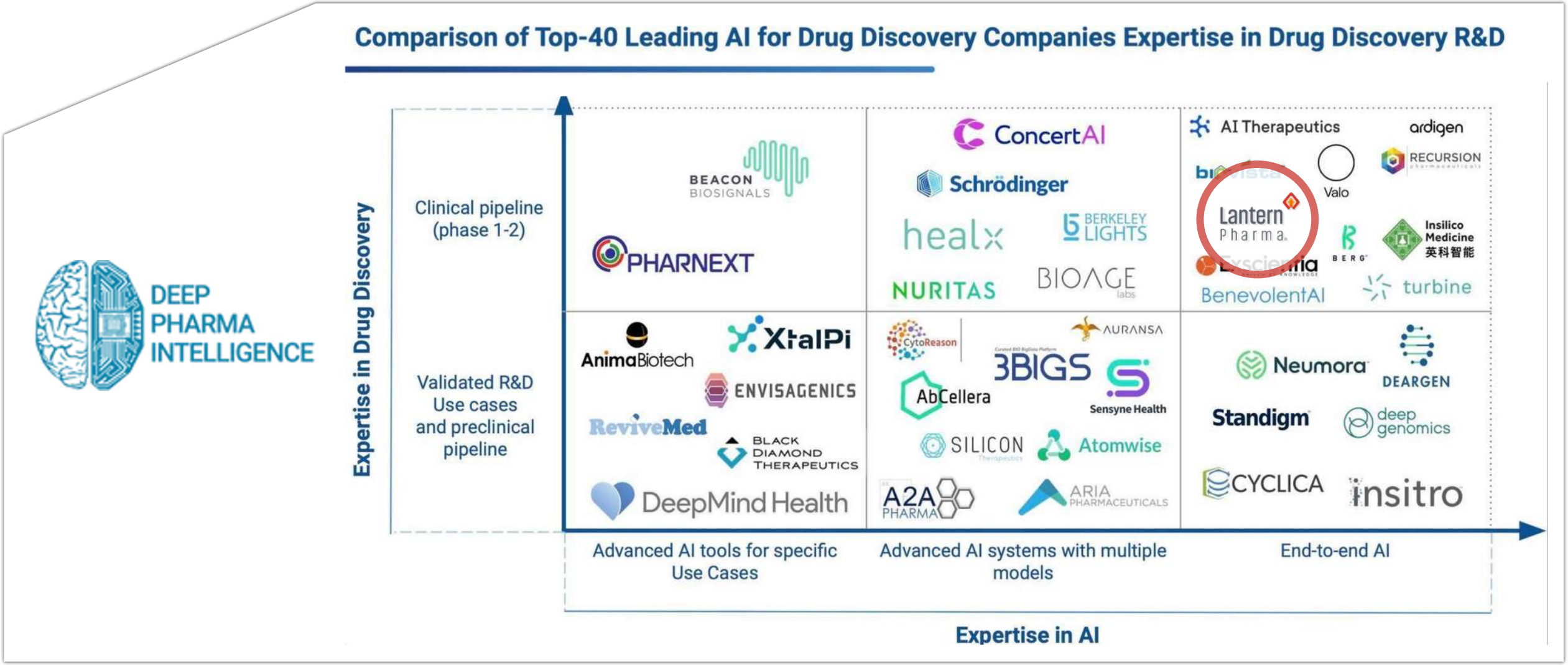
200+
Advanced ML Algorithms

8,163+
Data Sets

AI-Powered RADR® Modules for Oncology Drug Discovery and Development

- **m1** Discover mechanism of action
- **m2** Identify/prioritize disease indications or subtypes
- **m3** Determine optimal drug combinations
- **m4** Generate ML-driven biomarker signatures
- **m5** Characterize specialized attributes of a molecule
- **m6** Understand potential binding site interactions
- **m7** Discover combinations with checkpoint inhibitors
- **m8** ADC design and optimization

Lantern Pharma is a Top 10 End-to-End AI Drug Discovery Company



According to Deep Pharma Intelligence

Integrating Data, AI, and Science Across the Drug Development Cycle

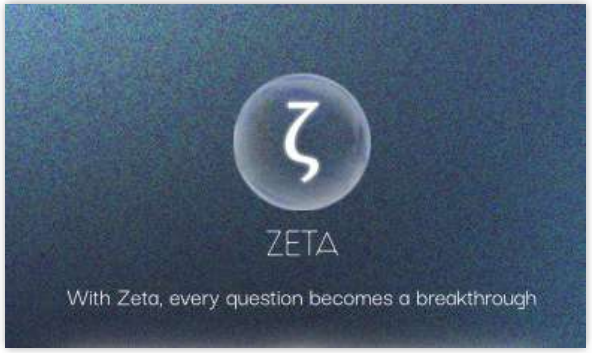
Lantern's comprehensive suite of computational drug discovery platform

PredictBBB™ & Zeta - The first in a series of transformative AI modules

- Powered by RADR®, our unified data lake and ensemble AI engine for drug discovery
- Future modules will include prediction and optimization of molecular properties vital to drug success
- Specialized & broad-use tools to accelerate oncology and other therapeutic areas
- Building a full AI-driven platform to reshape how drugs are discovered, developed, optimized, and advanced

PredictBBB™ : Predict any molecule's brain permeability

- Less than 6% of molecules cross the Blood Brain Barrier (BBB) - one of pharmaceutical development's most persistent challenges
- PredictBBB™ achieves **94%** accuracy with real-time machine learning, providing open-access to critical CNS drug development technology



Zeta : AI-powered co-scientist for rare cancer research

- AI research agent for rare cancers - instantly connects clinical, molecular, and therapeutic data that is traditionally fragmented
- Accelerates insight generation - turns days of manual searching into minutes with evidence-grounded answers

Collaborations

Strategic collaborations that are providing unique real-world insights and accelerating timelines

World-Class Academic and Research Institutions

Johns Hopkins Medicine

Fox Chase Cancer Center – Temple Health

UT Health San Antonio – Greehey Children's Cancer Research Institute

UMass Boston

Cornell University

The University of Texas MD Anderson Cancer Center – Making Cancer History®

Danish Cancer Society

Universität Bielefeld

Biopharma Collaborations

Actuate Therapeutics

ttc oncology

Oregon Therapeutics

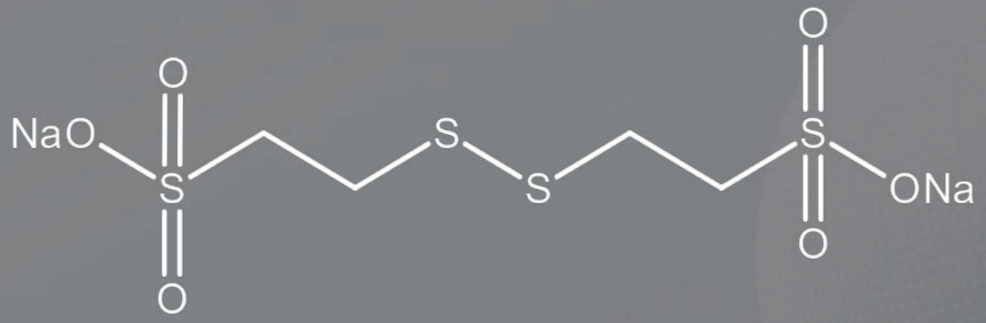
Eleven FDA Designations Demonstrate our Data-driven, AI-enabled Approach to Transform Drug Development & Strengthen Commercial Value

FDA

11 designations

Designation	Candidate	Indication	Date
Fast Track Designation	LP-184	Glioblastoma	Sep. 2024
	LP-184	Triple Negative Breast Cancer	Dec. 2024
Orphan Drug Designation	LP-184	Pancreatic Cancer	Aug. 2021
	LP-184	Glioblastoma	Aug. 2021
	LP-184	Malignant Glioma	Aug. 2021
	LP-284	Mantle Cell Lymphoma	Jan. 2023
	LP-284	High Grade B-Cell Lymphoma	Nov. 2023
Orphan Drug and Rare Pediatric Disease Designation	LP-184	ATRT	Jan. 2022
	LP-184	Malignant Rhabdoid Tumors	Sep. 2024
	LP-184	Rhabdomyosarcoma	Sep. 2024
	LP-184	Hepatoblastoma	Sep. 2024

LP-300 for the Treatment of Non-Small Cell Lung Cancer (NSCLC) in Never Smokers



Lead Indication	Relapsed NSCLC for Never Smokers
Clinical Status	Phase 2 (multiple patients dosed globally)
Market Potential*	$4+ billion
Indication Size*	150,000 + Cases
Target/ MOA	Tyrosine Kinases & Cell Redox Enzymes
Molecule Type	Disulfide Small Molecule
Combination	With Carboplatin and Pemetrexed
IP Estate	Claims extending to at least 2032

**Estimated Annual Global*

Disease Overview – NSCLC in Never Smokers – LP-300

NSCLC in never smokers is one of the largest unaddressed cancer populations

Global Annual Market Potential: $ 4+ Billion

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

1 in 6

lung cancer deaths will occur in patients that are **never smokers with NSCLC**

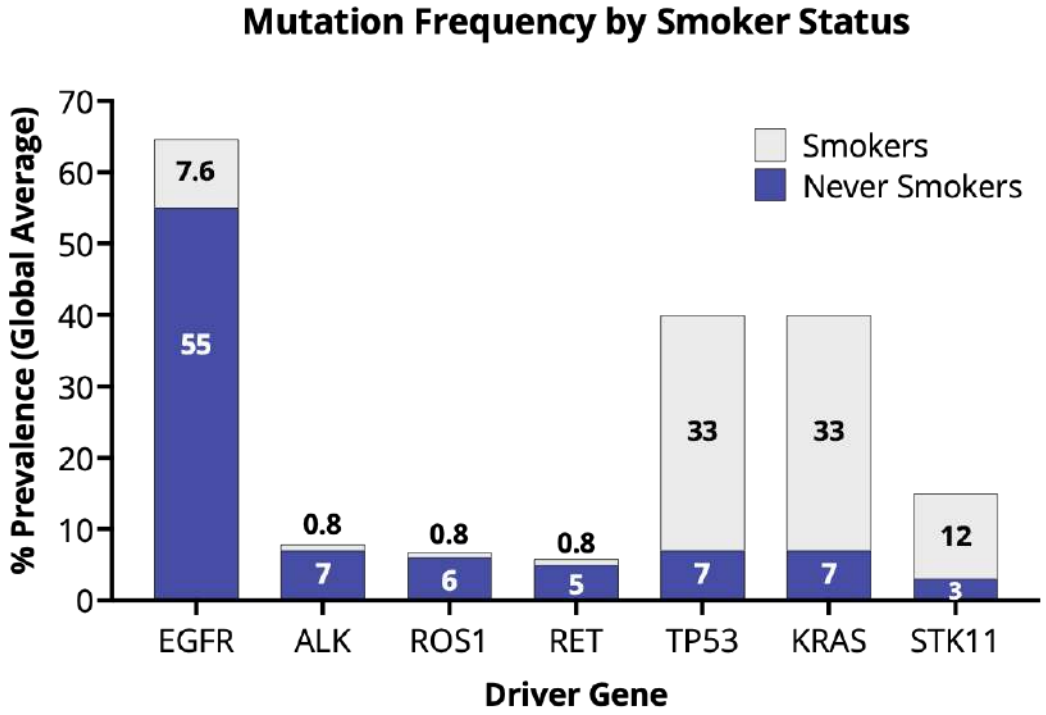
150,000~175,000

never smokers will be diagnosed with **NSCLC** Globally

Cancer.gov

NSCLC in Never Smokers is a Different Disease

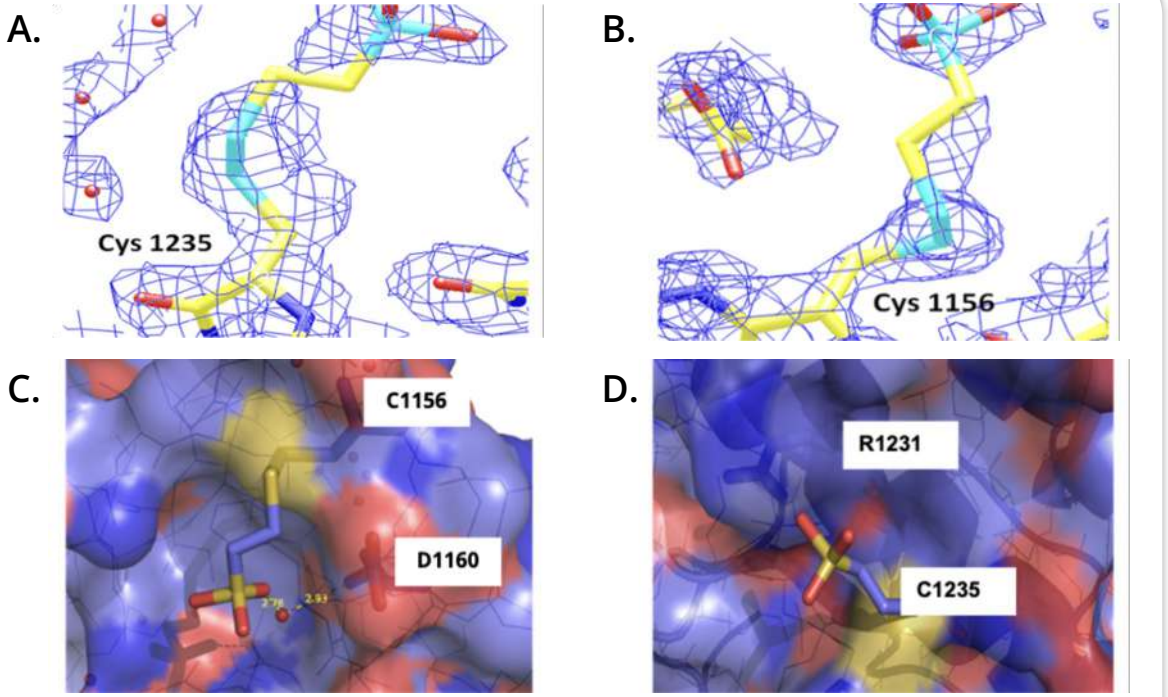
Lung Cancer in never smokers has **higher percentage of genetic mutations in Tyrosine Kinases (TK),** a family of cancer-promoting genes, such as EGFR, ALK, ROS and MET



Mechanism of Action – LP-300

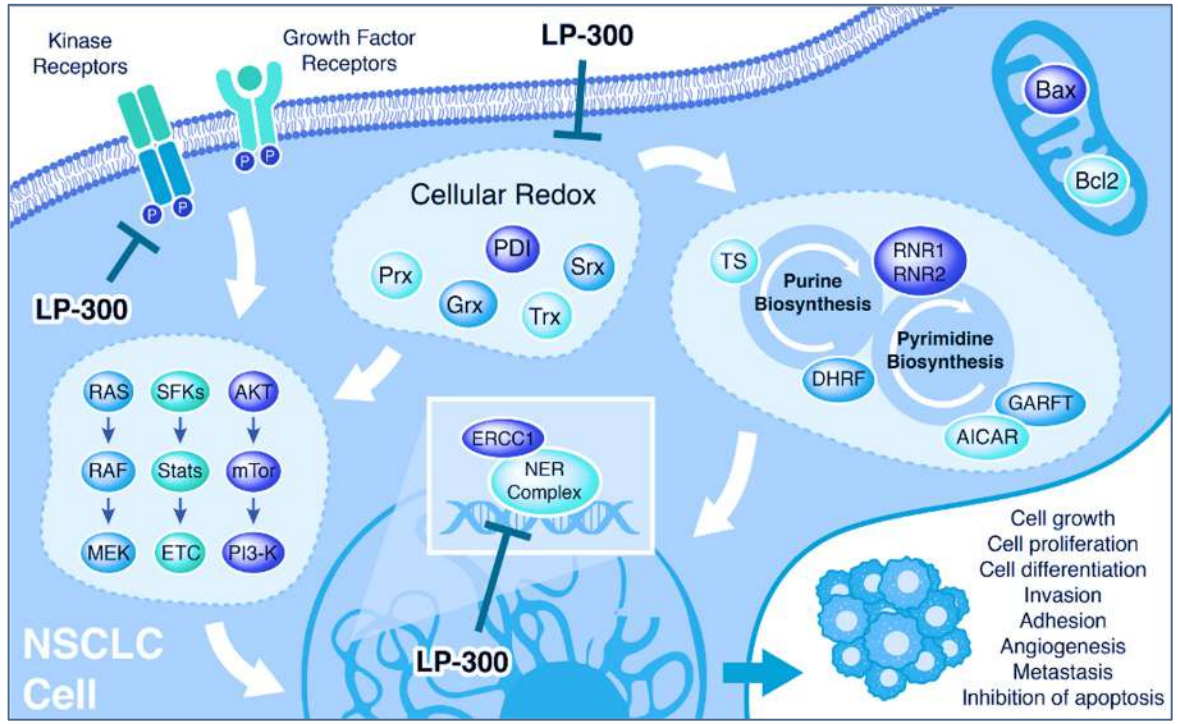
LP-300's multimodal MoA resensitizes NSCLC to chemo in the never smoker population

1. LP-300 Directly Engages with TKI Receptors via Cysteine Modification



A-B. LP-300 adduct at **Cys1235 Cys1156** **C.** Molecular surface of ALK with the LP-300-derived adduct at **Cys1156** *(yellow highlight)* **D.** Binding site of the LP-300-derived adduct at **Cys 1235** *(yellow highlight)*

2. LP-300 Modulates Cellular Redox in Key Signaling Pathways in NSCLC



- Restoring apoptosis sensitivity
- Oxidative stress modulation
- Anti-angiogenesis
- Reduced DNA synthesis and gene expression
- Reduce glutathione/thioredoxin mediated tumor resistance to therapy
- Nephrotoxicity protection against chemotherapy

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

Accelerating recruitment efforts for a growing indication with limited treatment options

harmonic

NCT05456256

Non-Small Cell Lung Cancer

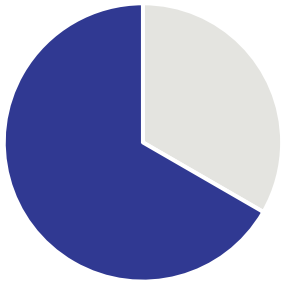
Never Smokers

90 Patients

Two arm, Open-label, Randomized Trial

Multi-Site in US & Asia

Phase 2 Trial Design



60 Patients will receive LP-300 with pemetrexed and carboplatin*

**after progressing from TKI*

30 Patients will receive standard of care (*pemetrexed and carboplatin*)

Primary Outcomes: Overall and progression free survival

Announced preliminary patient data showing an 86% clinical benefit rate - Scan the QR code for the full initial result release

Multi-national Phase 2 Trial with 8 sites in the **US**, 5 sites in **Japan**, and 5 sites in **Taiwan**

Initial Cohort / Lead-in Phase – Summary Results & Key Takeaways

KEY PATIENT CHARACTERISTICS

- ✓ Patients who are never smokers with lung cancer and histopathological evidence of stage III or IV primary lung adenocarcinoma
- ✓ Molecular alterations, including EGFR, MET exon 14 skipping, ROS1, BRAF, ALK, and NTRK fusions
- ✓ Relapsed after one or more lines of therapy with tyrosine kinase inhibitors

STUDY ENDPOINTS

- ✓ Primary: Progression-free survival (PFS) and overall survival (OS)
- ✓ Secondary: Objective response rate (ORR), duration of response (DOR), and clinical benefit rate (CBR)

Tumor Response	LP-300+ Carboplatin + Pemetrexed
Partial Response	3/7 (43%)
Stable Disease	3/7 (43%)
Progressive Disease (clinical)	1/7 (14%)
Clinical Benefit Rate (CBR)	**6/7 (86%)**
Objective Response Rate (ORR)	**3/7 (43%)**

All patient data as of July 25, 2024

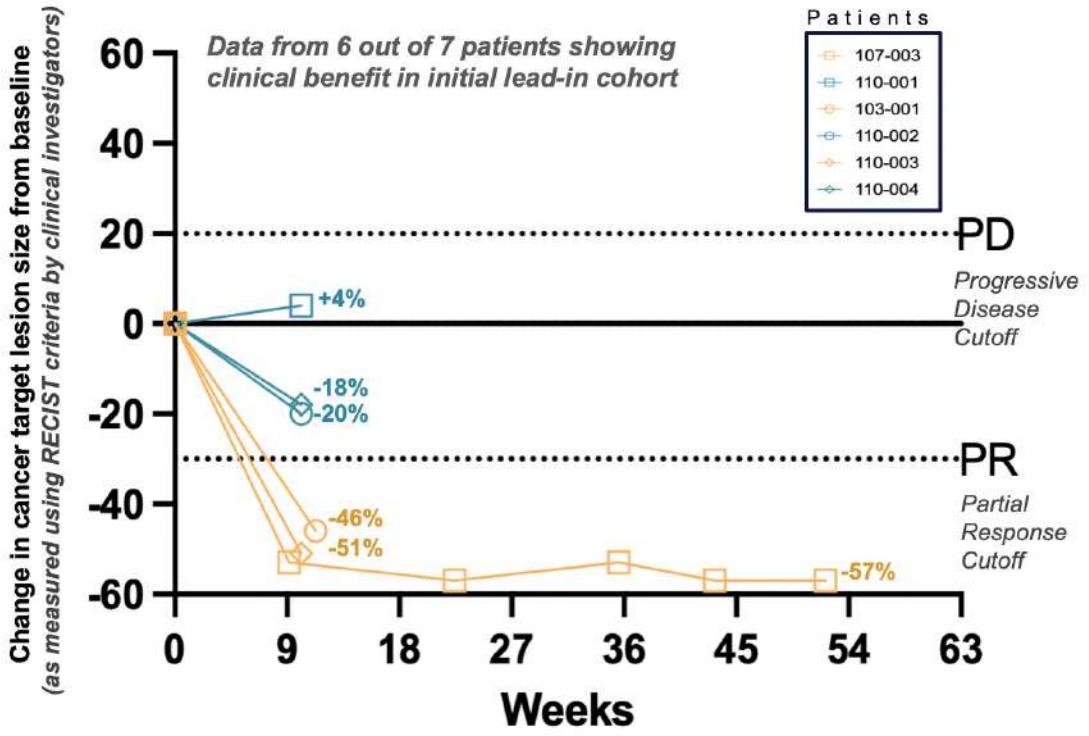
Patient Highlights from Initial Cohort

- 7 patients enrolled from different geographies
- Sites included were in CA, VA, TX
- 3 Female and 4 Male
- Average age of 62
- Median prior lines of therapy: 2 (1 to 4)
- Recent historical trials in similar patient groups receiving the chemo doublet have had an ORR of 26% to 36% with a PFS of 5.1 months

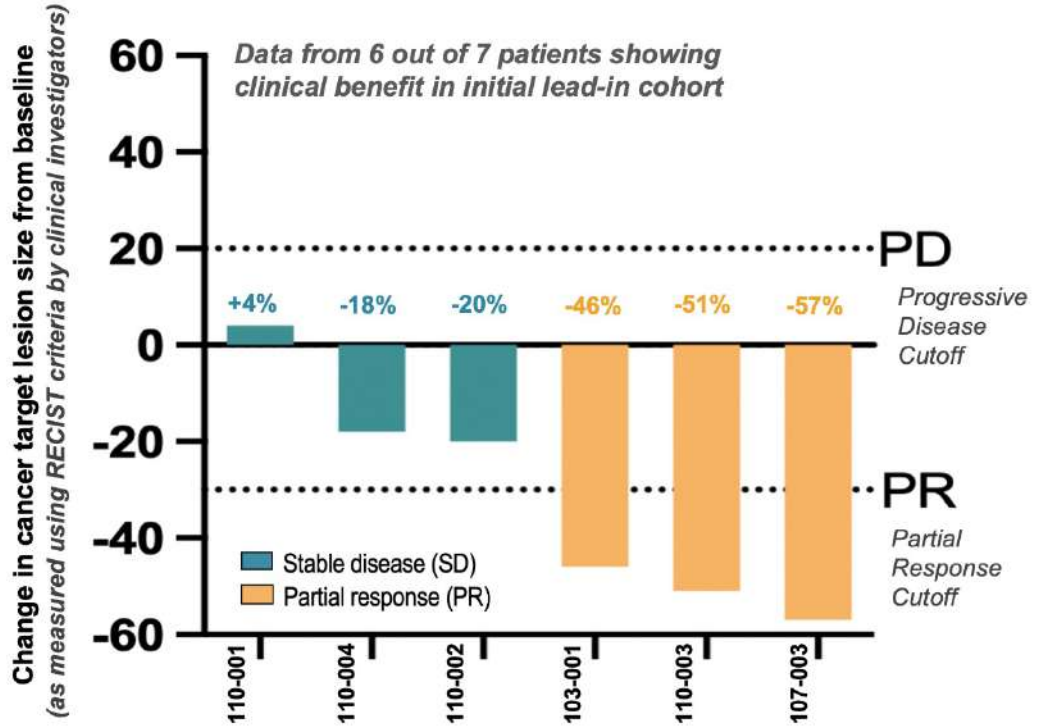
6 Out of 7 Patients Showed Clinical Benefit in Initial Lead-in Cohort

Initial patient responses in the Harmonic™ trial include an **86% disease control rate** in the cohort of lead-in patients and a **43% objective response rate (ORR)** including one patient maintaining a **50+% reduction in tumor size** over 14 months

Percent change in cancer lesion size over time

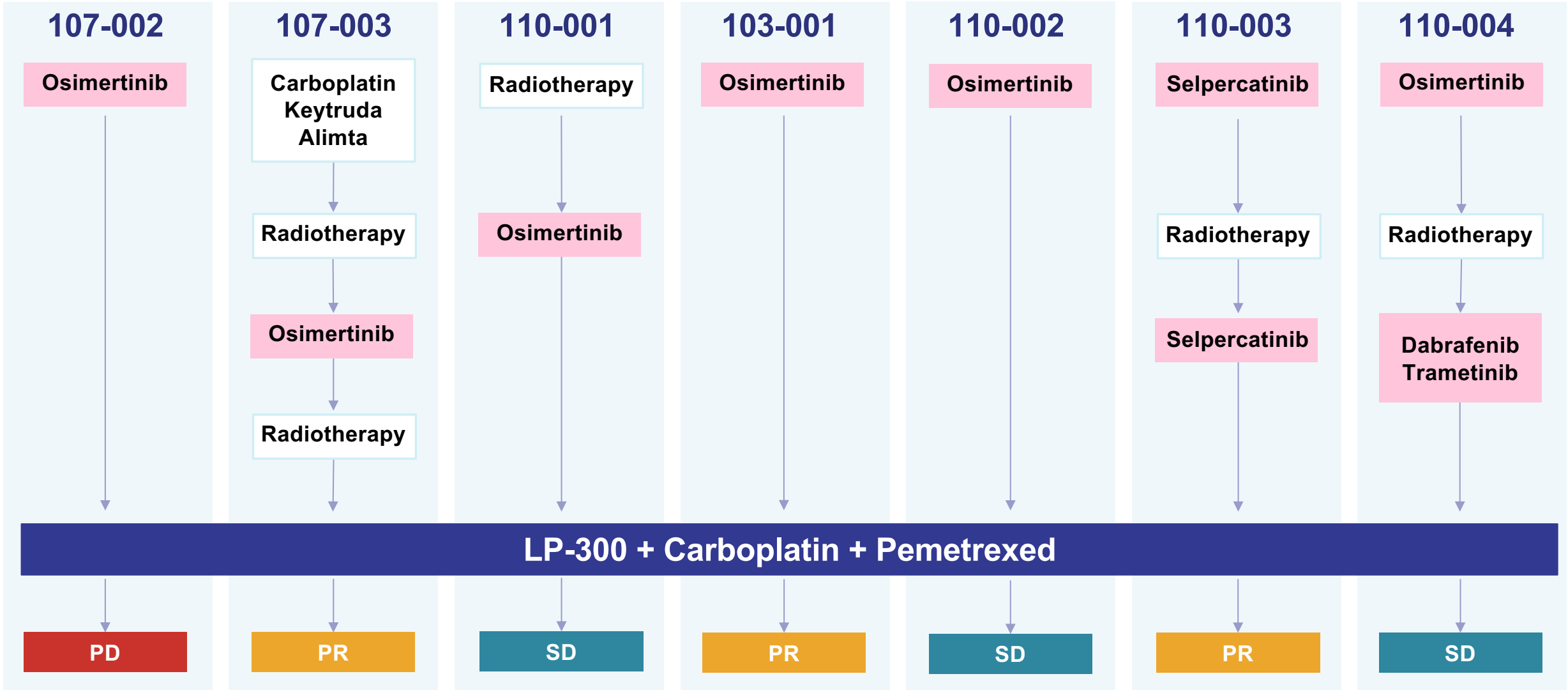


Percent change in cancer lesion size by patient



All patient data as of July 25, 2024

Initial Cohort for Phase 2 – Prior Cancer Treatments / History & Response



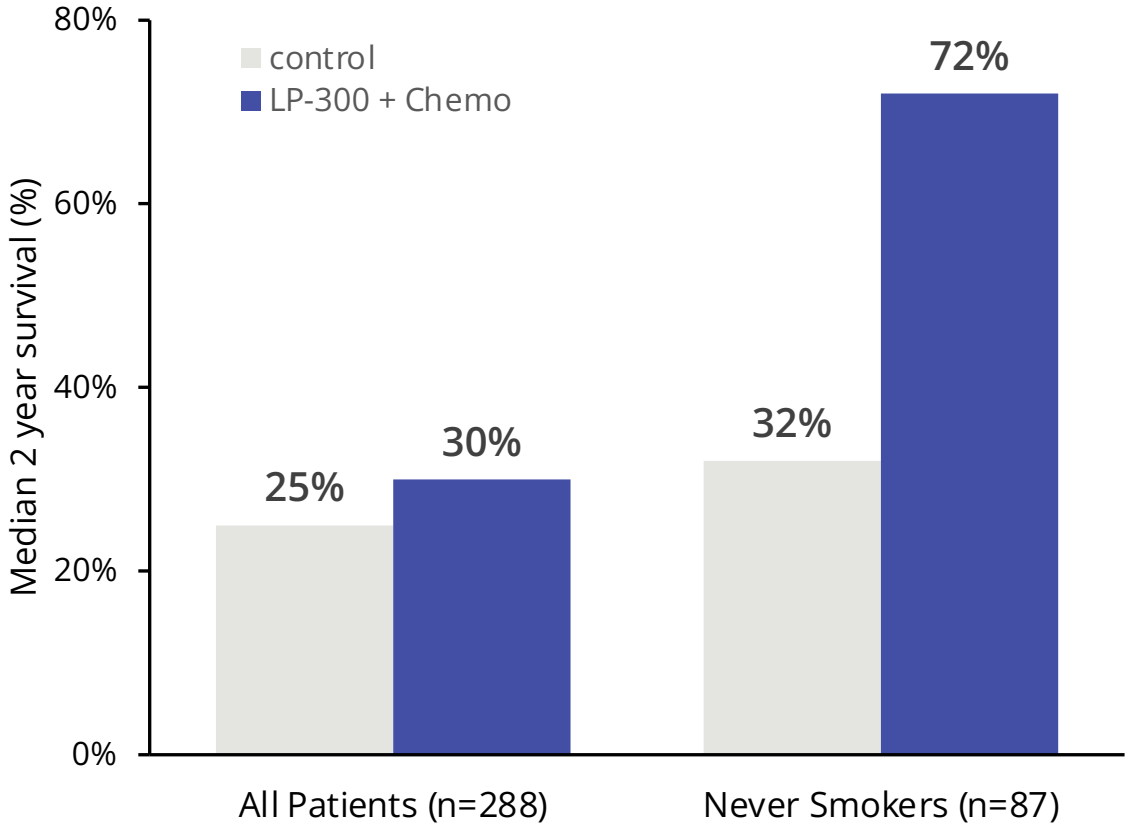
All patient data as of July 25, 2024

TKI PR: Partial Response, SD: Stable Disease, PD: Progressive Disease

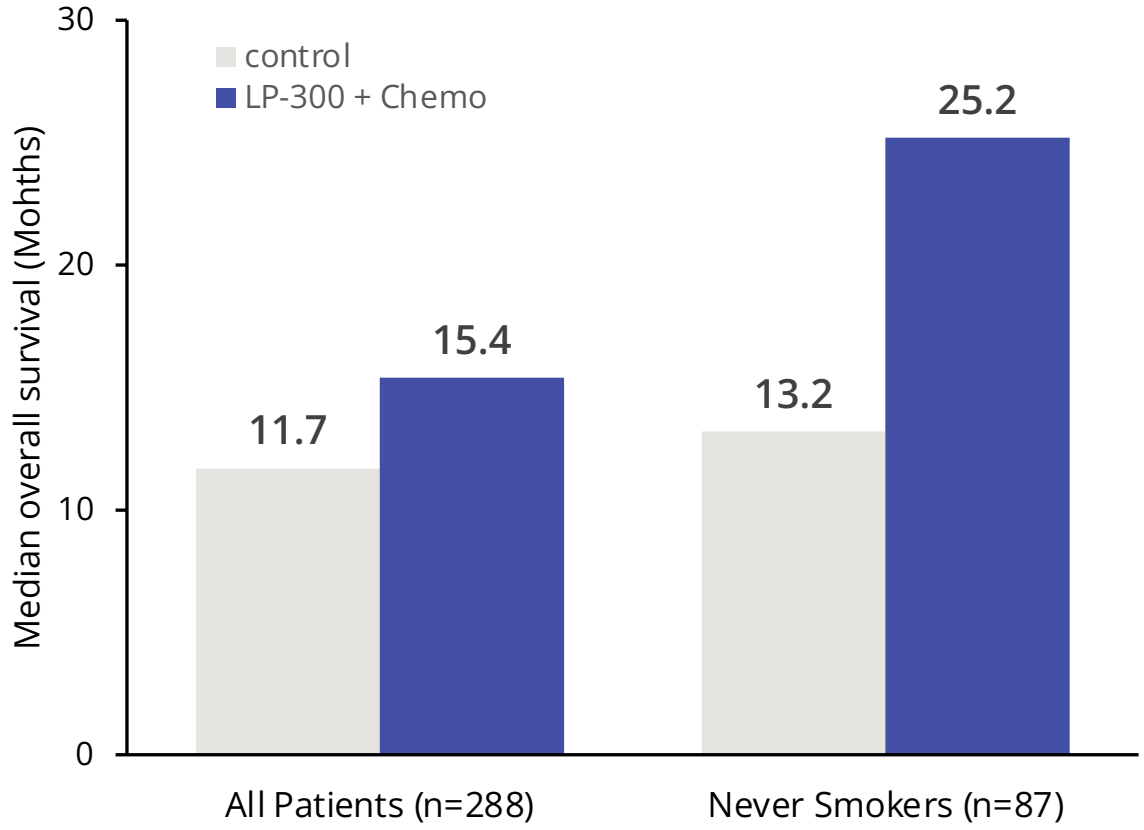
LP-300 Nearly Doubled Survival Outcomes for Never Smoker Subgroups with NSCLC in Previous Clinical Trial*

**Subpopulations receiving paclitaxel/cisplatin*

+ 125% increase in median 2 year survival



+ 91% increase in median overall survival



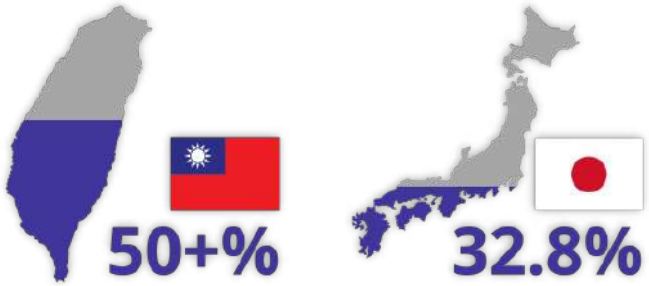
**Overall study did not meet clinical efficacy endpoints*

Clinicaltrials.gov (NCT00966914)

Initiated East Asia: Boosting Patient Enrollment in Countries with High Incidences of NSCLC in Never Smokers

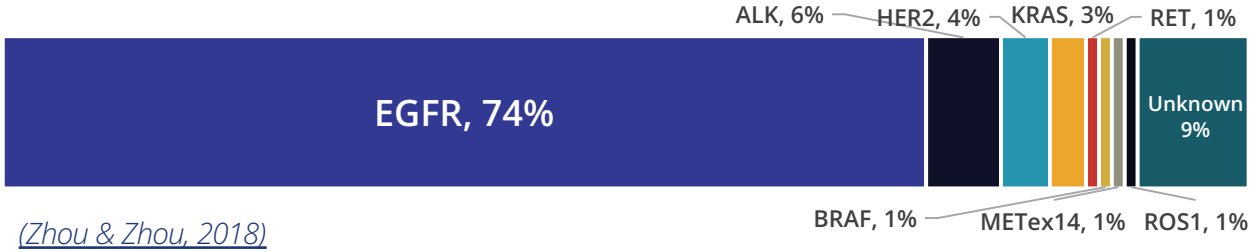
2 in 5 of all lung cancer patients in East Asia are **never smokers***

**Approximately*



% of **never smokers** among lung cancer patients in Taiwan and Japan

Lung cancer in East Asian never-smokers is a **distinct subtype** that can be largely defined by targetable mutations



(Zhou & Zhou, 2018)

Highlights

- Study expansion to Taiwan and Japan with 5 sites in each country
- First patients enrolled in Japan and Taiwan

Key Opinion Leaders

Dr. Yasushi Goto
National Cancer Center Hospital

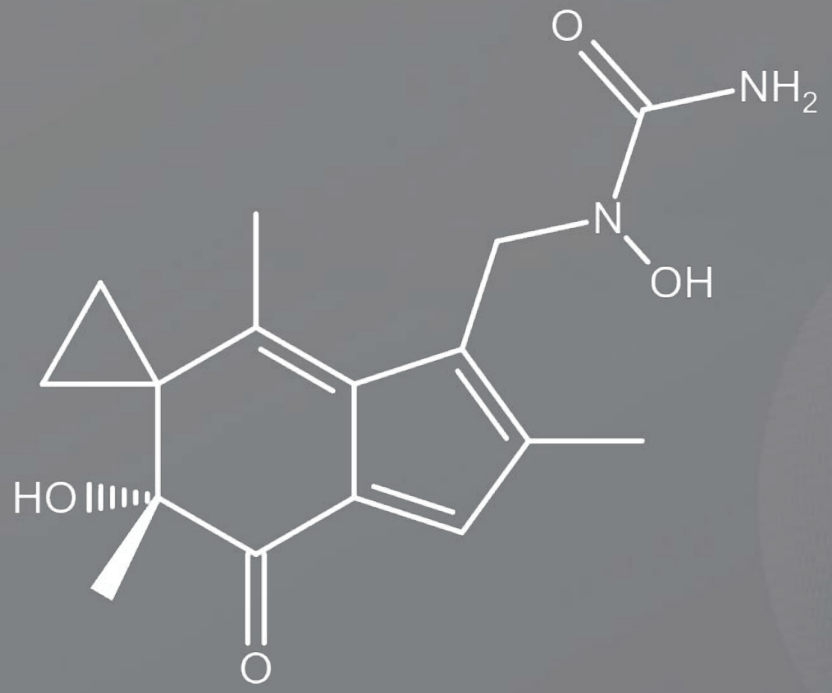
Dr. Chun-Hui Lee
National Cheng Kung University Hospital

Q2-Q3 2024 — Regulatory and Site Submissions

Q4 2024 — Site Activation and First Patients Dosed

Q4 2025 — Review of initial patient response in Asia and updates from first US cohort

LP-184 for the Treatment of Advanced Solid Tumors



Lead Indications	DDR deficient solid tumors including Pancreatic cancer, Bladder cancer, and TNBC
Clinical Status	Phase 1a completed, Phase 1b/2 planned
Market Potential*	$10+ Billion
Indication Size*	170,000 + Cases, Estimated 400,000 + Cases Global
Target/ MOA	Double-stranded DNA breaks; alkylates DNA in the 3' of Adenine
Molecule Type	Acylfulvene Class
Combination Potential	Checkpoint inhibitors, PARP inhibitors, Spironolactone, Chemotherapy and Radiation Therapy
IP Estate	10+ patents/pending apps., Claims extending into 2041

**Estimated Annual USA*

Disease Overview – Advanced Solid Tumors with DDR Deficiencies

LP-184 has Blockbuster Potential Across Multiple Cancers as a Single Agent or in Combination Therapy

Annual US Market Potential: $10+ Billion

(DDR Deficient Solid Tumors)

1 in 4 people have solid tumors with DDR Deficiencies

Pancreatic Cancer

Triple Negative Breast Cancer

Bladder Cancer

Lung Cancer

Advanced Solid Tumors

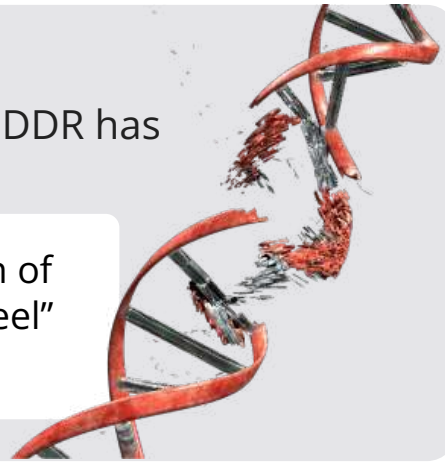
- Advanced solid tumor cancers, having spread beyond the primary site, are often more challenging to treat than earlier stage tumors due to their advanced progression
- Demonstrated preclinical synergy with multiple FDA approved drugs (e.g. PARPi, PD-1, and Spironolactone)
- Many of these indications - *reinforced with AI insights* - have limited or no standard of care, making them ideal and efficient entry points for LP-184 as an approved therapy

DNA Damage Response (DDR) Deficiency

DDR is essential for maintaining genomic stability by repairing different types of DNA damage. Inhibition of DDR has been shown to increase the effectiveness of anticancer immunotherapies

Cancer cells with high underlying levels of DNA damage are **more dependent on DDR** for survival when compared to normal cells

DDR Deficiencies result in the accumulation of DNA damage, which produces an “Achiles Heel” for drugs leveraging synthetic lethality

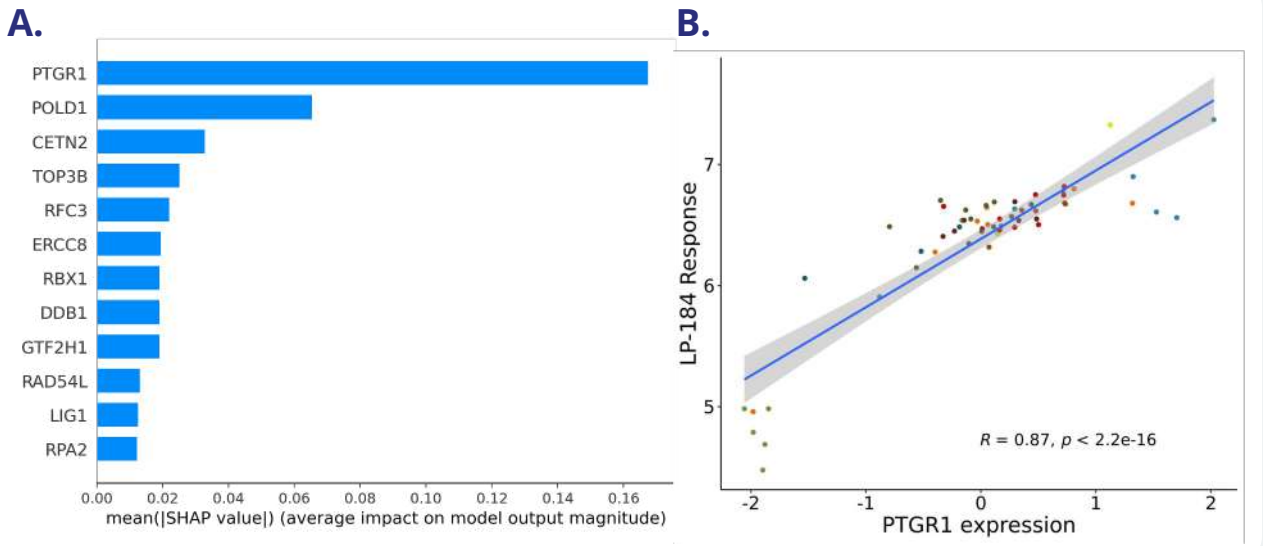


LP-184's MoA was Predicted by RADR® and Validated in Multiple Lab Studies

In silico

Precision Medicine Platform

Using RADR®, PTGR1 was Identified as a Biomarker that Predicts LP-184 Response

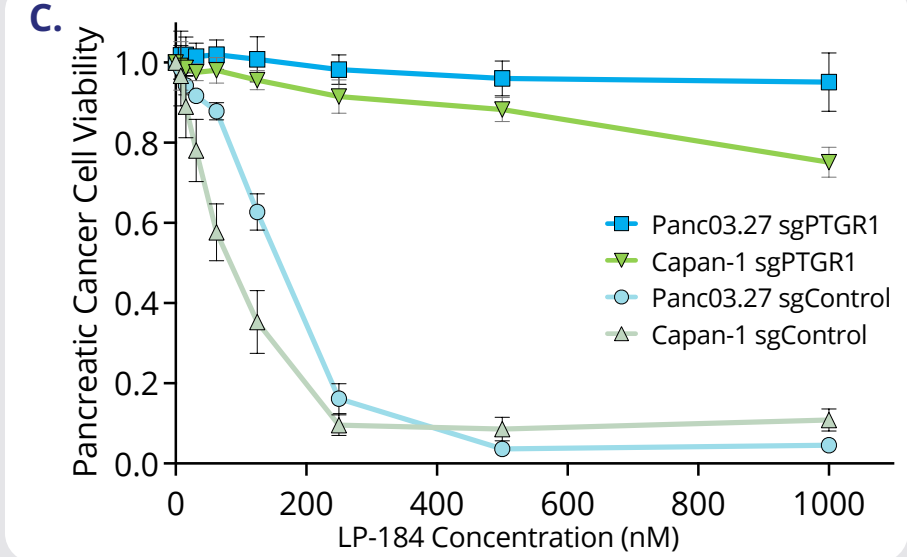


- **Prostaglandin Reductase 1 (PTGR1)** is an oxidoreductase enzyme that is frequently elevated in cancers
- PTGR1 activates LP-184 into its highly potent and cytotoxic form
- RADR® insights predicted that LP-184 activity positively correlates with PTGR1 transcript levels in the NCI60 cancer cell line panel

In vitro

Fox Chase Cancer Center, Temple Health

Validated using CRISPR Experiments



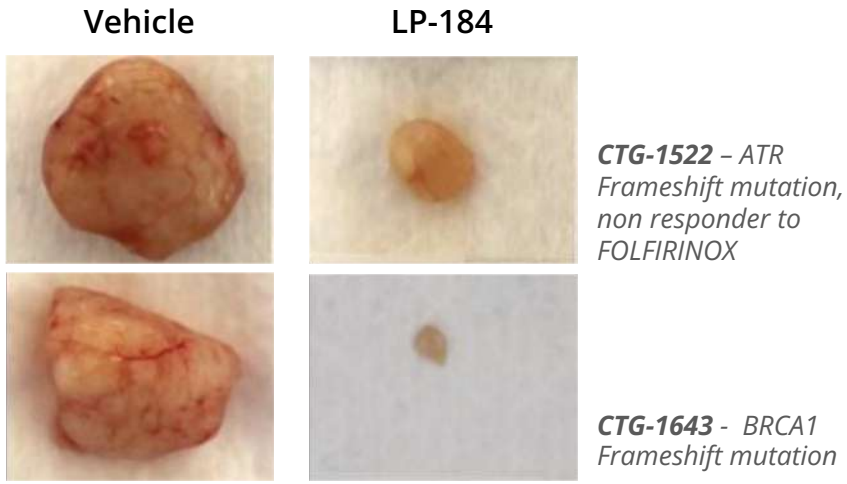
- CRISPR-mediated depletion of PTGR1 expression in a pancreatic cancer cell line is sufficient to **fully diminish LP-184 activity**
- This **confirmed the RADR® insights** and that LP-184 was highly potent in cells with PTGR1

LP-184 Treatment Results in Complete Regression in Multiple DDR Deficient PDX Models

Pancreatic Cancer

In-vitro PDX pancreatic mouse models treated with LP-184 - CTG-1522 and CTG-1643 models showed **a tumor growth inhibition of >100%**

A.



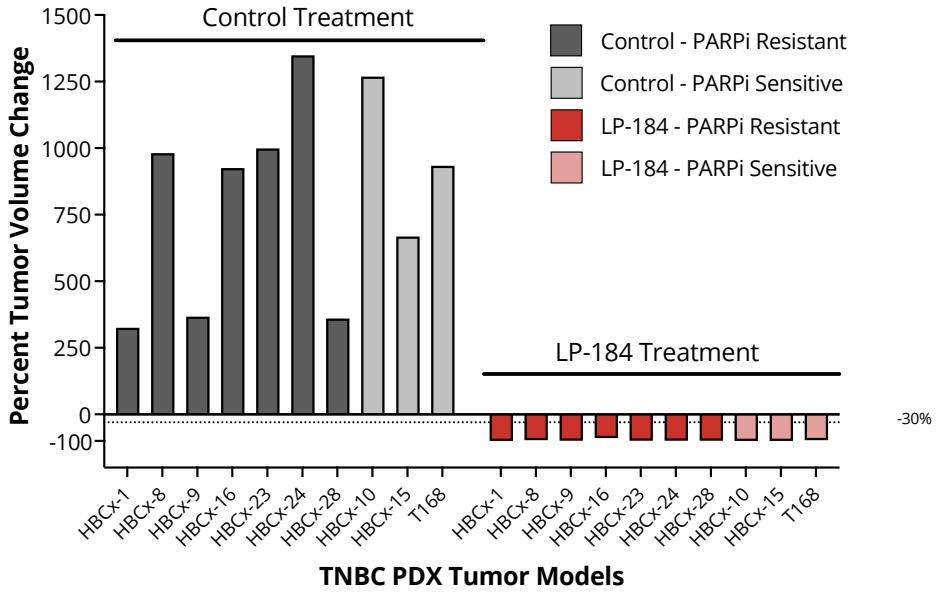
CTG-1522 *– ATR Frameshift mutation, non responder to FOLFIRINOX*

CTG-1643 *- BRCA1 Frameshift mutation*

Triple Negative Breast Cancer (TNBC)

Across 10 TNBC PDX mouse models (*All 10 TNBC PDX models were **HR deficient***) LP-184 treatment resulted in 107-141% tumor growth inhibition

B.



In collab. with FOX CHASE CANCER CENTER, TEMPLE HEALTH

Poster: AACR

- LP-184 exhibits nanomolar potency in PTGR1 overexpressing tumors with DDR deficiencies
- Positioned for 2nd and 3rd line treatment, where there is unmet need for novel therapies
- FDA **Orphan Drug Designation** granted in pancreatic and **Fast Track Designation** in TNBC
- Combination therapy potential with SOC agents: Spironolactone, PARP inhibitors, Gemcitabine, Irinotecan, Oxaliplatin, and PD-1

Clinical Trial – Completed LP-184 Phase 1a Basket Trial

Potential blockbuster molecule with a market of $10+ billion in annual sales

First-In-Human Trial for **LP-184**

Clinicaltrials.gov (NCT05933265)

Solid Tumors / Brain & CNS Cancers

~60

Patients expected to be enrolled

$10+ Bn

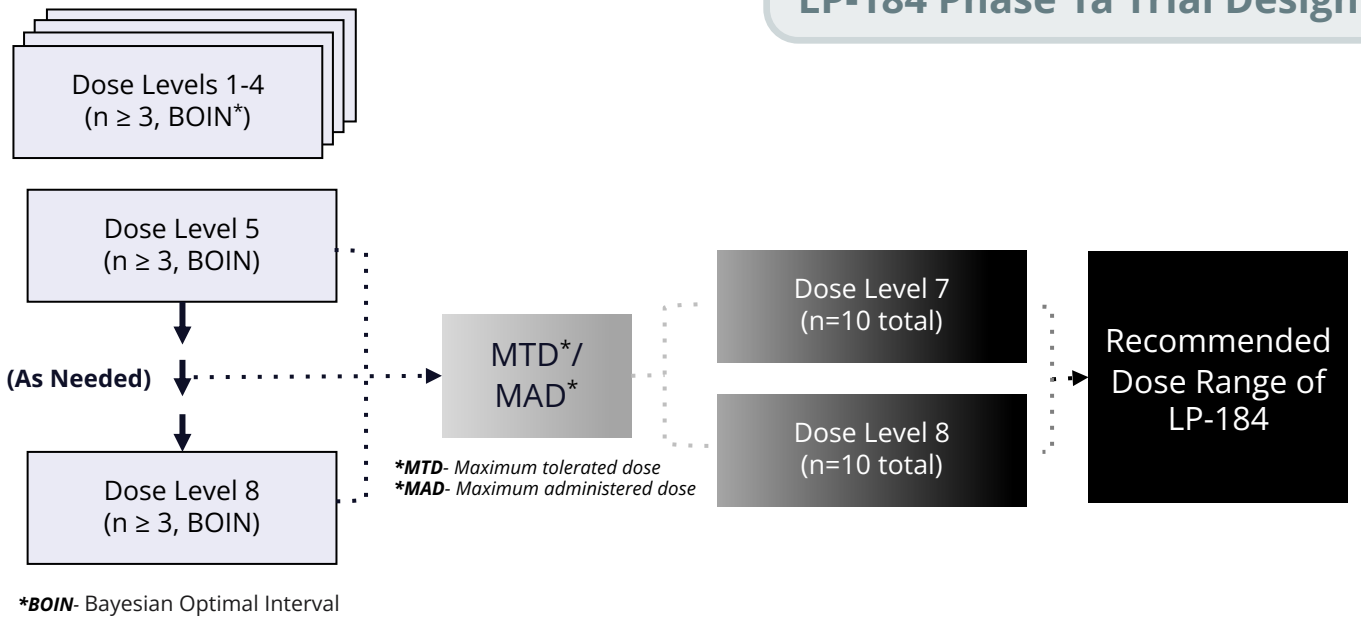
Annual US market potential in DDR deficient solid tumors

Multi-Site

Phase 1 Trial Highlights

- Successfully **completed** with all primary endpoints met, demonstrating a favorable safety and pharmacokinetic (PK) profile, and early signs of antitumor activity.
- **Potential future studies: Phase 2 in GBM (through Starlight) and Phase 1b/2 in other solid tumors** to be initiated after determination of MTD
- Enrollment is complete, with several patients continuing treatment due to ongoing clinical benefit.

LP-184 Phase 1a Trial Design

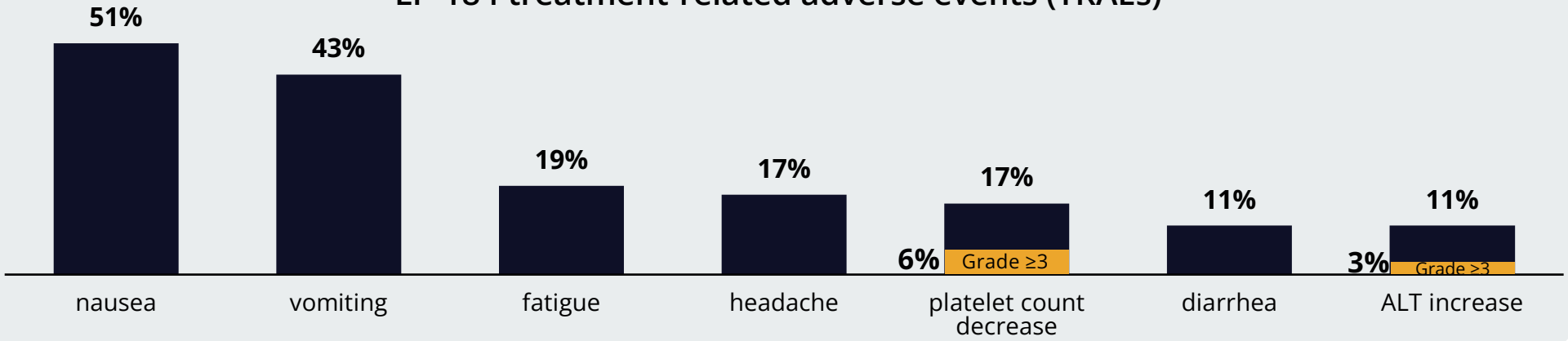


LP-184 Phase 1a Trial Achieved All Primary Endpoints with Robust Safety Profile and Promising Antitumor Activity in Multiple Advanced Solid Tumors

LP-184 exhibited a robust safety profile, with no dose-limiting toxicities in the majority of cohorts

89%

of treatment emergent adverse events (AEs) were Grade 1–2



TRIAL RESULT HIGHLIGHTS

- **Clinical benefit observed in 48%** of evaluable cancer patients at or above the therapeutic dose threshold
- **Durable clinical benefits** were observed **in hard-to-treat tumors** like glioblastoma multiforme (GBM), gastrointestinal stromal tumor (GIST) and thymic carcinoma
- PK data confirmed that therapeutic concentrations were achieved at **dose level 8 (0.25 mg/kg)** and above
- Biomarker insights highlight potential in **DDR-mutated cancers**, with marked tumor reductions in patients with CHK2, ATM, and STK11/KEAP1 alterations
- **Recommended Phase 2 dose (RP2D) established** for targeted Phase 1b/2 trials in triple-negative breast cancer (TNBC), non-small cell lung cancer (NSCLC), and bladder cancer

Planned Clinical Trials – LP-184 Phase 1b/2 Trials informed by RADR® AI Insights

TNBC and NSCLC with KEAP1 and/or STK11 mutations and low PD-L1 expression

Phase 1b/2 Monotherapy & Combination with **Olaparib**

for Triple Negative Breast Cancer

Triple Negative Breast Cancer

~60

Patients expected to be enrolled

Received **FDA Fast Track** Designation

$4+Bn

Annual US market potential

- **Monotherapy Trial:** Open-label study to determine the optimal dose and evaluate the preliminary clinical activity of LP-184 monotherapy in advanced TNBC patients with DNA damage repair gene alterations
- **Combination Trial:** Open-label study to evaluate the safety, tolerability, and preliminary clinical activity of LP-184 in combination with Olaparib in advanced TNBC patients with BRCA gene alterations

Phase 1b/2 Combination with **Immune Checkpoint Inhibitors**

for Non-Small Cell Lung Cancer

KEAP1 and/or STK11 mutated NSCLC

~25

Patients expected to be enrolled

Submission for **FDA Fast Track** in progress

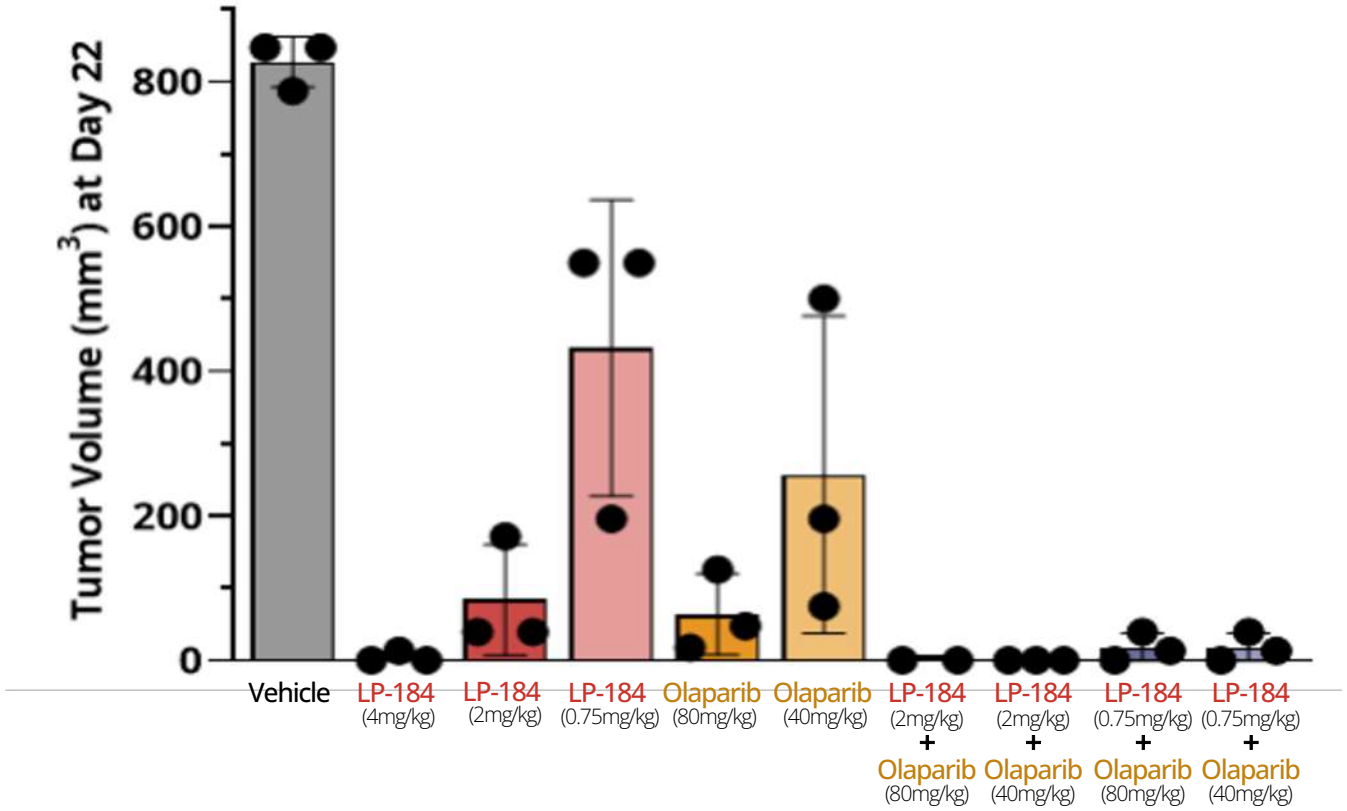
$2+Bn

Annual US market potential

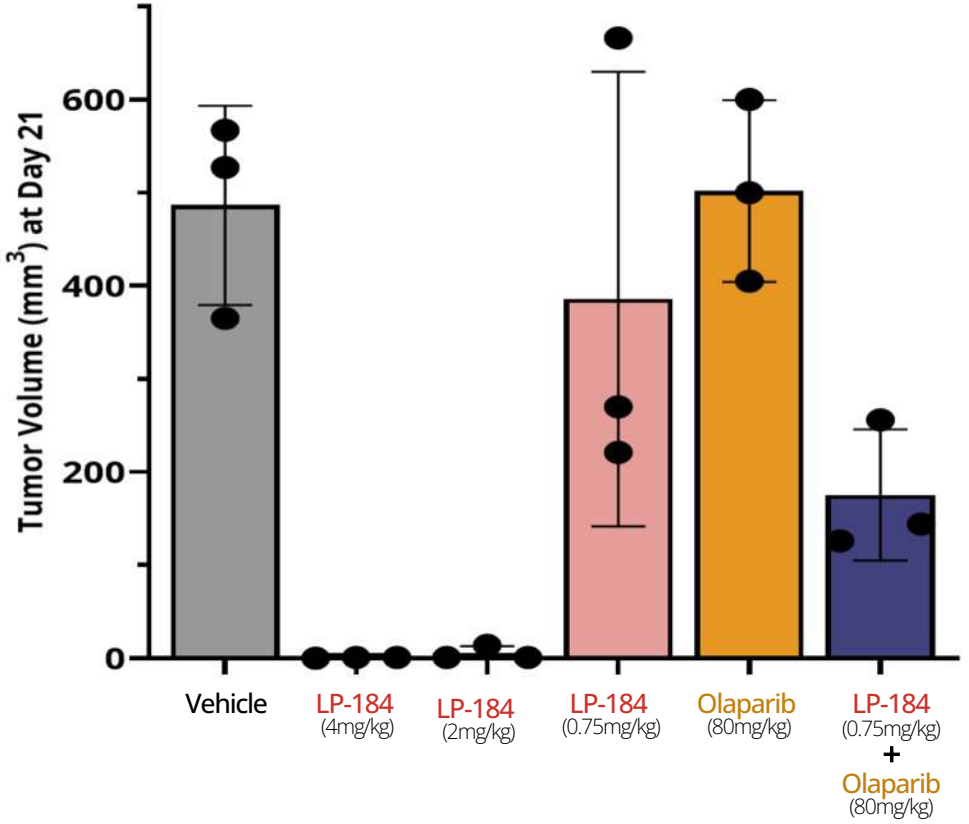
- Open-label study to evaluate the safety, tolerability, and preliminary clinical activity of LP-184 in combination with nivolumab and ipilimumab in advanced NSCLC patients with KEAP1 and/or STK11 mutation and low PD-L1

LP-184 + Olaparib Combination Achieves 3-14x Greater Tumor Regression Compared To Olaparib Alone In TNBC PDX Models

Tumor regression is achieved using 5x lower doses of LP-184 in combination as compared to doses used as monotherapy



Tumor Volume in HBCx-10 PARPi sensitive TNBC PDX Model Treated with LP-184 (days 1, 8), Olaparib (daily), or Combination



Tumor Volume in HBCx-28 PARPi resistant TNBC PDX Model Treated with LP-184 (days 1, 4, 8, 11), Olaparib (daily), or Combination

Kulkarni, A. et al., Cancer Research Communications, 2024

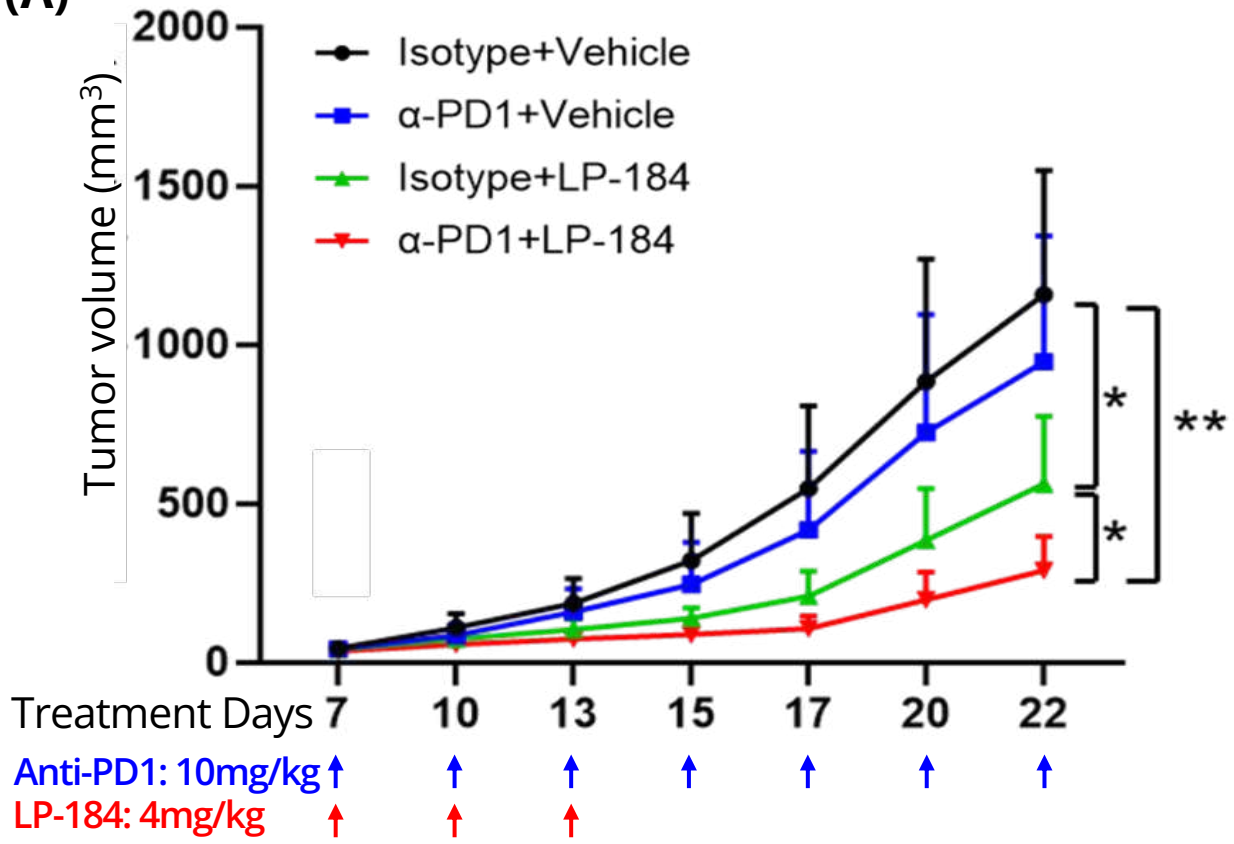
LP-184 + Anti-PD1 Combination Significantly Inhibits Tumor Growth And Delays Progression In T11 Mouse TNBC Model

THE UNIVERSITY OF TEXAS MD Anderson Cancer Center Making Cancer History®

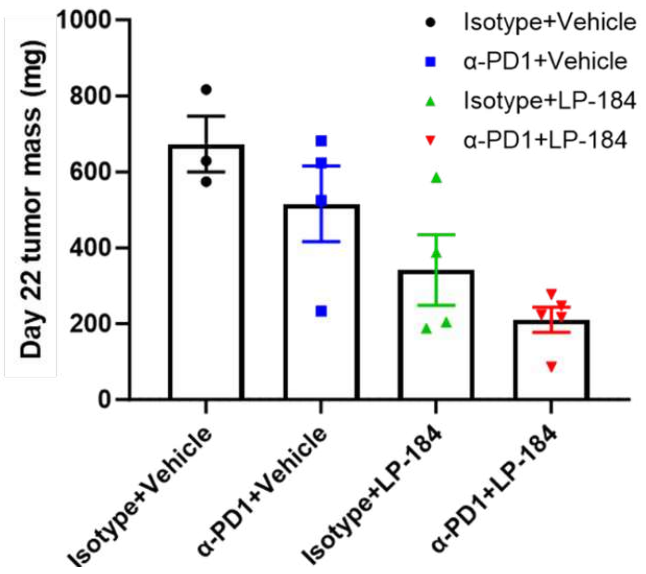
T11 mouse TNBC tumors treated with LP-184 and anti-PD1 antibody

LP-184 Demonstrates Anti-Tumor Efficacy in Mouse TNBC Models and Potential to Sensitize Tumors Non-Responsive to Anti-PD1 Therapy

(A)



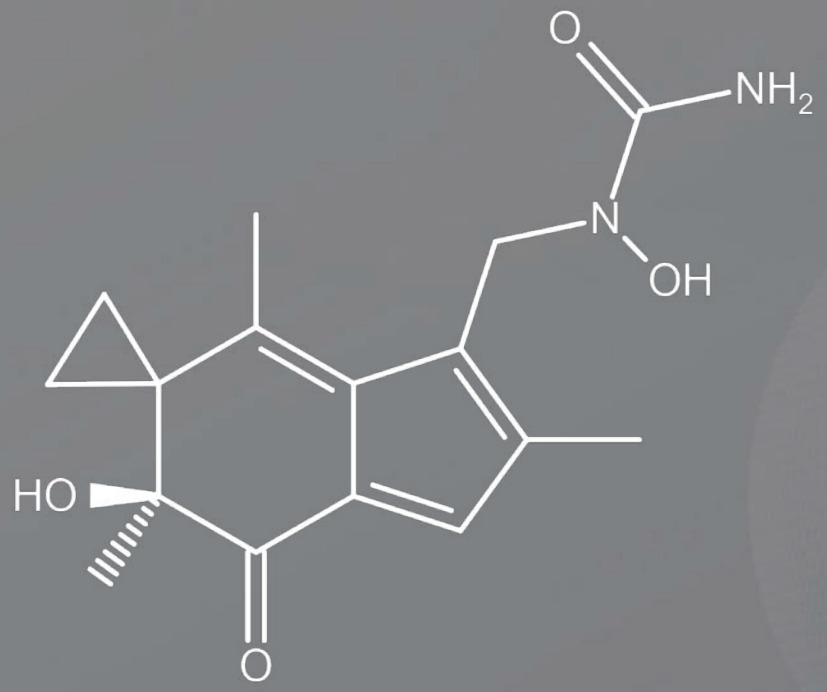
(B)



Treatment arm	Day 22 TGI
■ Anti-PD1 (10mg/kg)	17%
▲ LP-184 (4mg/kg)	51%
▼ **LP-184 + anti-PD1**	**72%**

In collaboration with Dr. Shiaw-Yih Lin, MD Anderson Cancer Center

LP-284 for the Treatment of B-cell Non-Hodgkin's Lymphomas (NHL)



Lead Indications	Mantle Cell, Double Hit Lymphomas, DDR Deficient Non-Hodgkin's Lymphomas
Clinical Status	Phase 1 (Complete response in heavily pre-treated lymphoma patient)
Market Potential*	$3.75 - 4 Billion
Indication Size*	375,000+
Target/ MOA	Synthetic Lethality
Molecule Type	Acylfulvene Class
Designations	Orphan Drug - Mantle Cell Lymphoma
Combination Potential	Rituximab and Spironolactone
IP Estate	Claims extending into 2039

**Estimated Annual Global*

Disease Overview – B-cell Non-Hodgkin's Lymphomas

Superior responses to LP-284 are observed preclinically

Annual Global Market Potential: $ 3-4 Billion

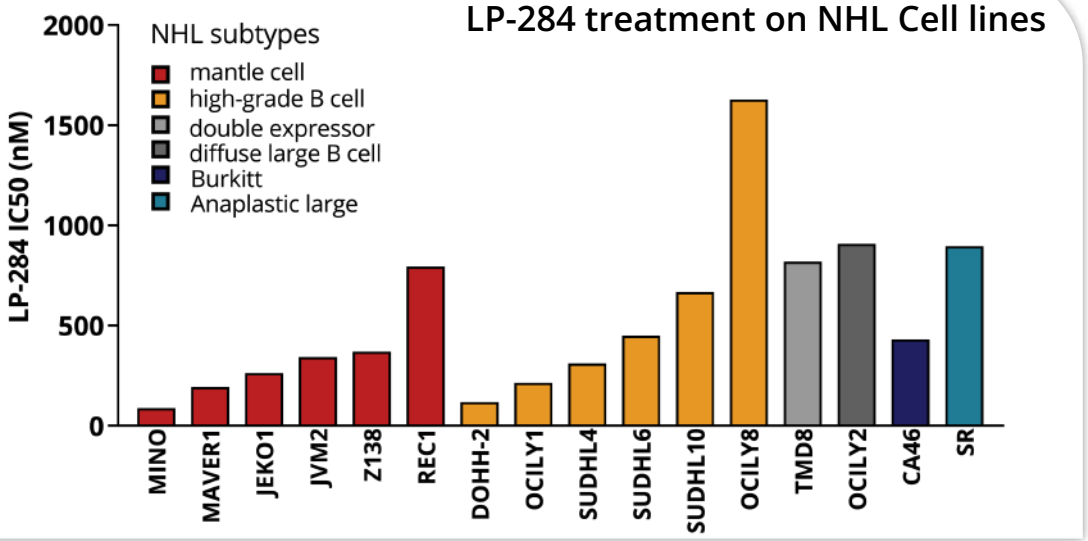
(NHL)

B-cell Non-Hodgkin's Lymphomas

- NHL is a cancer of the lymphatic system and occurs when normal B-cells, T-cells, or Natural Killer (NK)-cells grow out of control
- There are over 30 subtypes of NHL including mantle cell lymphoma (MCL), high-grade b-cell lymphoma(HGBL), and diffuse large B-cell lymphoma

7th leading cause of cancer in the US

4% of all cancers are NHL in the US



Mantle Cell Lymphoma

(MCL)

- A rare, aggressive type of B-cell NHL distinguished by overexpression of CCND1
- Small-medium size cancer cells in the lymph nodes, spleen, bone marrow, blood, and gastrointestinal system
- Rarely curable with current standard-of-care treatments and poor prognosis

High-Grade B-Cell Lymphoma

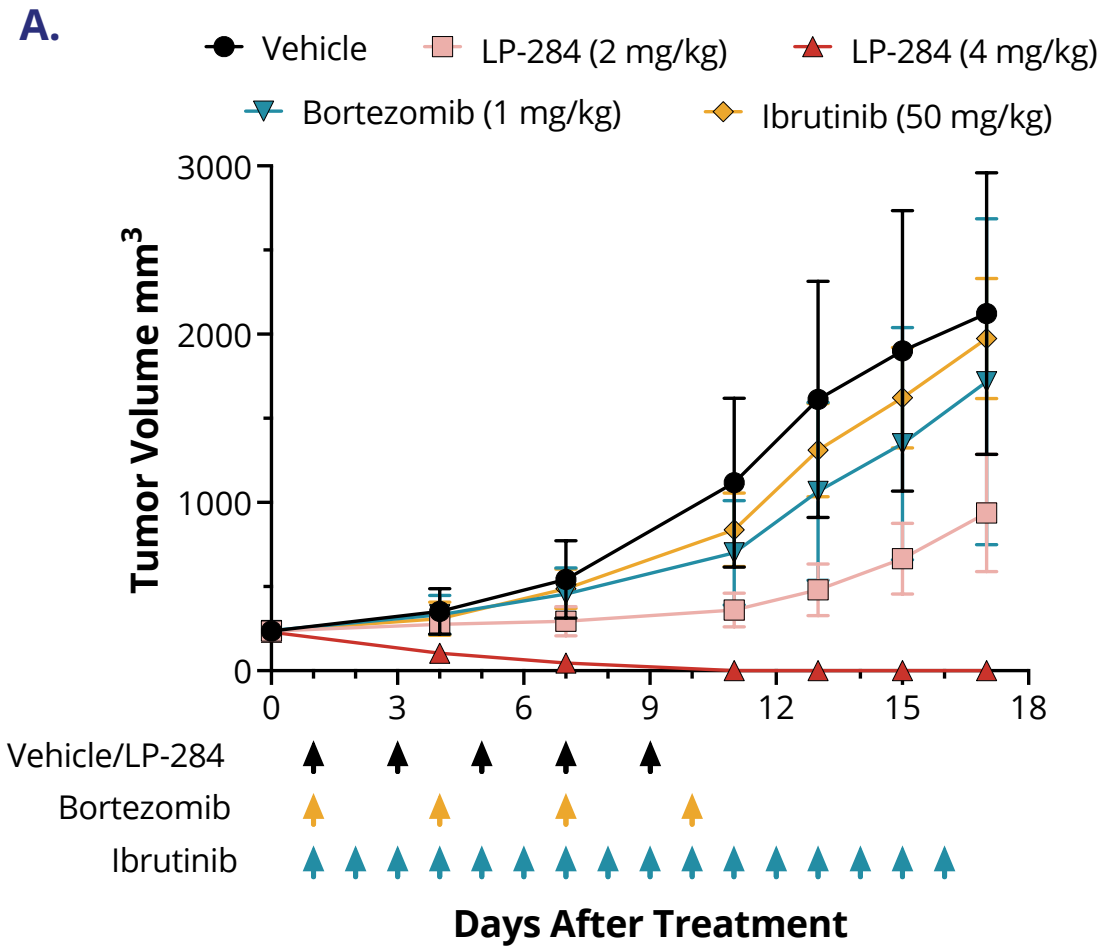
(HGBL)

- A rare, aggressive type of B-cell NHL characterized by rearrangements of MYC and BCL2 and/or BCL6 genes
- Often occurs in neck, armpit, groins and can spread to central nervous system
- No standard treatment approach and poor prognosis

Superior Responses to LP-284 are Observed Preclinically in Several NHLs Including those Resistant to SOC Agents

MCL tumor volumes drastically reduced compared to FDA approved agents in mice models

A.



Tumors resistant to Ibrutinib and Bortezomib has significantly reduced volume

B.

Nearly all MCL Patients Relapse from SOC Therapies

In cell-derived xenograft MCL models, LP-284 can completely reduce tumors that are resistant to Ibrutinib and Bortezomib

Clinical Trial – LP-284 Phase 1a Trial

Phase 1a trial for recurrent NHLs with scarce therapeutic options

First-In-Human Trial for **LP-284**

Non-Hodgkin's Lymphomas

30-35

Patients expected to be enrolled

$4.0Bn

Estimated global annual market potential in NHL

Multi-Site

Q4 2023

Launched Phase 1 trial

First Half 2024

Multiple patients dosed

First Half 2026

Anticipated MTD and trial finalization

Recent Highlights

- Trial launched and multiple sites activated in the US
- Heavily pretreated patient with aggressive Grade 3 B-cell lymphoma (DLBCL) achieved a **complete metabolic response**

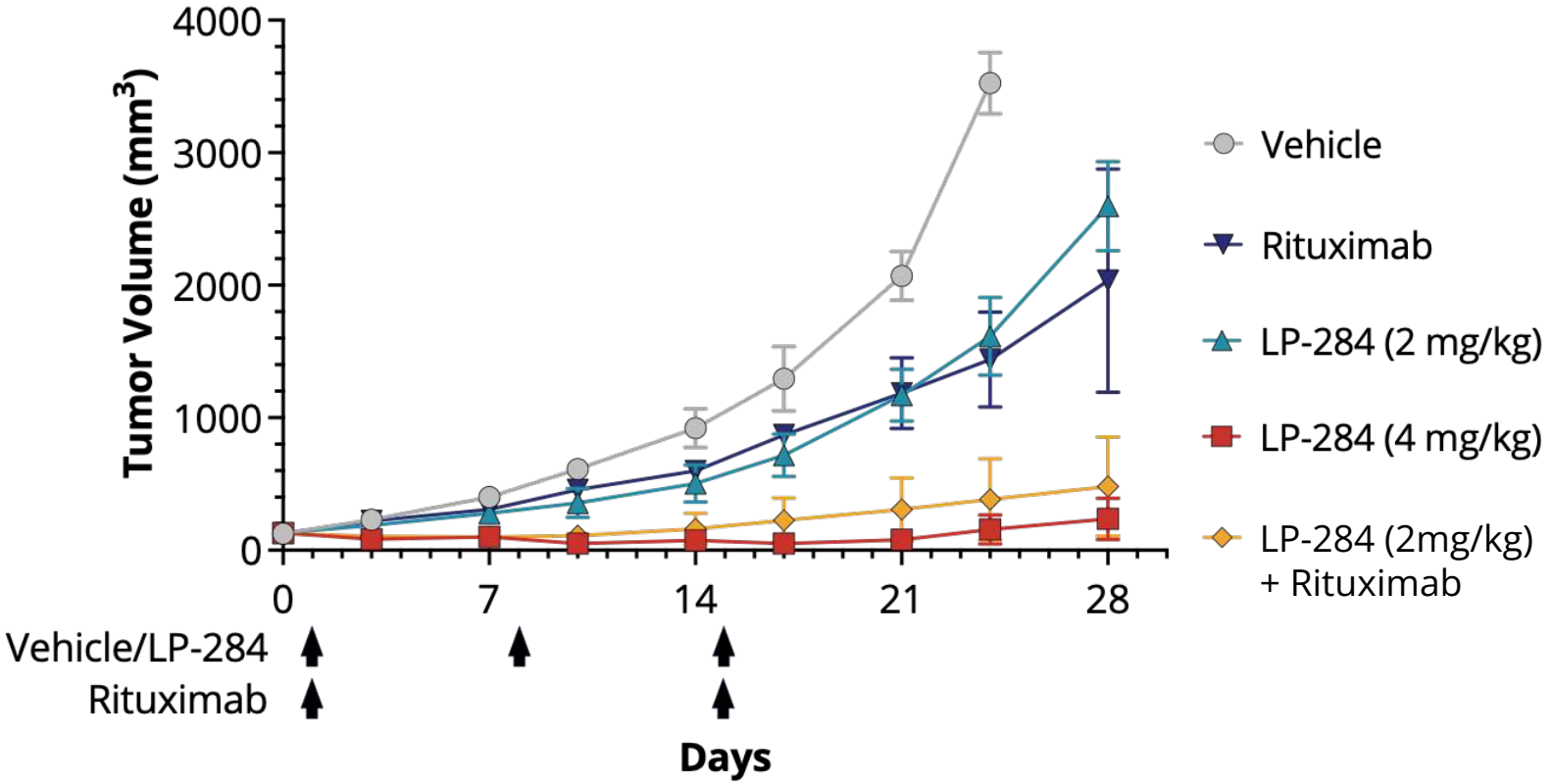
Program Highlights

- LP-284 has nanomolar potency against several aggressive non-Hodgkin's lymphomas (NHL) including mantle cell lymphoma (MCL) and high-grade b-cell lymphoma (HGBL)
- **FDA granted Orphan Drug Designation for MCL and HGBL**
- Enhanced potency when used in combination with rituximab in HGBL xenograft models

LP-284 was Highly Synergistic when Used in Combination with Rituximab in HGBL Xenograft Models

High Grade B-cell Lymphoma (HGBL) Tumor Volumes in Mice LP-284 – in combination with rituximab

HGBL have universally poor prognosis after chemotherapy, such as EPOCH, Hyper CVAD, and CODOX-M/IVAC - all are given with Rituximab. Novel agents are critically needed for more effective treatments in HGBL



LP-284 treatment led to **near complete tumor growth** inhibition and showed synergistic effects with the FDA-approved agent rituximab

At half of the optimal dose (2mg/kg v. 4mg/kg) **LP-284 when combined with rituximab led to a 63% improvement** in anti-cancer activity (as measured by tumor volumes) versus rituximab alone

- Rituximab alone = 57% TGI
- LP-284+ Rituximab = 93% TGI

Results presented at: soho2023 ELEVENTH ANNUAL MEETING

Developed from Billions of Datapoints Using AI

$5-6 Billion Market Potential

Multiple Clinical Stage CNS Cancer Indications

Received Fast Track & Orphan Drug Designation for GBM, Orphan Drug & Rare Pediatric Designation for ATRT

Completed Enrollment for Adult Phase 1a Trial

World Class Collaborators from Johns Hopkins, and UT Health San Antonio

starlight therapeutics

Scan the QR code for the full Starlight Corporate Overview

THERE ARE OVER 120 TYPES OF CNS CANCERS AND A MAJORITY HAVE NO CURATIVE TREATMENT OPTIONS

Starlight's Unique Areas of Focus

01 Glioblastoma (GBM)

13,000/yr in USA

No effective systemic therapies have been approved for GBM in over 18 years

02 Brain Metastases

100,000+/yr

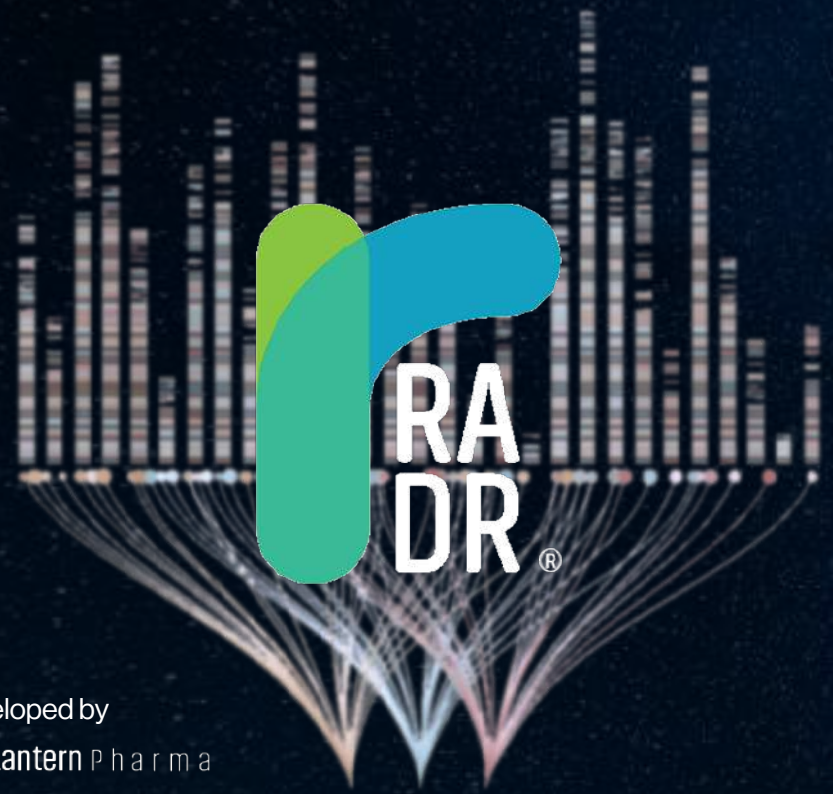
More effective therapies are needed to improve outcomes for brain metastases

03 Pediatric CNS Cancers

4,000/yr in USA

There are no approved therapies for atypical teratoid rhabdoid tumors (ATRT)

ORIGINATION OF STARLIGHT: RADR PREDICTIONS POWERED BY AI

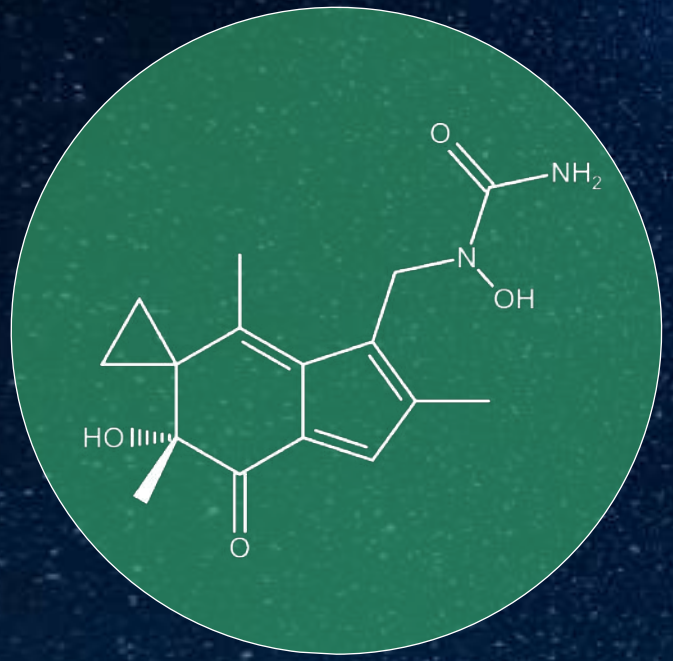


Developed by Lantern Pharma

Leading AI Technology developed by Lantern Pharma, RADR®, Helped Identify

- STAR-001 is brain penetrant
- PTGR1 levels correlate with response to STAR-001
- GBM has higher levels of PTGR1 relative to normal brain
- STAR-001 agnostic to MGMT promoter methylation
- Increased activity of STAR-001 with alterations in EGFR and SMARCB1
- Synthetic lethality when co-administered with spironolactone or in tumors deficient in DNA damage repair

STAR-001 IS POSITIONED TO EXPAND ACROSS MULTIPLE CNS INDICATIONS



STAR-001

- Tumors with high intracellular PTGR1
- Tumors with DNA damage repair deficiency
- EGFR altered cancers e.g., adult GBM
- SMARCB1 mutant cancers e.g., ATRT
- TMZ resistant adult gliomas
- Activity in multiple solid tumor brain metastases
- Increased activity when co-administer with spironolactone
- Additive in combination with radiotherapy
- Preclinical activity in pediatric & adult CNS tumors

STAR-001 HAS MULTI-BILLION USD MARKET POTENTIAL IN CNS CANCERS

Annual **$5-6 billion** (USD)

Estimated Market Potential

Glioblastoma	Other Gliomas	Brain metastases	Pediatric CNS Tumors
$1.5-2 billion*	$1.2 billion*	$3 billion*	$0.1 billion*
Annual US Cases **13K**	Annual US Cases **22K**	Annual US Cases **100K**	Annual US Cases **4,000**

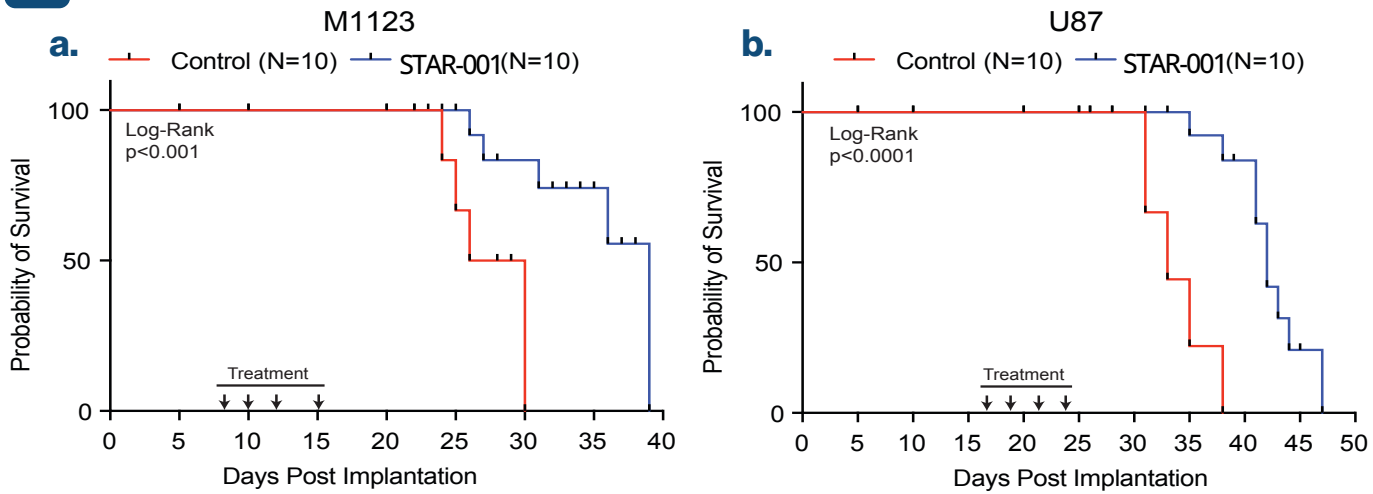
**Annual Estimated Market Potential*

STAR-001 Treatment Results in Prolongation of Survival in Orthotopic Mouse Models

KEY TAKEAWAYS

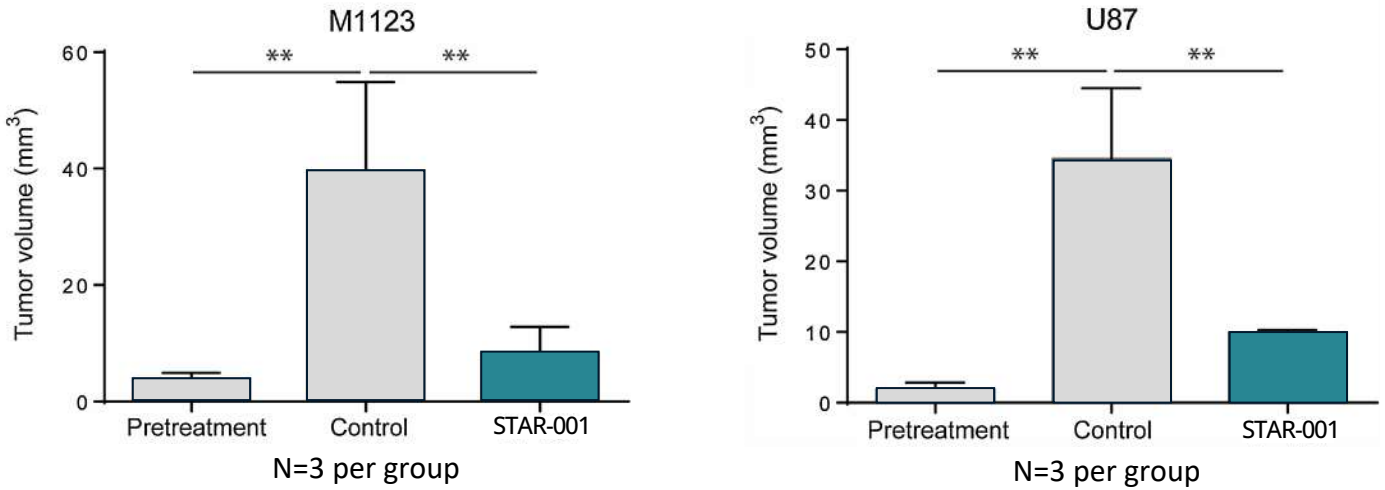
- STAR-001 increased survival of animals by >20%
- STAR-001 reduced M1123 and U87 tumor volume by >75%

A **STAR-001 treatment** increased survival of animals:



a: Mice with orthotopic M1123 or U87 xenografts received vehicle or STAR-001 (4mg/kg iv) on days indicated by arrow, 10 mice were evaluated for survival. **b:** Tumor volumes, pre treatment (post implantation day 8 and post treatment-post day 16 implantation for M1123 and for U87 pretreatment (day 16) and pot treatment day 25.

B Tumor volumes before and after **STAR-001 treatment**



Poster Preclinical efficacy of LP-184, a tumor site activated synthetic lethal therapeutic, in Glioblastoma, Society of Neuro Oncology, 2022

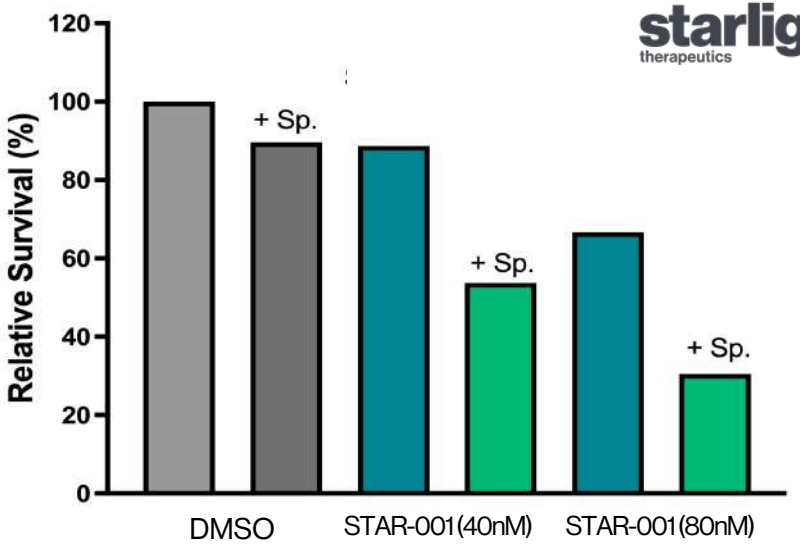
ATRT *in vivo* Tumors are Exceptionally Sensitive to STAR-001

KEY TAKEAWAYS

- RADR® identified the near universal SMARCB1 mutation and chromatin remodeling deficiency that make ATRT susceptible to STAR-001
- STAR-001 increases survival in ATRT mouse models, decreases tumor volume by >80%
- STAR-001 was granted FDA Rare Pediatric Disease and Orphan Drug Designations to treat ATRT

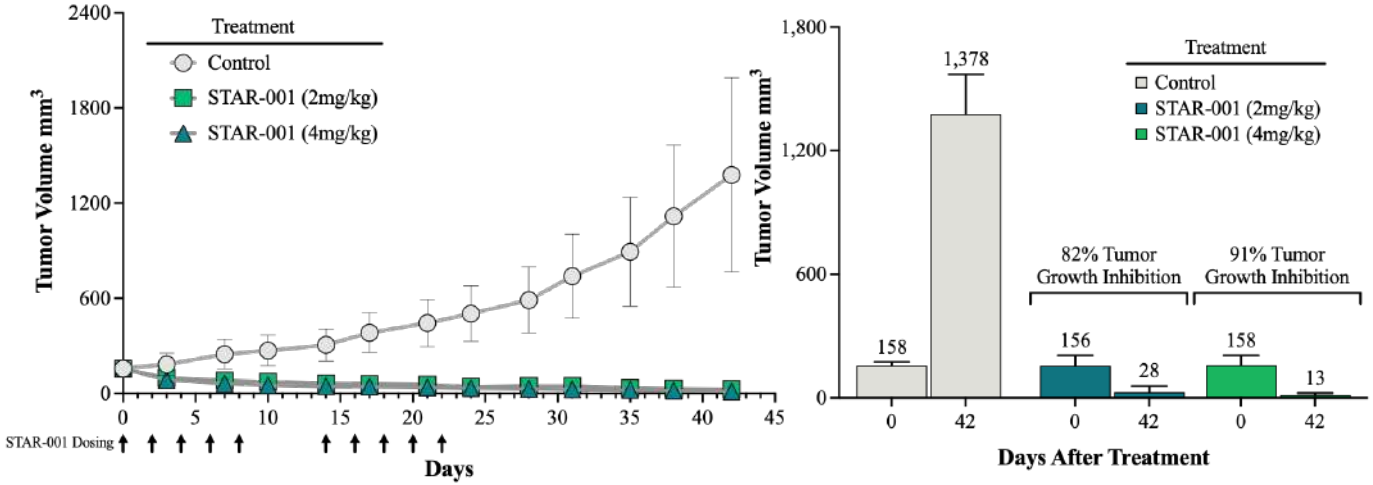
A

STAR-001 treatment with Spironolactone in the **ATRT Cell Line CHLA06**



B STAR-001 treatment of **ATRT mouse tumors** at 2mg&4mg/kg

NOD/SCID) mice implanted with subcutaneous cell-derived xenografts from the ATRT cell line CHLA-06 were treated with STAR 001 (i.v.) or vehicle for four weeks after implantation or when the tumors reached a group average volume of 1500 mm^3. The treatment schedule consisted of five i.v. injections every other day, followed by a 5-day holiday and a final round of five i.v. treatments every other day. Two dosages of LP-184 were tested, one at 2 mg/kg and one at 4 mg/kg.



Poster *LP-184, a clinical stage acylfulvene-derived tumor site activated small molecule, inhibits adult and pediatric CNS tumor cell growth*

COMPARABLES SUGGEST INCREASING INVESTOR AND INDUSTRY INTEREST IN CNS ONCOLOGY

COMPANY	VALUE	TRANSACTION	STAGE	COMPOUND	INDICATION
CHIMERIX® A Jazz Pharmaceuticals Company	**$ 953** Million	Acquired by Jazz Pharma	PDUFA After Phase II Trial	Dordaviprone	H3K27M Mutant Gliomas
ModifiBio	**$ 1,300** Million	Acquired by Merck	Preclinical	MOD246	TMZ-Resistant GBM
Day One BIOPHARMACEUTICALS	**$ 461** Million	Ex-US rights only sold to Ipsen	Phase III Trial	Tovorafenib	RAF-altered PLGG (pediatric low-grade glioma)
agios	**$ 2,000** Million	Servier acquired Agios CNS oncology	Phase II	Vorasidenib	Grade 2 IDH Mutant Gliomas

IP Portfolio

Intellectual property portfolio builds expanding protections with additional barriers to competition

100+ Issued Patents & Pending Applications

5 Families Drug Sensitivity & Response Signatures using Biomarkers

11 Families Methods of Use

2 Families Composition of Matter

RADR

2041* Identifying suitable cancer types and subtypes for a drug candidate

2043* Applying ensemble methods in machine learning and deep learning for drug discovery

2044* Predicting blood-brain barrier permeability

LP-300

2041* Determining sensitivity to LP-300 based on biomarkers

2041* Treating female (non-smoker) patients with non-small cell lung cancer

Increasing cancer patient survival time using LP-300

LP-184

2041 Treating rhabdoid tumors with LP-184

2039* Treating solid tumor cancers using LP-184 and biomarker

2041* Treating pancreatic cancer using LP-184

2042* Treating cancers with spironolactone and LP-184

LP-284

2040 Composition of Matter

2041* Treating blood cancers with LP-284

Patent Highlights

**Pending patent application. Date referenced indicates estimated year of expiration if the patent is granted.*

Financial Highlights And Cap Table

- **Approx. $15.9 M of cash, cash equivalents and marketable securities as of June 30, 2025**
- Committed to creating enduring growth and value for LTRN shareholders

LANTERN PHARMA INC. (LTRN)	
Exchange	Nasdaq
52 Week Per Share Price Range (through 10/28/25)	$2.55 - $6.12
Common Shares Outstanding (9/30/25)	11.04M
Options (Employees, Management and Directors) (9/30/25)	1.22M
Fully Diluted Shares Outstanding (9/30/25)	12.26M

Leadership & Board of Directors

Leadership

PANNA SHARMA
Chief Executive Officer & President

PRIOR: President & CEO, Cancer Genetics (CGIX); CEO & Managing Partner, TSG Partners; Managing Member, Oncospire Genomics (Joint Venture with Mayo Clinic); CSO, iXL Services

DAVID MARGRAVE
Chief Financial Officer

PRIOR: 20+ years of oncology focused management experience; Chairman, Texas Healthcare & Bioscience Institute (current); President & CAO, BioNumerik Pharmaceuticals

KISHOR BHATIA, Ph.D.
Chief Scientific Officer

PRIOR: 40+ years experience in cancer research; Director, Children's cancer Center Riyadh; Director Office of AIDS Malignancy Program, NCI

REGINALD EWESUEDO, M.D., M.S.c., MBA
VP of Clinical Development

PRIOR: VP, Kymera Theraputics
VP, Tesaro/GSK
VP, Pfizer

MARC CHAMBERLAIN, M.D.
Chief Medical Officer of Starlight

PRIOR: Co-director of Neuro-oncology program, UC San Diego; USC; Moffitt Cancer Center; Fred Hutchinson Cancer Center; Medical Director, Cascadian Therapeutics; SeaGen; SystImmune; Pionyr Immunotherapeutics

PETER CARR
Principal Software Architect

PRIOR: Sr. Software Engineer, Broad Institute Cancer Program
Sr. Programmer/Analyst, Boston Univ Science & Math Education Center

Board of Directors

- **Donald "Jeff" Keyser, J.D., MPH, Ph.D.**
  Non-executive Chairman
- **David Silberstein, Ph.D.**
- **Vijay Chandru, Ph.D.**
- **Maria Maccecchini, Ph.D.**
- **Panna Sharma**
  CEO and President

2025 Investment Highlights

Recent Milestones

- Preliminary patient data showing an 86% clinical benefit rate in the initial safety lead-in cohort of the Harmonic™ Phase 2 Trial
- Reported a durable complete response in a Harmonic™ trial patient, with survival continuing for nearly two years
- Delivered complete metabolic response after two cycles of LP-284 for in a heavily pre-treated lymphoma patient
- Received three rare pediatric disease designations for LP-184 in malignant rhabdoid tumors (MRT), rhabdomyosarcoma (RMS), and hepatoblastoma
- Received fast track designation from US FDA for LP-184 in Glioblastoma and Triple Negative Breast Cancer
- Expanded RADR® AI platform to 200+ billion datapoints and launched initial modules publicly
- Expanded the Harmonic™ trial to Taiwan and Japan with 5 sites in each country and completed enrollment in Japan

Upcoming Milestones & objectives

- Complete Phase 1a clinical trial for LP-184; pursue Phase 1b/2 and investigator led trials
- Advance enrollment in first-in-human clinical trial for LP-284 in NHL + other cancers
- Report initial clinical data for Asian cohort in the Harmonic™ Trial and updates on the US patient population
- Progress and monetize Starlight Therapeutics towards Phase 1/2 adult & pediatric clinical trials
- Expand and commercialize RADR® AI platform modules; PredictBBB™ and withZeta.ai
- Further ADC preclinical and IND development to support future Phase 1 launch and/or partnership
- Develop and communicate combination programs and trials for Lantern's portfolio with existing FDA approved drugs

Lantern Pharma®

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