



Corporate Overview

August 12th 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

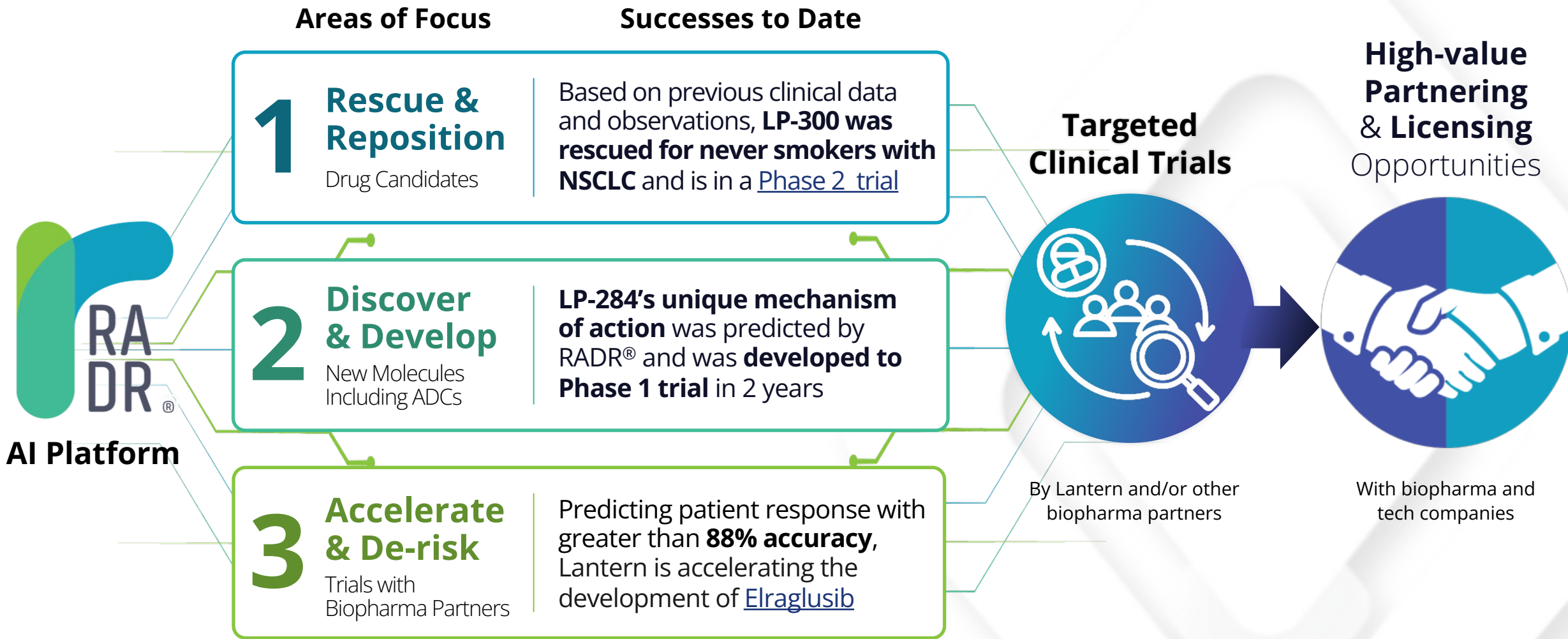


Proprietary AI
platform RADR®



Accelerated
timelines; reduced
costs and risks

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



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

Lantern has 12 disclosed and collaborative lead drug programs including the Phase 2 Harmonic™ trial

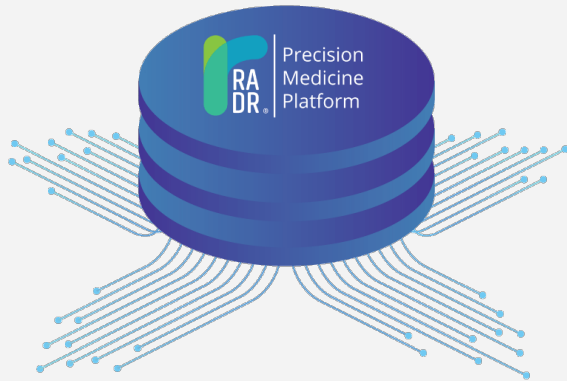
Lantern Pharma (NASDAQ: LTRN)								
Lantern Pharma								
Lead Program	Indication	Discovery	Preclinical	Phase I	Phase II	Orphan Designation	Rare Pediatric Disease	Fast Track
LP-300	Non-Small Cell Lung Cancer for Never Smokers							
LP-184	Recurrent Advanced Solid Tumors (Pancreatic, TNBC, Bladder, Lung Cancers)					● * for Pancreatic, MRT, RMS, HB, HGG	● * for MRT, RMS & HB	● * for TNBC
LP-284	Recurrent Non-Hodgkin's Lymphomas (Mantle cell, Double-hit lymphomas)					● * for Mantle Cell & HGBL		
ADC	Select Solid Tumors							
Starlight Therapeutics (Wholly Owned Subsidiary)								
starlight								
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					● * for ATRT	● * for ATRT	
	Phase 1b combination select pediatric CNS cancers							
RADR® Collaborations								
RADR Precision Medicine Platform								
Elraglusib owned by - Actuate Therapeutics	Multiple Solid Tumors					Collaboration partner		
TTC-352 owned by- TTC Oncology	ER+ Breast Cancers					Collaboration partner		
XCE853 owned by - Oregon Therapeutics	Protein Disulfide Isomerase (PDI) Inhibitor					Collaboration partner		
ADC	Cryptophycin Conjugate for Solid Tumors					Collaboration partner		



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

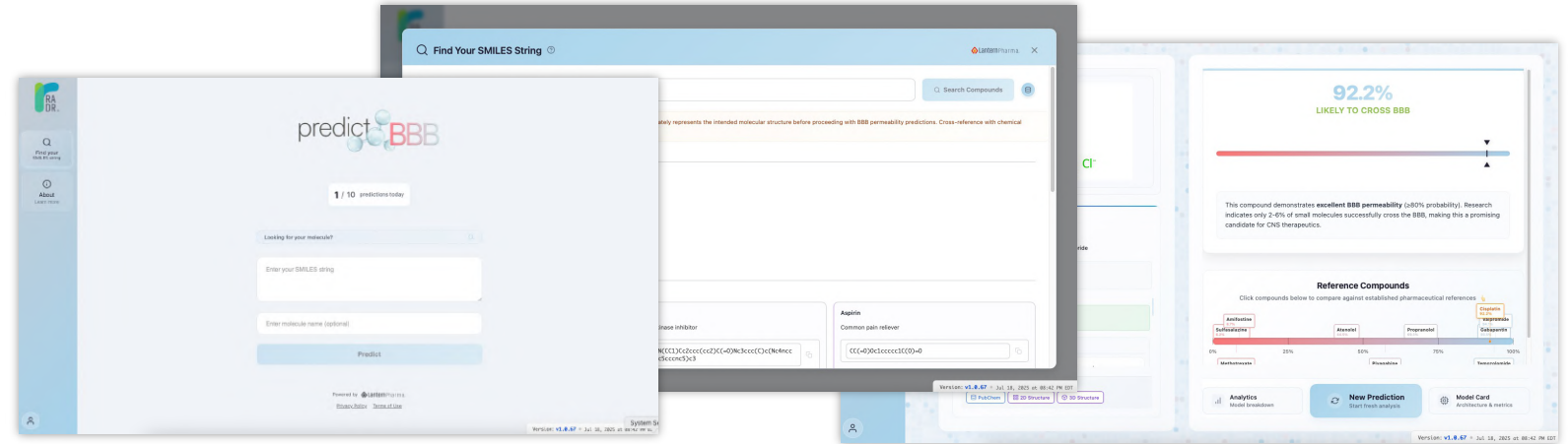
Discover combinations
with checkpoint inhibitors

m8

ADC design and
optimization

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

Lantern's comprehensive computational drug discovery platform roadmap



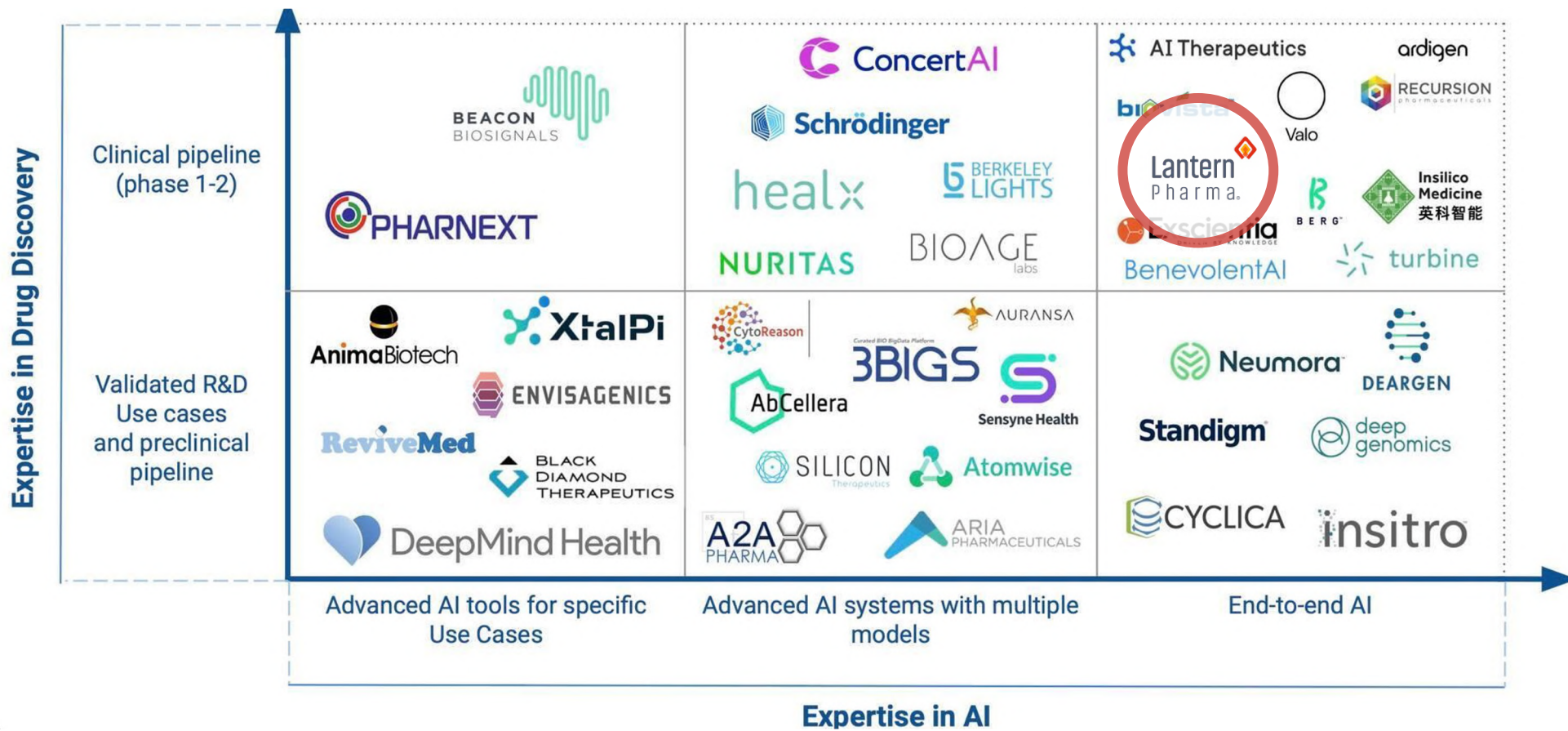
- Less than 6% of molecules cross the Blood Brain Barrier (BBB) - one of pharmaceutical development's most persistent challenges
- PredictBBB™ achieves **94%** accuracy with real-time machine learning, providing open-access to critical CNS drug development technology

Predict BBB is just the beginning — the first in a series of transformative AI modules

- Powered by RADR®, our unified data lake and ensemble AI engine for drug discovery
- Next modules to predict dozens 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 and developed

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

Comparison of Top-40 Leading AI for Drug Discovery Companies Expertise in Drug Discovery R&D

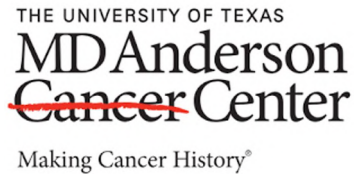


According to Deep Pharma Intelligence

Collaborations

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

World-Class Academic and Research Institutions



Biopharma Collaborations

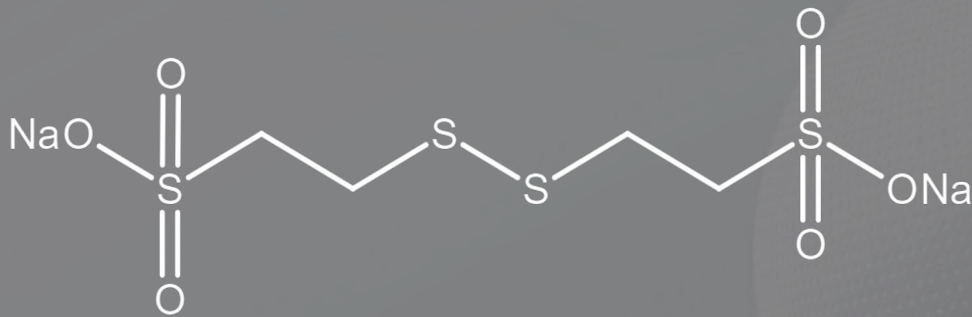


**OREGON
THERAPEUTICS**

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

 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

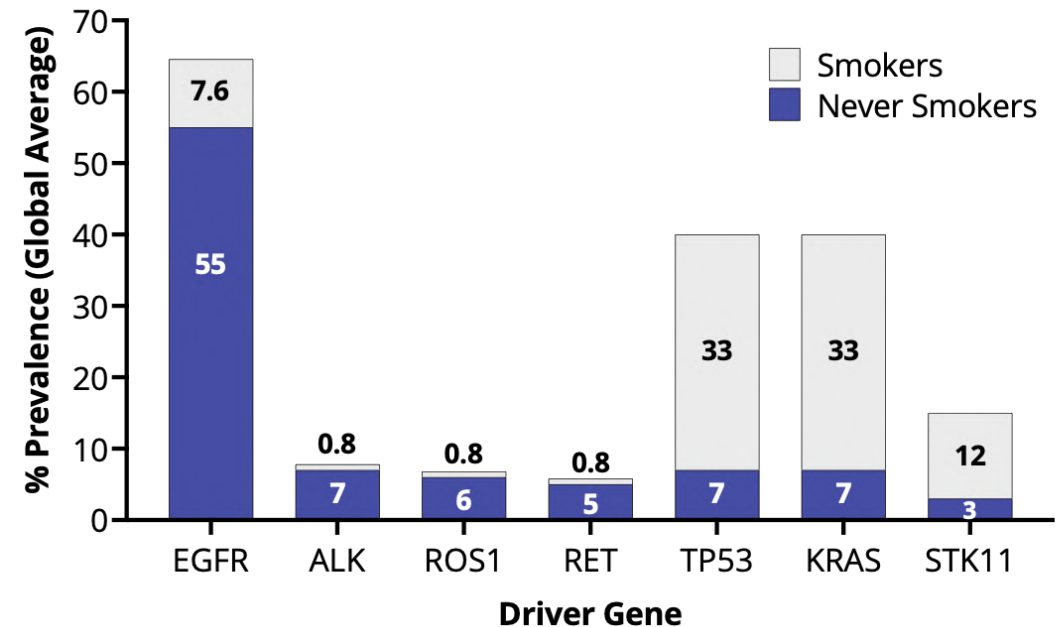
150,000~175,000

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

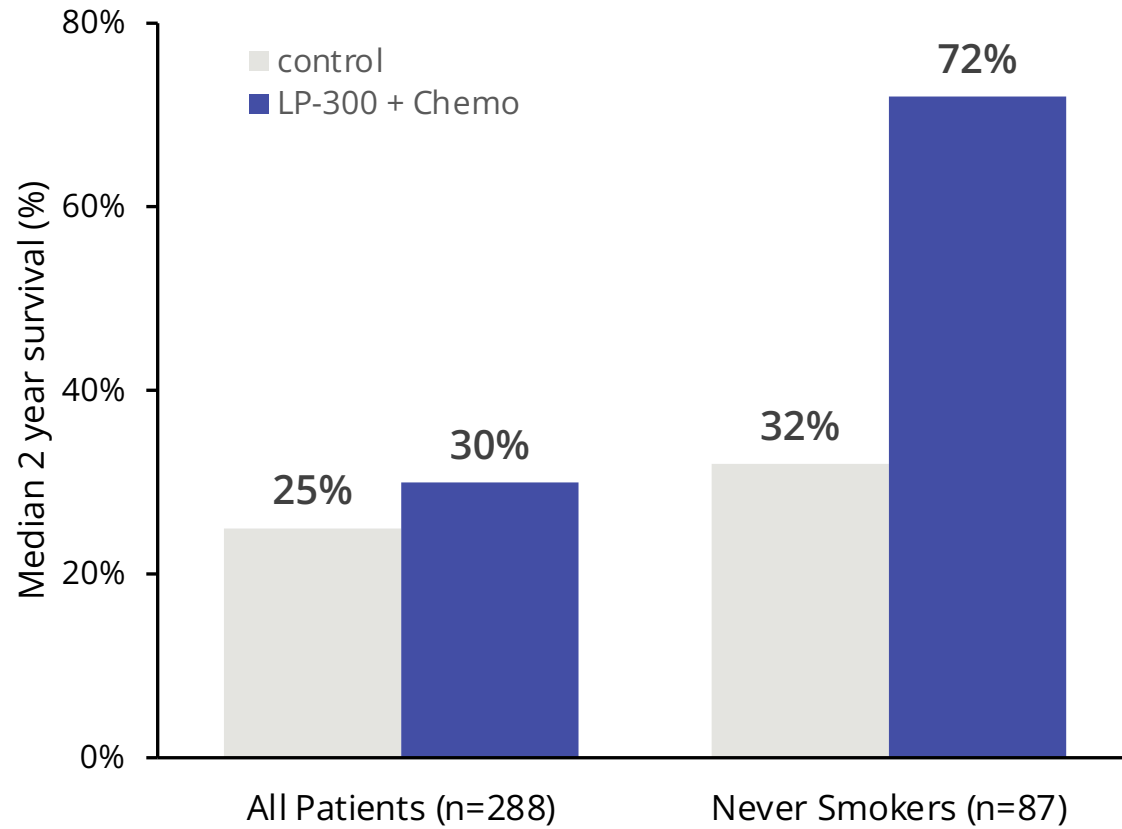
Mutation Frequency by Smoker Status



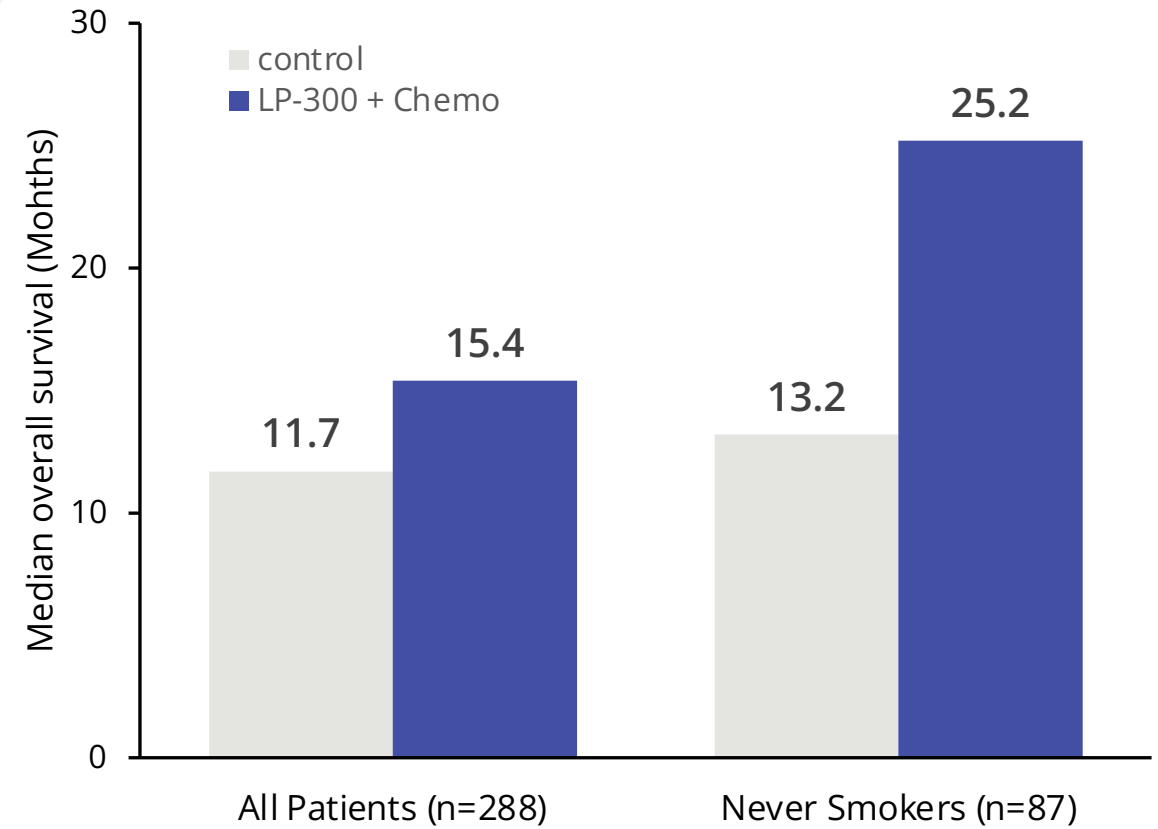
LP-300 Nearly Doubled Survival Outcomes for Never Smoker Subgroups with NSCLC in Previous Clinical Trial*

**Subpopulations receiving paclitaxel/cisplatin*

+ 125% increase in median 2 year survival



+ 91% increase in median overall survival



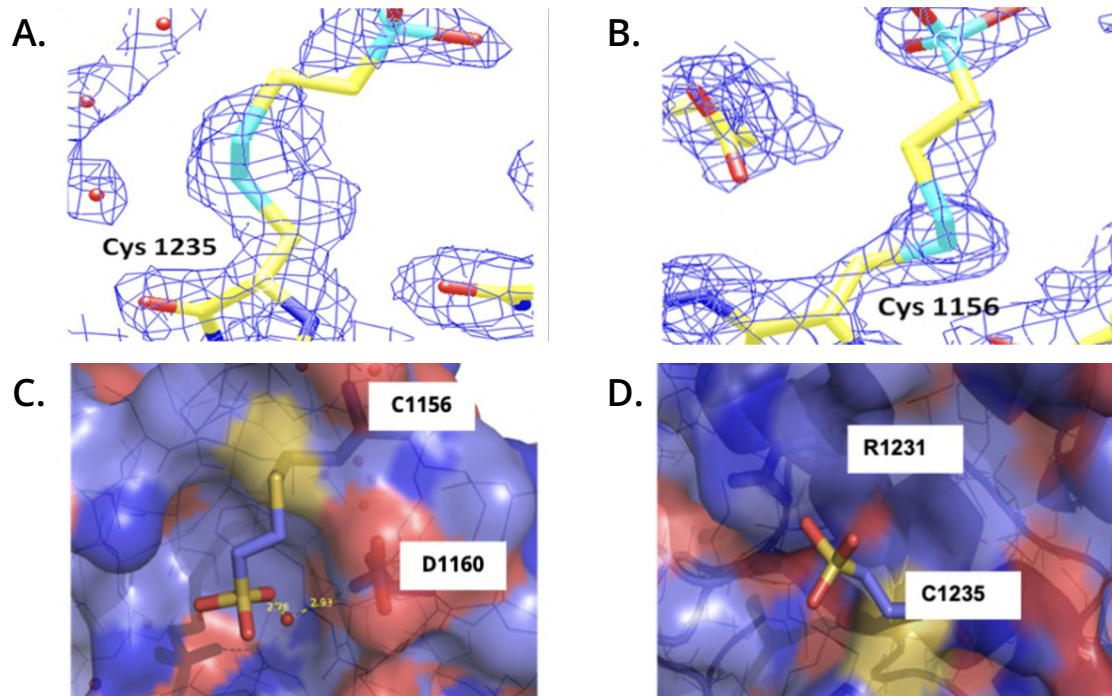
**Overall study did not meet clinical efficacy endpoints*

Clinicaltrials.gov ([NCT00966914](https://clinicaltrials.gov/ct2/show/study/NCT00966914))

Mechanism of Action – LP-300

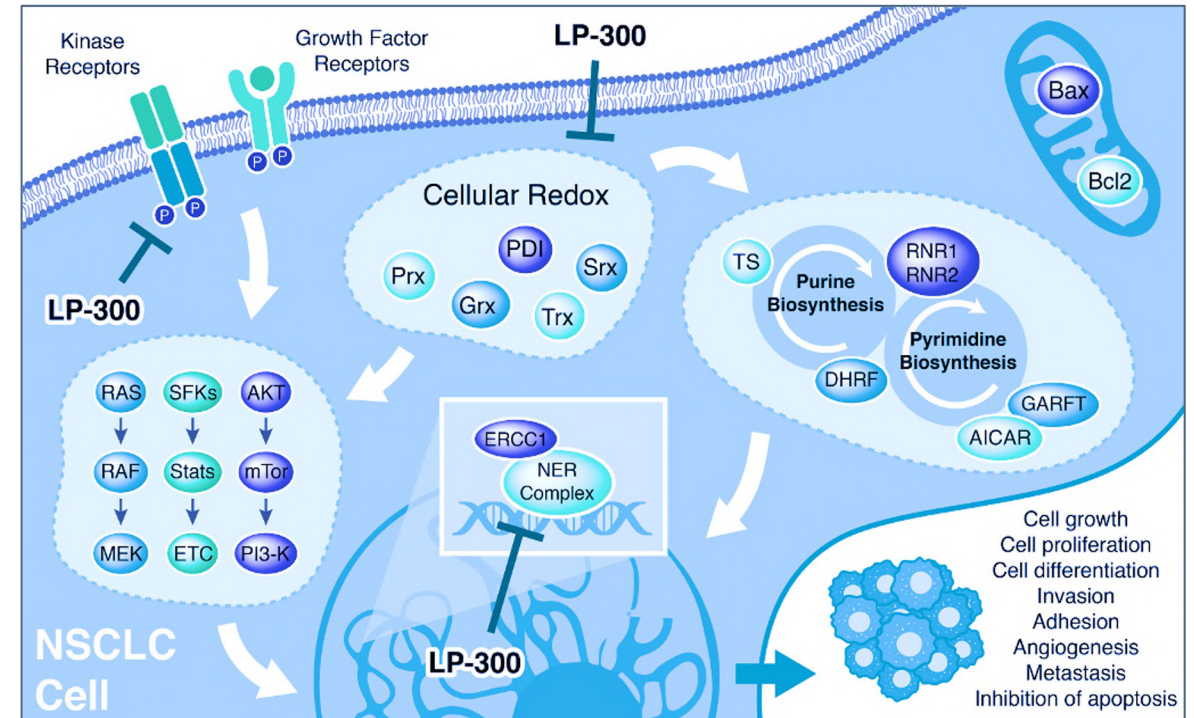
LP-300's multimodal MoA resensitizes NSCLC to chemo in the never smoker population

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



[NCT05456256](https://clinicaltrials.gov/ct2/show/study/NCT05456256)



Non-Small Cell
Lung Cancer



Never Smokers

90

Patients

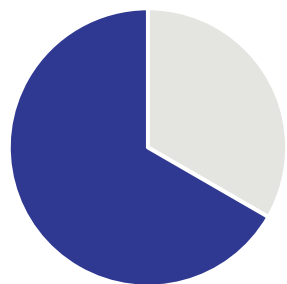


Two arm, Open-label,
Randomized Trial



Multi-Site
in US & Asia

Phase 2 Trial Design



60

Patients will receive LP-300 with
pemetrexed and carboplatin*

**after progressing from TKI*



30

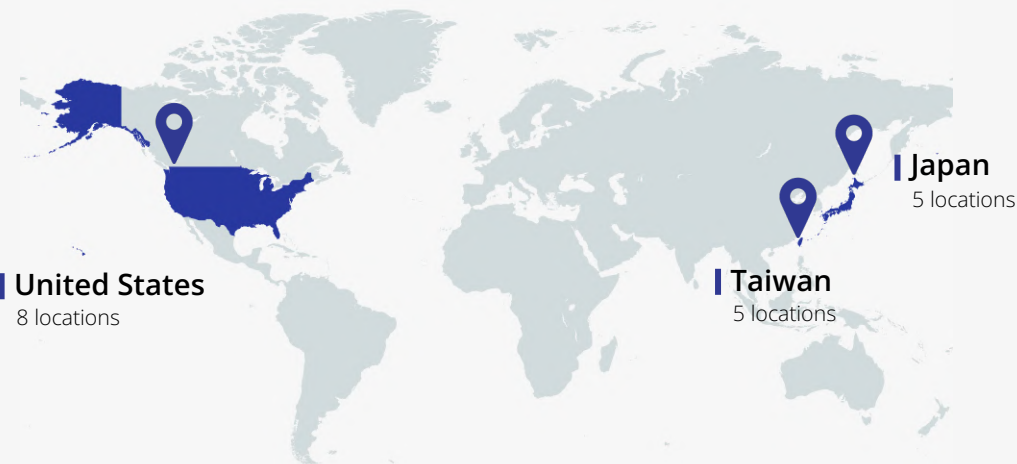
Patients will receive standard of
care (*pemetrexed and carboplatin*)

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



No Dose Limiting Toxicities or Serious Adverse Events were observed & Lantern received approval from the DSMB (Data & Safety Monitoring Board) to proceed to next phase of the trial

- Overall, LP-300 in combination with the chemo doublet has been well tolerated with primarily Grade 1 or 2 adverse events (AEs)

Category	Adverse Events	LP-300 + Pemetrexed + Carboplatin (n=7)
Adverse Events	Serious Adverse Events	0
	Dose Limiting Toxicities	0
Most common related AEs	White blood count decreased	2 (29%)
	Platelet count decreased	2 (29%)
	Constipation	2 (29%)
	Fatigue	2 (29%)
Related ≥ Grade 3 AEs	White blood count decreased	1 (14%)
	Neutrophil count decreased	1 (14%)

**Based on data from 7 patient safety lead-in cohort*

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%)

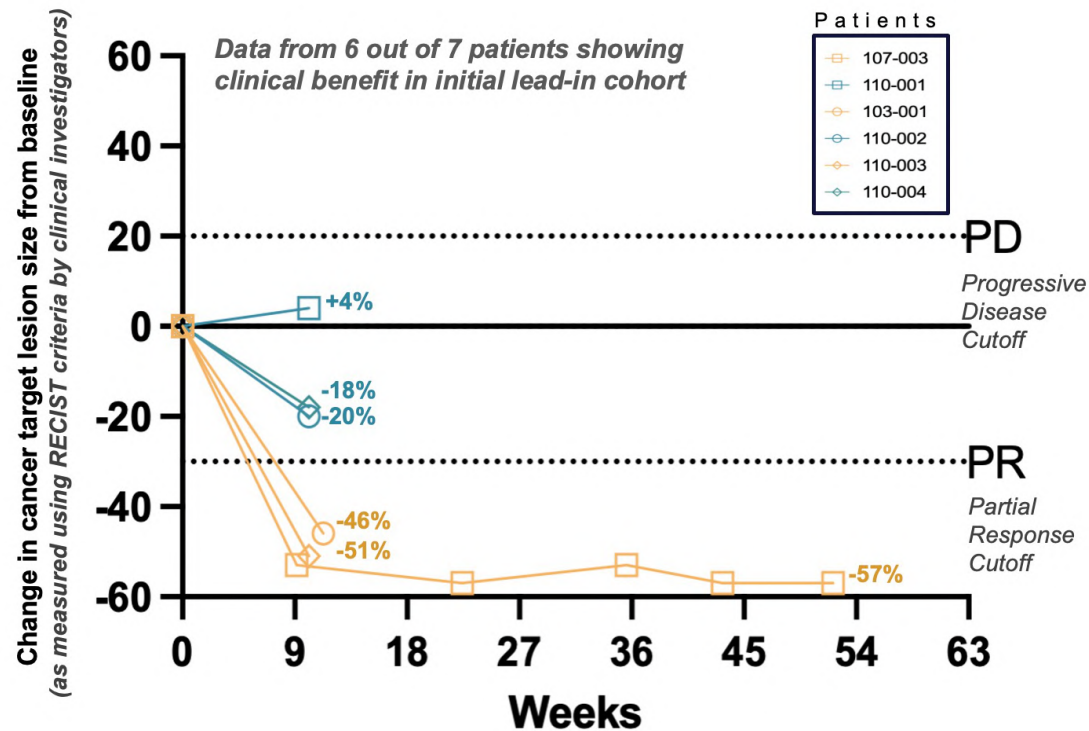
All patient data as of July 25, 2024

Patient Highlights from Initial Cohort

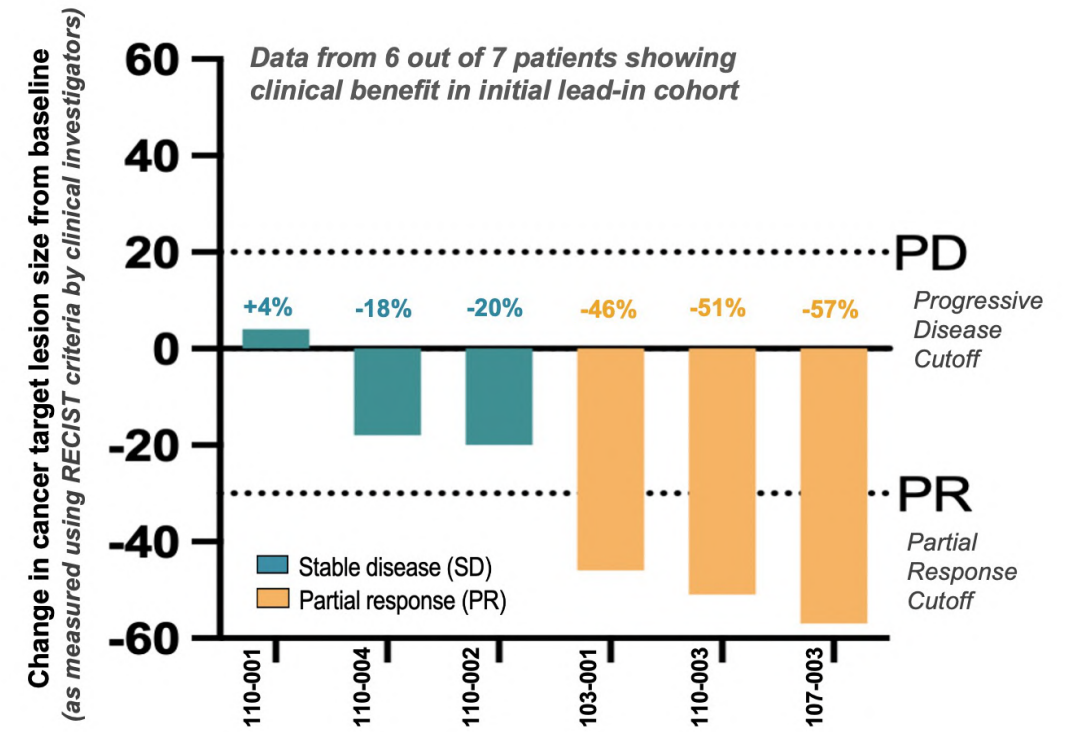
- 7 patients enrolled from different geographies
- Sites included were in CA, VA, TX
- 3 Female and 4 Male
- Average age of 62
- Median prior lines of therapy: 2 (1 to 4)
- Recent historical trials in similar patient groups receiving the chemo doublet have had an ORR of 26% to 36% with a PFS of 5.1 months

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

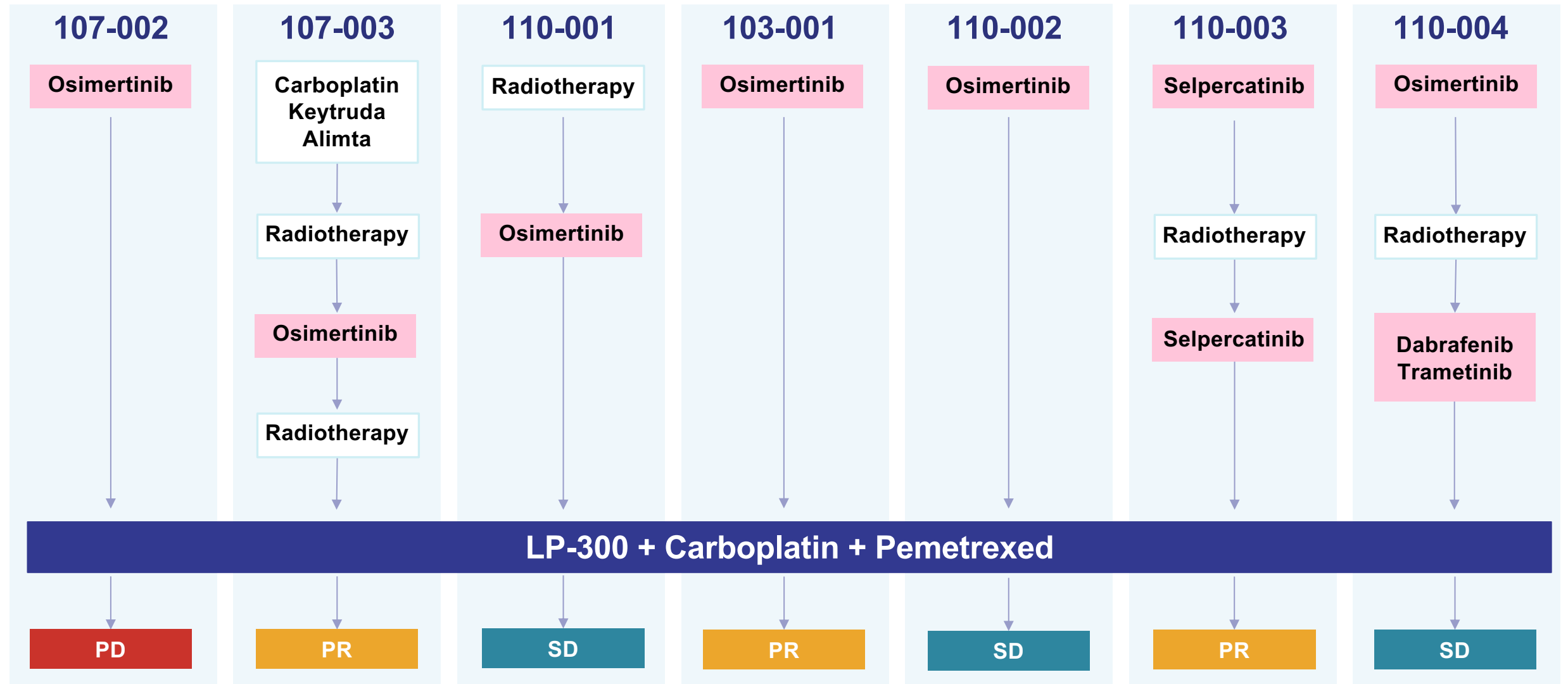
Percent change in cancer lesion size over time



Percent change in cancer lesion size by patient



All patient data as of July 25, 2024



All patient data as of July 25, 2024

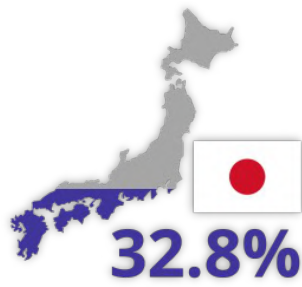
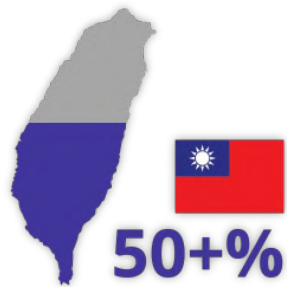
TKI PR: Partial Response, SD: Stable Disease, PD: Progressive Disease

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



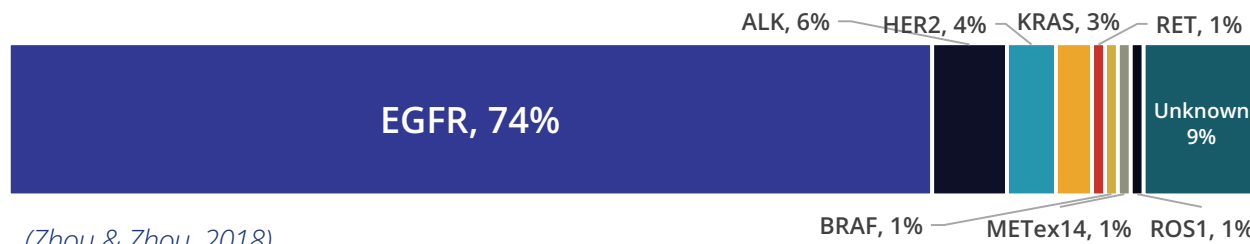
of all lung cancer patients in East Asia are **never smokers***

**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

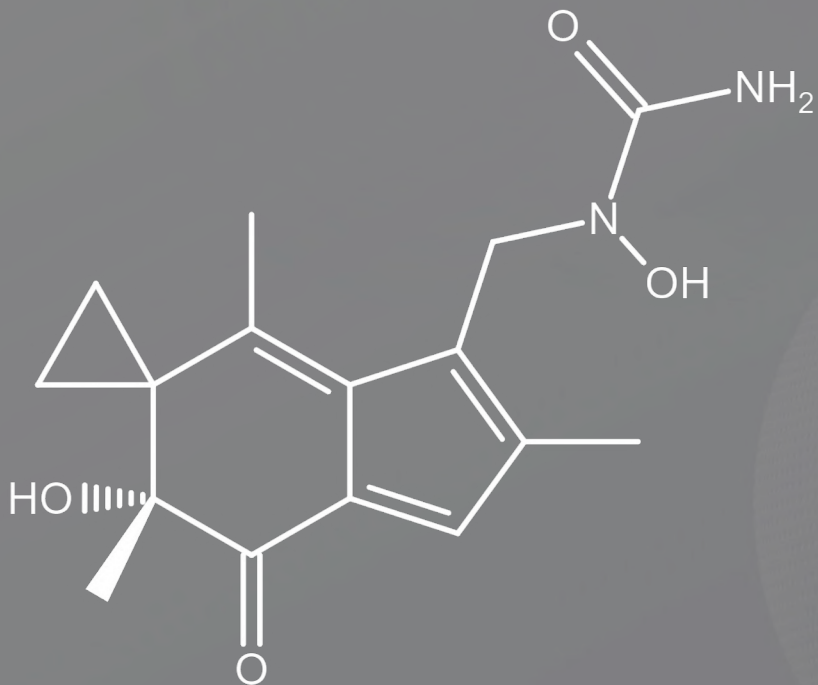
Site Activation and First Patients Dosed

Q2 2025*

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

**Expected late June*

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 1 (multiple cohorts dosed with no dose-limiting toxicity observed)
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



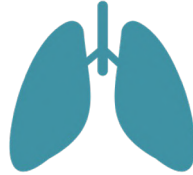
Pancreatic Cancer



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

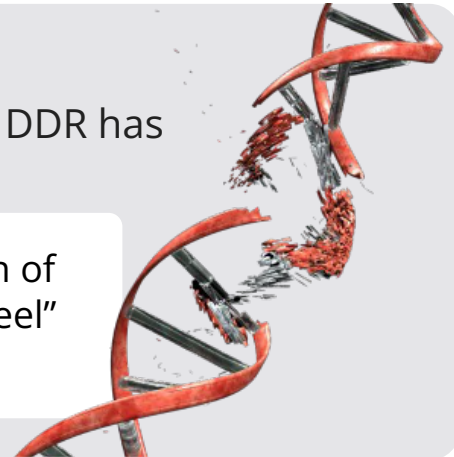
DNA Damage Response (DDR) Deficiency

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 “Achilles Heel” for drugs leveraging synthetic lethality

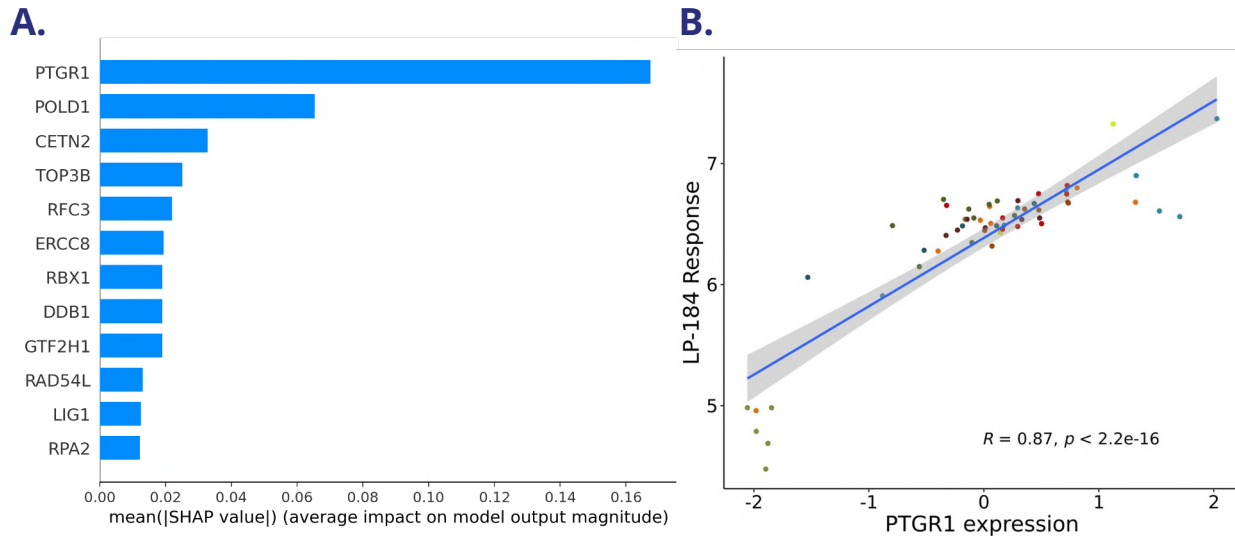


LP-184's MoA was Predicted by RADR® and Validated in Multiple Lab Studies

In silico



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

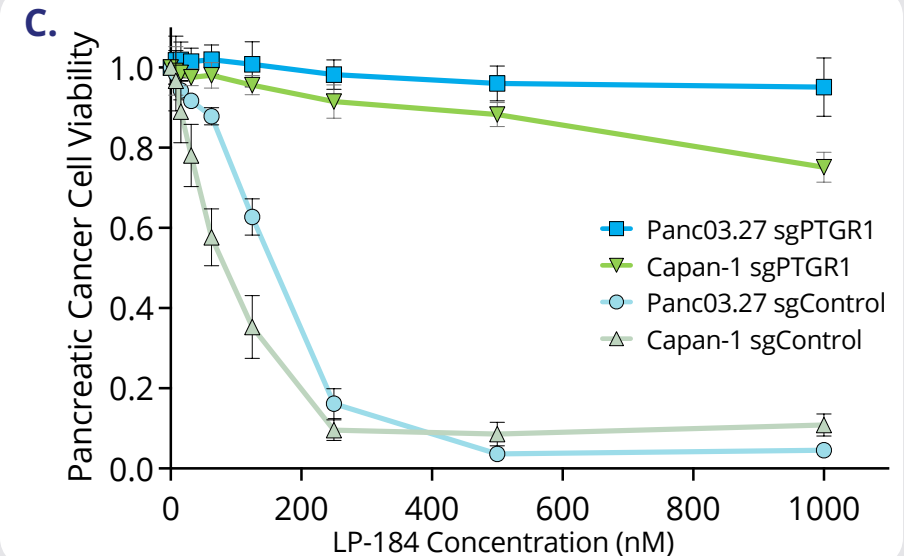


- **Prostaglandin Reductase 1 (PTGR1)** is an oxidoreductase enzyme that is frequently elevated in cancers
- PTGR1 activates LP-184 into its highly potent and cytotoxic form
- RADR® insights predicted that LP-184 activity positively correlates with PTGR1 transcript levels in the NCI60 cancer cell line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

In vitro



Validated using CRISPR Experiments

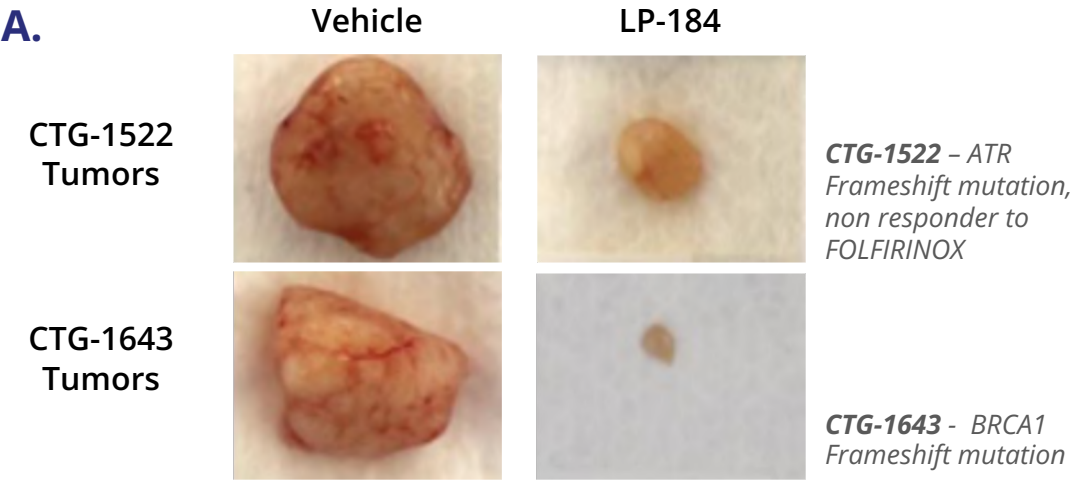


- CRISPR-mediated depletion of PTGR1 expression in a pancreatic cancer cell line is sufficient to **fully diminish LP-184 activity**
- This **confirmed the RADR® insights** and that LP-184 was highly potent in cells with PTGR1

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

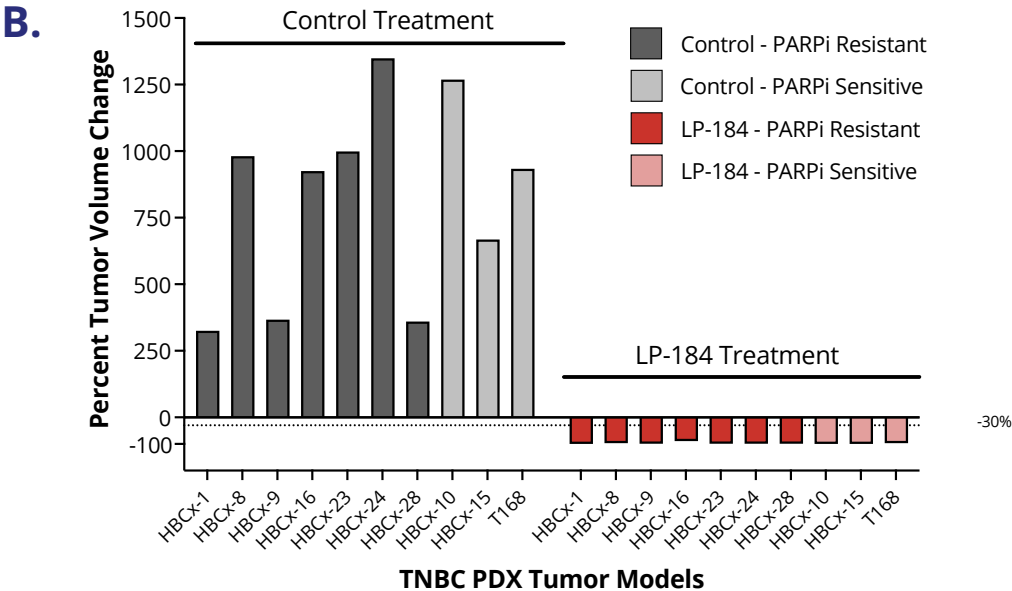
Pancreatic Cancer

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



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



In collab. with  **FOX CHASE**
CANCER CENTER
TEMPLE HEALTH

Poster: 

- 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 – LP-184 Phase 1 Basket Trial

Launched Phase 1 basket trial for a blockbuster molecule with a market potential of \$10+ billion in annual sales

First-In-Human Trial for LP-184

[Clinicaltrials.gov \(NCT05933265\)](https://clinicaltrials.gov/ct2/show/study/NCT05933265)



Solid Tumors /
Brain & CNS Cancers

~60

Patients expected
to be enrolled

\$10+ Bn

Annual US market potential in
DDR deficient solid tumors

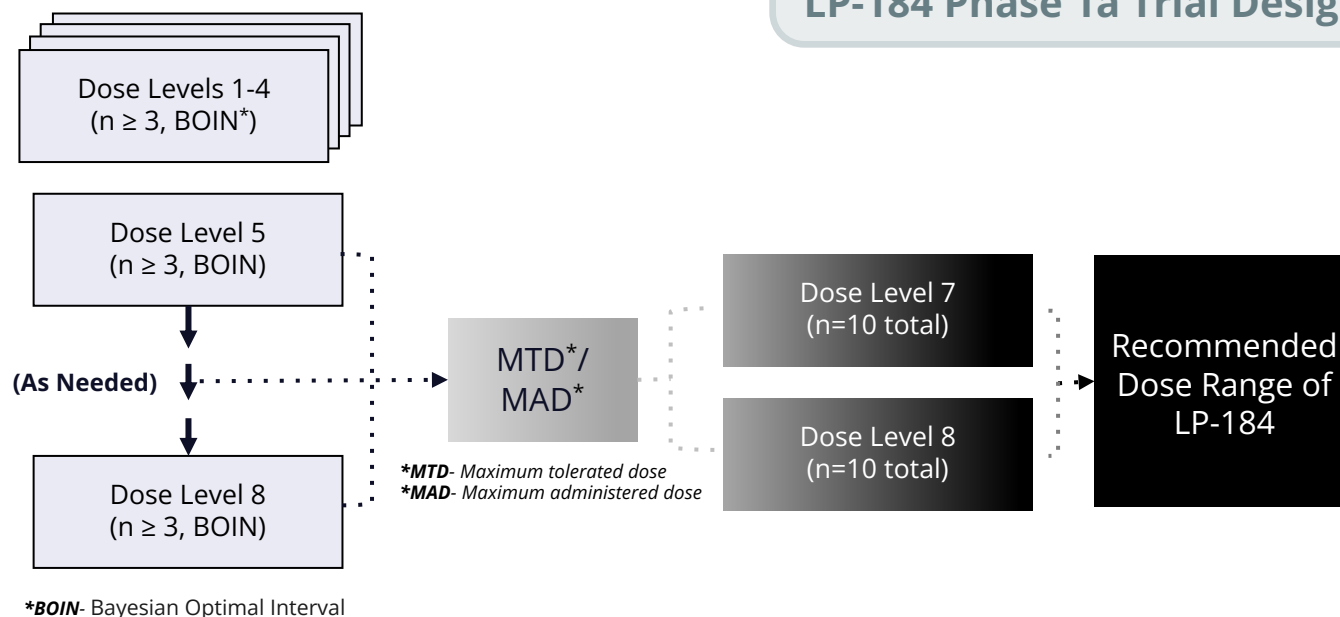


Multi-Site

Phase 1 Trial Highlights

- Trial launched and multiple US sites activated, including Fox Chase Cancer Center
- Patients with recurrent GBM have been enrolled at 2 academic centers, including Johns Hopkins, and 1 community site
- **Potential future studies: Phase 2 in GBM (through Starlight) and Phase 1b/2 in other solid tumors** to be initiated after determination of MTD

LP-184 Phase 1a Trial Design



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

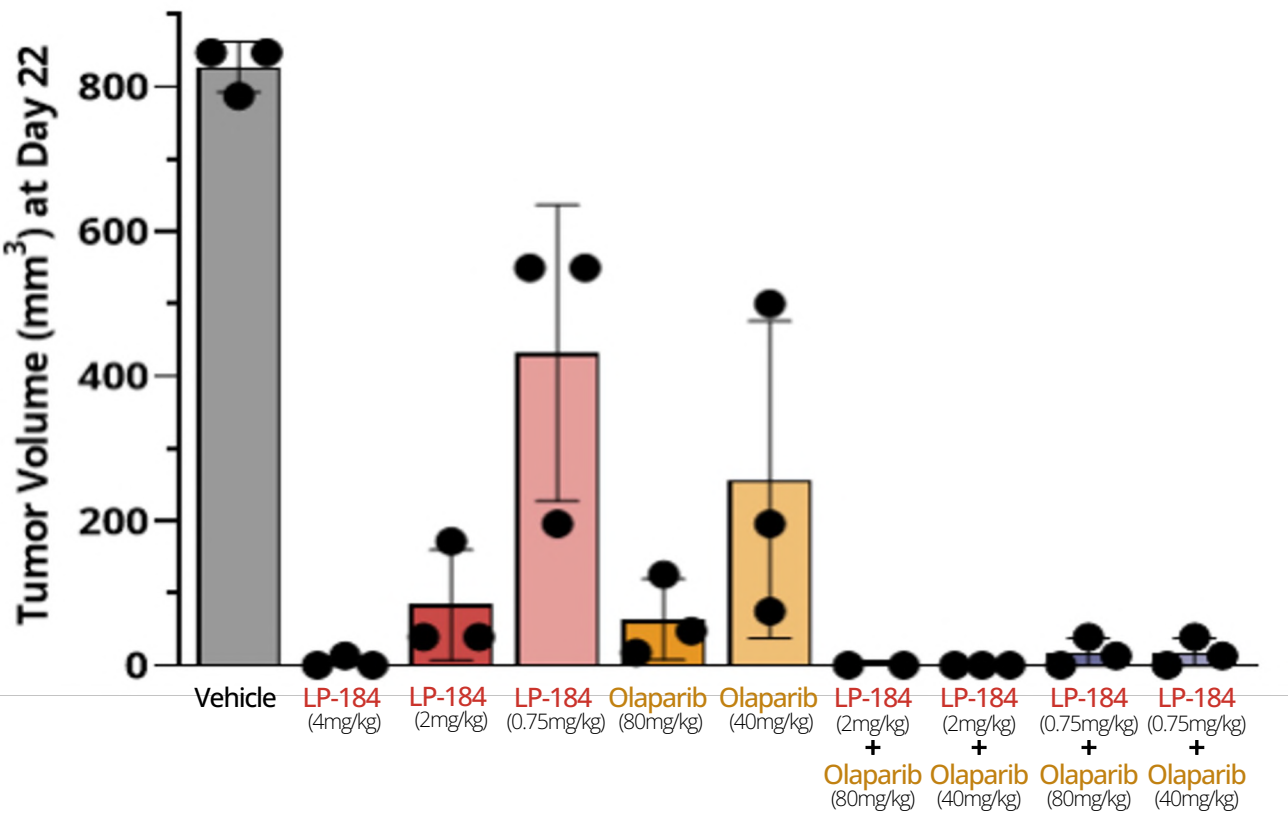
\$2+Bn

Annual US
market potential

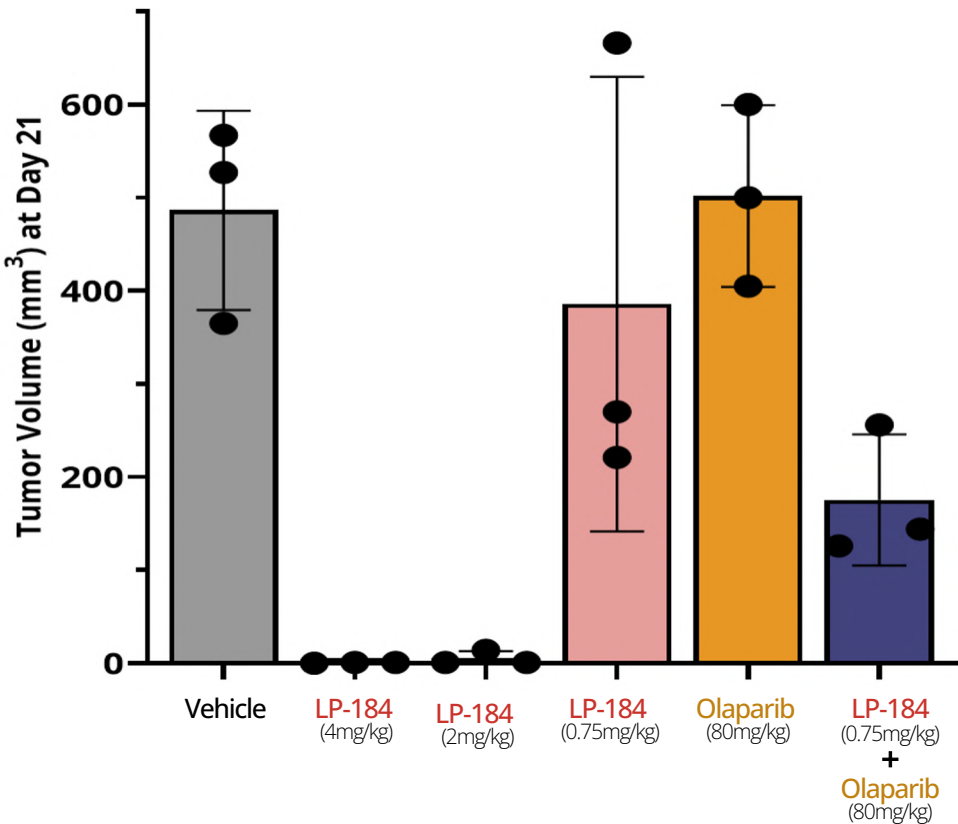
- Open-label study to evaluate the safety, tolerability, and preliminary clinical activity of LP-184 in combination with nivolumab and ipilimumab in advanced NSCLC patients with KEAP1 and/or STK11 mutation and low PD-L1

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



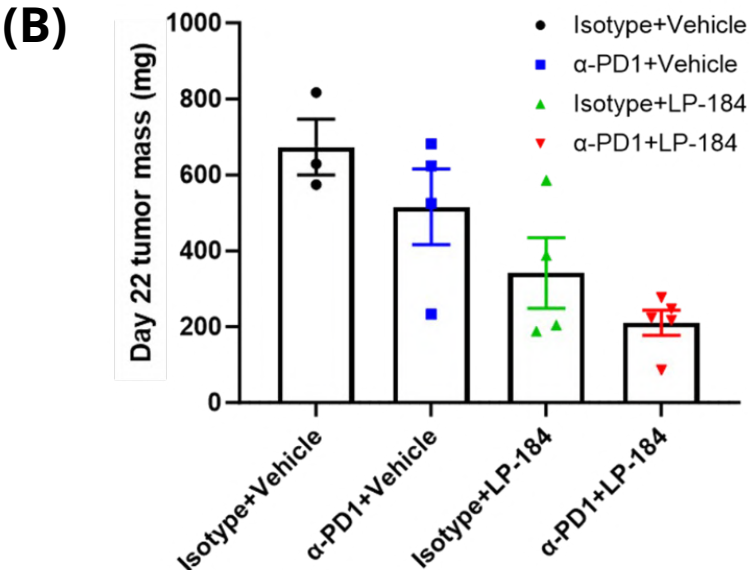
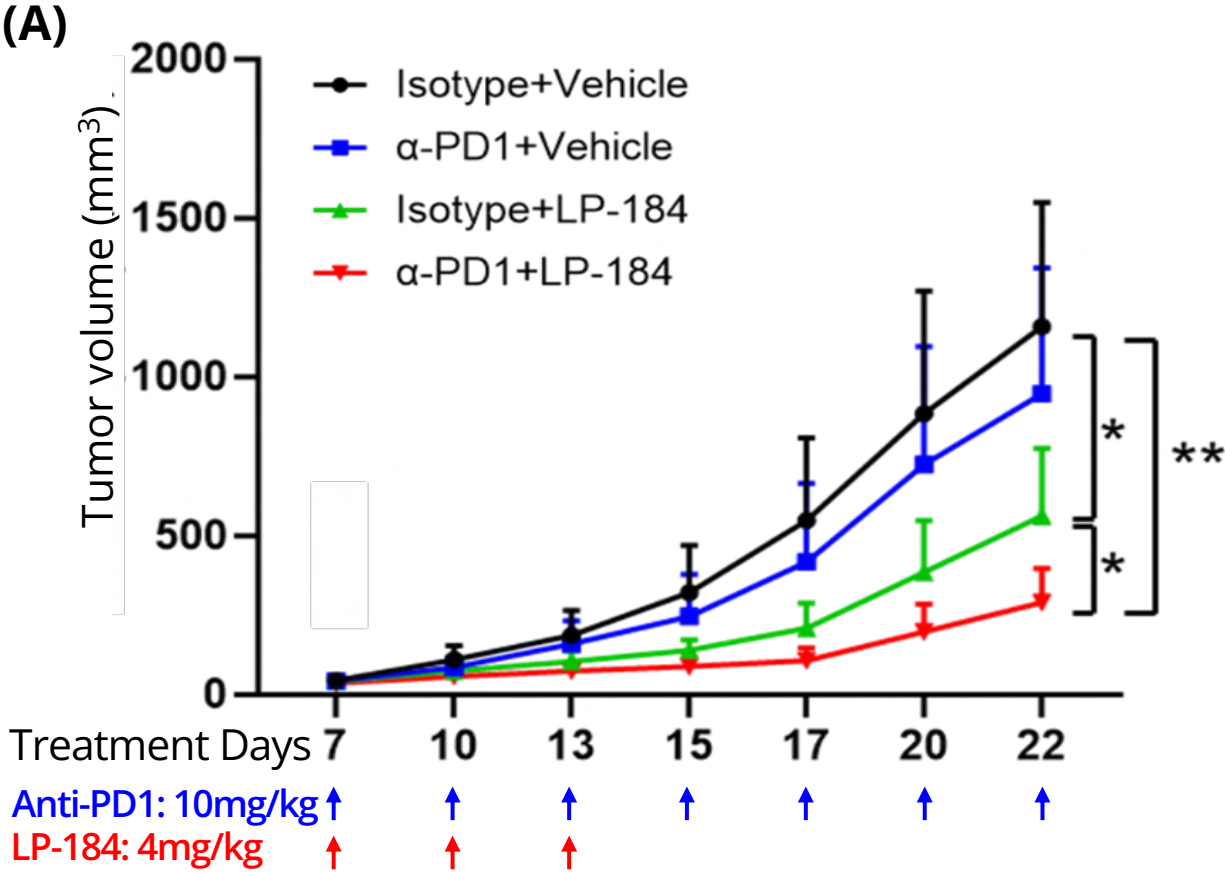
Tumor Volume in HBCx-28 PARPi resistant TNBC PDX Model Treated with LP-184 (days 1, 4, 8, 11), Olaparib (daily), or Combination

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

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

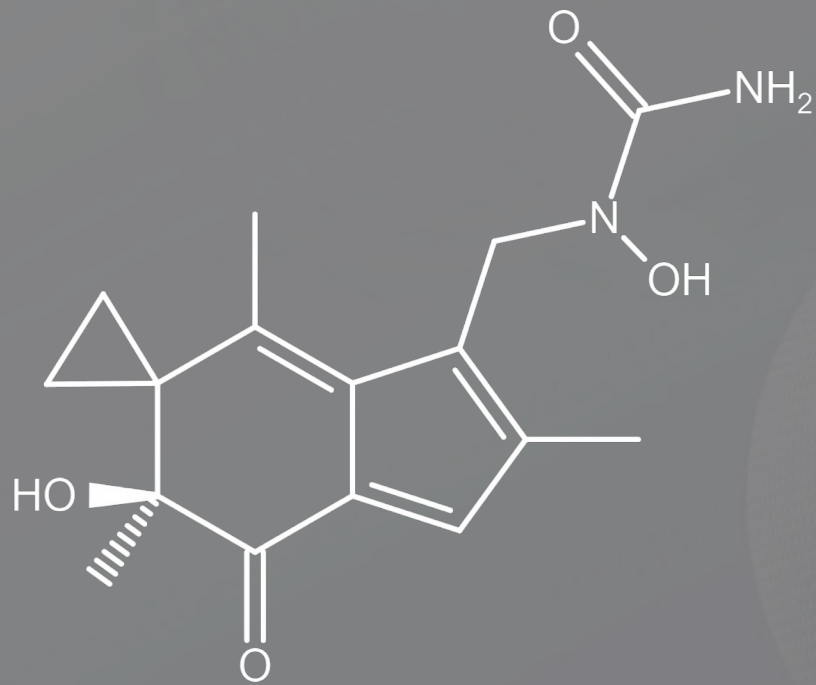
LP-184 Demonstrates Anti-Tumor Efficacy in Mouse TNBC Models and Potential to Sensitize Tumors Non-Responsive to Anti-PD1 Therapy



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 (multiple patients dosed with no dose-limited toxicity observed)
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

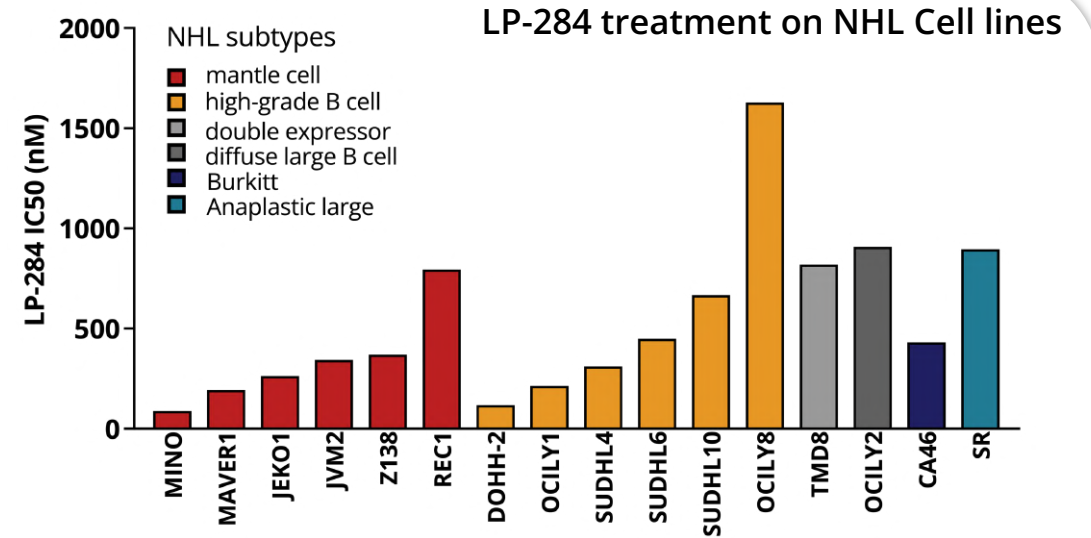
Annual Global Market Potential: \$ 4 Billion

(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

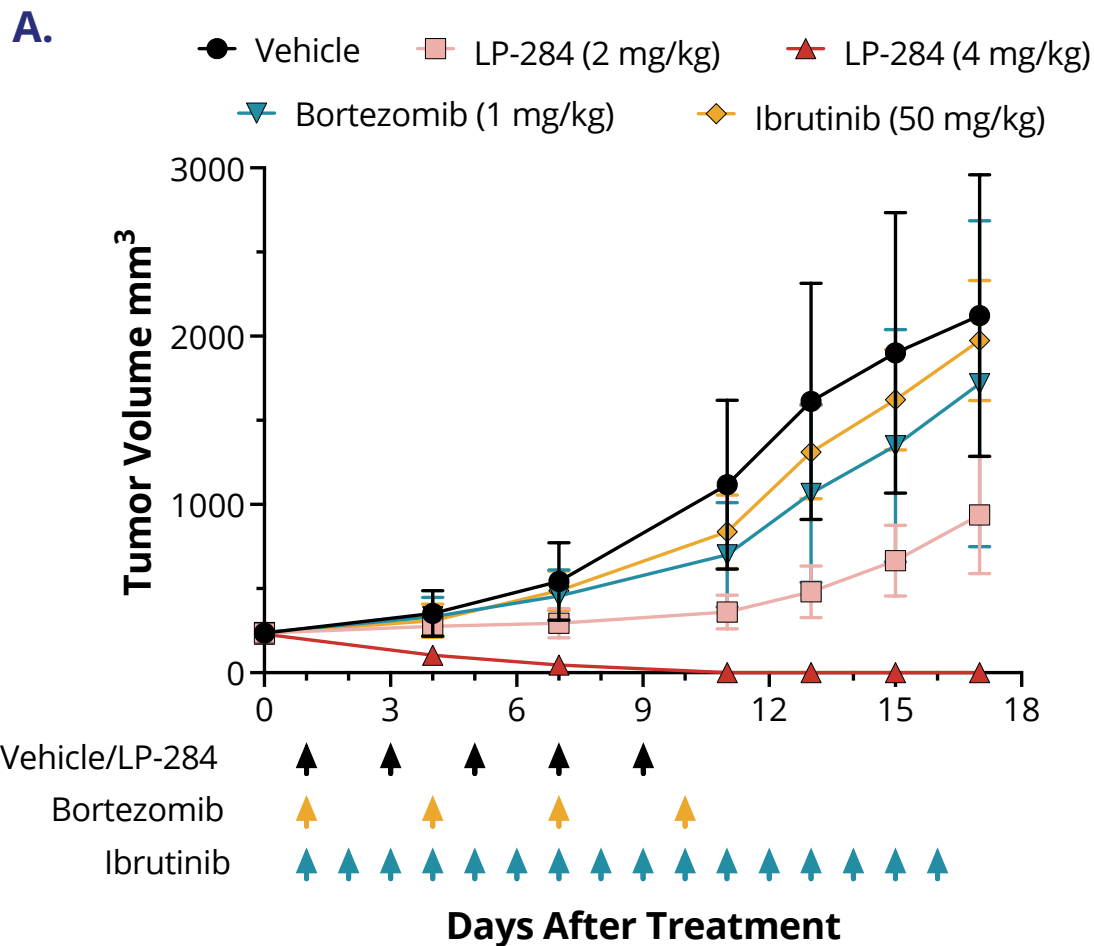
High-Grade B-Cell Lymphoma

(HGBL)

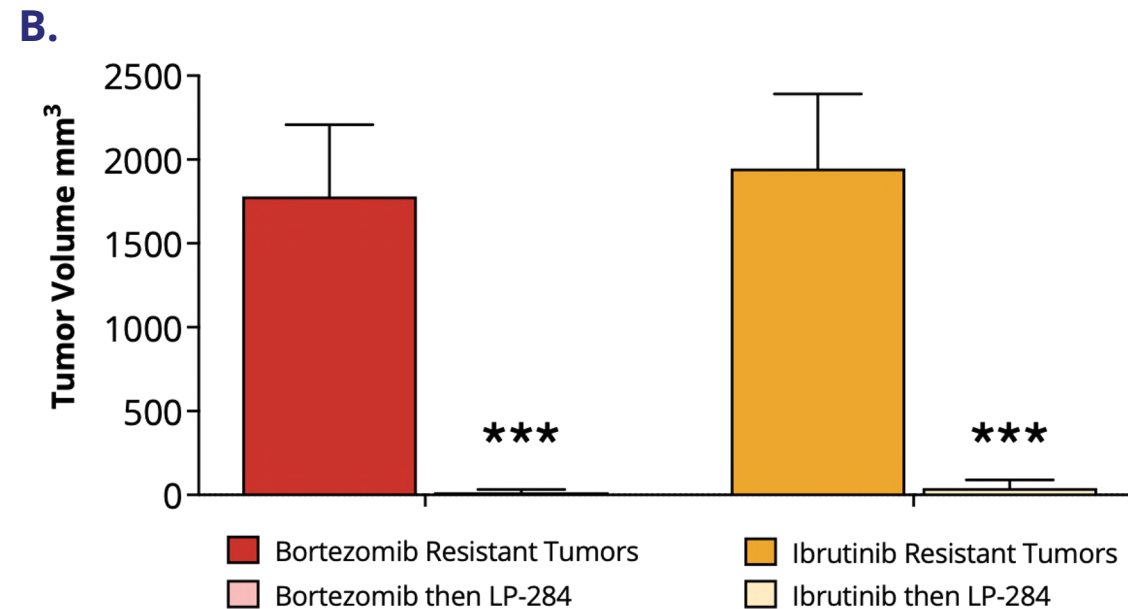
- A rare, aggressive type of B-cell NHL characterized by rearrangements of MYC and BCL2 and/or BCL6 genes
- Often occurs in neck, armpit, groins and can spread to central nervous system
- No standard treatment approach and poor prognosis

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



Tumors resistant to Ibrutinib and Bortezomib has significantly reduced volume



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 1 Trial

Ph. 1 trial launched in Q4 2023 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

Second Half
2025

Anticipated MTD
and trial finalization

Recent Highlights

- Trial launched and multiple sites activated in the US

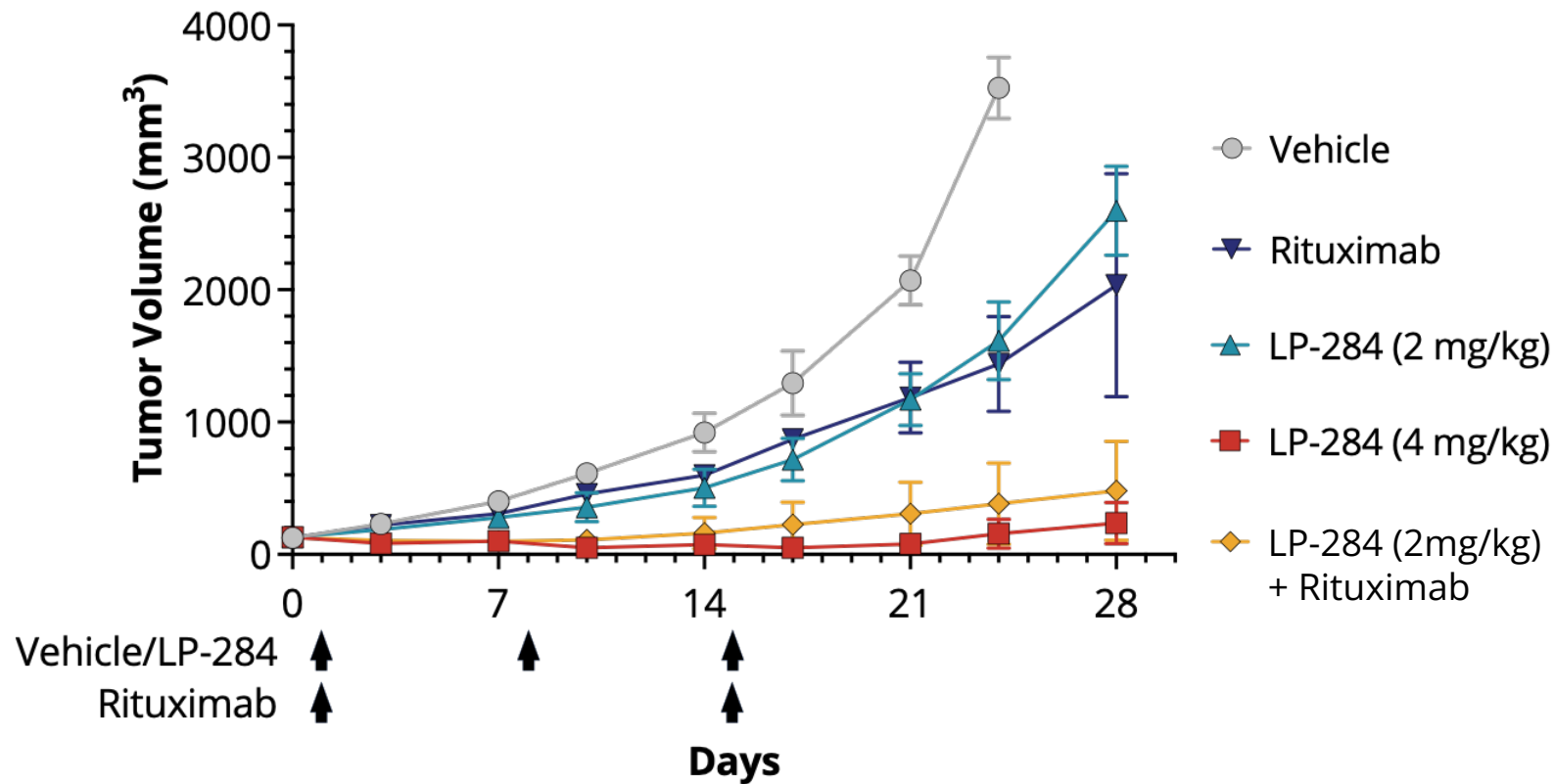
Program Highlights

- 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**
- In-vivo LP-284 can rescue MCL xenograft tumors resistant to Ibrutinib and Bortezomib
- 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

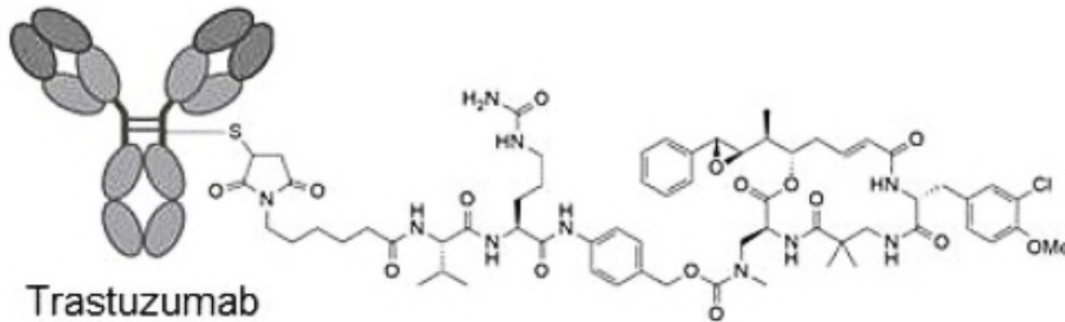
- ▼ Rituximab alone = 57% TGI
- ◆ LP-284+ Rituximab = 93% TGI

Results
presented at:

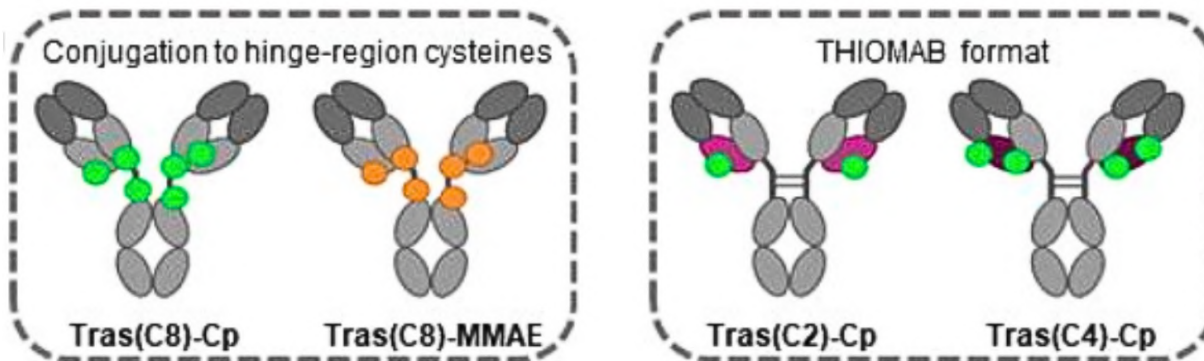


Successful Generation and Characterization of Potent Cryptophycin-Loaded ADCs

A Cryptophycin attached to trastuzumab



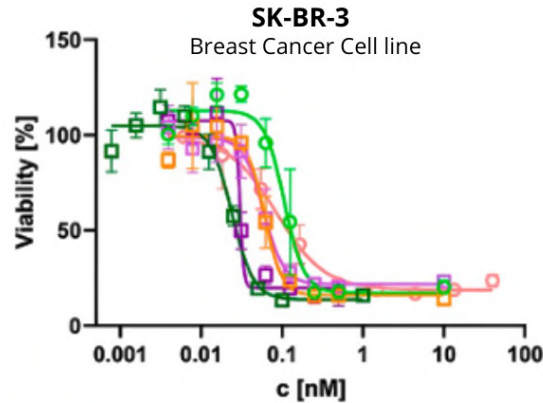
B Overview of generated ADC constructs



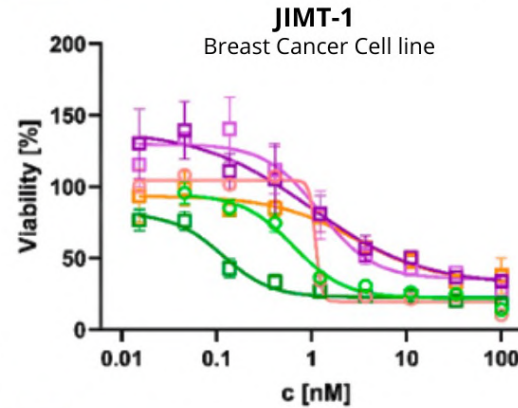
- **Effective ADC Development:** Successfully generated Cp-loaded ADCs using native and engineered cysteines in Trastuzumab and TH10MAB variants, leading to highly potent ADC constructs
- **Efficient Conjugation:** Conjugated Mc-Val-Cit-PAB-cryptophycin-uD[Dap(Me)] linkers to Trastuzumab via Michael addition, produced high DAR conjugate Tras(C8)-Cp
- **Comprehensive Characterization**
 - HIC confirmed successful conjugation and higher hydrophobicity than parental antibodies
 - SEC showed no aggregation in Tras(C2)-Cp and Tras(C4)-Cp, indicating high stability
 - MALDI MS confirmed precise DAR values, with Tras(C8)-Cp having a mean DAR of 6, indicating high drug loading and potency

Advanced the Development, Synthesis, and Preclinical Proof-of-concept of a Novel, Highly Potent, Cryptophycin-based ADC

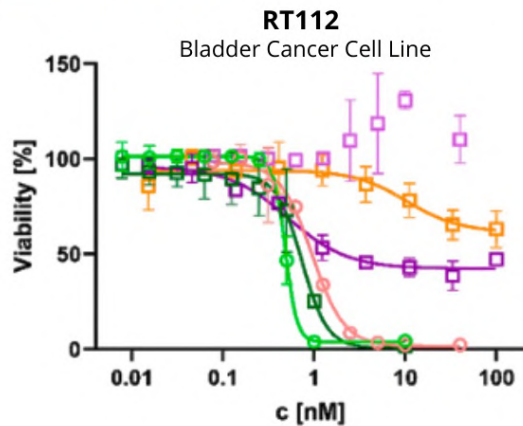
A High HER2 Expression



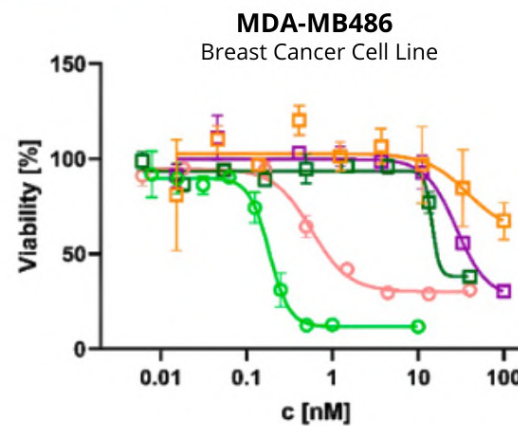
B Moderate HER2 Expression



C Moderate HER2 Expression



D Low HER2 Expression



—○— Cryptophycin —○— MMAE —□— Tras(C2)-Cp —□— Tras(C4)-Cp —□— Tras(C8)-Cp —□— Tras(C8)-MMAE

Key Highlights

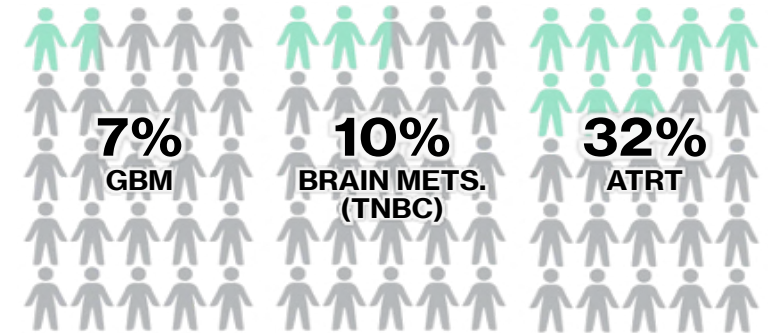
- Cryptophycin ADCs showed sub-nanomolar potency across cell lines with medium to high HER2 levels (A,B,C), achieving **over 80% cell killing** in most cases
- The cryptophycin ADC demonstrated greater potency than the MMAE reference, with double-digit picomolar activity in high HER2-expressing cells (A)
- In moderate HER2-expressing tumors (e.g., Breast JIMT-1, Bladder RT112), Tras(C8)-Cp ADC (DAR 8) was 10x more potent than MMAE (B,C)
- These findings suggest cryptophycin-based ADCs may significantly improve therapeutic outcomes over existing treatments
- Further studies are underway to validate these results and confirm efficacy and safety in broader patient populations

Born from Billions of Datapoints & AI, Starlight has Blockbuster Potential to Provide New Treatment Options for 500,000+ Patients

There are over **120 types of central nervous system (CNS) and brain cancers** and a majority have **no effective treatment options**

- No effective single-agent therapies have been approved for glioblastoma (GBM) in over 18 years
- Effective therapies are needed to improve outcomes for brain metastases patients
- There are no approved therapies for atypical teratoid rhabdoid tumors (ATRT)

■ **5 Year Survival Rates of CNS And Brain Cancers Remain Low Despite Advances in Cancer Therapies**



■ **Starlight's Initial Focus**

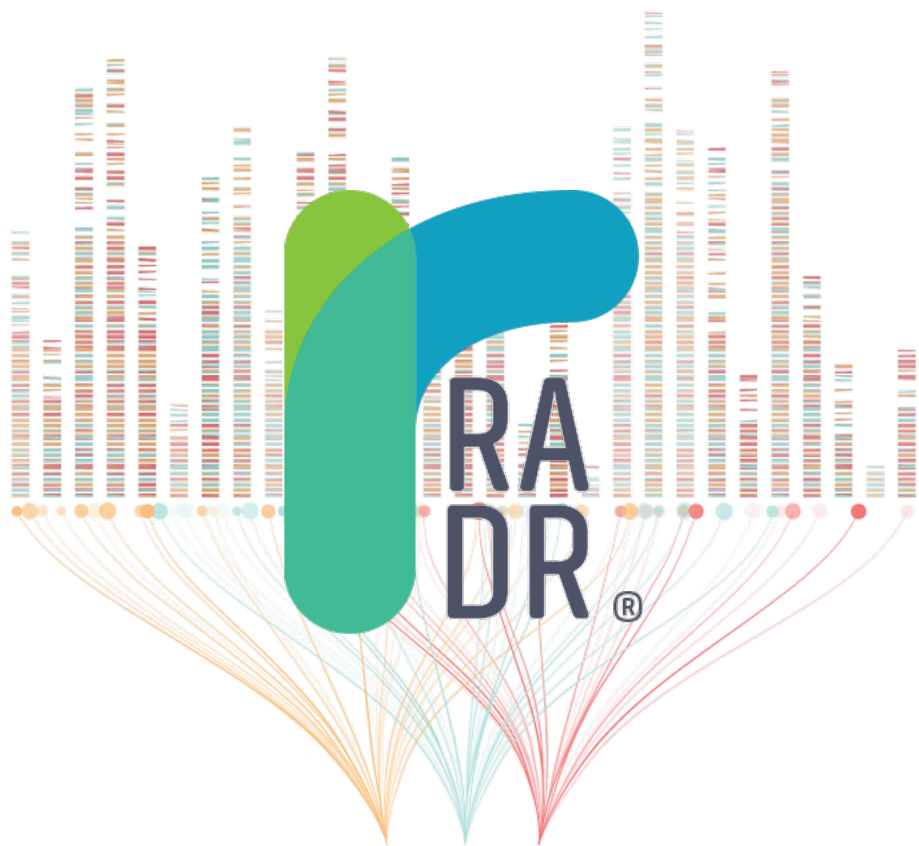
- 1 Glioblastoma
- 2 Brain Metastases
- 3 Pediatric CNS Cancers



- **500,000+ Potential CNS Patients*** with a global market potential of over **\$5 Billion**
- **Multiple Clinical-stage** CNS Cancer Indications
- STAR-001 has been Granted **FDA Orphan Drug Designation for GBM & ATRT and Rare Pediatric Disease Designation for ATRT**
- **World Class Collaborators** from Johns Hopkins, UT Health San Antonio, and Children's Brain Tumor Network
- **4 US Patents & Patent Applications and 10+ Foreign Pending Patent Applications**

*Estimated Annual Global Numbers

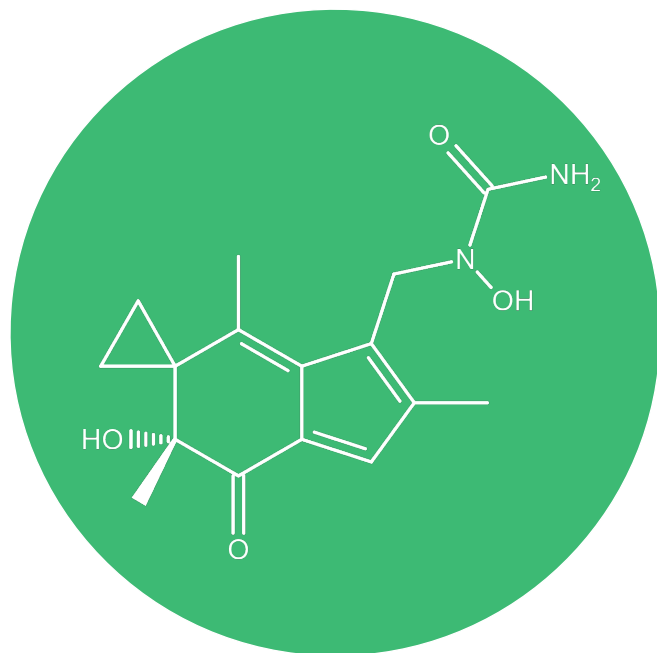
Origination of Starlight: RADR® Predictions Powered by AI



Leading AI Technology, RADR®, Helped Identify

- STAR-001 crosses the blood brain barrier
- PTGR1 levels correlate with response to STAR-001
- GBM has higher levels of PTGR1 relative to normal brain
- STAR-001 anti-cancer activity independent of MGMT promoter methylation status
- Increased activity of STAR-001 with alterations in EGFR, PTEN, PI3K, and SMARCB1
- Synthetic lethality when co-administered with spironolactone (FDA approved drug)
- Synthetic lethality in tumors deficient in DNA damage repair

STAR-001 is Positioned to Expand over Multiple CNS Indications



STAR-001

Scan the QR code
for the full Starlight
Corporate Overview



- Tumors with high PTGR1 expression
- Tumors with DDR pathway deficiency, synthetic lethality in cancers with deficiencies in NER or homologous repair (~25% of all solid cancers)
- PTEN mutant cancers (e.g. endometrial cancer, prostate cancer, breast cancer, thyroid cancer, and kidney cancer)
- Low expression of ERCC3 (a component of NER)
- Co-administration of spironolactone (depletes ERCC3 by proteasomal degradation)
- SMARCb1 mutant e.g., ATRT
- TMZ resistant gliomas
- NSCLC, melanoma, CRPC, PROC, PDAC, and TNBC brain metastases
- In combination with radiotherapy which increases PTGR1 levels

Combination of Spironolactone and LP-184 Enhances Anti-tumor Efficacy in Glioblastoma Models

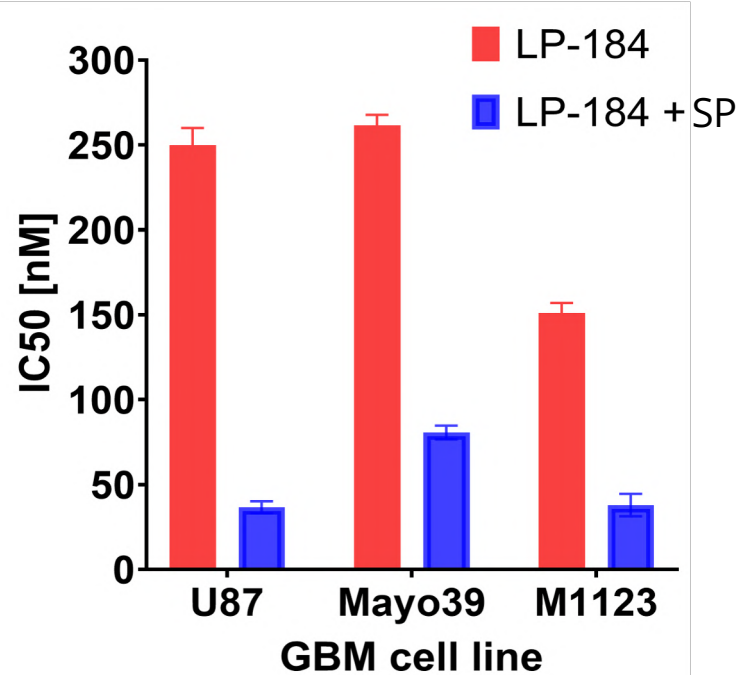


JOHNS HOPKINS
MEDICINE

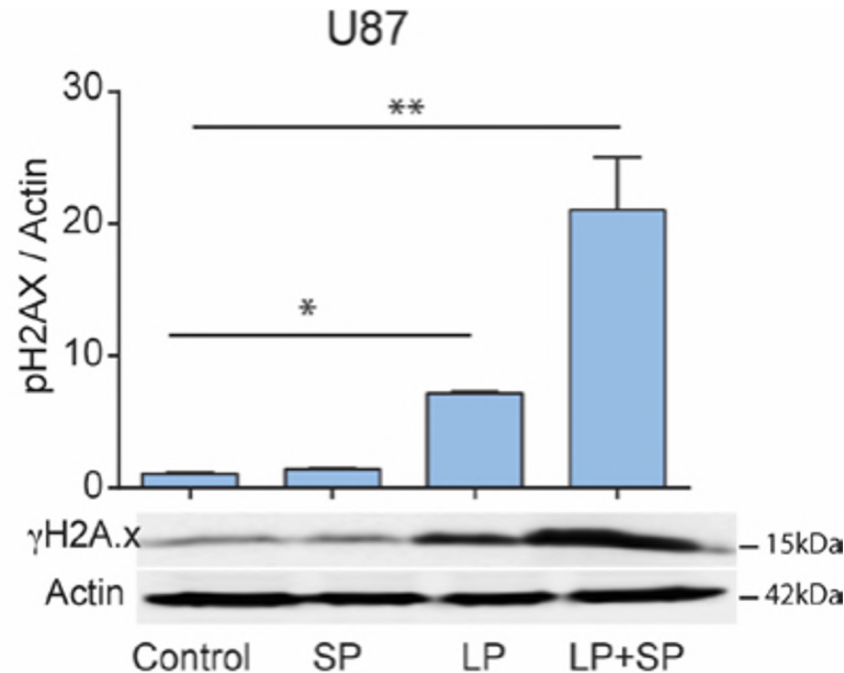
starlight
therapeutics

Treatment of GBM cells with Spironolactone 24h before LP-184 led to....

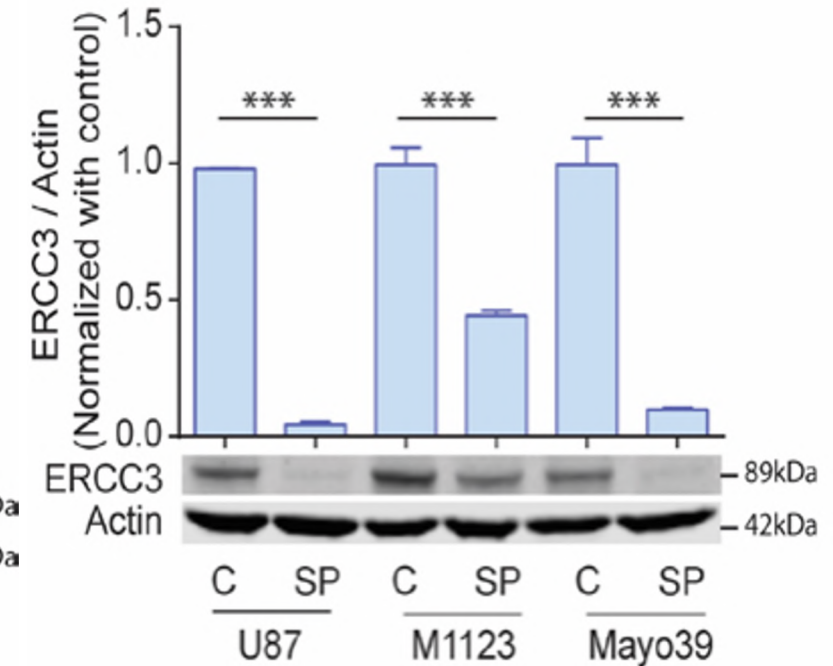
1 3-6x increase in LP-184 sensitivity



2 3x increase in damage response (γ H2AX DNA) to LP-184



3 Depletion of ERCC3 protein by up to 95%



In collaboration with Dr. John Laterra
Lal B et al., *Clinical Cancer Research*, 2023

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 8/04/25)	\$2.56 - \$6.12
Common Shares Outstanding (6/30/25)	10.78M
Warrants (12/31/24)	70.0K
Options (Employees, Management and Directors) (6/30/25)	1.24M
Fully Diluted Shares Outstanding (6/30/25)	12.09M



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 Therapeutics
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
-  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 and launch initial modules as open source AI agents
-  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



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1-972-277-1136

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