the spark
A newsletter from Lantern Pharma®

The Spark Newsletter

By Lantern Communications Team • Jun 08, 2023

Smart Brevity® count: 4.5 mins...1130 words

The May 2023 edition of The Spark features the latest Lantern updates including:

- Submitted LP-184's IND application to the FDA - A Phase 1A Trial Expected to Launch During Q2 2023
- Established New Collaboration with Bielefeld University to Develop Breakthrough Antibody Drug Conjugates (ADCs) using AI
- Dosed Initial Patients in the Harmonic™ Clinical Trial - A Phase 2 Study for Never Smokers with Lung Cancer
- RADR® Machine Learning Models Accurately Predict Clinical Trial Patient Responses - Results Presented at ASCO 2023 with Actuate Therapeutics
- Developed Industry Leading AI Algorithms to Predict Any Compound's Ability to Cross the Blood-Brain Barrier - a Major Problem for Drug Development in Neuro-Oncology.
- In Case You Missed It: Replays of our Q1 Call and Recent Investor Conferences are Now Available.

We want to hear from you - send us feedback or unsubscribe from The Spark at the bottom of the newsletter.

Lantern has Submitted the LP-184 IND Application to the FDA

In early May, Lantern submitted the LP-184 investigational new drug (IND) application to the US FDA. The IND submission is a major regulatory milestone for LP-184 and supports its advancement toward a first-in-human Phase 1 clinical trial, which is targeted to launch in Q2 2023.

What's next: The upcoming LP-184 Phase 1A basket trial is expected to enroll 30-35 patients with solid tumors and central nervous system (CNS) cancers including:

1. Pancreatic cancer
2. Select solid tumors with DNA damage response deficiencies
3. Recurrent high-grade gliomas, including glioblastoma (GBM)
4. Metastatic brain and CNS cancers

Go deeper: Insights from Lantern's AI Platform, RADR®, rapidly accelerated the development of LP-184 towards the clinic and aided in discovering LP-184's mechanism of action, identifying and prioritizing its cancer indications, and generating machine-learning biomarker signatures to assist with clinical trial patient selection.

By the numbers: Globally, the combined annual market potential of these programs is estimated to be approximately $11.0-13.0 billion, consisting of $5.0-6.0 billion for CNS cancers and $6.0-7.0 billion for solid tumors.

New Collaboration Established to Develop Breakthrough Antibody Drug Conjugates (ADCs) using AI

The new collaboration with Bielefeld University (Germany) is focused on the development of AI-powered antibody-drug conjugates (ADCs), an exciting class of potent and highly targeted drug candidates.

Go deeper:

- The initial aims of the collaboration will be to develop and test a novel ADC linked to cryptophycins, which are small molecules with anti-tumor potency at ultra-low, picomolar concentrations.
- Lantern's AI ADC development module, which has been incorporated into RADR®, will be leveraged to uncover novel cancer cell surface protein targets for the collaboration and to guide the design and development of additional ADCs.
- The collaboration with Bielefeld University (Germany) will be led by Professor Norbert Sewald, Ph.D., a leading expert in the synthesis of cryptophycins, development of ADCs, and leader of the European ADC consortium "Magicbullet::reloaded".
- Lantern is receiving an exclusive, worldwide, option to license intellectual property from Bielefeld University related to the collaboration and IP generated from the collaboration.

By the numbers: Globally, ADC drug programs are one of the fastest-growing drug development markets. In 2021, the ADC market was over $4.0 billion and is projected to represent a global market potential of over $14 billion by 2027.

What's next: Lantern anticipates using the AI ADC development module with other collaborators, both academic and commercial, to develop promising ADC candidates for launch into targeted clinical trials.

Initial Patients Dosed in The Harmonic™ Trial

Lantern recently dosed the initial patients in the Harmonic™ trial and continues to dose and screen additional patients across its trial sites across the US.

The Harmonic™ trial has 5 trial sites across the US including Gabrail Cancer Center, Northwest Oncology, New York Cancer and Blood Specialists, Texas Oncology, and the Cancer and Blood Specialty Clinic - Los Alamitos CA. The activation of multiple additional trial sites in the US is anticipated in the coming quarters to bolster patient enrollment.

Go deeper: For more info on the Harmonic™ clinical trial check out the:

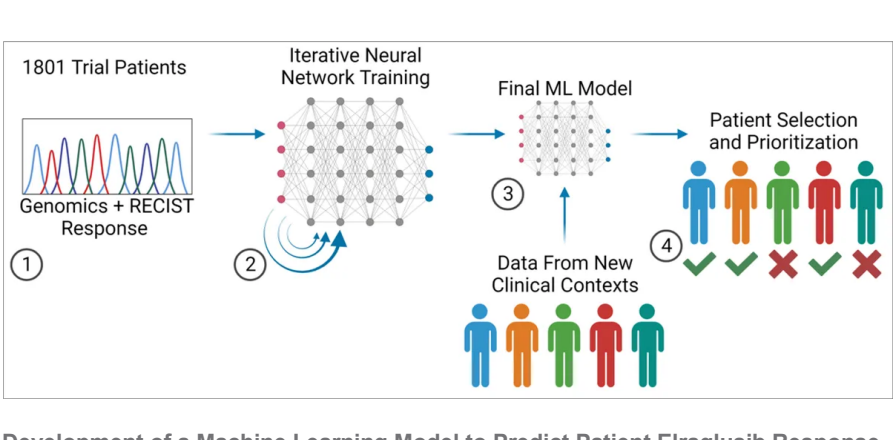
- Harmonic™ clinical trial website
- Locations of all the clinical trial sites
- First-of-its-kind Harmonic™ trial app for your iPhone, focused on education & awareness for patients and the NSCLC cancer community

RADR® Machine Learning Models Accurately Predict Clinical Trial Patient Responses

At the ASCO 2023 annual meeting, Lantern presented the development of advanced machine-learning (ML) modeling to accurately predict patient responses to Actuate Therapeutics' drug candidate Elraglusib (9-ING-41).

Go deeper:

1. Elraglusib (9-ING-41) is a novel inhibitor of GSK-3β and has been evaluated in >230 patients (pts) with advanced malignancies, including metastatic melanoma (1801 Phase 1/2 trial; NCT03678883).
2. Lantern's AI platform, RADR®, was leveraged to develop ML models to accurately predict metastatic melanoma patient response to Elraglusib.
3. ML modeling was able to predict patient response with greater than 88% accuracy and was able to identify that metastatic melanoma patients resistant to PD-1 therapies may benefit from Elraglusib.
4. View the full poster presentation here.

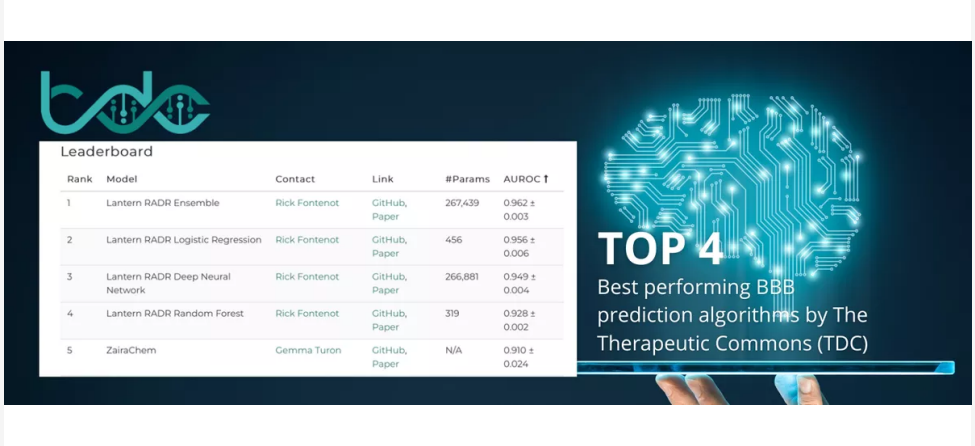


Development of a Machine Learning Model to Predict Patient Elraglusib Response with Genomic Input

What's next:

1. Lantern and Actuate are working to further advance the ML models to predict responders and non-responders to Elraglusib, Lantern's drug candidates, and those of future biopharma collaborators.
2. The AI models are anticipated to be used to inform future clinical trial patient selection for Elraglusib for metastatic melanoma and multiple other cancer indications.

Industry Leading AI Algorithms Developed to Predict the BBB Permeability of Any Compound



The blood-brain-barrier (BBB) is a highly selective border that prevents 98% of drugs from entering brain tissues and is a major hurdle for biopharma companies developing neuro-oncology drugs.

To solve this problem, Lantern developed industry-leading AI algorithms that are capable of rapidly and accurately predicting any compound's BBB permeability.

Lantern's BBB permeability prediction AI algorithms were evaluated and scored as the top-4 best-performing algorithms in the BBB drug prediction challenge conducted by Therapeutics Data Commons (TDC), a coordinated initiative to evaluate AI capabilities across therapeutic modalities and stages of discovery.

Go deeper: Lantern's industry-leading BBB prediction AI algorithms are:

- **Highly Accurate -** BBB prediction accuracy ranges from 88%-92%
- **Ultra-fast** - prediction generation time in ~1 minute
- **Scalable** - capable of rapidly screening thousands of compounds simultaneously
- **Incorporated** - into Lantern's AI platform RADR®

What's next for the BBB permeability prediction AI algorithms:

- They are being made available to Lantern's wholly-owned subsidiary, Starlight Therapeutics, to further advance its brain and CNS cancer drug programs.
- They are anticipated to facilitate opportunities for new high-value business development collaborations with other biopharma companies to develop brain and CNS drugs.

In Case You Missed It: Replays of our Q1 Call and Recent Investor Conferences are Now Available

Q1 2023 earnings call replay and press release:

- https://us06web.zoom.us/webinar/register/2016825185534/WN_jlzd9TfkQMmU5eUH_gYfVw#
- https://ir.lanternpharma.com/news-events/press-releases/detail/126/lantern-pharma-reports-first-quarter-2023-financial-results

Lytham Partners Investor Conference 2023 fireside chat webinar with Panna Sharma, Lantern's CEO and President:

- https://wsw.com/webcast/lytham8/ltrn/2066400

RedChip Investor Group Call with Lantern with Panna Sharma:

- https://redchip.zoom.us/webinar/register/WN_zf4ovw2LQbWhTAUYBgcwkw#/registration

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Forward Looking Statements

This newsletter 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, our plans to advance the development of our drug candidates and antibody drug conjugate program, or our future financial performance. Any statements that are not statements of historical fact (including, without limitation, statements that use words such as "anticipate," "believe," "contemplate," "could," "estimate," "expect," "intend," "seek," "may," "might," "plan," "potential," "predict," "project," "target," "objective," "aim," "upcoming," "should," "will," "would," or the negative of these words or other similar expressions) should be considered forward-looking statements. There are a number of important factors that could cause our actual results to differ materially from those indicated by the forward-looking statements, such as (i) the impact of the COVID-19 pandemic, (ii) the risk that our research and the research of our collaborators may not be successful. (iii) 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, (iv) the risk that no drug product based on our proprietary RADR® A.I. platform has received FDA marketing approval or otherwise been incorporated into a commercial product, and (v) those other factors set forth in the Risk Factors section in our Annual Report on Form 10-K for the year ended December 31, 2022, filed with the Securities and Exchange Commission on March 20, 2023. You may access our Annual Report on Form 10-K for the year ended December 31, 2022 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 newsletter 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.