

LEAP INTO THE FUTURE OF DRUG DEVELOPMENT



THE NEXT GENERATION OF AI HAS LANDED

BULLFROGAI
One giant leap for mankind.

Stock Symbol: **NASDAQ: BFRG**

Forward-Looking Statements

This presentation contains forward-looking statements. In addition, from time to time, we or our representatives may make forward-looking statements orally or in writing. We base these forward-looking statements on our expectations and projections about future events, which we derive from the information currently available to us. Such forward-looking statements relate to future events or our future performance, including: our financial performance and projections; our growth in revenue and earnings; and our business prospects and opportunities. You can identify forward-looking statements by those that are not historical in nature, particularly those that use terminology such as “may,” “should,” “expects,” “anticipates,” “contemplates,” “estimates,” “believes,” “plans,” “projected,” “predicts,” “potential,” or “hopes” or the negative of these or similar terms. In evaluating these forward-looking statements, you should consider various factors, including: our ability to change the direction of the Company; our ability to keep pace with new technology and changing market needs; and the competitive environment of our business. These and other factors may cause our actual results to differ materially from any forward-looking statement. Forward-looking statements are only predictions. The forward-looking events discussed in this document and other statements made from time to time by us or our representatives, may not occur, and actual events and results may differ materially and are subject to risks, uncertainties and assumptions about us. We are not obligated to publicly update or revise any forward-looking statement, whether as a result of uncertainties and assumptions, the forward-looking events discussed in this document and other statements made from time to time by us or our representatives might not occur. See offering documents for further risks and disclosures. Past performance is not indicative of future results. There is no guarantee that any specific outcome will be achieved. Investments may be speculative, illiquid and there is a total risk of loss.





Using AI to discover drug targets that drive disease.

NASDAQ: BFRG



WHAT WE DO

BullFrog is at the intersection of computational biology and artificial intelligence. We use combinations of state-of-the-art causal AI/ML techniques to identify new drug targets that drive disease.

OURS IS A DISEASE AND DATA AGNOSTIC PLATFORM



BULLFROG AI INVESTEMENT THESIS

- Exclusive neuropsych data partnership with the Lieber Institute provides access to the largest brain bank in the world
- Leveraging the Applied Physics Lab's breakthrough AI technology to access difficult drug targets
- Massive total addressable market expected to grow at an 8.9% CAGR, to reach \$162B by 2030
- Macro tailwinds driven by rapidly rising drug development costs and a lengthy regulatory pathway
- Lean operating model expected to self-fund cash runway for 10+ years with a single bio bucks deal



THE PROBLEM: High Failure Rate of New Drugs

88% OF DRUGS

in the industry's pipeline will fail

THE REASONS?

- Poor drug efficacy
- Deficient ADME profile
- Unmanageable toxicity
- Patient enrollment

HIGH-RISK PROCESS:

8½ YEARS

average time
to market

\$1.8 BILLION

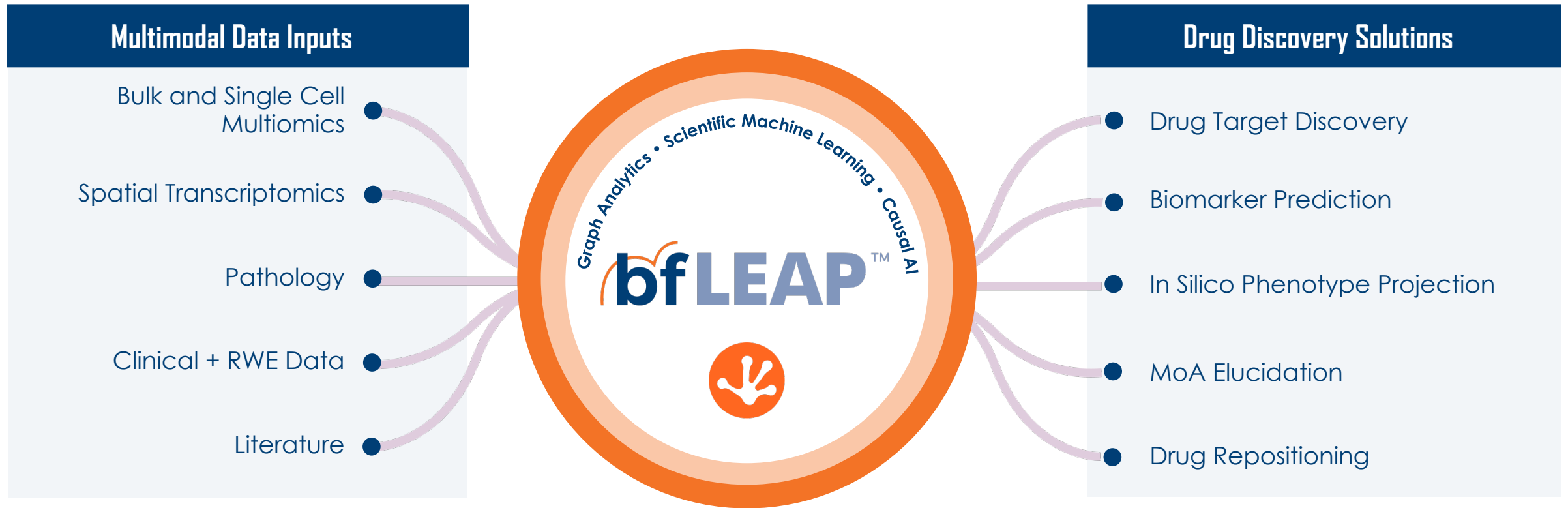
average cost to
develop a new drug

\$204 BILLION

total annual R&D
spending by 2024,
3% CAGR



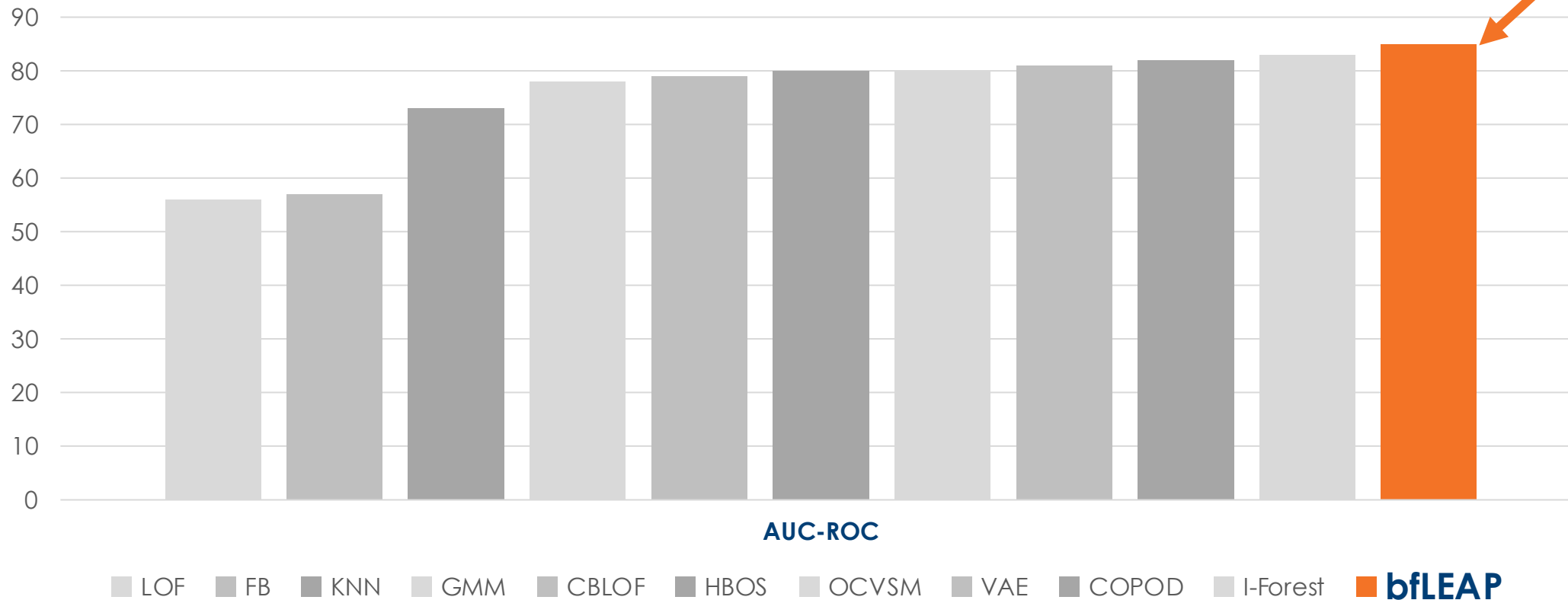
THE SOLUTION: AI-enabled Drug Discovery and Development



Benchmark Comparison Study

Our anomaly detection algorithm outperformed the top 10 currently used algorithms for complex, multivariate data analysis

ML Performance - Benchmarking



BullFrog's
algorithm
was #1



Stay Lean Business Model

Drug Discovery Collaborations

Secure Proprietary data --- A combination of cash payments and success fees based on achieving certain milestones as determined by each specific arrangement.

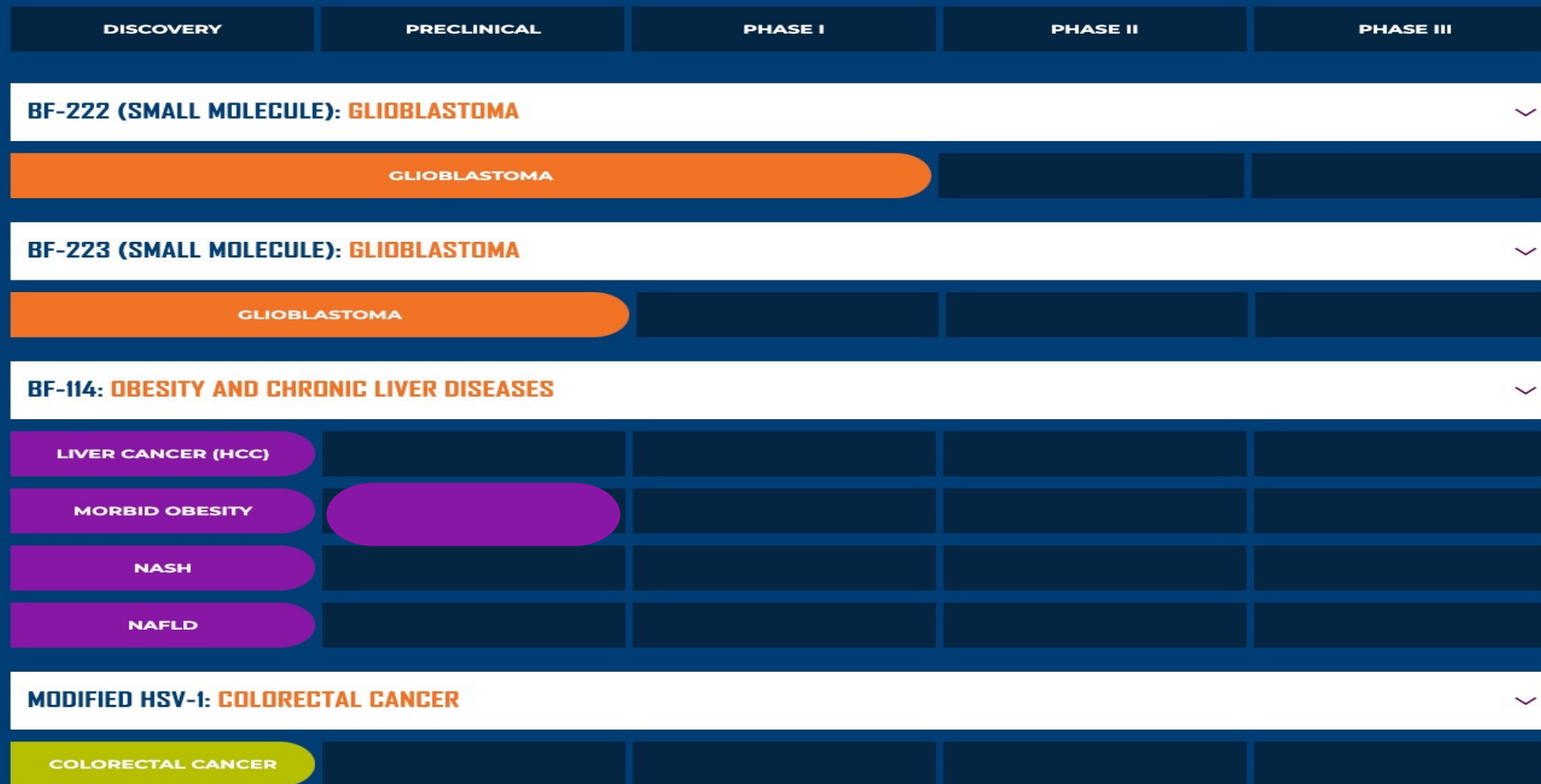
Advance Therapeutic Assets and Monetize

Discover/License and Out-license internal drug assets from discovery to Phase 1.



Internal Therapeutic Pipeline

Demonstrated Success Advancing In-Licensed Assets



Cutting Edge Collaboration



**Daniel R. Weinberger, M.D.,
Director and CEO of LIBD**

“Our collaboration with BullFrog AI has enabled us to apply cutting-edge AI technologies to our extensive brain data. The preliminary results are provocative and offer novel insights at the gene level that may only be discoverable using these novel AI technologies, offering a new lens through which we can view and potentially treat brain disorders. This is an important first step towards personalized medicine in psychiatry.”



Vin Singh, CEO of BullFrog AI



“By employing our bfLEAP™ platform on LIBD's unrivaled brain data, we've gained invaluable ground into unraveling the biological underpinnings of psychiatric disorders. These preliminary findings have the potential to not only deepen our understanding but also pave the way for developing more targeted and effective treatments that set the stage for us to seek out revenue-generating strategic partnerships with pharmaceutical companies.”



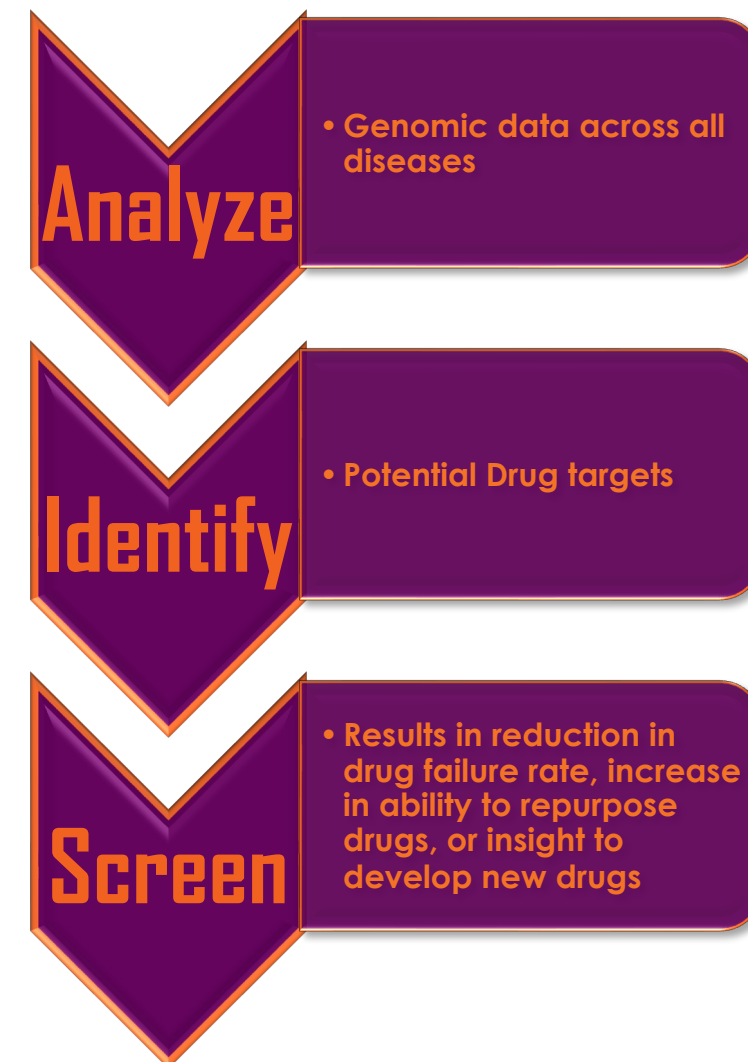
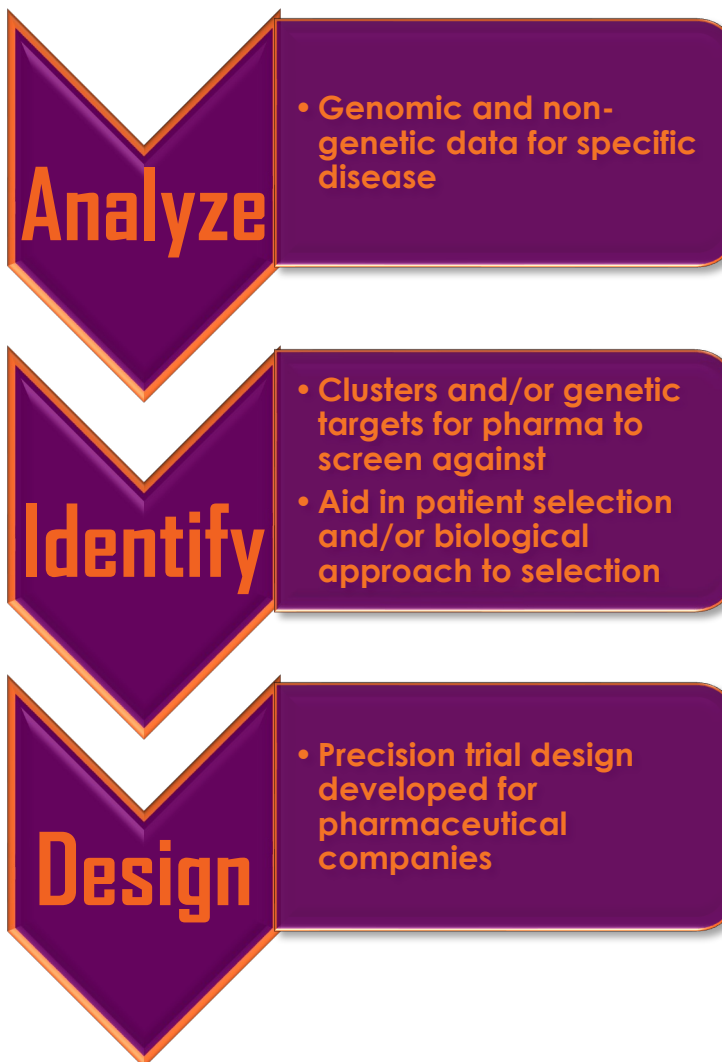
Current Market Challenges

According to a 2023 report from Deloitte:

- 1 in 8 have a neuropsychiatric disorder
- Currently a \$100 billion market for pharmaceuticals
- Projected to grow to \$200 billion annually by 2028
- High failure rates in development
- A human brain is exponentially more complex than an animal brain
- Unable to perform brain tissue biopsy without harm to subject



LIEBER INSTITUTE *for*
BRAIN DEVELOPMENT
MALTZ RESEARCH LABORATORIES



Hot Off The Press....

BULLFROG AI AND LIEBER INSTITUTE FOR BRAIN DEVELOPMENT COLLABORATION IDENTIFIES NOVEL DRUG TARGETS FOR NEUROPSYCHIATRIC DISORDERS

GAITHERSBURG, Md., May 16, 2024 (GLOBE NEWSWIRE) -- [BullFrog AI Holdings, Inc.](#) (NASDAQ: BFRG; BFRGW) ("BullFrog AI" or the "Company"), a technology-enabled drug discovery company using artificial intelligence (AI) and machine learning to enable the successful discovery and development of pharmaceuticals and biologics, today announced significant advancements in its collaboration with the Lieber Institute for Brain Development (LIBD), including the identification of potential drug targets for multiple neuropsychiatric conditions.

BullFrog AI and LIBD have made remarkable progress in identifying novel subgroups between and within neuropsychiatric disorders, including major depression, schizophrenia, and bipolar disorder. Utilizing a combination of ensemble machine learning, generative AI, and graph analytics, the team has successfully clustered patients by expression levels of gene isoforms across multiple brain regions. This innovative approach led to the identification of dozens of clusters of patients, each exhibiting differential enrichment of neuropsychiatric conditions, providing unprecedented insights into the biology of these disorders. These biological subtypes could ultimately lead to targeted therapeutics for a more precise treatment of psychiatric disorders.

For each identified cluster, key genes have been pinpointed that explain cluster membership. These genes present new potential drug targets by revealing unique molecular mechanisms and pathways associated with each cluster. To prioritize these genes for wet lab validation, BullFrog AI is now applying Causal AI, a crucial step for confirming the therapeutic potential of the identified targets.

"This collaboration continues to yield transformative insights into the biological underpinnings of neuropsychiatric disorders," said Vin Singh, CEO of BullFrog AI. "The identification of these novel subgroups and key genes is a testament to the power of AI in advancing precision medicine. Importantly, our proprietary bfLEAP™ platform, combined with LIBD's unparalleled brain data, is paving the way for the development of targeted and effective treatments, and we have initiated engagement with pharmaceutical companies with an objective of securing multiple strategic partnerships in the coming quarters."

Daniel R. Weinberger, M.D., Director and CEO of LIBD, added, "Our partnership with BullFrog AI has unlocked new pathways for understanding the complexities of brain disorders. These findings not only advance our scientific knowledge but also open new avenues for developing targeted therapies that can improve patient outcomes. We are excited about the potential impact this collaboration holds for the future of neuropsychiatric treatments."



Biologically Targeting Neuropsychiatric Disorder Treatments

Identified multiple potential drug targets for schizophrenia, bipolar disorder, and major depressive disorder.

Entered discussions with potential pharmaceutical partners to further validate targets for clinical development.

The schizophrenia treatment market is expected to surpass \$10 billion by 2028, while major depressive disorder and bipolar disorder markets are expected to surpass \$16 billion and \$6.2 billion respectively by 2027.

Upcoming Milestones:

- Causal analysis = final target list – Q3
- Target validation – Q4
- Active discussions with pharma for multiple target discovery deals

Typical Deal Structure:

- 5 Target deal
- ~\$10-\$20M upfront per target for discovery and validation
- 14 • ~\$250M total payment per target that leads to an approved drug



Innovative Cancer Therapeutics

BF-222:

Preclinical animal data shows potential for treating various cancers, targeting glioblastoma initially.

BF-223:

Novel mebendazole prodrug with improved solubility and bioavailability, targeting glioblastoma.

Seeking partners for co-development and/or out-licensing opportunities.

The market for glioblastoma treatments is expected to surpass \$10 billion by 2032.

Upcoming Milestones:

- Exploring advancement of BF-223 using AI and possibly non-dilutive funding
- Partner program



Pioneering Treatments for Metabolic Disorders

BF-114: Novel nucleic acid therapeutic

Pre-clinical asset that shows potential in the treatment of numerous metabolic indications, obesity, non-alcoholic fatty liver disease (NAFLD), non-alcoholic steatohepatitis (NASH), and hepatocellular carcinoma (HCC).

Currently engaging with leading metabolic disease-focused pharmaceutical companies for early-stage collaboration to advance preclinical and clinical development with potential licensing agreements post-IND approval

The market for anti-obesity medications is projected to reach \$77 billion in 2030; HCC \$14.2 billion by 2031; NAFLD \$32.5 billion by 2032; and NASH \$16.3 billion by 2030.

Upcoming Milestones:

- Completion of animal study– Q3
- Active discussions with pharma with goal of deal

**THE GEORGE
WASHINGTON
UNIVERSITY**

WASHINGTON, DC



Next-Generation Oncolytic Virus for Cancer Treatment

HSV-1: Oncolytic virus

Co-development project with JCVI to design, engineer, and validate a novel, precision-engineered oncolytic virus for colorectal cancer.

Leveraging JCVI collaboration to advance early engagement with oncology-focused pharma companies to secure joint development agreements and/or partnerships for clinical development and commercialization.

The market for colorectal cancer treatments is projected to reach \$21.8 billion in 2031.

Upcoming Milestones:

- Completion of proof-of-concept studies – Q3
- Completion of animal study – Q4
- Outreach to pharma for deal



BullFrog AI Leadership



Vin Singh
Chairman and CEO



Dane Saglio
Chief Financial Officer



JT Koffenberger
Chief Information Officer



Hon. Prof. Tom Chittenden, Ph.D, D.Phil
Chief Science Officer



Thomas Hazel, Ph.D.
VP, Drug Development



Kristin Bigos, Ph.D.
Senior Director, CNS



David Recker, M.D.
Chief Medical Officer



Toby Sayre
VP, Business Development



Enrique Garcia-Rivera, Ph.D.
VP, Artificial Intelligence





Contact

Vin Singh – Founder, CEO

Email: vin.singh@bullfrogai.com

Thank You

Investor Relations Contact

Dave Gentry

(407)-491-4498

1-800-RED-CHIP

BFRG@redchip.com



Advancing medicine through artificial intelligence