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 now guarantee that any specific outcome will be achieved. Investments may be speculative, illiquid and there is a total risk of loss.

BULLFROG AI

A technology-enabled life sciences company using AI to aid in advancing the next generation of lifesaving therapies.

NASDAQ: BFRG

The Problem:

High Failure Rate in Drug Development

*Only **12%** of drugs that enter clinical trials make it to market*

54% of drugs
Fail in Phase 3

88% of drugs
in the industry's pipeline will fail

8½ years
average until ready to go to market

$2.6 billion
average cost for a new drug

$100 billion
spent on research in 2018 by Top 15 pharma companies

$204 billion
Total annual R&D spending by 2024, 3% CAGR

THE SOLUTION

bfLEAP™

Award-winning AI analytics platform
(Johns Hopkins APL – Technology of the Year 2018)
(R&D100 Award - Finalist 2023)

Proven performance, actionable insights

Optimized drug development for enhanced odds of success

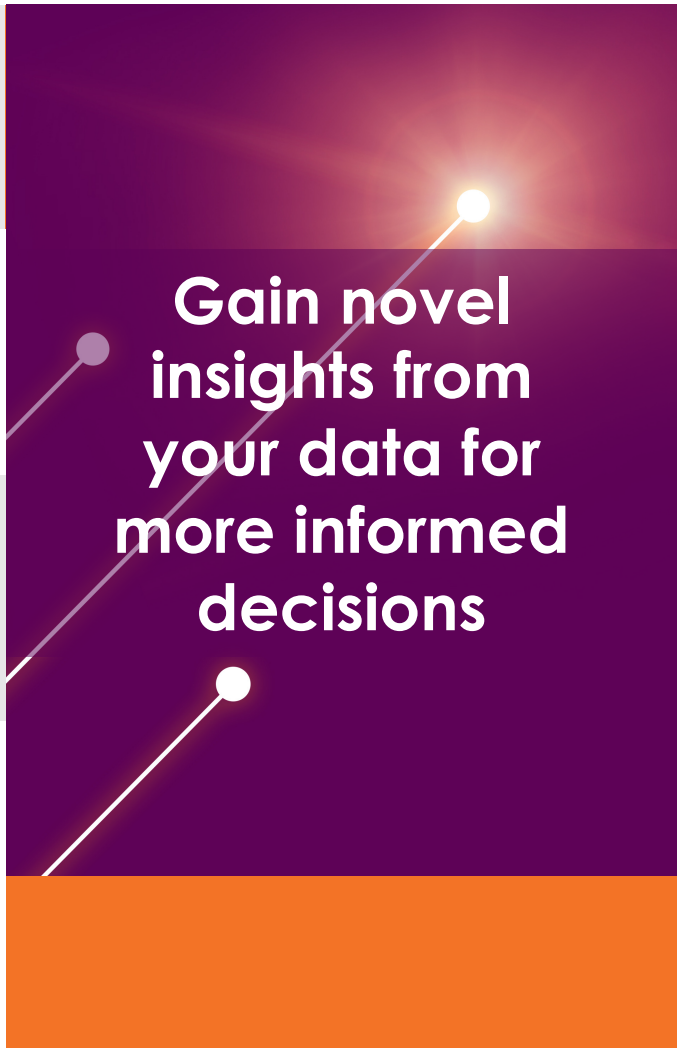
APL JOHNS HOPKINS APPLIED PHYSICS LABORATORY

Engineered for the Future

Identifying previously unknown associations with scalable and data agnostic capabilities

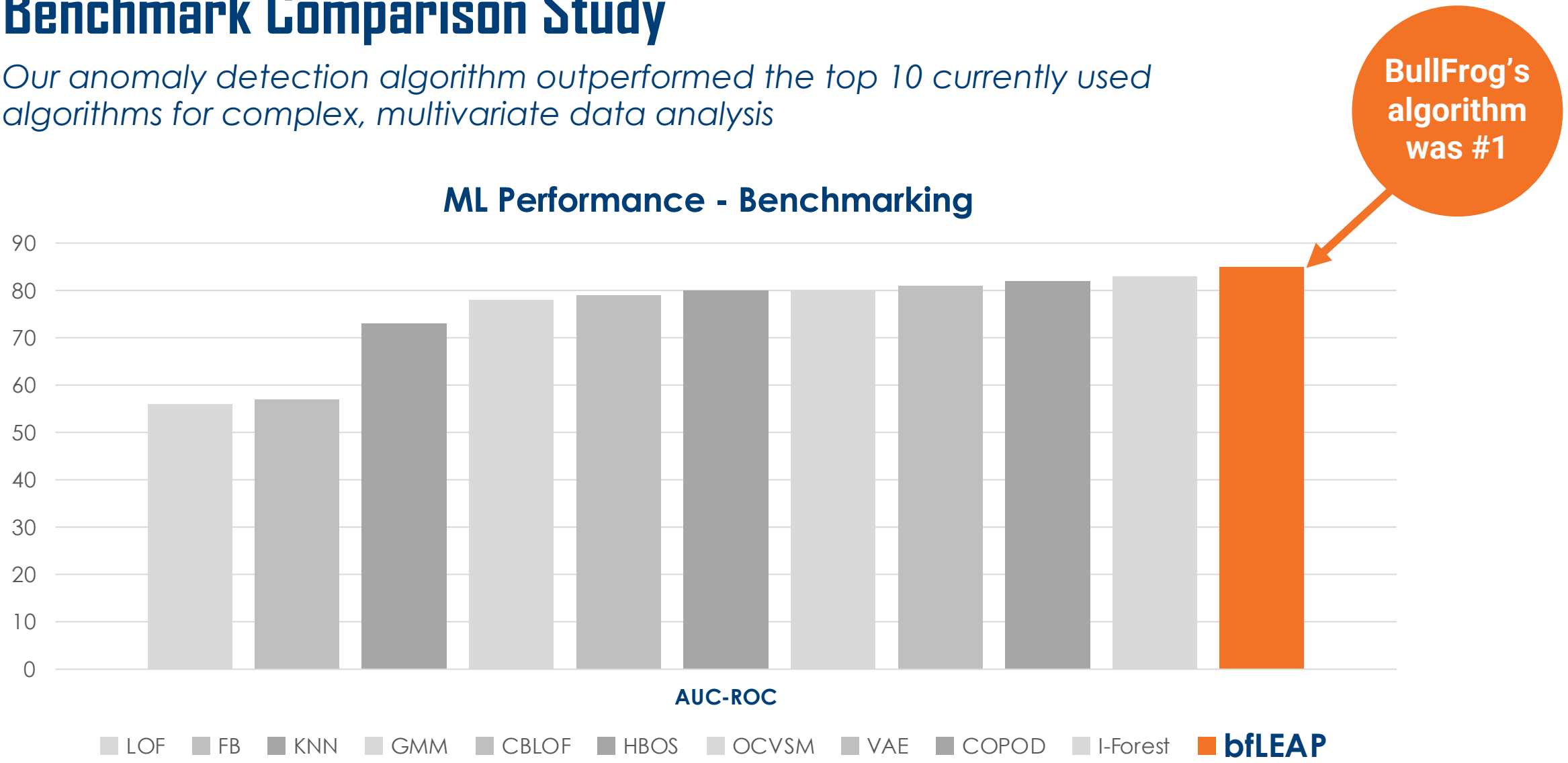
bfLEAP™

Next-Generation Parallel Computing	• bfLEAP™ is an analytical code library offering proven, trusted algorithms for data science. It features **over 250 functions** to facilitate data ingestion and analysis, tailored to accommodate diverse analytical needs
Uniquely Scalable Data Analytics	• **Scalability** is a key strength, with support for parallel processing, enabling rapid analysis of large datasets without compromising accuracy or efficiency
Data Agnostic	• **Full compatibility** with all healthcare data types, including numerical values, categories, and time series, ensuring a wide coverage of biological data sources.
Graph/ML Analytics	• Powerful graph utilities for data analysis, including features for clustering and link inference to detect patterns and relationships. This includes **proprietary and explainable methods** for dimensional reduction and predictive modeling, enhancing the understanding and interpretation of complex multi-dimensional data.



Benchmark Comparison Study

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



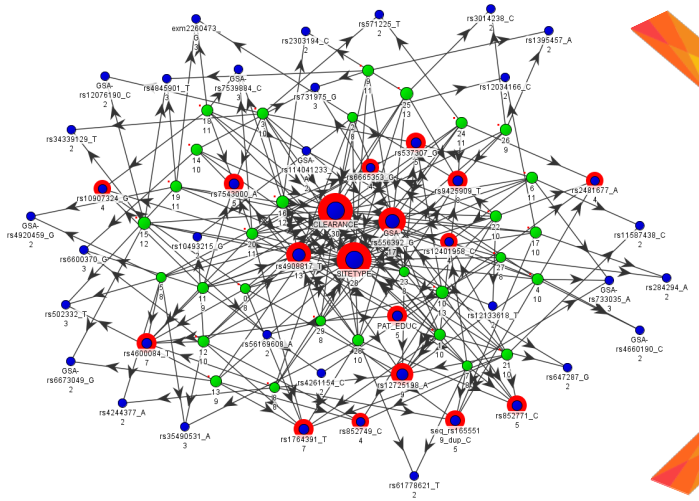
C. Savkli, & C. Schwartz. "Random Subspace Mixture Models for Interpretable Anomaly Detection"
23rd International Conference on Artificial Intelligence, July 26-29, 2021, USA

Advanced Graph Analytic Approach

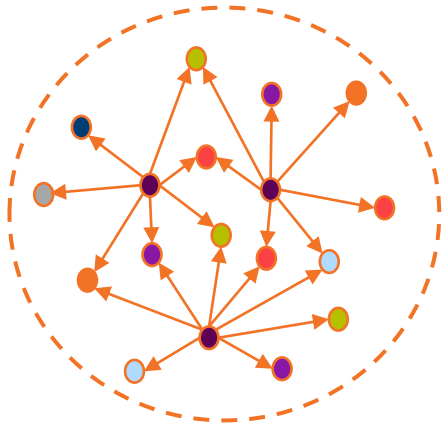
Explainable AI

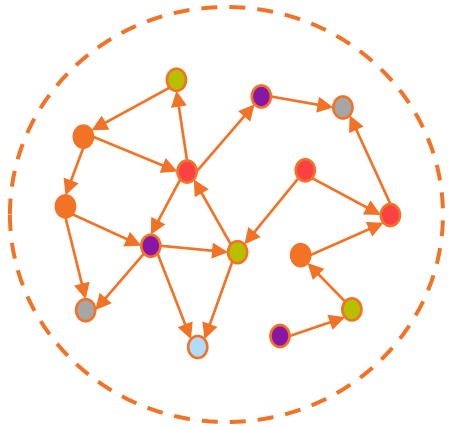
Data Modalities

Fuse Into a Global Network



Create Outcomes Network





Create Patient Network

Benefits:

- Clear organization of relationships
- Explain data insights with confidence
- Analyze incomplete data
- Fully scalable
- Minimal coding
- Superior anomaly detection

Increasing Odds of Success Across the Development Spectrum

	Discovery Lead Identification	Phase I-II Development	Phase III Development	Phase IV Commercial
Data Sources	"-Omics" Data Preclinical/ Clinical Data Dose Response Data		Socio-demographic Data Behavioral Data Real-World Data	
Actionable Insights	New Targets New Therapies New Biomarkers	Dose Response Drug Interaction Patient Subgroups	Protocol Design Trial Optimization Responders Nonresponders	Real-World Data Product Registries

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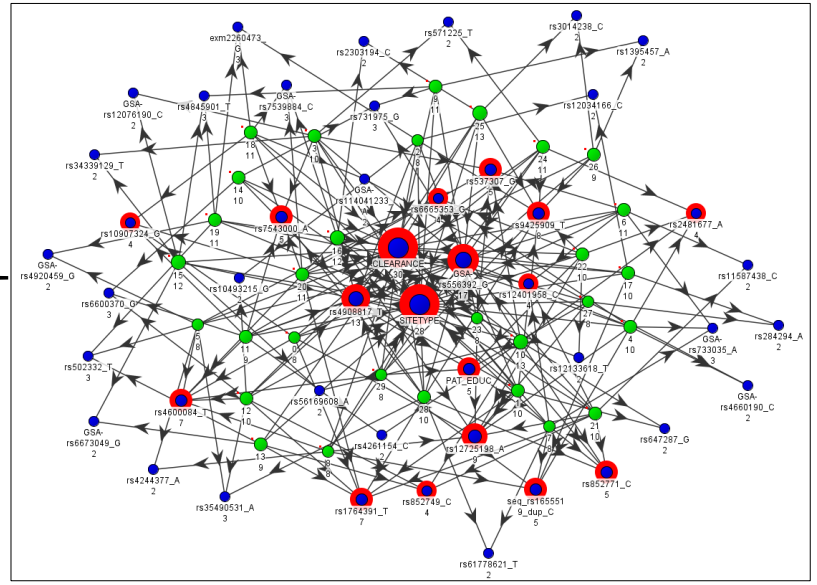
AI-enabled Target Identification

Relevant -omics Data Sources

- Genomics
- Transcriptomics
- Proteomics
- Epigenomics

AI-Enabled Data Networks to Identify Clusters of Relevant Genes and Genomic Features



Multi-modal data is fused into a global network

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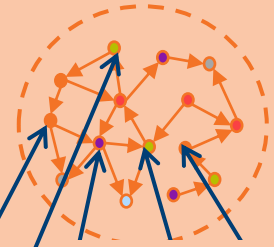
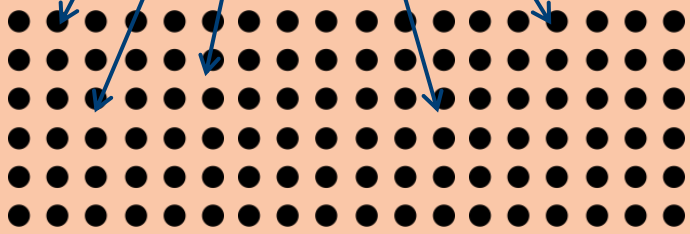
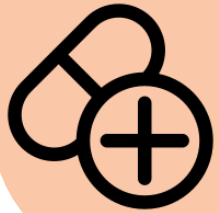
Cluster of Disease-associated Genes (potential targets)



Screening vs. existing compound library



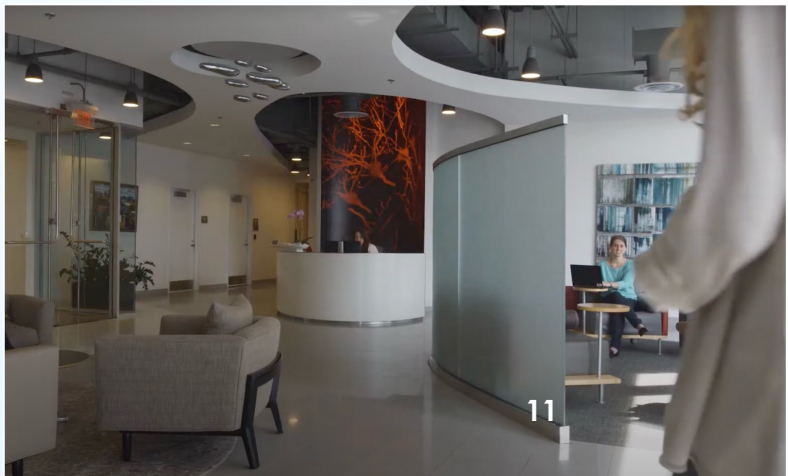


Resulting hits can be used to inform clinical program design, as well as in drug rescue or indication expansion

BULLFROG AI

LIBD

LIEBER INSTITUTE *for*
BRAIN DEVELOPMENT
MALTZ RESEARCH LABORATORIES

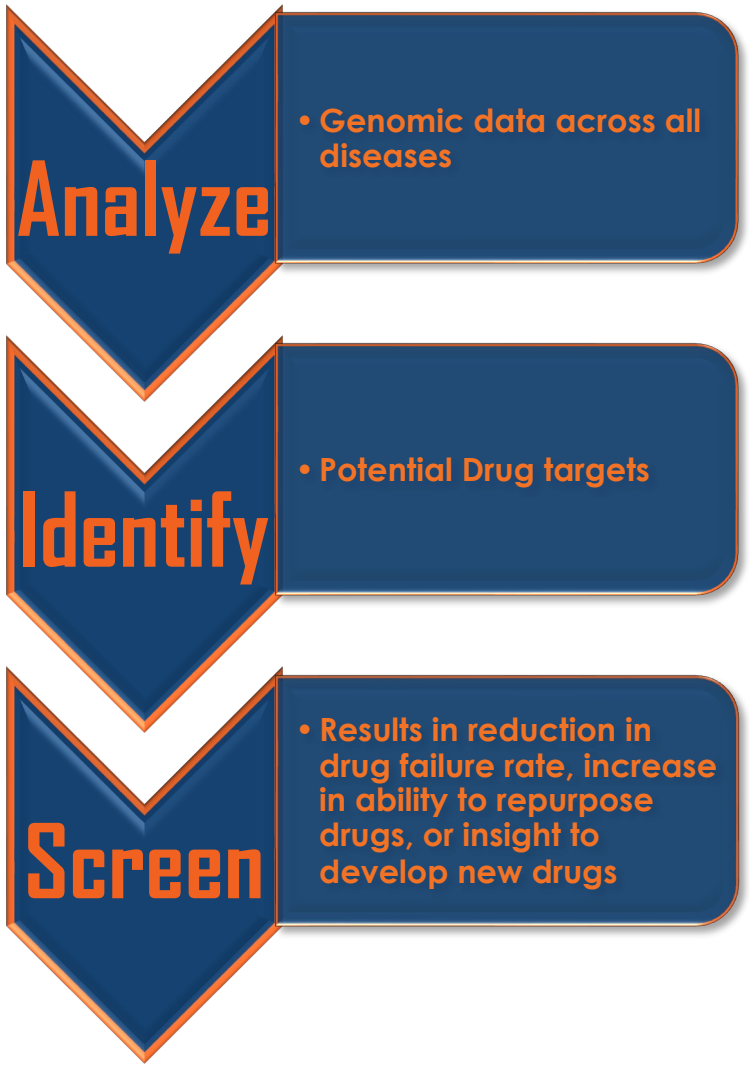


Largest collection of human brains for study of neuropsychiatric disorders in the world

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



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Purpose-built Data Networks using the bfLEAP platform

BullFrog Data Networks extend the bfLEAP platform to create purpose-built comprehensive data networks from multi-modal data to identify hidden insights. Networks can be created using clinical trial data, EMR, claims, -omics, and all types of Real-World Data (RWD), analyzed together using unsupervised machine learning.

BullFrog Data Networks™

World-Wide Exclusive Rights

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Program	Candidate	Discovery	Preclinical	Phase 1	Phase 2	Phase 3	Collaborator	Status
Glioblastoma bf-222-Polyform C bf-223 ProDrug	Repurposed small molecule for cancer therapy				PARTNER		The Johns Hopkins University	Exclusive License
Liver Cancer (HCC)	siRNA for cancer and metabolic disorders						The George Washington University	Exclusive License
Morbid Obesity								Exclusive License
NASH								Exclusive License
NAFLD								Exclusive License
Colorectal Cancer	Oncolytic Virus						JCVI	Exclusive Co-Dev

= planned

USE CASES

Advancing medicine through artificial intelligence

Novel Biomarker ID

Multidimensional clustering analysis

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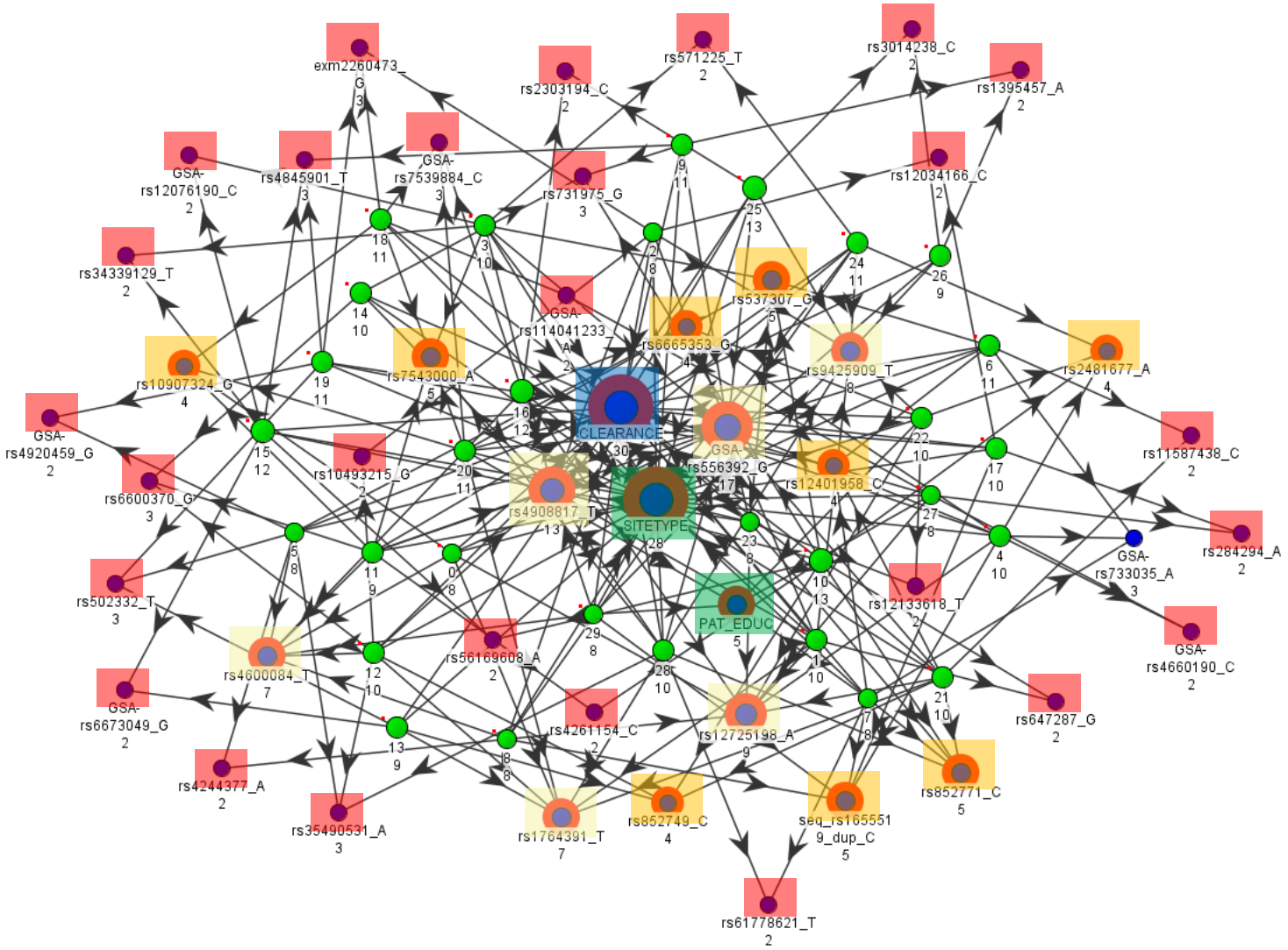


Results:

Multi-variate signature ID:

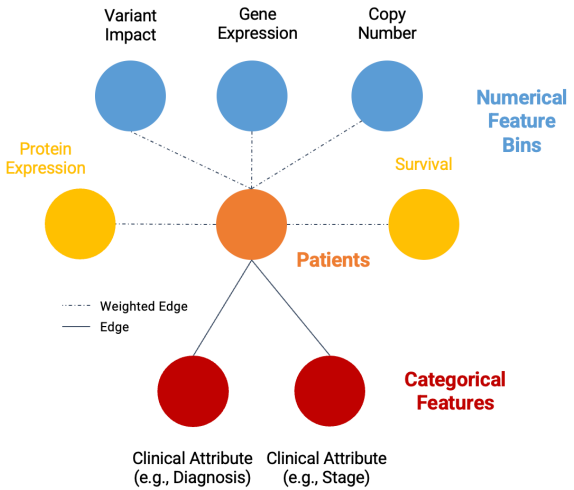
- **Genetic Variants**
- **Physiological Biomarkers**
- **Categorical Correlates**
- **Outliers**

DATA SPECS:

- **Medication:** Olanzapine
- **~200 patients**
- **~30 non-genetic attributes**
- **~700K genetic attributes**

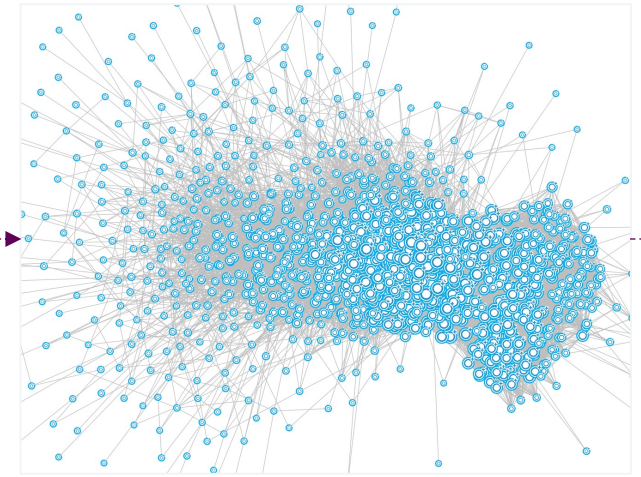
bfLEAP™ Identifies 3 Colon Adenocarcinoma Specific and Novel Markers

Pan-cancer multi-modal graph from TCGA (~10,000 patients)



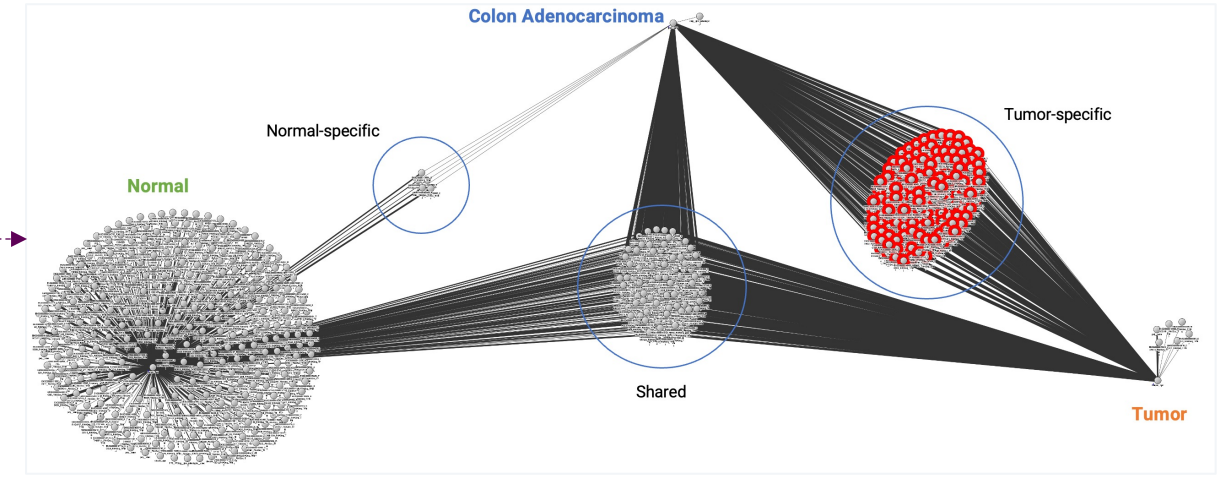
>150,000 features

Feature relationship graph



>1,500 features with significant associations
>100,000 edges

Colon adenocarcinoma sub-graph



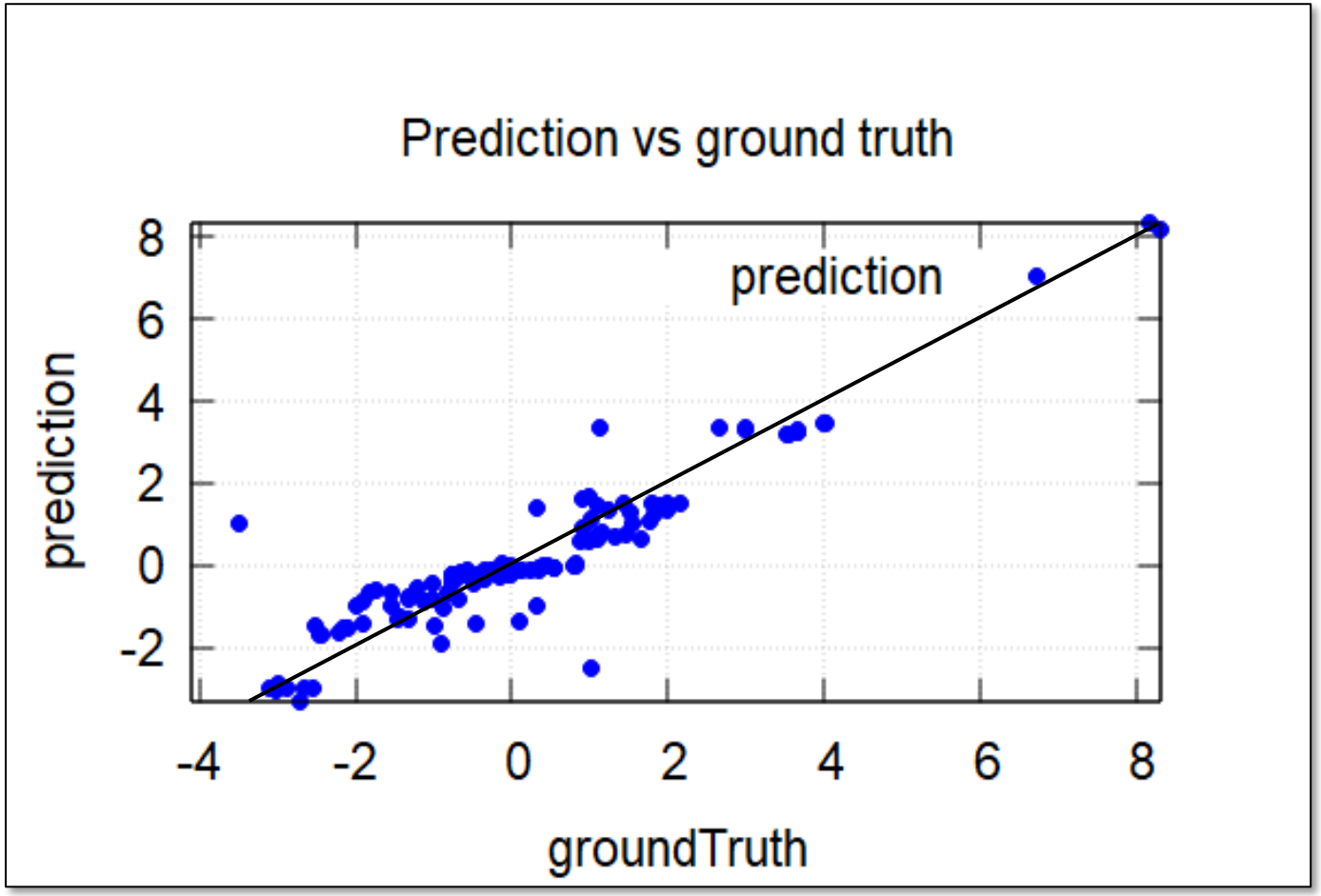
90 features specific to Colon cancer
14 over-expressed
76 under-expressed

bfLEAP™ identified **90 colon adenocarcinoma markers** differentially expressed compared to healthy tissues, with **14** being significantly over-expressed in tumors, a remarkably smaller and more actionable gene set compared to traditional differential expression analysis, which yields over >3,000 candidates for this same comparison. Using NLP, we categorized **3** of these 14 as novel and **6** as near-novel (having little existing literature).

The Cancer Genome Atlas

Patient Stratification: Predicting Rate of Disease Progression

- Using a combination of attributes, we can create models that predict rate of disease progression with strong correlation to ground truth



150 Patients
Multimodal data
Incomplete data
Time series data

0.92 correlation coefficient

Thank You

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Advancing medicine through artificial intelligence