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Just Add Data Knowledge Discovery Made Easy

Automated Machine Learning and Biomarker Discovery

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JADBio is trusted

30+ Paying & Piloting Customers in biotech, pharma & academia



40+ new scientific discoveries using JADBio published in scientific literature







Finding the "needle in the haystack"

Modern biotechnologies enable the generation of exabytes of high complexity data during life science discovery programmes

Data can tell us

- which therapies work best on a given patient
- which biomarkers are potential drug targets
- which biomarkers diagnose disease

There is an urgent need for Machine Learning and Biomarker identification



The role of AI in identifying better biomarkers in Biotech

Only 10% of clinical trials ever succeed, because of poor biomarkers lacking genetic evidence

Artificial Intelligence

- can potentially double the probability of successful trials
- can shorten the early discovery stage by at least 30%

HOWEVER

Standard analysis practices cannot handle the growing complexity of the data

When AI is performed, it's mainly tailored or completely outsourced, thus not scalable



JADBio is

an AutoML-based Bioinformatics platform.

Enables Life Scientists to effortlessly make novel biomarker discoveries among millions of measurements



Build and deploy accurate and explainable predictive models with speed and ease.

...Model interpretation, explanation, visualization, and deployment

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You Just Add Data ...

Upload measurements of possible predicting biomarkers and factors

- (Multi) Omics (transcriptomics, proteomics, methylomics, genomics)
- Clinical, medical, of lifestyle factors
- Single Cell measurements
- Medical images or signals

& Combinations of the above

Works on human, animal and plant data!



... to predict or find

Diagnostic outcomes

- disease status
- disease subtype
- disease staging

Therapeutic outcomes

- chemosensitivity response
- Identify new drug candidates or repurpose existing ones

Time-to-event outcomes

- death/survival
- metastasis
- relapse/complication

Diagnostic / Predictive biomarkers

- Phenotypic traits
- Drug targets

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JADBio Spec Sheet



- **01** Fully automated for the non-expert, no coding required
- 02 Customizable by experts
- **03** Accepts tabular, image, signal data, and their combinations
- 04 Can handle very large feature sets (>1M) and very small sample size (>15), missing values and imbalanced classes in the data
- Predictive models for continuous (regression), discrete (classification), and time-to-event (Survival Analysis) outcomes (time to death, survival, relapse)
- 06 Model is output as executable to embed within user applications

Ask us for complex data types (single cell data, graph data, text data) and custom types of analyses

JADBio vs Classical Statistics

JAD Bio		Classical Statistics
Returns just a handful of biomarkers to examine JADBio removes irrelevant and redundant biomarkers (signatures)	Biomarkers to examine	Returns thousands biomarkers to examine Univariate statistics (e.g. differential expression Analysis) also return redundant markers
Discovers biomarkers that are predictive in combination Increases predictive and diagnostic power of resulting models	Biomarker quality	Examines markers in isolation (not signatures) Leads to inferior predictive models
Estimates the predictive power of models and biomarkers	Model quality	Focus on p-values and statistical significance Statistical significant markers do not necessarily correspond to high predictive ability

Novel JADBio discoveries in development



Breakthrough Knowledge Discovery by well known organizations

Outperforms state-of-the-art tools in gold standard oncology data corpus

Cancer subtype prediction; against 4 expert teams returned the best predictive model in 16 out of 26 cancer types when all omics are employed

Provides insight into the differences between closely related cancer phenotypes

NASA's Genelab identified, in two days effort, two non-redundant, 4-gene, biosignatures distinguishing radiation-induced thyroid cancer and sporadic thyroid cancer.



CelPress

TCGA



Breakthrough Knowledge Discovery in infectious diseases

Faster turnaround times

Identified the determinants of Severe COVID-19 in less than 7 days instead of 2 months, saving more than 100K <u>more...</u>

Single/multi-omic signatures for COVID-19

Identified biomarkers of COVID-19, severe COVID-19 and COVID-19 versus different acute respiratory illness *more...*





nature

SCIENTIFIC

REPORTS

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Norwegian University of Science and Technology

JADBio delivery and deployment options

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Graphical user-interface REST API / Python wrapper



SaaS on AWS

On-premise installation on own AWS private cloud

On-premise installation on local servers





High standard Security & Privacy by use of several AWS solutions (encryption at rest/transit, firewalls, log audits, etc.); GDRP compliance

Thank you

www.jadbio.com

Discover all of JADBio's functionalities using the sample data in the platform

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Using JADBio, we saved 8 months and \$50K in 14 days for drug repurposing

"

Dr. Theodora Katsila Biomarker Discovery & Translational Research Lab Head, National Hellenic Research Foundation

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How JADBio Works



The AI system analyses successes and failures to **improve itself** for the next analysis

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