



blinklab

**Early and accurate diagnosis
of autism and ADHD**



**PRINCETON
UNIVERSITY**

Introducing a breakthrough AI-powered smartphone platform for neurological testing

BlinkLab Ltd (ASX:BB1), November 2024

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What is autism?

- “Neurodevelopmental condition that affects how the brain processes **sensory information**.”
- Autism impacts:
 - Social development
 - Language development
 - Sensory processing
 - Behavior and interests

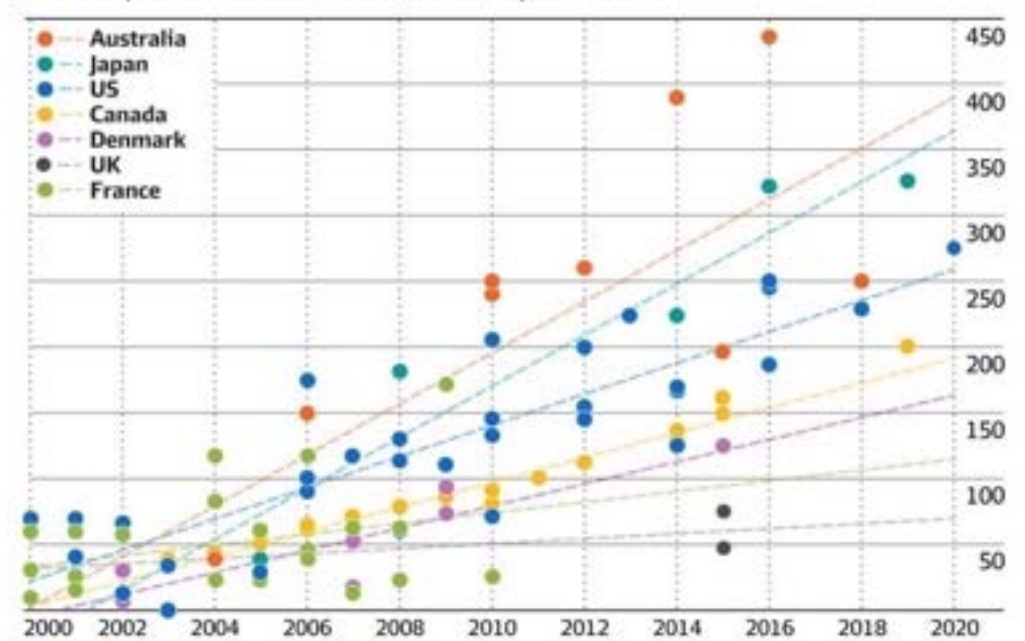


Economic burden of autism in US: \$700B in 2024

"The economic burden is significant and alarming" ¹

- Prevalence has grown up to 2-4% among children²
- Autism healthcare expenses are soaring³
 - USA: Costs for an autism diagnostic evaluation: **\$1,000 to \$5,000**
 - USA: Lifetime cost for individual with ASD: **\$3.6M³**
 - **AUS: 35% of NDIS participants have autism accounting for \$6.7B⁴**
- 3.6M kids born each year in US
 - AAP recommendation: "all children be screened for autism at ages 18 and 24 months."
- Extreme shortage of behavioral specialists
 - USA: 758 specialist for **19M children** with developmental concerns⁵
 - USA: Total time for evaluation is between **3-8 hours⁵**

Autism prevalence studies of children, per 10,000



SOURCE: MAATHU RANJAN

¹ Leigh and Du (2015), Forecasting the economic burden of autism in 2015 and 2025 in the US, Journal of Autism and Developmental Disorder

² Center for Disease and Control, World Health Organization

³ Cakir et al. (2020) The lifetime social cost of autism: 1990-2029, Research in Autism Spectrum Disorder

⁴ National Disability Insurance Scheme (NDIS)

⁵ Cognoa 3 March 2023, <https://cognoa.com/waitlist-crisis-report/>

Autism diagnosis is expensive, inefficient, and often late

The costly labor and time intensive diagnostic evaluations are unnecessary for many children.

Parental observations

Concerns arise about child's behavior and development.



Autism screening

By primary care physician, who refers to specialist.



12-24
months
waitlist

Autism diagnostic evaluation

Formal diagnosis requires input from multiple disciplines, including psychiatry, psychology, audiology, occupational and physical therapists.

Process is complex, expensive and frequently delayed. Current diagnostic tools are subjective.



Diagnosis at age 5-6

Family frustrated by evaluation that took longer than 12 months.



Late intervention

Yielding poor clinical results and leading to high expenses later in life.



Long waitlists are caused by specialist shortages and lack of a clear standard of care

BlinkLab's **digital solution** accelerates path to diagnosis

Efficient screening leads to better allocation of resources throughout the diagnostic workflow

Parental observations

Concerns arise about child's behavior and development.



BlinkLab screening

Using our accessible smartphone-based platform.



Diagnostic evaluation

Using biomarkers. Only necessary specialists are consulted.



Diagnosis at age 2-3

Initial diagnosis instantaneously, confirmed in 1-2 months by clinician.



Early and personalized intervention and accurate monitoring

Intervention starts early during brain development, yielding optimal clinical results and leading to significant reduction in costs (40-60%) later in life.



BlinkLab's smartphone app facilitates early diagnosis, reduces costs, and improves accuracy.



blinklab

Our patented solution: **Neuroscience on a smartphone**

Minuscule facial reflexes, evoked by our app, generate a digital biomarker for autism.



Evokes facial reflexes

By presenting visual and auditory stimuli during smartphone use.

Computer vision

Facial features are tracked on the smartphone and transferred to the **BlinkLab platform**.

Biomarker detection

Biomarkers are detected in **real-time** and made available to the clinician.

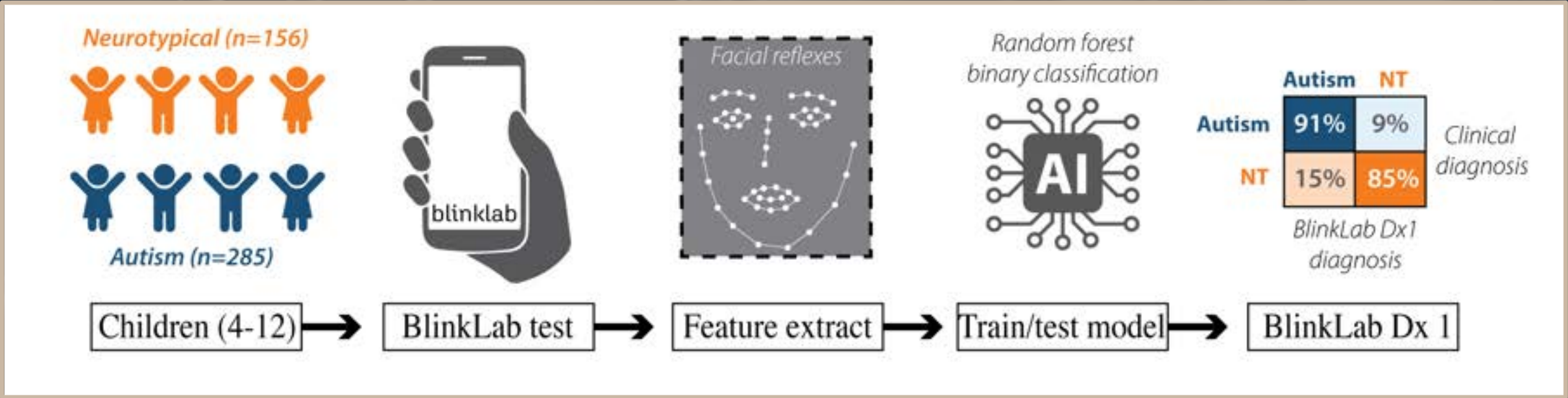
Evaluates brain function

State-of-the art analysis methods and AI modelling to **map the functioning of brain regions involved in autism**.



Large-Scale Study Validates and Enhances BlinkLab's Accuracy in Detecting Autism in Children

News announcement 19 November 2024



In a sample of 441 children, BlinkLab achieved a **sensitivity of 91%** and **specificity of 85%**

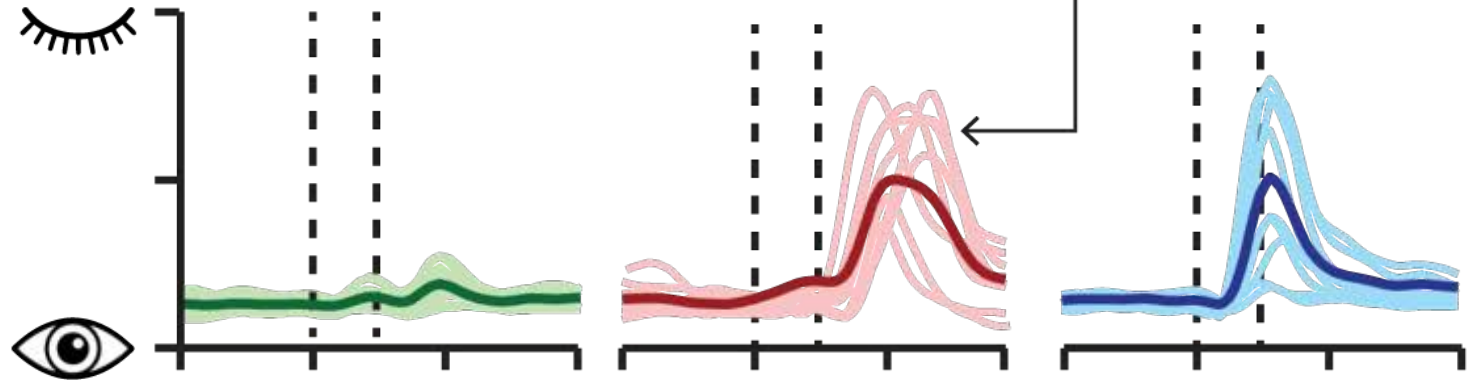
Our AI technology detects autism and ADHD



Auditory cues
delivered with
BlinkLab app



Reflexive eye blinks
recorded with
BlinkLab app



Time (ms)

Control

Autism

ADHD

BlinkLab precisely measures sensory sensitivity in people with autism and ADHD.

BlinkLab App and Online Portal are fully developed

Validated in >8,000 subjects tested globally, including people with limited access to healthcare.

- **Remote testing**

Enables accessible and global diagnostics.

- **Scalable solution**

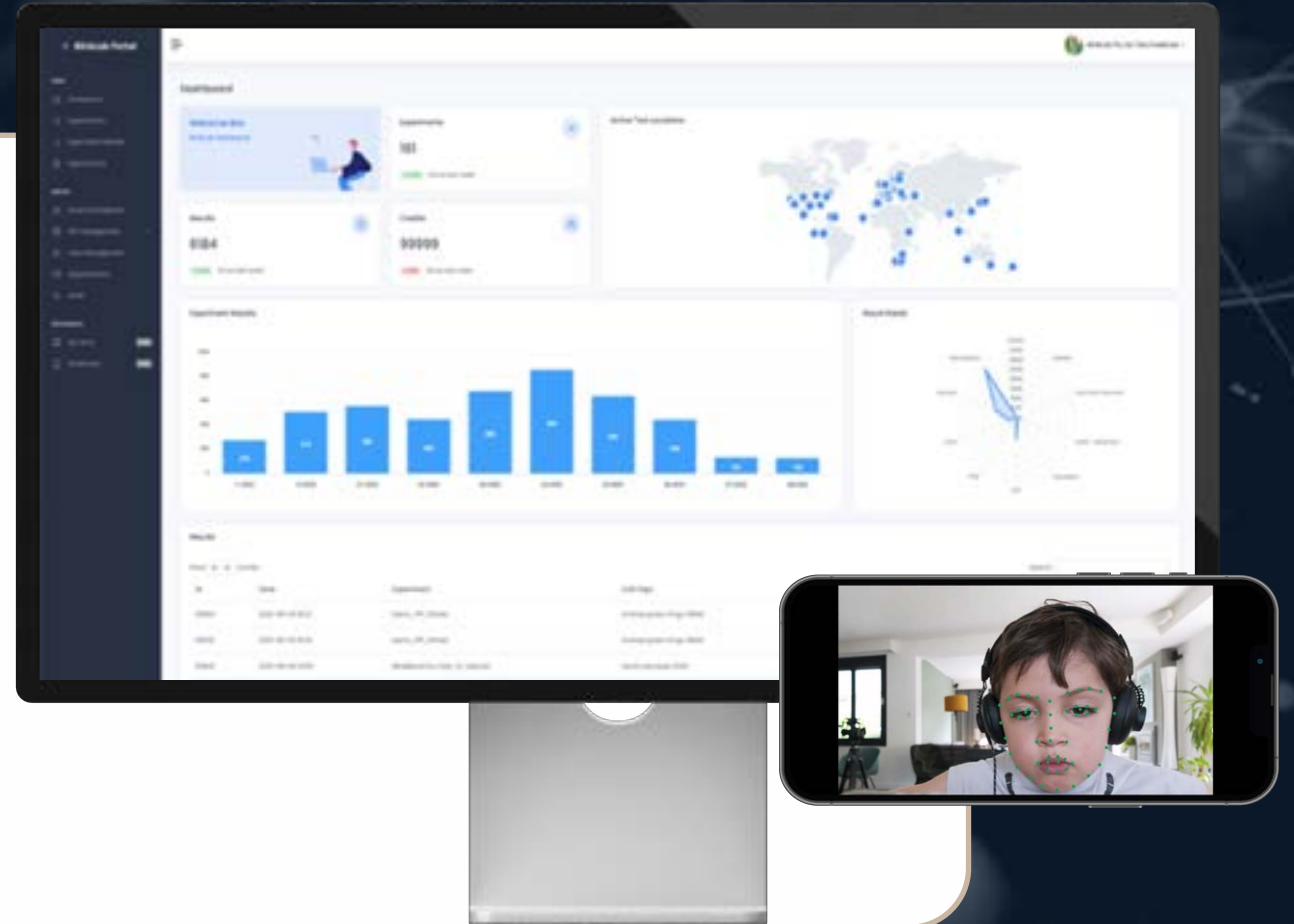
Easily adaptable for clinical and diverse research needs.

- **Real-time analysis**

Immediate insights in user tests and biomarker scores.

- **Rapid global adoption**

Academic and clinical institutes, special schools and, large healthcare providers around the globe already have started implementing BlinkLab.



BlinkLab is collaborating with world-leading institutions

Since our product launched in 2022, we have established **global partnerships** academic and clinical institutes.

2022	2023	2024	ongoing
<div>Princeton University</div> <div>Prof. Samuel S. -H. Wang (Princeton University)</div> <div>"The BlinkLab app is easy to operate, substantially reduces the costs of diagnosis, and produces reliable and reproducible results."</div>			Proof-of-concept of smartphone-based neurometric evaluations.
	Mohammed V Foundations for solidarity		Multi-center autism study in Morocco on BlinkLab's diagnostic accuracy.
	ESPOCH		Multi-center study in Ecuador on brain development, nutrition, and autism .
		Scanner Consortium Europe	Large European consortium, awarded 5.3M euro's, on autism in women.
		Turning Pointe Autism	Autism study in United States on BlinkLab's diagnostic accuracy.
		Erasmus University	Large study on early detection of Alzheimer's and Frontotemporal Dementia .
		Bates College	Objective biomarkers for Functional Neurological Disorders .
		Columbia University	Effects of physical activity on Spinocerebellar Ataxia (SCA) .
		Mental Care Group	Research and commercial partnership with the fifth largest provider of mental health care in EU.
		Monash Univ.	Study on the pharmacology of human decision making and effects of ketamine .
		INTER-PSY	Prospective study on diagnostic accuracy for autism in young children.



BlinkLab to Participate in the Landmark Monash University Autism/ADHD MAGNET Project

News announcement 13 November 2024

- The MAGNET project is an ongoing large cohort study aiming to enroll **1,000 families** with children diagnosed with autism, ADHD, or both autism and ADHD.
- MAGNET is utilizing a novel **family-based trial design** where the parents, affected child and siblings are all enrolled in the same study.
- The aim of the study is to identify novel data-driven autism and ADHD subtypes using **deep phenotyping data**, including the BlinkLab Dx 1 biomarkers, that may outperform current categorical diagnoses with potential future implications for better and more personalized autism and ADHD diagnosis and treatment.



BlinkLab outperforms FDA-approved digital peers

We are leaders in the rapidly growing space of digital diagnostics and therapeutics.

blinklab

cognoa



Sensitivity

91%

52%*

71%



Specificity

85%

19%*

81%



Smartphone-based

Yes

Yes

No



FDA approval

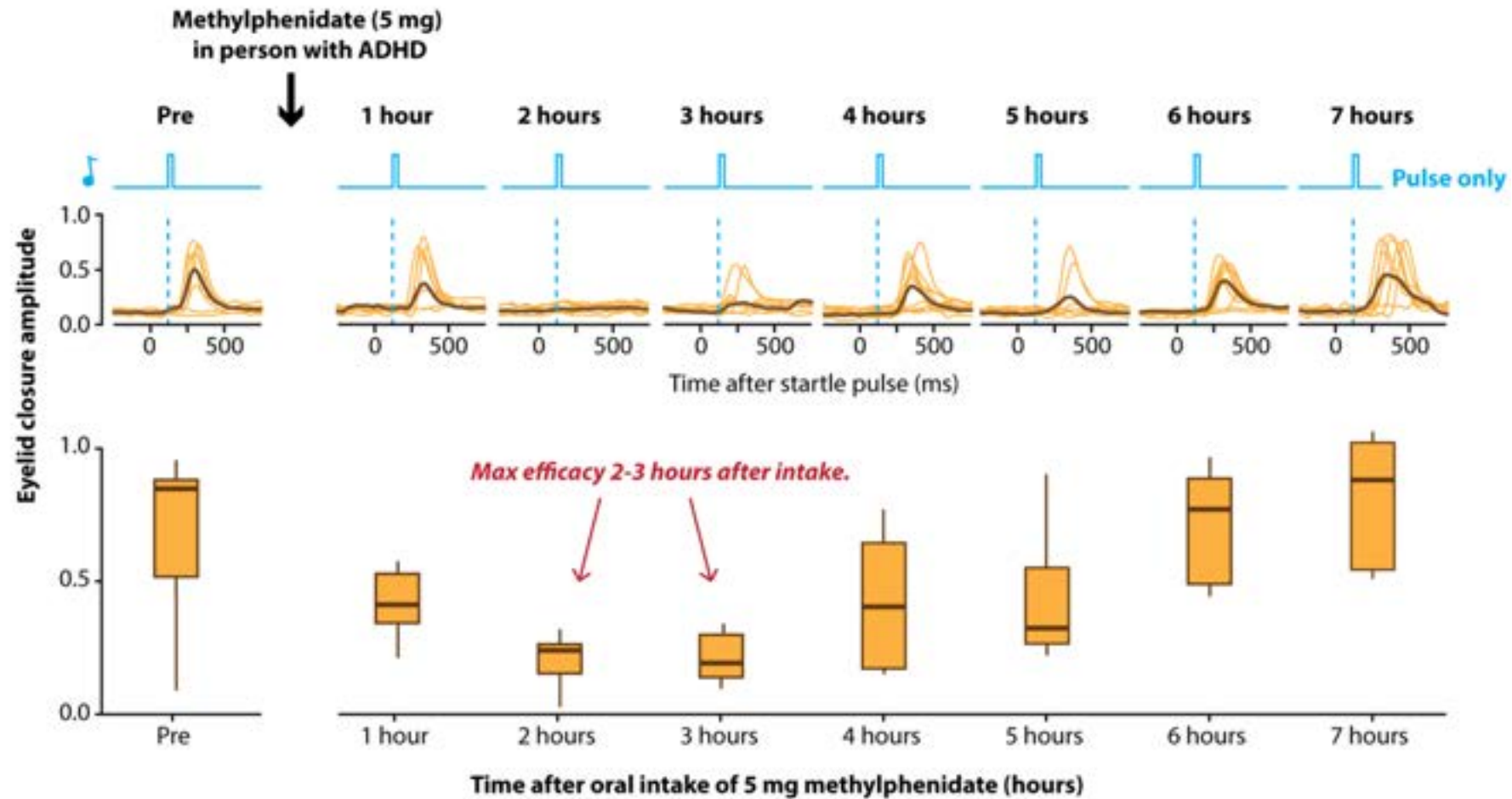
No - 510(k)

Yes - De Novo

Yes - 510(k)

* Calculated over all study completers (Cognoa's device yielded indeterminate results in 68% of cases)

First product to monitor the effect of therapy in real-time



Real-time drug monitoring offers a path to even larger recurring revenues via subscription-based models.

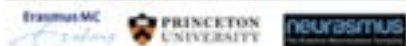
We are experts in science, tech and commercialization



Henk-Jan Boele, CEO

MD, PhD, Entrepreneur and neuroscientist at Erasmus MC and Princeton University

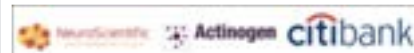
Fifteen years of experience in neurobehavioral testing with over 35 publications. Recipient of many prestigious awards. Team leader and inventor of BlinkLab.



**Anton Uvarov, COO
Executive director**

MBA, PhD, Biotechnology Analyst with Citibank

Cofounder of two biotechnology companies, developed therapeutics for neurodegenerative disorders. Both successfully IPO and publicly traded.



Bas Koekkoek, CSO

PhD, Assistant Professor of Neuroscience. Erasmus MC

Twenty-six years of experience in neurobehavioral testing with over 55 publications in IEEE and the field of neuroscience. An innovator in heart and soul. Cofounder of Neurasmus BV.



Peter Boele, CTO

MA, PhD candidate, Erasmus MC

Born to code, with over 20 years of experience in software development, both as developer as well as executive.



Our mission is to use neuroscience to improve the daily life of families with autism.

We are backed up by an expert advisory board

Company Chairman



Brian Leedman

Experienced Chairman and co-founder of five ASX listed healthcare companies including digital healthcare company ResApp Health, acquired by Pfizer for \$180M in 2022.



Company Director



Jane Morgan

Providing strategic investor and media relations services for over 16 years. Founder of JMM.



Company Director



Richard Hopkins

Experienced bio-pharmaceutical executive with over 20 years in corporate leadership roles with public biotechnology companies.



Scientific advisor



Prof. Samuel Wang

Professor of Neuroscience at Princeton University and author of 2 bestselling books.



Scientific advisor



Prof. Chris De Zeeuw

Professor of Neuroscience at Erasmus MC and vice-director of the NIN (Netherlands Institute of Neuroscience).



Scientific advisor



Prof. Javier Medina

Professor in neuroscience at Baylor College of Medicine in Houston.

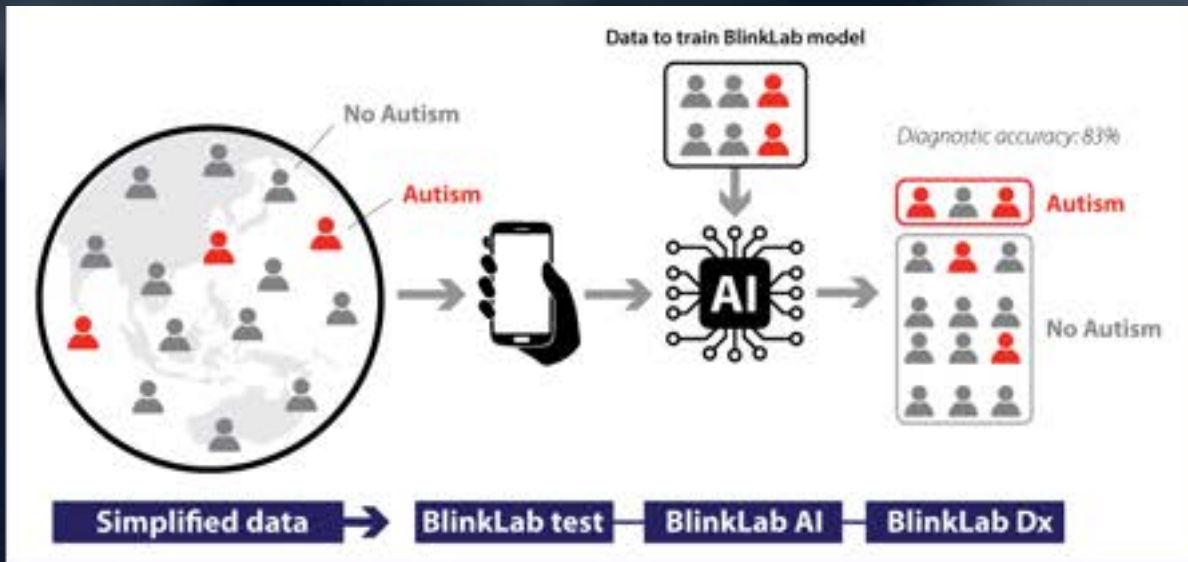


World leading scientists, strategic and commercial advisors.

Optimizing AI and machine learning for BlinkLab Dx

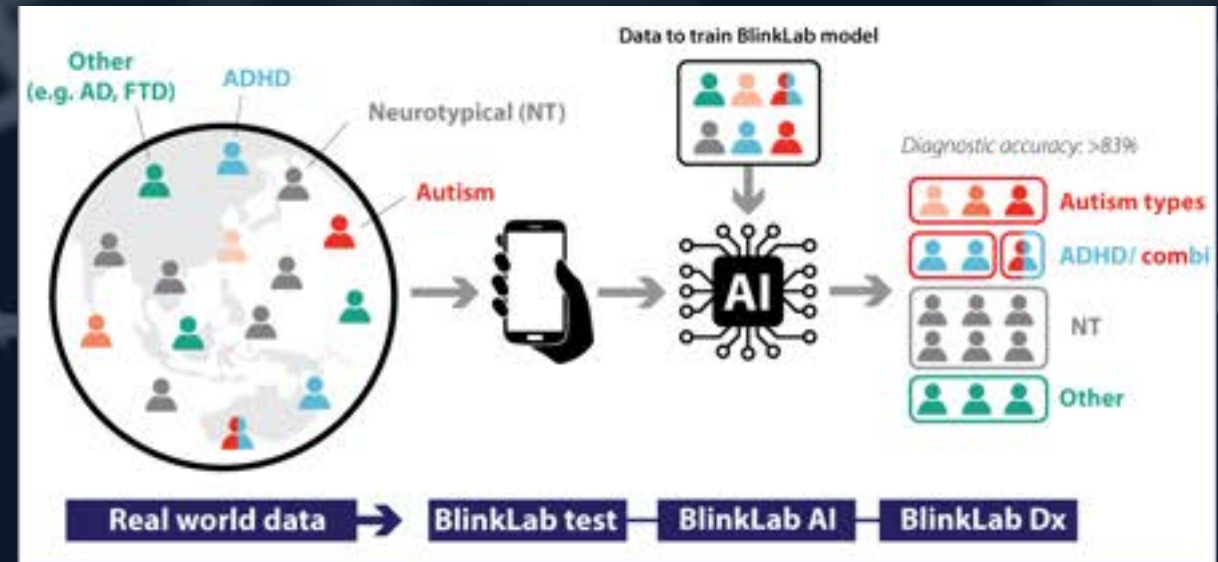
Establishing academic partnerships is crucial not only for academic and clinical adoption, but also for training our ML models with diverse datasets that reflect real-world data.

PREVIOUS STUDIES



Our binary AI classification model, which categorizes individuals into 'Autism' and 'No Autism,' achieved an 83% diagnostic accuracy. However, this model's assumption of only these two categories oversimplifies the complexity of real-world diagnoses.

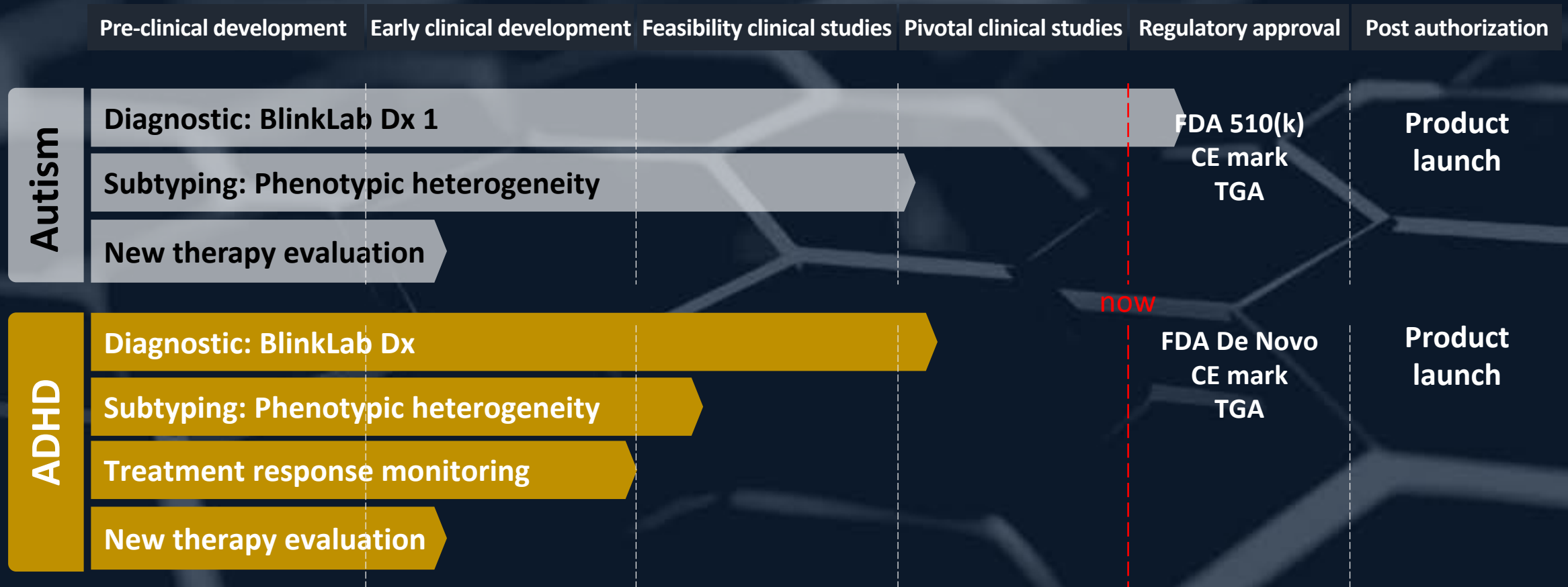
CURRENT WORK



We are currently training our AI model with data that more accurately reflects real-world diversity, including other neuropsychiatric conditions such as ADHD, Alzheimer's (AD) and frontotemporal dementia (FTD). This enhances the model's performance in identifying autism subtypes and ADHD.

R&D Pipeline

*Our R&D pipeline is focused on obtaining **FDA 510(k) clearance** and EU regulatory approval for BlinkLab as a diagnostic adjunct for autism and ADHD.*



Important milestones

News pipeline: Updates on regulatory studies on autism and ADHD and new partnerships

Milestone	Timeframe
Start of activities for FDA registrational study in autism	*2Q 2024
Interim data from ADHD clinical study in EU	*3Q 2024
Appointment of US based CRO to conduct FDA registrational study in Autism	*4Q 2024
Final data from large clinical study in autism (Morocco/US clinical sites)	*4Q 2024
Selection of US clinical trial sites for FDA registrational study	4Q 2024
First subjects tested in FDA registrational study	4Q 2024
Update on CE/ISO certification in EU	4Q 2024
Completion of ADHD clinical study in EU (final data)	2Q 2025
Initiation of FDA registrational study in ADHD	3Q 2025
FDA registration study in Autism complete	4Q 2025
510k FDA submission is Autism	4Q 2025
510k FDA approval in Autism (approx. 6 months after submission)	2Q 2026
Ongoing partnerships updates / new partnerships	Ongoing

***Achieved**

Capital structure of ASX:BB1

Pre-IPO Overview (November 2021 – March 2024)

November 2021: Seed Raising of A\$1.2M	A\$0.07
November 2023: Pre-IPO Raising of A\$1.4M	A\$0.12
April 2024: IPO Raising of A\$7.0M	A\$0.20

Public Market Overview (19 November 2024)

Share Price	A\$0.31
Shares on issue	99,150,003
Founders' shareholding percentage	37%
Market Cap	A\$30.7M

Current Cash (end Q3 2024)

In Cash	A\$5.4M
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Intellectual property

Our patents prohibit other parties to conduct neurometric testing using mobile devices.



BlinkLab has consistently prioritized the development and protection of its intellectual property since its seed funding round in August 2021. Our capital investments sourced from seed investors, government funding, and industry sponsorships - have been primarily utilized for IP and software development.



We are represented by the US-based law firm, Meagher Emanuel Laks Goldberg & Liao, LLP, which ensures our IP protection. We have filed National Stage Applications for 2020-2021 patents across various jurisdictions including the United States, Japan, Canada, Australia, Korea, and the European Patent Office (EPO) in March 2023.



Our portfolio comprises patents filed both by Princeton University, under an exclusive license agreement, and BlinkLab itself. These patents range from systems for neurobehavioral testing to methods for measuring emotional engagement, all of which firmly establish our innovation and leadership in the field.



Patents filed by Princeton University, with an exclusive license agreement in place between Princeton University and BlinkLab:

- PCT application number PCT/US2021/058698 Filed November 10, 2021, entitled “System and Method for Remote Neurobehavioral Testing”
- US patent application number 18/036,009 Filed May 9, 2023, entitled “System and Method for Remote Neurobehavioral Testing”
- European patent application number 21892692.1 Filed March 31, 2023, entitled “System and Method for Remote Neurobehavioral Testing”
- Japanese patent application number 2023-528017 Filed May 10, 2023, entitled “System and Method for Remote Neurobehavioral Testing”
- Canadian patent application number 3,195,596 Filed April 13, 2023, entitled “System and Method for Remote Neurobehavioral Testing”
- Korean patent application number 10-2023-7018839 Filed June 2, 2023, entitled “System and Method for Remote Neurobehavioral Testing”
- Australian patent application number 2021378273 Filed May 23, 2023, entitled “System and Method for Remote Neurobehavioral Testing”



Patents filed by BlinkLab:

- US Provisional patent application number 63/218,607 Filed on November 30, 2022, entitled “Psychopharmacological System and Method Using Eyelid Tracking”
- US Provisional patent application number 63/460,451 Filed on April 19, 2023, entitled “Method And System For Measuring Emotional Engagement”
- US Provisional patent application number 63/548,542 Filed on February 1, 2024, entitled “System And method For Detecting Neurological Condition”

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