AlCumene

Programmable neuroplasticity and brain longevity. BCI devices, apps and AI for brain health

Alexandra Bernadotte, July 27, 2026

The Problem

The Brain Adapts Continuously.
But We Cannot Program the Outcome

- There is no system that turns personal biological data into measurable brain change.

The Solution

AI-guided Closed-loop Programmable Neuroplasticity

Discovery

AI-native Drug & Supplement Discovery
Brain-computer Interface
Directed Neuroplasticity technic

Measurement

Brain assessment:
EEG, MRI, CT, cognitive tests.

Organism assessment:
Metabolomics, Epi/Genetics.

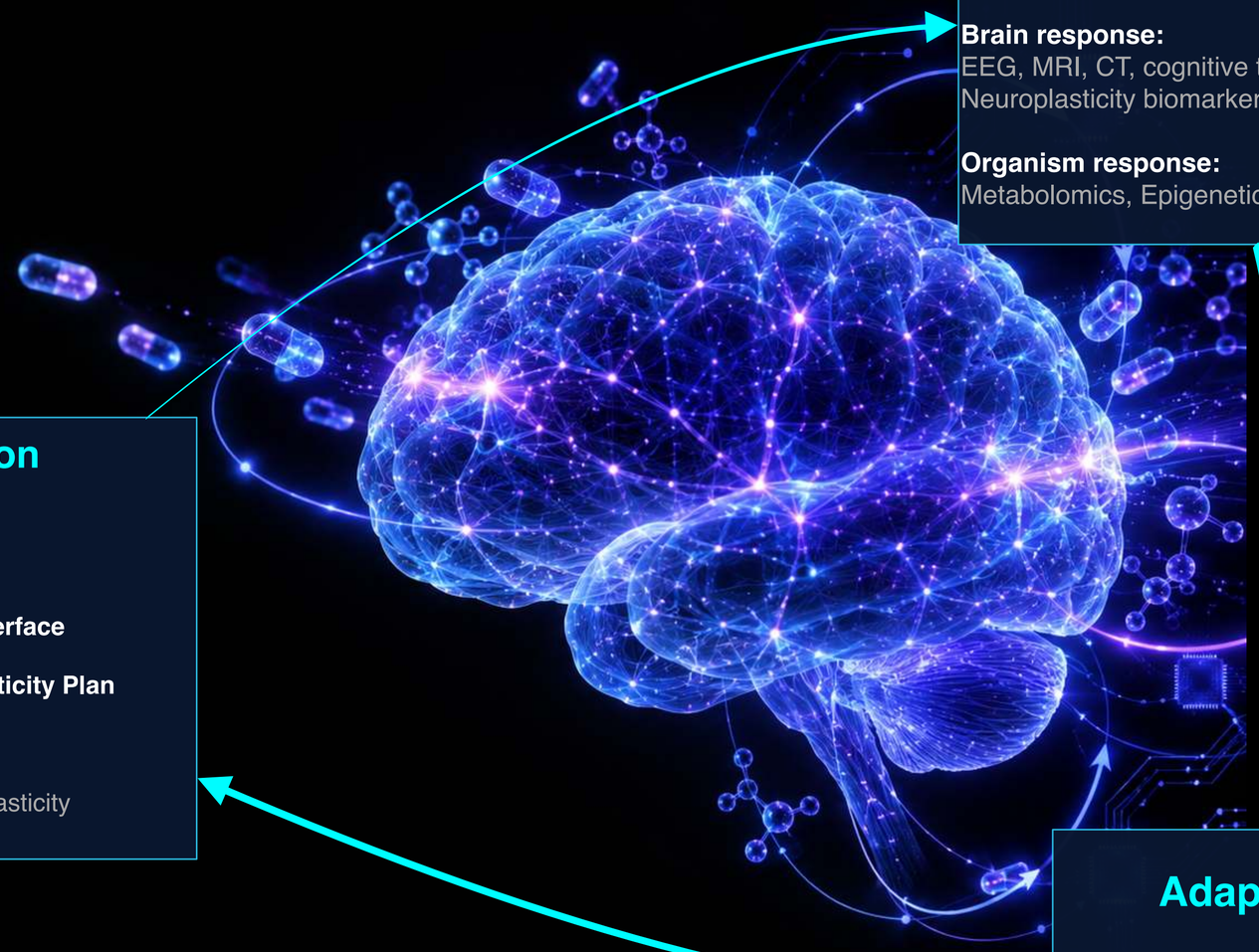
Personalisation

Personalised Biological Profile
with real-time monitoring

Personalised Brain-computer Interface

Personalised Directed Neuroplasticity Plan
with Brain-computer Interface

Personalised Supplement
with focus on genetics and Neuroplasticity biomarkers.



Verification

Brain response:
EEG, MRI, CT, cognitive tests, Neuroplasticity biomarkers.

Organism response:
Metabolomics, Epigenetics.

Adaptation

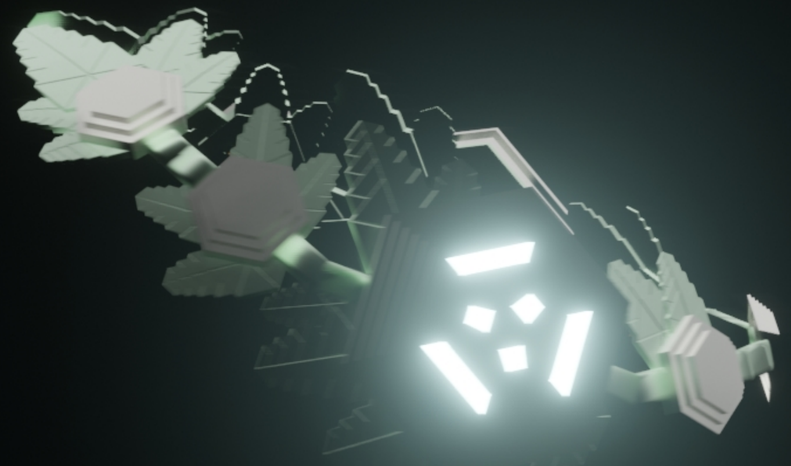
AI-guided protocol modification

The Product

20+ Paid Clients Already Use Our Brain–Computer Interfaces

Commercially available

16 EEG channels + reference & bias · Dry gold electrodes · 512 Hz · BLE/Wi-Fi



9 channels · Dry gold electrodes · 512 Hz · BLE/Wi-Fi

Early Human Validation of Programmable Neuroplasticity

All 12 participants showed regional cortical thickening after six months

12/12 Participants

- Regional cortical thickness increased
- 5–12-year shift toward a younger MRI-derived brain-age profile
- Model trained on 19,000 MRI scans

HyperCortex measures whether each personalized intervention actually changes the brain.

Exploratory longitudinal cohort, n=12. Preprint available.

Read the preprint

Protected by 3 Patent Families:

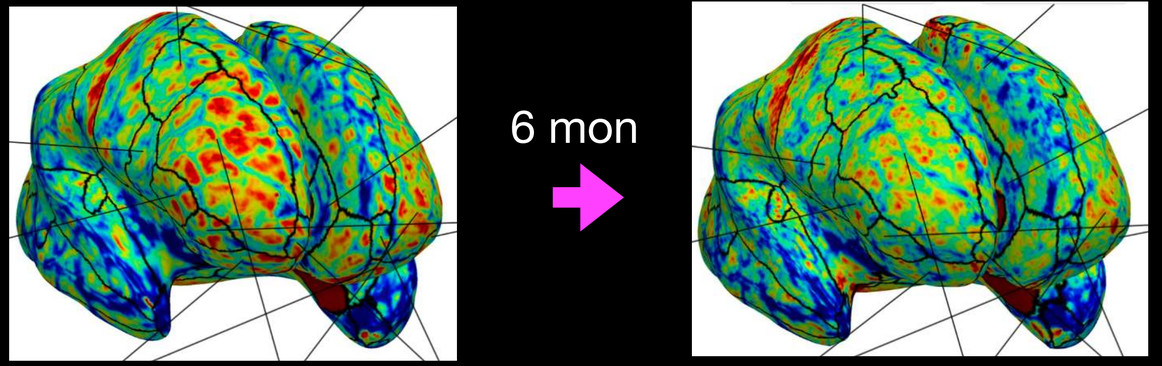
· Closed-loop neurofeedback

· Brain-pattern activation

· Training-free mental commands

Regional cortical-thickness maps

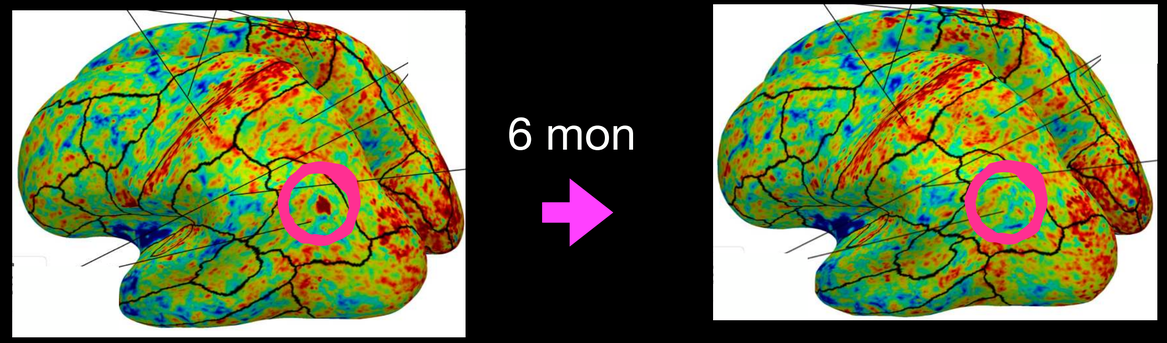
Healthy Adult Longitudinal Case



Estimated Brain Age: 39

Estimated Brain Age: 26

Post-Stroke Longitudinal Case



The AI Discovery Engine Is Already Built

AI-Native Drug and Supplement Discovery for Programmable Neuroplasticity

Drugs, pro-cognitive supplements and personalized combinations

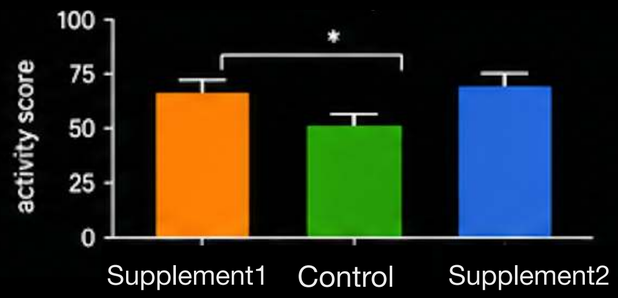
Most discovery platforms stop at biological activity.
We close the loop with measured brain-response data.

AI-First Discovery Pipeline

- AI screens and ranks millions of compounds
- Laboratory experiments validate biological activity
- Top candidates become targeted formulations
- Cortex measures brain response
- Outcomes continuously improve the models

Preclinical Validation

- Lead candidates demonstrated measurable cognitive and behavioral effects in mouse, with preliminary longevity signals in transgenic models.



Read the preprint soon

Early Human Evidence

- A forthcoming preprint reports improved cognitive performance after personalized pro-cognitive supplementation (10-Participant).

Scientific Assets

- 800+ compounds lab-screened
- 5 proprietary formulations
- Peer-reviewed publications
- Proprietary models, datasets, and AI platform
- Closed-loop validation using brain biomarkers

Technology and Moat

A full-stack platform for AI-guided Closed-loop Programmable Neuroplasticity

1. PROPRIETARY NEUROTECH

- 16+1 / 8+1 channel EEG systems
- Dry gold electrodes
- 256–512 Hz real-time acquisition
- BLE / Wi-Fi connectivity
- 20+ clients already using the hardware

HyperCortex App

2. MULTIMODAL AI BRAIN MODEL

One dynamic personal model of brain state, risk and response.

3. CLOSED-LOOP VALIDATION

- HyperCortex measures whether each intervention changes the brain
- Brain response is tracked with EEG, cognition and biomarkers
- Outcome data continuously improves personalization

4. DEFENSIBILITY / MOAT

Patents	3 patent families
Data	19,000 MRI model + longitudinal brain-response data
Validation	Preclinical evidence + early human studies
Flywheel	Every measured response improves ranking and protocols

Traction and Validation

Commercial Traction and Scientific Validation

We Have Built, Sold and Scientifically Validated the Core Platform

Commercial Traction B2C

- **20+ clients** already use our proprietary brain–computer interfaces (hardware) with annual subscription (software).
- 30+ **clients** already used our MRI-derived brain-age biomarkers
- 10+ **clients already use directed neurplastisity service**

Commercial Traction B2B

- **In commercial discussions with a UK school for BCI devices and a recurring cognitive-monitoring service.**

Preclinical and Scientific Validation

- **12+ Exploratory longitudinal cohort of Directed Neuroplasticity.**
- **800+ compounds** experimentally screened +5 proprietary formulations
- Measurable cognitive and behavioral effects demonstrated in mouse models and human

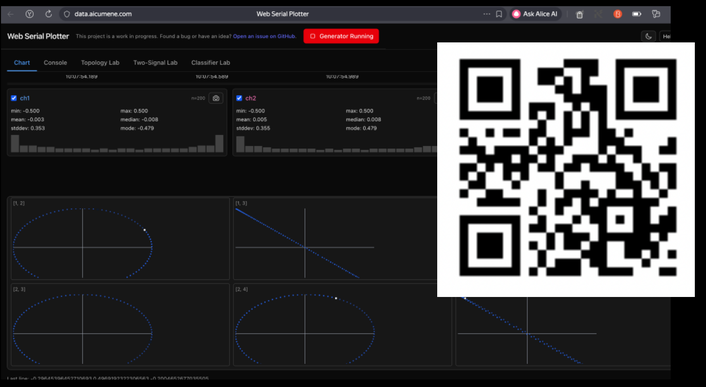
We are not starting with a concept.

The hardware & software is commercially available, the discovery engine is operational, and early human and preclinical studies show measurable brain response.

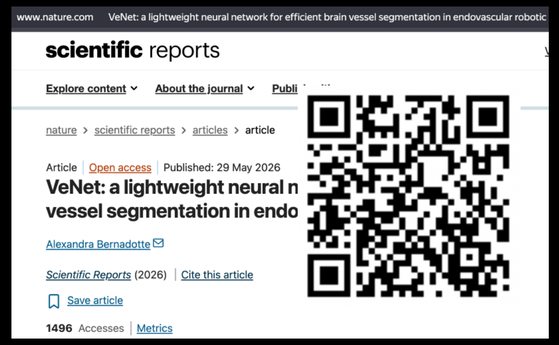
The Foundation

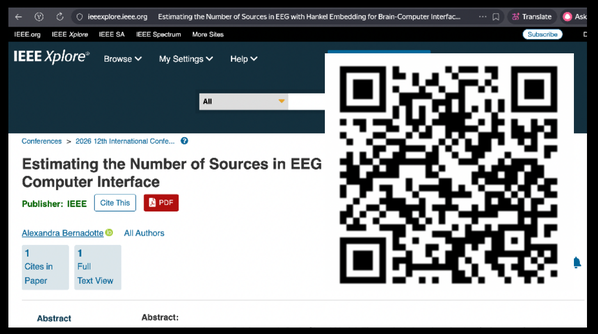
Some of our scientific papers, preprints, datasets, & code

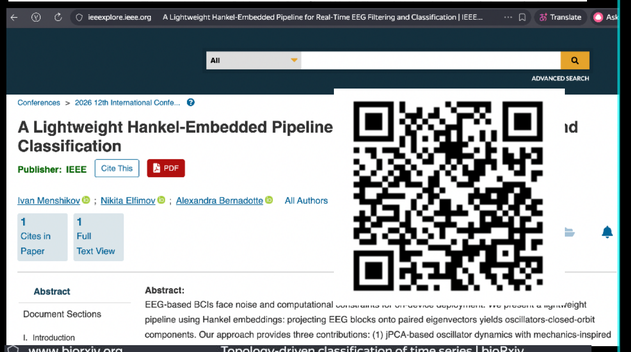
Dataflow platforms

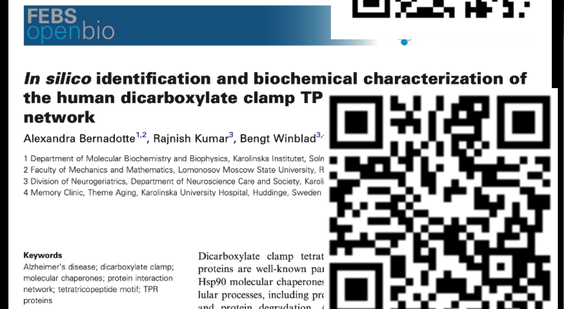


Algorithms & methods

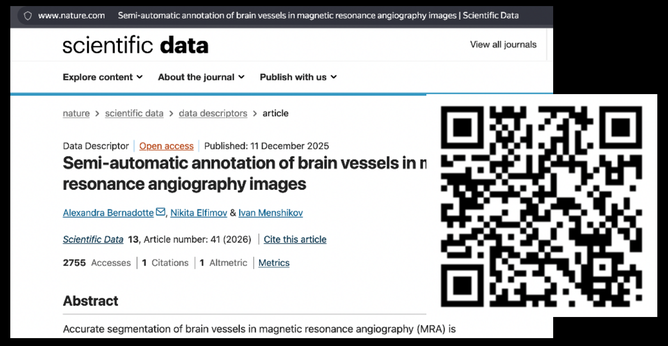








Datasets



For more visit

Our scientific page

Market and Business Model

We start with customers already paying for advanced diagnostics and cognitive enhancement — then scale through clinics, proprietary response data and pharma validation.

Beachhead: Premium Brain Longevity.

$4–7B initial serviceable market

HNWI · Biohackers · Executives · Longevity-clinic clients

Global Expansion

$20B+ market today

Brain-health supplements · BCI · Longevity clinics

Growing to

$45–60B by 2033–2035

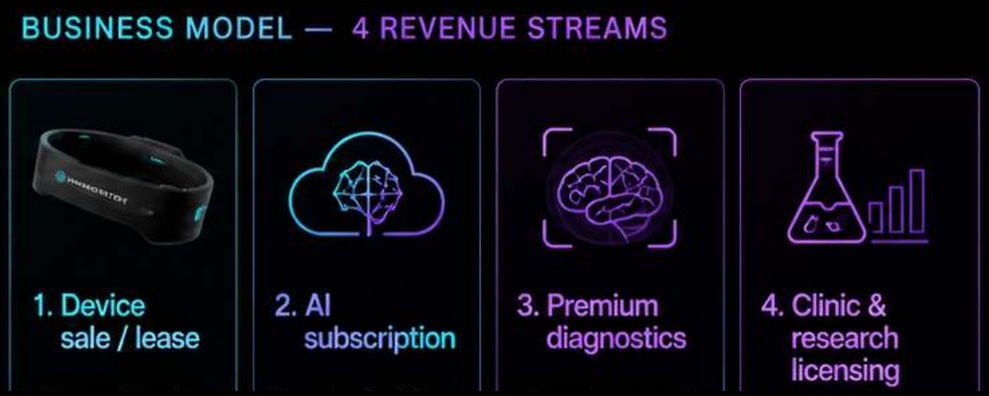
Preventive neurology · Clinical monitoring · Pharma response validation

Bottom-Up Opportunity

50,000 users + 500 clinics + pharma contracts = $130M+ annual revenue

Business model

- device sale or lease;
- monthly AI-App subscription;
- premium diagnostics;
- clinic & research licensing.



Competition

Others Measure One Layer. HyperCortex Closes the Loop.

Category	What it does	Missing
Consumer EEG	measures brain activity	No biological personalization
Neurofeedback clinics	trains selected signals	Limited diagnostics and adaptation
Longevity platforms	analyze biomarkers	No real-time brain verification
Cognitive apps	train performance	Do not measure neural change
HyperCortex	integrates, programs and verifies	Full closed loop

- We are not another EEG headset, supplement recommender or cognitive training app.
- We are the control layer connecting all three.

Team

Alexandra Bernadotte,

CEO and co-CTO

- MD, PhD in Med, PhD in Math
- 40+ scientific papers, 7+ patents
- Led 50+ interdisciplinary techs across AI, medicine and engineering.
- Previously scaled a company to $200M valuation

Sergey Musienko

CPO and co-CTO

- Entrepreneur with 15+ years building healthcare, bioinformatics and AI businesses
- 12 scientific papers
- Previously scaled a bioinformatics company to $30M valuation

Together, we combine deep scientific expertise with a track record of commercializing complex healthcare technology.

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