

# NeuroAudit Proposal

Intelligent Patch Driving Instant Cognitive Boost



## Who Are We? Introduction



Most innovative Neurotechnology company of 2022



Neurotechnology innovation specialists of 2022

01.

Multidisciplinary project Founded in 2019

**学際的プロジェクト 2019年設立**

02.

Developed an innovative Psychoacoustic Neurotech

**音響心理技術「Psychoacoustic Neurotech」の開発**

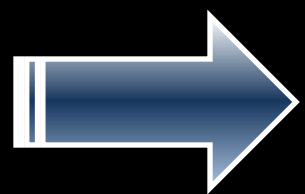
03.

Intelligent patch driving an instant cognitive boost in Alzheimer's disease

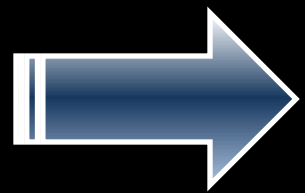
**アルツハイマー病の認知機能を高めるインテリジェント・パッチ・ドライブを開発**



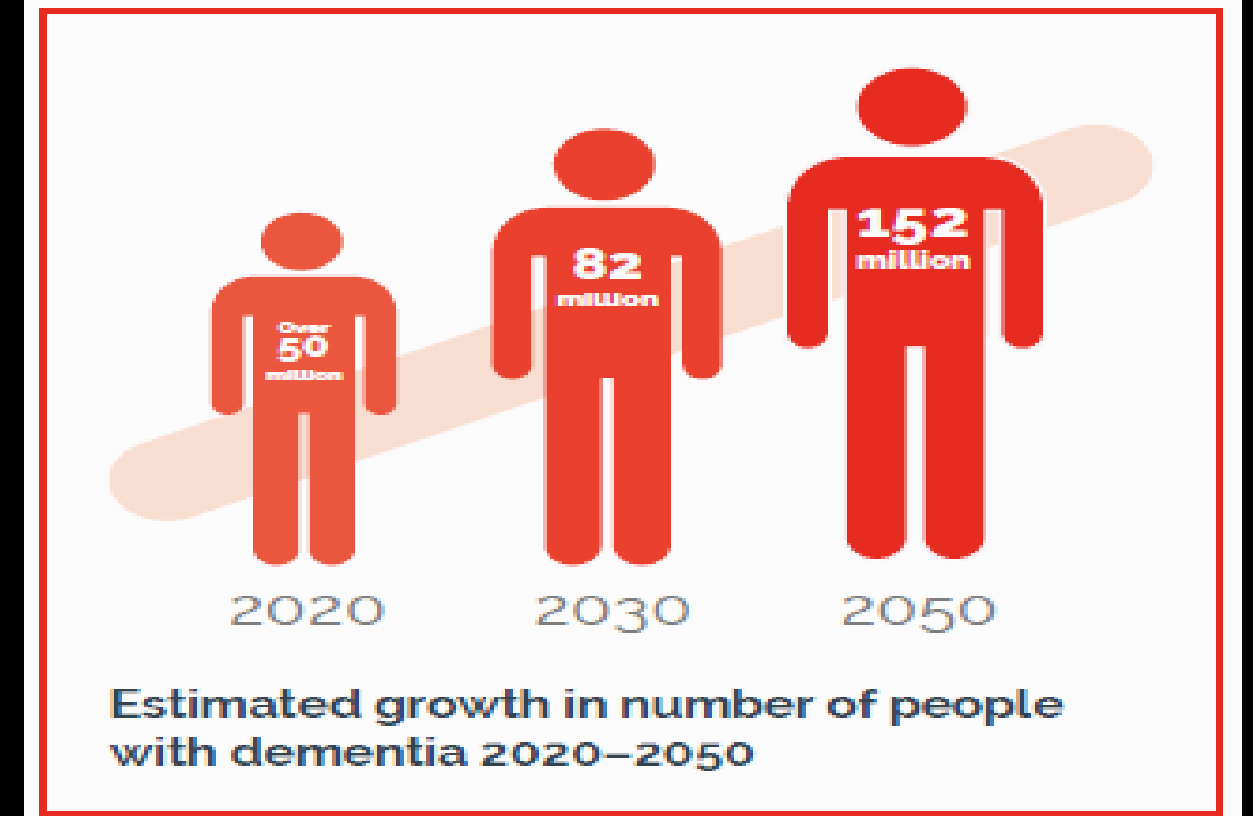
## World's Alzheimer's population Market Challenge



The world's older population is more likely to develop Alzheimer's disease and dementia, which are associated with cognitive disorders.



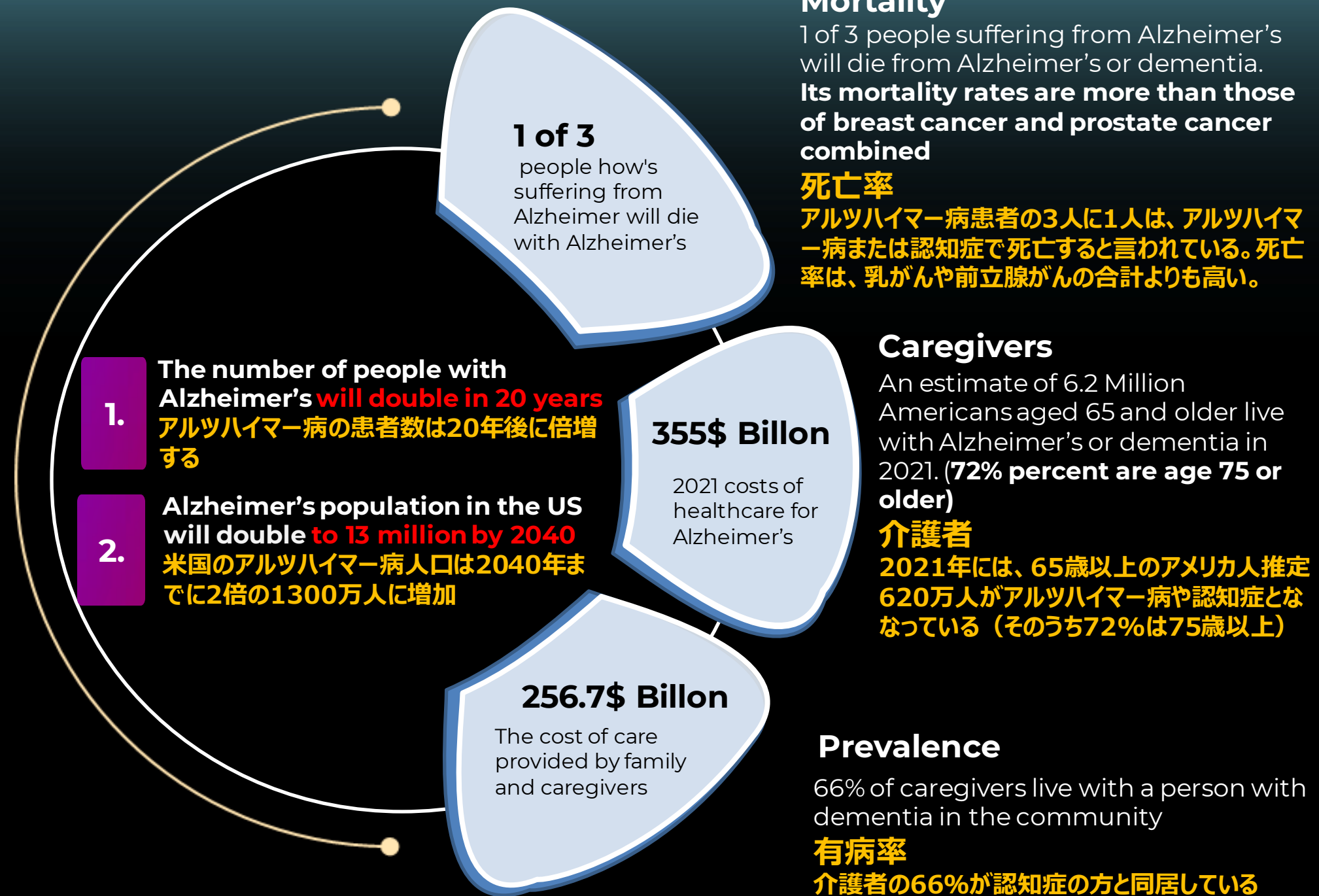
The Number of people with dementia is predicted to **grow up to 152,000,000 by 2050**





# Alzheimer's Market Costs

Alzheimer's Diseases effects



## Quick Facts ファクト

COSTS COULD RISE AS HIGH AS **\$1.1 TRILLION** IN 2021, ALZHEIMER'S WILL COST THE NATION **\$355 BILLION**. BY 2050, THESE N.

MORE THAN **11 MILLION** AMERICANS PROVIDE UNPAID CARE FOR PEOPLE WITH ALZHEIMER'S

IN 2020, THESE CAREGIVERS PROVIDED AN ESTIMATED 15.3 BILLION HOURS OF CARE VALUED AT NEARLY \$257 BILLION.



# Alzheimer's Gov Programs Finding Treatment Proposition

Over the Globe, more than 377 National programs are working with Academic institutions and governments to find treatment for Alzheimer's disease

**世界では、377以上の国家プログラムが、学術機関や政府と協力してアルツハイマー病の治療法を探している**

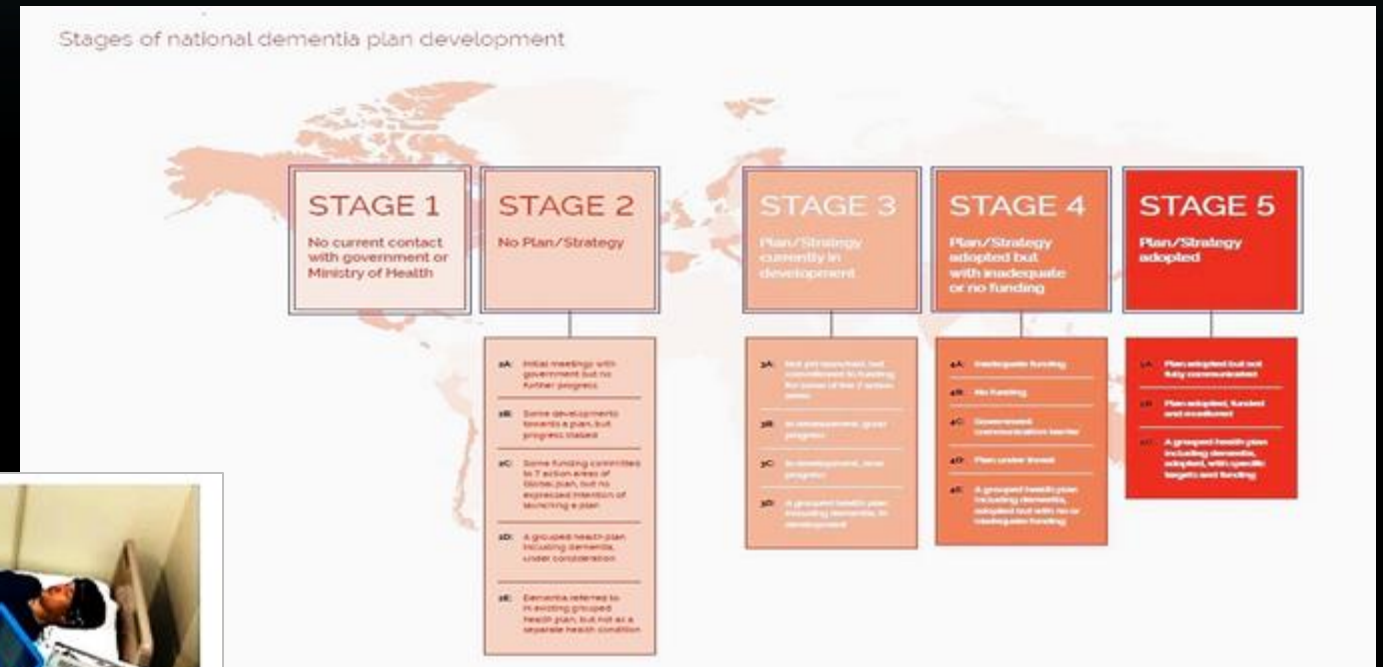


図6. 経頭蓋超音波治療装置(経脳治療装置)

東北大学  
Puls Ultrasound

経頭蓋超音波治療装置(経脳治療装置)の概要

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経頭蓋超音波治療装置(経脳治療装置)の概要

Country	Program Name
Argentina	Programa de Atención Integral a la Vejez (PAIV)
Australia	Alzheimer's Disease Research Program
Belgium	Programme National de Recherche Alzheimer (PNRA)
Canada	Alzheimer's Society of Canada Research Program
China	China Alzheimer's Disease Research Program
France	Programme National de Recherche Alzheimer (PNRA)
Germany	Alzheimer's Disease Research Program
India	Alzheimer's Disease Research Program
Japan	Alzheimer's Disease Research Program
USA	Alzheimer's Disease Research Program
UK	Alzheimer's Society Research Program
South Korea	Alzheimer's Disease Research Program
Spain	Programa Nacional de Investigación Alzheimer (PNIA)
Italy	Programma Nazionale di Ricerca Alzheimer (PNRA)
Sweden	Alzheimer's Disease Research Program
Denmark	Alzheimer's Disease Research Program
Netherlands	Alzheimer's Disease Research Program
Finland	Alzheimer's Disease Research Program
Poland	Alzheimer's Disease Research Program
Czech Republic	Alzheimer's Disease Research Program
Slovakia	Alzheimer's Disease Research Program
Hungary	Alzheimer's Disease Research Program
Slovenia	Alzheimer's Disease Research Program
Croatia	Alzheimer's Disease Research Program
Serbia	Alzheimer's Disease Research Program
Bosnia and Herzegovina	Alzheimer's Disease Research Program
Montenegro	Alzheimer's Disease Research Program
Albania	Alzheimer's Disease Research Program
Moldova	Alzheimer's Disease Research Program
Romania	Alzheimer's Disease Research Program
Bulgaria	Alzheimer's Disease Research Program
Greece	Alzheimer's Disease Research Program
Cyprus	Alzheimer's Disease Research Program
Turkey	Alzheimer's Disease Research Program
Israel	Alzheimer's Disease Research Program
Lebanon	Alzheimer's Disease Research Program
Syria	Alzheimer's Disease Research Program
Yemen	Alzheimer's Disease Research Program
Saudi Arabia	Alzheimer's Disease Research Program
UAE	Alzheimer's Disease Research Program
Qatar	Alzheimer's Disease Research Program
Oman	Alzheimer's Disease Research Program
Kuwait	Alzheimer's Disease Research Program
Bahrain	Alzheimer's Disease Research Program
Singapore	Alzheimer's Disease Research Program
Malaysia	Alzheimer's Disease Research Program
Indonesia	Alzheimer's Disease Research Program
Philippines	Alzheimer's Disease Research Program
Thailand	Alzheimer's Disease Research Program
Vietnam	Alzheimer's Disease Research Program
Laos	Alzheimer's Disease Research Program
Myanmar	Alzheimer's Disease Research Program
Burma	Alzheimer's Disease Research Program
Timor-Leste	Alzheimer's Disease Research Program
East Timor	Alzheimer's Disease Research Program
Brunei	Alzheimer's Disease Research Program
Sri Lanka	Alzheimer's Disease Research Program
Maldives	Alzheimer's Disease Research Program
Nepal	Alzheimer's Disease Research Program
Bhutan	Alzheimer's Disease Research Program
India	Alzheimer's Disease Research Program
Bangladesh	Alzheimer's Disease Research Program
Pakistan	Alzheimer's Disease Research Program
Afghanistan	Alzheimer's Disease Research Program
Iran	Alzheimer's Disease Research Program
North Macedonia	Alzheimer's Disease Research Program
South Macedonia	Alzheimer's Disease Research Program
North Kosovo	Alzheimer's Disease Research Program
South Kosovo	Alzheimer's Disease Research Program
North Serbia	Alzheimer's Disease Research Program
South Serbia	Alzheimer's Disease Research Program
North Montenegro	Alzheimer's Disease Research Program
South Montenegro	Alzheimer's Disease Research Program
North Albania	Alzheimer's Disease Research Program
South Albania	Alzheimer's Disease Research Program
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North Serbia	Alzheimer's Disease Research Program
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North Albania	Alzheimer's Disease Research Program
South Albania	Alzheimer's Disease Research Program



## Product Value Proposition

# NeuroAudit Product

- 💡 Clinical technology, innovative brain stimulation via Blood conduction
- 💡 The smallest Ultrasound device available
- 💡 Based on LFUS (Low-Frequency Ultrasound Stimulus)
- 💡 Creating instant cognitive boost
- 💡 User-friendly, suitable for daily use in home

💡 **IMAGINE**

*“Imagine the Alzheimer's population using a daily patch to get stimulus-enhancing cognitive processes using innovative clinical technology”*





## Value Proposition

# What Does it Mean?



### Innovation



- ➔ Cognitive boost for patients suffering from Alzheimer's, cognitive.
- ➔ Using a novel blood conduction technic to transfer the stimulation to the brain via the carotid artery,
- ➔ Using a psychoacoustics ultrasound neuro-stimuli, which is field that explores the effects of ultrasound on the brain.

### Market Impact



- ➔ Large and growing market of neurological disorders, which affect millions of people worldwide.
- ➔ Affordable, user-friendly, suitable for Alzheimer's.
- ➔ A competitive edge intelligent daily-use patch.

### Vision

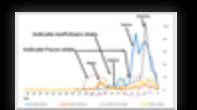


- ➔ Establishing strong relationships with the Alzheimer's market and Alzheimer's patient .
- ➔ Initial target customers **are large** Pharma Networks, potential dealers and local pharma networks.
- ➔ Total addressable market for our product will be approximately **\$500 million per year**.



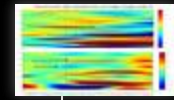
# Case Studies

## POC's Timeline



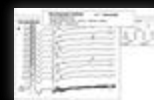
**2016**

tDCS Preliminary POC  
**Detecting Signal effect**  
tDCS予備的POC  
信号効果の検出



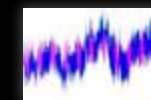
**2017**

ADHD Preliminary POC  
**Detecting Cognitive Gaps**  
ADHD予備的POC  
認知機能のギャップを発見



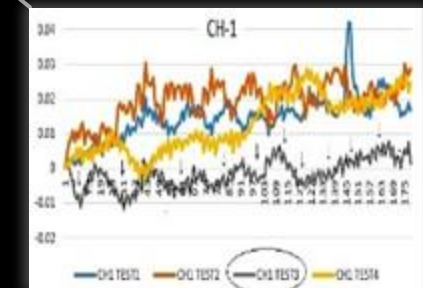
**2019**

E.M.G Preliminary POC  
**Detecting Ultrasonic Effect**  
E.M.G 予備的POC  
超音波効果の検出



**2019**

ADHD-2 Preliminary POC  
**Detecting Cognitive**  
ADHD予備的POC  
認知検知



**2020**

Japan POC  
**cognitive performance**  
日本におけるPoC  
認知パフォーマンス



Results:  
More than 70% of cognitive performance was  
CORRELATED with less left-brain activity effort  
**結果：**  
70%以上の認知パフォーマンスは、左脳の活動努力が少  
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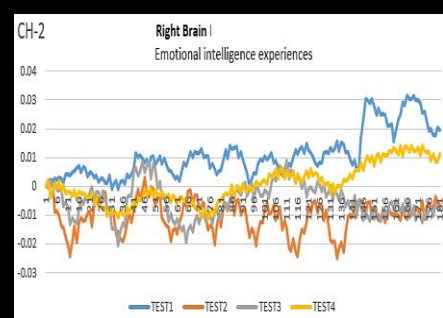




# Japan POC (13 Dec. 2019)

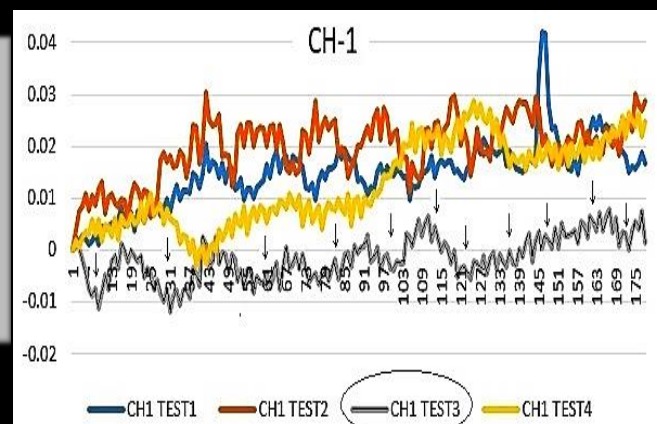
## Publications based on Ultrasound Neurostimulation

- Test case POC with Astem company from Japan (KGAP+ Batch1)
- Technology knowledge exchange & results based on Innovative two Brain
- Technology integration (Ultrasound Brain Technology & NIR Brain Technology).
- **日本のアステム社とのテストケースPOC (KGAP+ Batch1)**
- **革新的な2つの脳技術統合に基づく技術知識の交換と成果**
- **技術知識の交換と成果 (超音波ブレインテクノロジーとNIRブレインテクノロジー)**



### Right Brain

- Emotional
- Intelligence
- Experiences



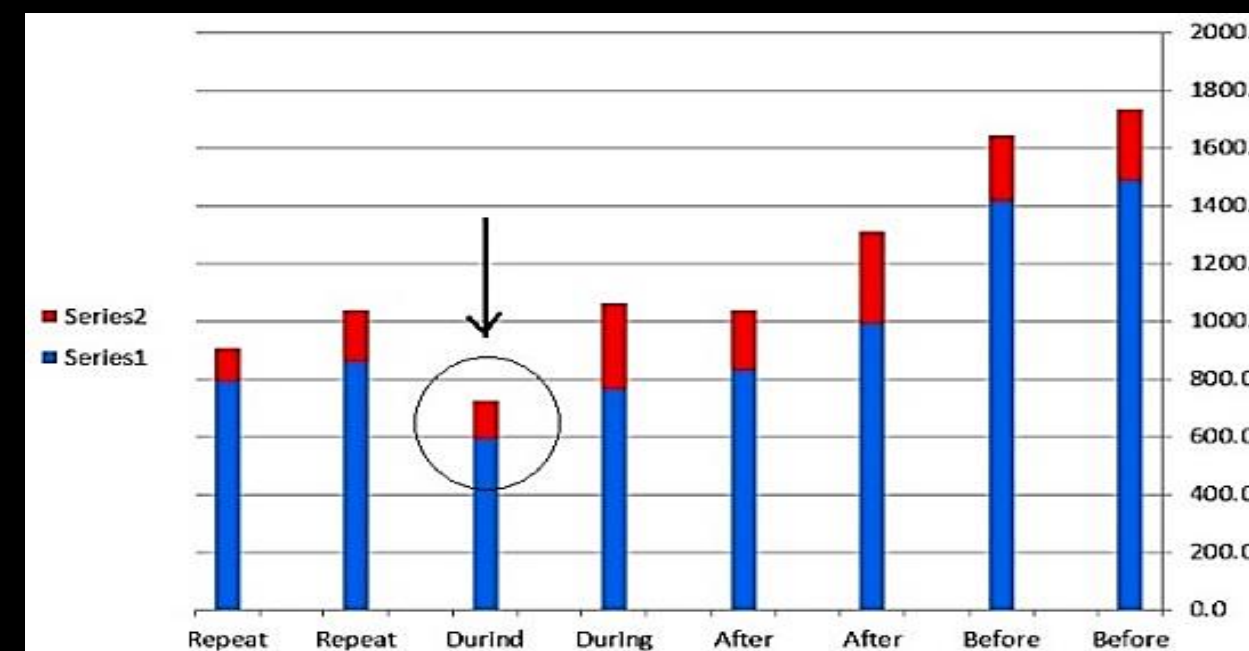
### Left Brain

- language
- logic
- analytical

### Stroop effect interference (Cognitive diagnostic)

- Ultrasound & NIR Working without artifacts interference
- NeuroAudit stimulation influences performance on Cognitive task
- Astem NIR System can measure influence with NeuroAudit stimulation.
- Cognitive performance enhancement was shown along the stimulating correlated less brain effort in the left Brain (ADHD)

### NeuroAudit Brain Technology (Ultrasonic brain stimulation)



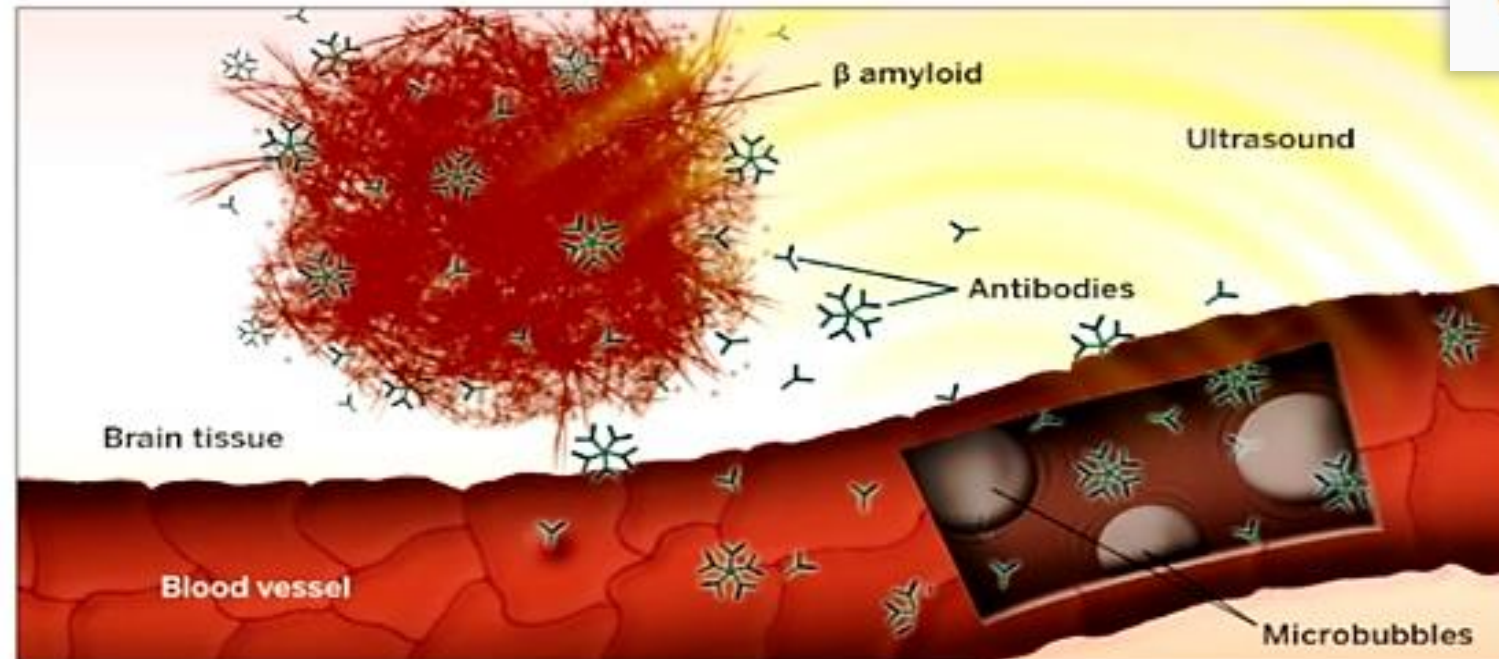


# Supporting Clinical and Publications

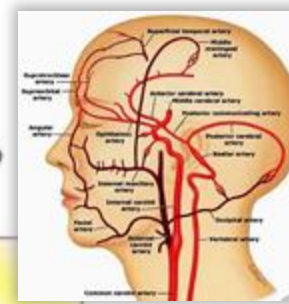
## Publications based on Ultrasound Neurostimulation

### An Supersound to clean up the brain

Microbubbles injected into the blood vibrate under ultrasound, temporarily forcing cells lining the blood-brain barrier apart. This may allow amyloid-fighting antibodies to slip into brain tissue (shown) or rouse cells that clean up the protein.



EMMANUEL THÉVENOT/LAB OF ISABELLE AUBERT, COURTESY OF SUNNYBROOK RESEARCH INSTITUTE



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NEWS RELEASE 24-JAN-2022

### Researchers from the GIST propose ultrasound stimulation as an effective therapy for Alzheimer's disease in new study

Synchronizing one's brainwaves to ultrasound pulses could reduce the accumulation of abnormal proteins characteristic of the onset of Alzheimer's disease

Peer-Reviewed Publication  
GIST (GWANGJU INSTITUTE OF SCIENCE AND TECHNOLOGY)

Print Email App

With the increase in average life expectancy in many parts of the world, certain age-related diseases have become more common. Alzheimer's disease (AD), unfortunately, is one of them, being extremely prevalent within aging societies in Japan, Korea, and various European countries. Currently there is no cure or an effective strategy to slow down the progression of AD. As a result, it causes much suffering to patients, families, and caregivers as well as a massive economic burden.

Fortunately, a recent study by a team of scientists at the Gwangju Institute of Science and Technology (GIST) in Korea has just demonstrated that there might be a way to combat AD by using "ultrasound-based gamma entrainment," a technique that involves syncing up a person's (or an animal's) brain waves above 30 Hz (called "gamma waves") with an external oscillation of a given frequency. The process happens naturally by exposing a subject to a repetitive stimulus, such as sound, light, or mechanical vibrations.

Previous studies on mice have shown that gamma entrainment could fight off the formation

IMAGE: ULTRASOUND STIMULATION AS AN EFFECTIVE THERAPY FOR ALZHEIMER'S DISEASE [view more >](#)

CREDIT: GWANGJU INSTITUTE OF SCIENCE AND TECHNOLOGY



# Supporting Clinical and Publications

## Publications based on Ultrasound Neurostimulation

**Journal of Neurodegenerative Diseases and Disorders** [contact@imedpub.com](mailto:contact@imedpub.com)

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### Abstract

#### Non-invasive apparatus and method for Cranial Brain Stimulation

Ultrasound (US) has received widespread attention as an emerging technology for targeted, non-invasive neuromodulation based on its ability to evoke electro-physiological and motor response. As the focusing is achieved through constructive interference of the incident waves, a focal spot can be formed at depth within the tissue without affecting cells along the propagation path closer to the transducer.

Hearing is a well-known sensory phenomenon that enables humans to hear sounds at a far higher frequency than would naturally be detectable through the actual inner ear, typically by stimulation of the cochlea base by bone conduction.

Author(s): Dan Anzyo  
Abstract | PDF



Open Access Journals



Following on from your recent nomination in Global Health & Pharma's seventh annual **Biotechnology Awards**, I am delighted to be reaching out to inform you that NeuroAudit has been successful in this year's edition, and has been awarded:



Most Innovative Neurotechnology Company  
- Middle East -



# Global Activities

## Global



## Japan activities



## US activities



## Brazil activities

Su Jung Ko  
F 55 11 2450 7820  
M 55 11 94294 6225  
sujung@goldenhawkconsulting.com.br  
www.goldenhawkconsulting.com.br



HOSPITAL Dona HELENA  
(47) 3451-3333  
Rua Blumenau, 123 - Centro | Joinville/SC  
www.donahelena.com.br





# Product Roadmap

## Timeline to GTM

### Business model

- Recurrent Revenue
- Initial customers - Pharma companies & potential dealers
- **2nd B2B customers** – mid/local area pharma networks



### Invest in Intelligent Neurotech



### Investment traction

- Huge market - Alzheimer's in the US will double to 13 million
- Technology is ready for the Market
- Innovative, simple to use, No services
- Disrupting Technology



### Investment Roadmap- Full Partnership

- First millstone - 9 months
- Second millstone - 14 months
- Grow millstone - 18 months
- Milestone timeline 18 \ 14 \ 9 months





# Alzheimer's Market Plan

## Alzheimer's Diseases market effects

### GTM using Neuro Audit Patch as a standards-home care for daily use product

- ✓ A substantial data set has been created validating the treatment and all the major pillars of the NeuroAudit solution
- ✓ POCs completed
- ✓ Product cognition boost demo completed
- ✓ Company assets include FDA approval and additional applications in process
- ✓ Partner and customer ecosystems initiated and several pilots in deployment





# Key Investment Thesis



**Full worldwide Partnership**

# Leadership Team



**Dan Anzio**  
**CEO & Business Development**

Leads the management and strategy of NeuroAudit, experienced in marketing & technology development with a blend of business acumen and implementing marketing plans to maximize results and bring to the table a strategic view, high analytical skills, leading to result in business growth and personal empowerment



**Rachel Langford,**  
**MSc.Med, Clinical Science**

Heads the Research at NeuroAudit. Neuroscientist and a clinician in private brain assessment and training clinics using HEG NIRS and EEG technology for improving brain functions. Her previous research fields were in medical neuroscience and health psychology.



**Erez Saadon**  
**CTO & R&D Designer**

Heads the R&D Technology Research at NeuroAudit. Responsible for researching the bi-lateral development Technology interaction Is areas for many years as an electronical, software engineer



**Dr. Boaz Sadeh**  
**Clinical Science Advisory board**

R&D clinical science, computational neuroscientist, and electrophysiologist. Served as lead neuroscience and researcher in the medical device industry and has more than 15 years of research experience working with EEG, functional MRI, and transcranial magnetic stimulation (TMS)



**Dr. Lionel Krief**  
**MD Advisory board**

Medical expert with a specialty in nuclear medicine. Has diagnosed Alzheimer's Disease in the EU for over 20 years, specializing in nuclear medicine and PET (two imaging modalities used to examine organ function)



**Dr. Alon Sinai**  
**Clinical Science Advisory board**

Neurophysiologist in the department of neurosurgery at Rambam Medical Center, Haifa. Was a research fellow at Johns Hopkins University, Baltimore, Maryland (2003-2008). Specialized in evoked potentials, electrophysiology, and methods of electrical and magnetic stimulation for the treatment of various disabilities in the nervous system



**Esther Fuerster-Askhenazi,**  
**Clinical programs**

Many years in the field of forensic genealogy; assisted a governmental agency to build their research system in Poland, and Eastern Europe; increasing their response rate. Has close ties with governmental and non-governmental organizations in Israel and around the world.



Invest in the future of Humanity with us  
*NeuroAudit*

