

Where Medicine Ends,
Our Remedy Begins

Phin Array

Cortical Electrode

Conformal way of ECoG monitoring

Product Summary

Phin Array (Cortical Electrode Array)



Phin Array (Version 1)

Currently under clinical trial and regulatory review (MFDS & FDA)



Phin Array (Version 2)

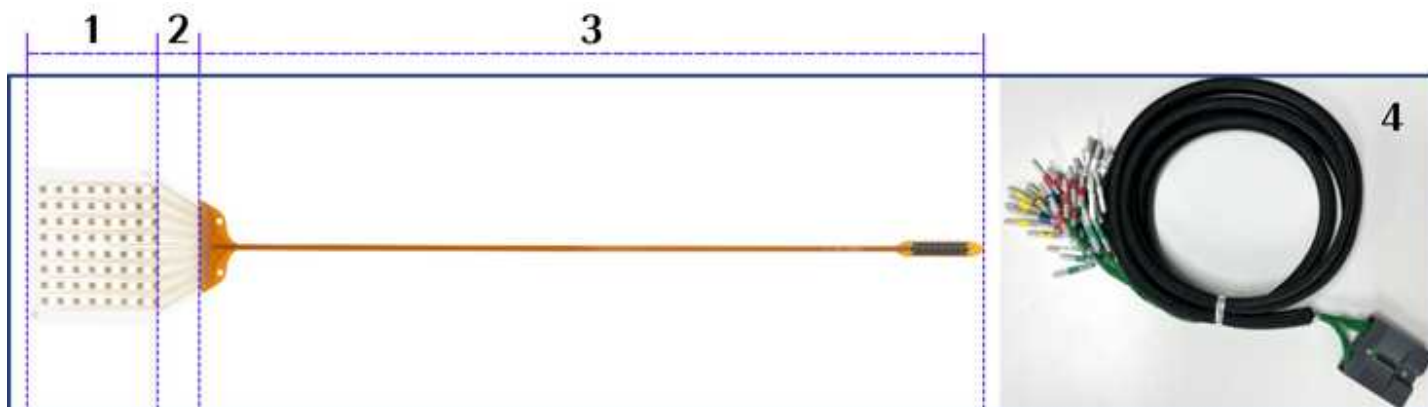
Final design may be updated upon MFDS and FDA approval

Product Name	Phin Array
Device Name	Cortical Electrode Array / A58060.19 [4]
Intended Use	Temporary or short-term placement on the cortical surface of the brain to record neural oscillations or electrically stimulate
Product Description	The Phin Array is a medical instrument designed to adhere to the cerebral cortex for recording electrical signals and delivering electrical stimulation. It captures brain activity by detecting electrical signals generated by neurons at the cortical surface. The device can be connected to the approved EEG system (Import Certification No. 08-1232) for brainwave recording and to the neural stimulator (Import Certification No. 11-822) for delivering electrical stimulation, supporting functional research on specific brain regions. Constructed with materials exhibiting excellent electrical conductivity, the device flexibly conforms to the brain's surface, allowing close adhesion without damaging brain tissue. To enhance signal fidelity, the electrode array is fabricated on an ultra-thin 16 μm Parylene C substrate with a through-hole design, which promotes stable contact with the cortical surface. This advanced design enables higher-precision brainwave recording and neural stimulation.



Neural Interface Solution

Product Detail



Intended Use Period: 1 year from the date of manufacture (to be extended)

Implantation Period: Up to 29 days after implantation

	Name		Description
1	Phin Array	Contact Electrode	- Thin gold layer for sensing neural signals - Placed directly on the brain surface, specifically the pia mater - Parylene C-Coated border area for reinforcement
2		Electrode Line	- Gold conductor for connecting the contact electrode to the electrode cable - Supported by the Parylene C substrate and encapsulation - Connected to FPCB using ACF Bonding
3		Electrode Cable	- FPCB for external electric connection - Parylene-C Coated for insulation - Suture holes included for device securing during implantation
4	Compatible Cable		- Providing connection from Phin Array to the EEG device (Import Certification No. 08-1231) and the stimulator (Import Certification No.11-822)

Product Detail

Phin Array (Cortical Electrode Array)



"We have obtained Good Manufacturing Practice (GMP) certification for our manufacturing facility and are currently conducting clinical trials to obtain regulatory approval."

Five Latest Publication

- A Wireless Cortical Surface Implant for Diagnosing and Alleviating Parkinson's Disease Symptoms in Freely Moving Animals / Advanced Healthcare Materials / Shin *et al.* (2025)
- 2D Material-Based Injectable Sensor for Minimally-Invasive Cerebral Blood Flow Monitoring / Small / Park *et al.* (2025)
- Injectable 2D Material-Based Sensor Array for Minimally Invasive Neural Implants / Advanced Materials / Kim *et al.* (2024)
- Neurodiagnostic and neurotherapeutic potential of graphene nanomaterials / Biosensors and Bioelectronics / Yang *et al.* (2024)
- Cortical surface plasticity promotes map remodeling and alleviates tinnitus in adult mice / Progress in Neurobiology / Pak *et al.* (2023)

Registered Patents (Selected)

- Apparatus and Method of Implantable Bidirectional Wireless Neural Recording and Stimulation/KR, US
- Devices included in a wireless neural interface system/KR
- Graphene composite-based implantable multi-channel neural electrode array/KR
- Syringe-injectable structure for neural signal acquisition and stimulation, and a method for injecting the same using a syringe/KR, EP, JP
- Multi-channel electrode array for brain map remodeling and a system employing the same for neural map modulation/KR
- Micro-scale neural interface array for combined electrophysiology and optical stimulation/KR Graphene-based bio-device for electrotherapy/KR, US

Market Size

Phin Array (Cortical Electrode Array)

Drivers of Demand and Growth

Increase in Epilepsy Surgeries

According to WHO (2022), approximately 30% of patients with epilepsy are refractory to anti-epileptic drugs (AEDs).

These patients are potential candidates for surgical intervention, driving increased demand for intracranial monitoring solutions such as subdural electrodes.

Expansion of Dedicated Epilepsy Centers

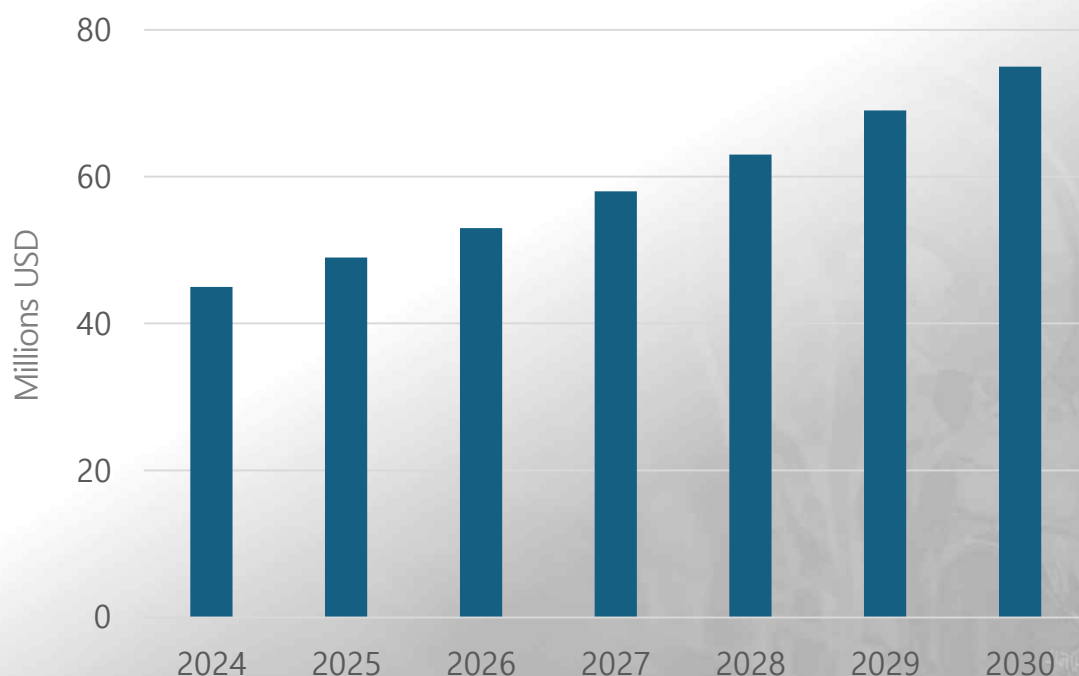
The number of Level 3 and Level 4 epilepsy centers in the United States continues to grow, enhancing accessibility to surgical epilepsy care and contributing to rising adoption of cortical monitoring technologies.

Exploration of New Clinical Indications

Beyond epilepsy, clinical research is expanding into the use of cortical electrodes for patients with traumatic brain injury (TBI), subarachnoid hemorrhage, and other focal brain lesions.

These emerging applications are expected to further accelerate market demand.

Cortical Electrode Market Forecast in US



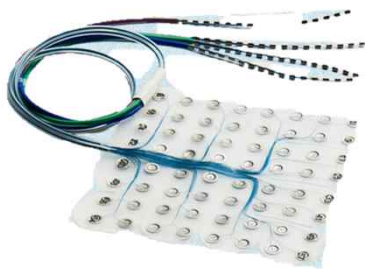
Advantages

- | About 60 times thinner electrode substrate compared to PMT (Gbrain: 16 μ m / PMT: 1mm)
- | More than 3 times higher resolution compared to PMT (Gbrain: 49 $\times$ 42mm², 64 Ch. / PMT: 80 $\times$ 82mm², 64 Ch.)



Gbrain's Phin Array (64 Ch.)

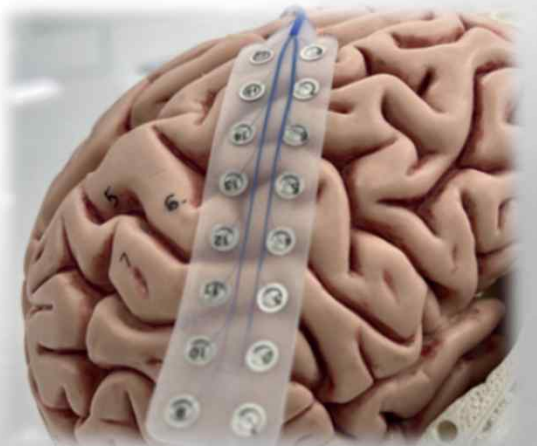
- Product Name: Phin Array (64370H)
- Classification: Class III (US)
- Intended Use: Temporarily or short-term placement on the brain surface for electrical stimulation or recording of neural activity
- Implantation Period: Up to 29 days



PMT[®] CORPORATION

Competitor's silicone electrode (64 Ch.)

- Product Name: PMT Cortac Cortical Electrode (2111TX-64-091)
- Classification: Class III (US)
- Intended Use: Temporarily or short-term placement on the brain surface or deeper regions for electrical stimulation or recording of neural activity.
- Implantation Period: Up to 24 hours (US)



| Regulatory Status and Future Plans

Region	Current Certification	Future Plans
United States	Preparing for initial 510(k) clearance for use within 24 hours	Apply for expanded 510(k) clearance for use within 30 days; Diversify product portfolio
South Korea	Preparing for use within 30 days	Expand product portfolio

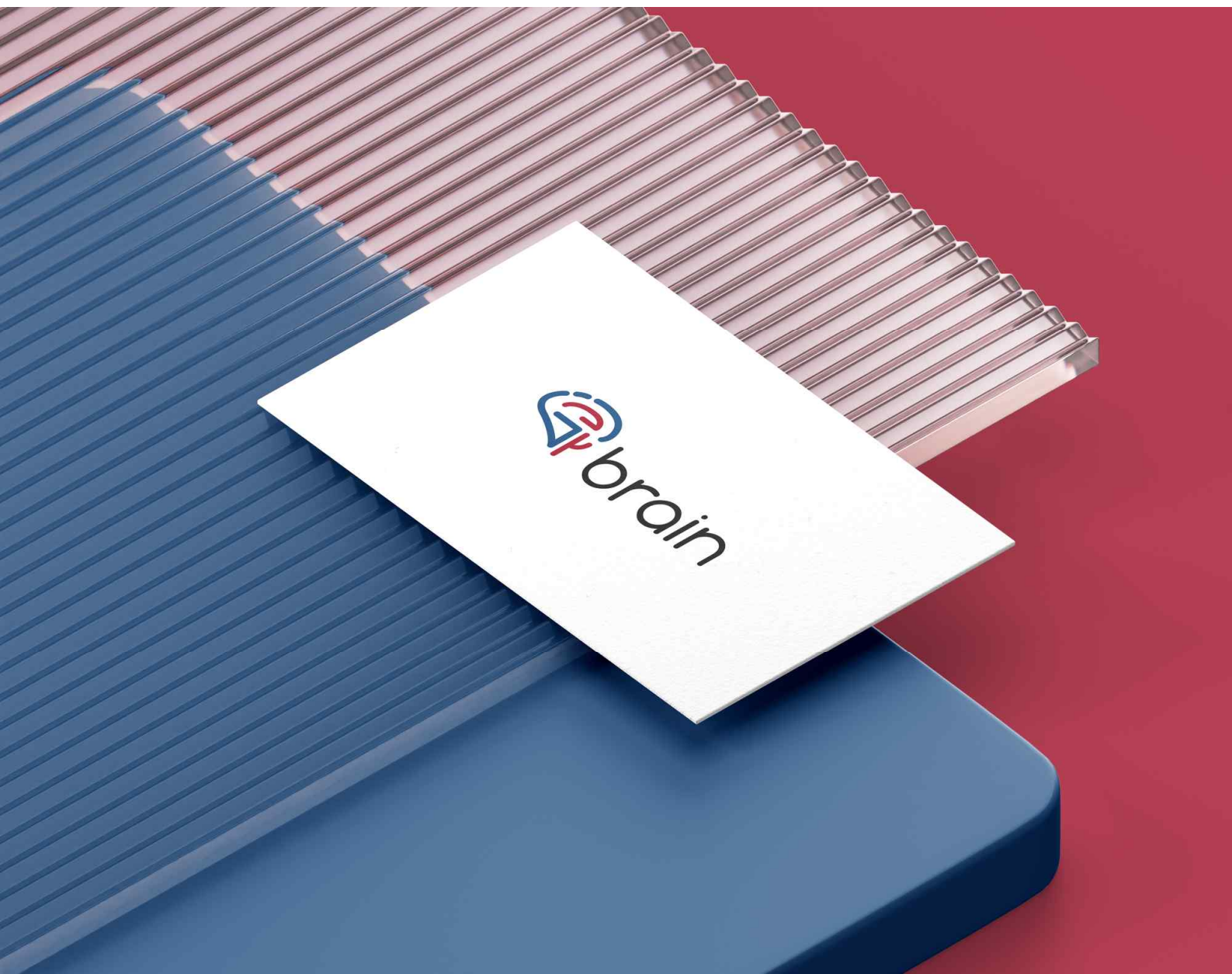
Company Profile



Neural Interface Solution

| Gbrain Develops Medical Solutions

| Based on Brain – Computer Interface Technology



Gbrain's Approach

Not Too DEEP, but not Too SHALLOW

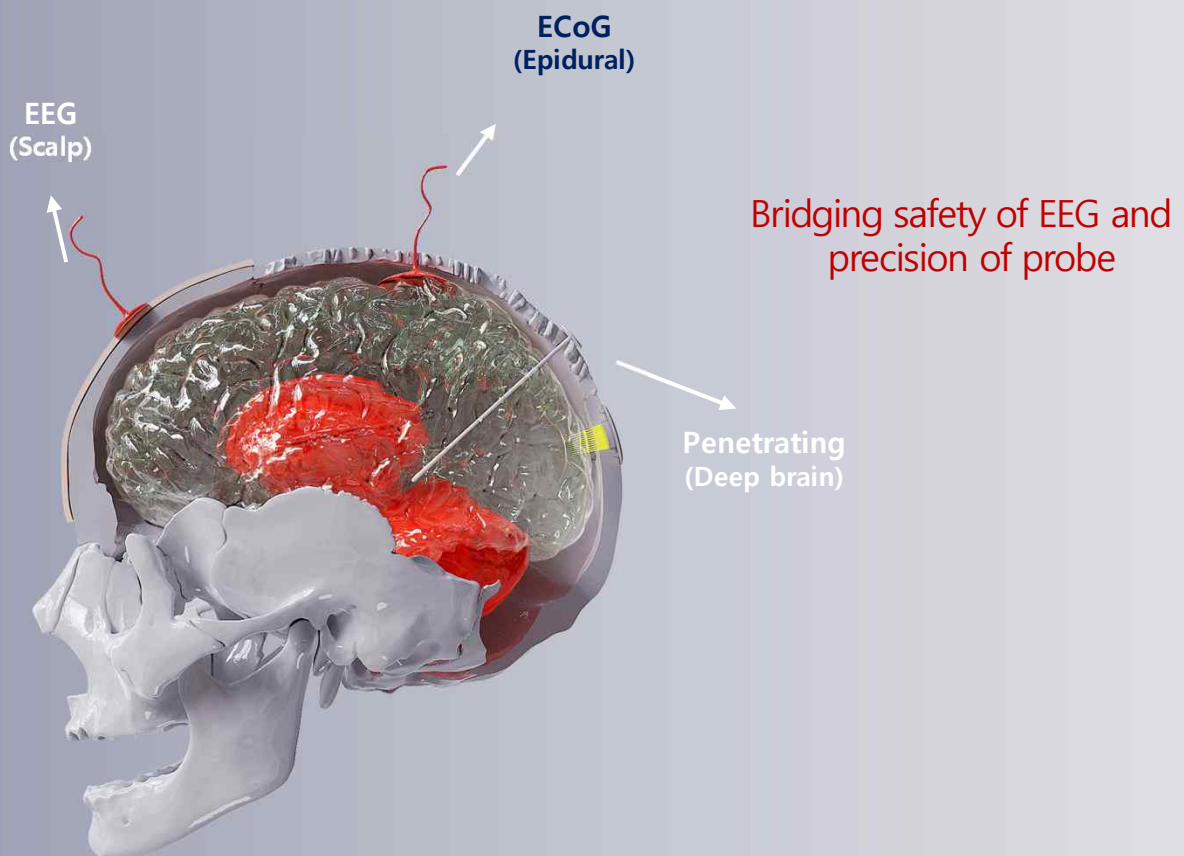
“

Gbrain aims to differentiate itself from conventional EEG and intracortical acquisition methods by providing a safe and precise approach for recording neural activity from the subdural cortical surface. The platform is designed not only to monitor brain signals with high fidelity, but also to deliver patient-specific electrical stimulation for therapeutic intervention.

”



| This Approach Ensures
| Excellent Signal Fidelity & Safety



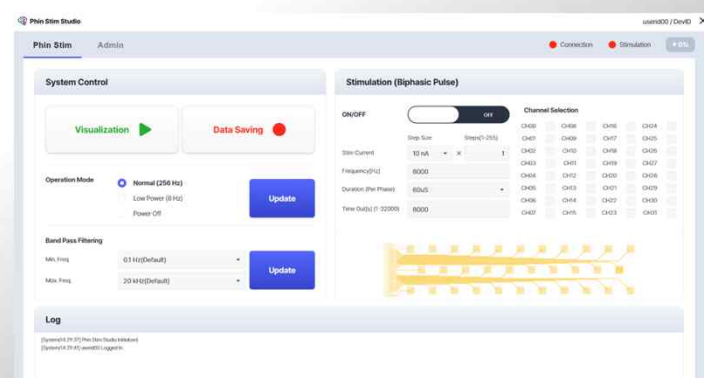
Product in Development

Wireless Neural Implants



Phin Stim

"Gbrain is developing brain-computer interface (BCI) technology through preclinical studies, including non-human primate trials, targeting neurological disorders."



Key Features

32 Ch. Brainwave Recording and Electrical Stimulation

- Wireless communication via 2.4GHz Bluetooth LE
- Inductively coupled battery recharging
- 16-bit data handling
- Stimulation current up to 500 μ A per Ch.
- PC GUI for monitoring and control

Phin Stim with Software

2025 PROTOTYPE

Product Pipeline Development

Gbrain has completed non-clinical studies demonstrating the potential of subdural cortical interfaces for the diagnosis and treatment of various chronic neurological disorders. The company is currently initiating clinical trials and preparing commercial products.

 brain	Indication	PoC/ Preclinical	Device Development	Clinical Pilot	Clinical Pivotal	Potential Market Size	Key Point
Phin Array	Epilepsy/ Brain surgery (BCI)	→			N/A	> \$40M	High Resolution / Thin
Phin Stim	Parkinson's Disease	→				> \$2B	DBS Alternative
	Stroke Rehabilitation	→				> \$2B	Novel Therapy
	Epilepsy Control	→				> \$1B	Novel Therapy
	Neuro Prosthetics Device Control	→				> \$1B	Subdural Approach
	Neuro Prosthetics (Speech)	→					
Phin Stim 2 nd GEN	Tinnitus	→	→			> \$1B	Novel Therapy
	Depression	→	→			> \$2B	Novel Therapy