Neural Implant Platform for Direct and Large Surface-area Access to Brain

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OTHER INFORMATION

KEYWORDS

Neural implant, Electrode,

Brain recording

CATEGORIZED AS

- **Medical**
  - Devices

RELATED CASES

2018-011-0

INVENTION NOVELTY

This invention is a neural implantation platform permitting large scale recording of brain activity, suitable for both animals and humans. The use of advanced silicone materials in the design allows for greater access to brain surface area than currently existing implantation platforms.

VALUE PROPOSITION

Current methods of neural implantations are limited in size and the area of recording of brain activity due to issues with stability and heat dissipation. This design utilizes silicone gels and elastomers along with other innovations to bypass those issues and allow for larger areas of brain to be implanted.

Advantages of Technology

- Allows for large scale recording of brain activity in animals and humans
- Superior heat dissipation, allowing for larger devices, covering larger surface area
- Silicone elastomers seal the opening around the brain preventing cerebrospinal fluid leakage and reducing the risks of infection, while still allowing devices to pass through
- A harder silicone elastomer cap provides pressure matching normal intracranial pressure reducing brain pulsations and the risk of herniation
- Embedding of flexible material in silicone allows forces to be distributed along the length of the device providing strain relief
- A protective shell covers the active electronics protecting it from impact and movement

TECHNOLOGY DESCRIPTION

Researchers from University of California, San Francisco have developed a neural implant platform for direct and large-scale access to brain. This platform is suitable for the positioning of flexible, implantable devices, such as recording electrodes or deep-brain stimulators, both on the surface of the brain as well as within the brain under the surface.

These flexible devices are embedded in a low-viscosity silicone gel that also seals the edges of the durectomy and craniectomy. This gel is then capped with a harder silicone elastomer to match intracranial pressure. The flexibility of the devices provides strain relief and the silicone elastomer cap protects the active electronic components of the implantation platform.

LOOKING FOR PARTNERS

To develop & commercialize the technology as the implantation platform for an implantable electronics package.

STAGE OF DEVELOPMENT

Pre-clinical

DATA AVAILABILITY

Under CDA / NDA

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	12,168,123	12/17/2024	2018-011
United States Of America	Issued Patent	11,648,394	05/16/2023	2018-011

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