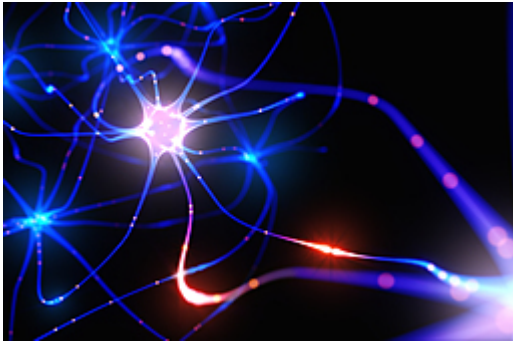




Microthread Arrays

TECHNOLOGY NUMBER: 4720



OVERVIEW

Implantable microthread electrodes to monitor, sense, and/or stimulate neural activity

- Small and flexible to enable long duration in vivo use

BACKGROUND

Implantable microscale neural probes are important tools for neuroscience. Precisely monitoring specific neuronal circuits for long periods of time can link those with low-level activity to high-level brain function, such as learning, memory, and perception. In the clinic, such probes enable the development of closed-loop neurostimulation and neuroprosthetic systems using detailed neurophysiological signals for feedback. Beyond neural recording applications, such microelectrodes can enable new approaches for creating long-lasting, high-fidelity neural interfaces for neurostimulation applications.

While various types of implantable probes have been investigated, their recording quality is suboptimal. Further, with conventional implantable microelectrodes, the recordings eventually degrade and ultimately fail over time. Currently, the primary challenge in neural interface technologies is the development of reliable, implantable devices for long-term, stable, high-fidelity spike recordings from selected neuronal ensembles.

This technology comprises an implantable microthread electrode that is smaller and more flexible than currently available microelectrodes, due to its fabrication with certain bio-compatible polymers. The ultra-small size and high flexibility enable long duration, in vivo use in an organism where the implanted device can monitor, sense, or stimulate neural activity.

Technology ID

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Category

Medical Devices
Life Sciences

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