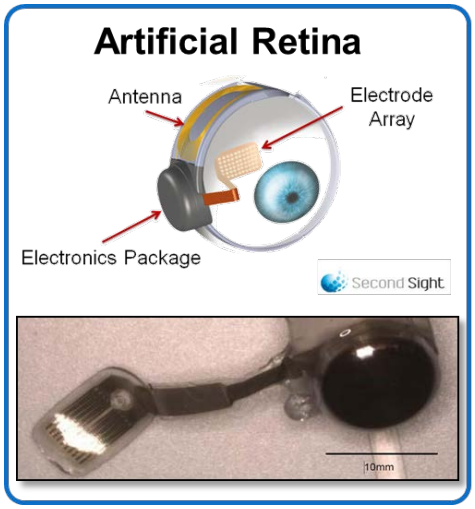
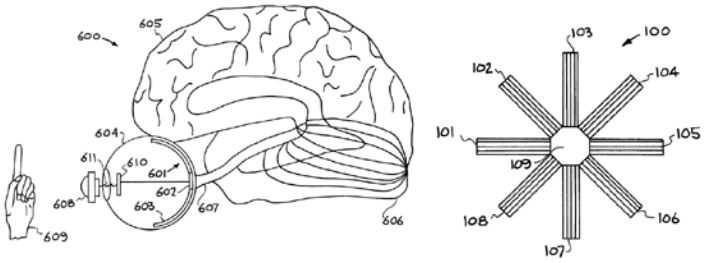
FLEXIBLE, MULTI-ELECTRODE ARRAYS FOR ARTIFICIAL VISION

Background

Lawrence Livermore National Laboratory (LLNL) played a critical role in developing the world's first artificial retina. Also known as the "bionic eye," this retinal prosthesis was developed for people blinded by retinitis pigmentosa or macular degeneration. LLNL engineers developed a flexible microelectrode array that conforms to the curved shape of the retina. Second Sight, a company that collaborated with LLNL, developed it further and received approval by the U.S. Food and Drug Administration (FDA) as the first high-density, microfabricated, and fully implantable neural prosthetic ever produced. The device partially restores sight to blind individuals.



IL11207: HIGH DENSITY POLYMER-BASED INTEGRATED ELECTRODE ARRAY (US Patent 7,035,692)



This invention is a high-density polymer-based integrated electrode apparatus that comprises a central electrode body and multiple arms extending from the electrode body. The central electrode body with multiple arms is comprised of a silicone material with metal features in the silicone material, which comprises electronic circuits.

An advantage of this design is increased density of electrodes to meet increased resolution for devices, such as artificial vision and hearing implants.

Potential Applications

This technology may find use in artificial vision and hearing implants, shaped acoustic transducers, formed non-destructive biological sensors and stimulators for interfacing with the human body, and stimulators for virtual reality simulators.

Additional uses may include any situation where an electrode conforms to various shapes, attaches to skin, or is implanted for direct cell stimulation in model organisms or humans.

Development Status

LLNL is seeking industry partners with a demonstrated ability to bring such inventions to the market. Moving critical technology beyond the Laboratory to the commercial world helps our licensees gain a competitive edge in the marketplace. All licensing activities are conducted under policies relating to the strict nondisclosure of company proprietary information.

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