Skysong Innovations
Advancing the Arizona State University Knowledge Enterprise

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Micro-implantable Devices for Neurostimulation

A common method of neurostimulation is the application of pulsed electrical currents to tissue through electrodes implanted within tissue or in some cases applied to the body surface. A major concern in the development of neurostimulators for implantation near nerve or muscle for therapeutic applications in the human body is the size of the implant. Smaller implants reduce the attendant risk of complications and so encourage their more widespread use, especially in elective surgery.

Bruce Towe at the Arizona State University has developed a micro-implantable device for neurostimulation. The physical size of the implant is easily compatible with common syringe needles used in medicine. Further, the implanted device can be wirelessly monitored, useful in improving the safety and performance of the implanted neurostimulation systems.

These devices promise to be able to provide therapeutic neurostimulation for medical applications of an unusually wide scope including possibly Parkinson's disease, epilepsy, mental depression, obesity, incontinence, functional rehabilitation, stroke, and pain relief. Neurostimulation is increasingly being viewed as a potential replacement for drugs and pharmaceuticals.

Potential Applications

- Therapeutic neurostimulation
  - pain relief
  - rehabilitation
  - restoration of lost function
  - treatment for epilepsy and neurological disorders of many types

Benefits and Advantages

- Potential replacement for drugs and pharmaceuticals
- Allows wireless neurostimulation and monitoring of implant performance
- Smaller form factor than conventional implanted electrodes
- Implantation via needles results in less trauma
- Device can be implanted deeply into tissue

For more information about the inventor(s) and their research, please see Dr. Towe's Directory webpage