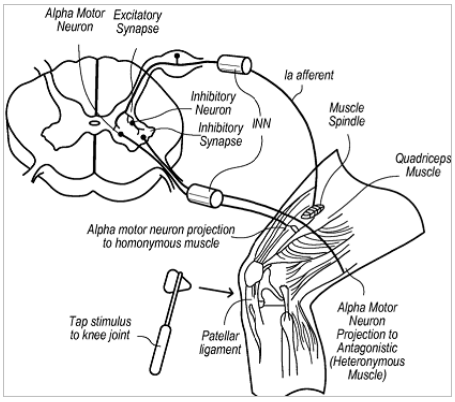
Microchannel scaffolds and microtube electrodes for a neural interface system

Human disabilities caused by traumatic accidents and rare diseases, such as arteriosclerosis, Buerger's disease, etc., can cause lasting nerve damage. In such cases, medical efforts to rehabilitate individuals to normal social life become extraordinarily challenging. While nerve surgeries do not always succeed, individuals who lose full or portion of their hand, arm or leg can be partly rehabilitated through prosthetic devices. Regrettably, highly sophisticated electronic prosthetic control systems do not possess the ideal capability to interface signals between the nervous system and the prosthetic device.

This invention advances neural interface technologies by developing a neural interface that connects the peripheral nervous system with external devices, such as prosthetic limbs, and provides a direct communication pathway between the two. This invention leverages on a microchannel integrated neural network device and a system which can control the reinnervated muscles and interpret neurological signals. The acquired bioelectrical signals can then be used for the interpretation of mind and create a neural map.



(image source: inventor)

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Competitive Advantages

- Advances rehabilitation capabilities of disabled individuals
- Nerve regeneration through microchannel scaffolds
- Direct neuron communication using microtube electrodes
- Bio-degradable materials used

Commercial Applications

- Implantable devices
- Embedded microwave and acquisition systems

IP Status

- Patent pending
- Licensing available

Status of Development

- Prototyping stage

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