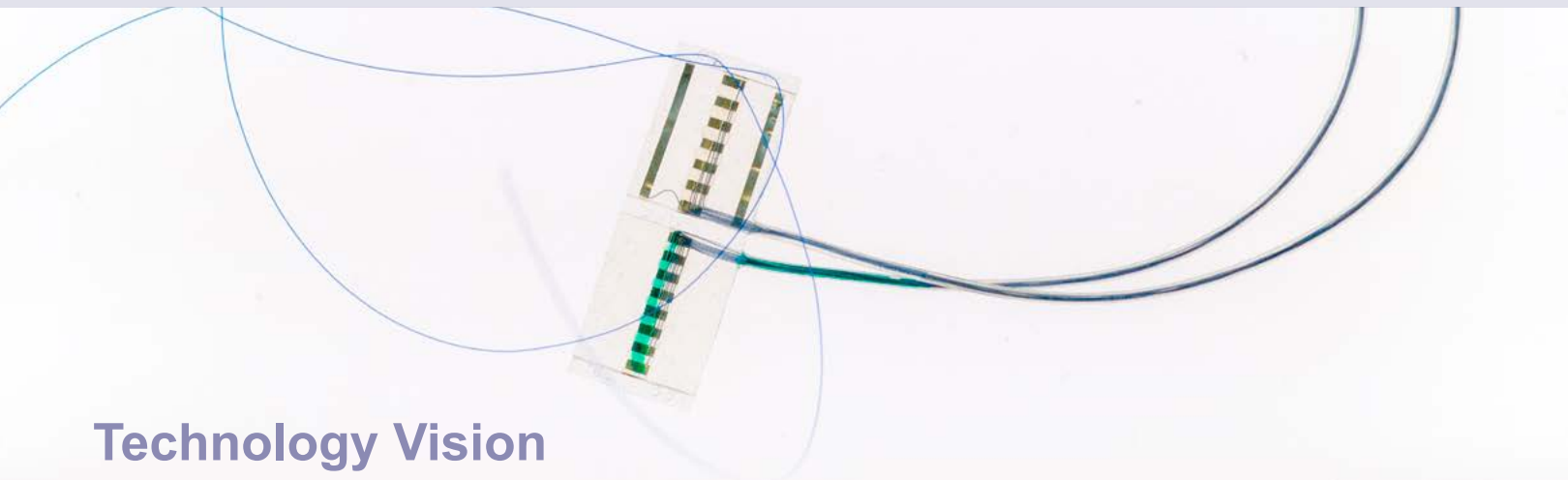


TOOLS & TECHNOLOGY



Technology Vision

The Cleveland FES Center has the ability to conceive, fabricate, test, and produce advanced technologies addressing clinical applications. Our technological capabilities are divided into two segments; **innovation** and **technical**.

The innovation group is charged with identifying the cutting edge techniques, materials and concepts from

across the industry for possible inclusion into neural applications.

The technical production group is charged with fabricating small quantities of implantable and external devices to a quality level fit for clinical use.

It's been a long road, it's a lot of work to get from the point of things scribbled on napkins to an FDA approved device that can be put into humans.

— Kevin Kilgore, PhD

Implantable Electrode Design



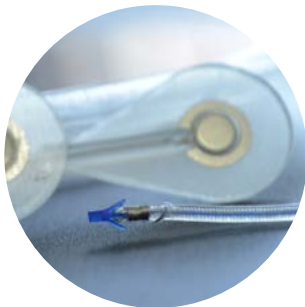
Nerve Cuff Electrode

This self-spirling electrode is designed to conform to the natural circumference of a nerve. It can be used to stimulate or inhibit neural signals.



Myoelectric Signal (MES) Electrode

The Myoelectric Signal (MES) electrode records muscle activity, which can then be utilized as a control mechanism for the entire system. The biomedical engineers can exploit a participant's residual voluntary movement for the command signal.



Epimysial & Intramuscular Electrodes

These electrodes stimulate the muscle for activation of movement. The epimysial electrode is stitched on top of the muscle. The intramuscular electrode is inserted into the muscle tissue and held in place by the blue barbs. The style of electrode is chosen by the biomedical engineers and surgeons for to customize the system for each patient.

For more information about FES research and programs
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About the Cleveland FES Center

The Cleveland FES Center is a consortium of the Louis Stokes Cleveland VA Medical Center, MetroHealth Medical Center, Case Western Reserve University, University Hospitals, and the Cleveland Clinic Neurological Institute. With their support, researchers, engineers and clinicians collaborate together to develop innovative solutions that improve the quality of life of individuals with neurological or other muscular skeletal impairments. Through the use of neurostimulation and neuromodulation research and applications, the Cleveland FES Center leads the translation of this technology into clinical deployment.