



## Advancing Technology

## Enhancing Life

The Cleveland FES Center was established through the US Department of Veteran's Affairs, Office of Rehabilitation Research & Development Service in 1991. The FES Center, a consortium in neuromodulation and neurostimulation includes the Louis Stokes Cleveland VA Medical Center, Case Western Reserve University, MetroHealth Medical Center and University Hospitals of Cleveland.

The focus of the Cleveland FES Center is to improve people's lives by supporting fundamental research in the neuromuscular sciences, developing new technologies and methods, performing clinical evaluation and feasibility testing, and promoting the widespread deployment of new technologies through professional education and commercial partnerships.

### Culture

A transdisciplinary **alliance** of active, passionate and committed professionals, students and trainees, in science and medicine, specializing in the fields of biomedical and neural research, engineering, medicine and rehabilitation who embrace an open-door, collaborative, compassionate and inquisitive engagement; Together, we are solving real medical problems that impact medical science and comfort a vulnerable veteran and civilian population.

### Research

Research is an evolutionary process that depends on a complementary relationship between discovery and application. The Center is a global leader in the research and development of commercially adopted, patient-centric neurostimulation and neuromodulation applications.

Research Thrusts:

**Brain Health • Pain • Autonomic Function • Movement • Tools & Technology**

### Technology

Custom technologies crafted to meet individual goals and physiological needs are unique to the clinical research programs.

**Networked Neuroprosthetic (NRP) System • Implantable Stimulator Telemeter (IST) • Universal Control Module • Implantable Electrodes**

### Impact

Individuals enjoy the return to their daily lives including work and social activities. From picking up a cup of coffee to standing to reach a book off the shelf, the Cleveland FES Center clinical research programs provide volunteers a greater level of independence.

*I'm able to do a lot of stuff that I didn't think I'd be able to do ever again. I've gotten great function so far, and a lot more will come with time.*

### Education

Dedicated to the integration of engineering and medical education, we serve to educate students with the clinical aspects of the FES Center research. Additionally, productive interactions are facilitated between those research investigators advancing the fundamental understanding of the nervous system and creating innovative technologies, and the medical students, residents and fellows, who will implement the technologies in the future.

*While I was working in the lab for hours trying to get the circuits to work, I felt good knowing this was going to help someone.*



### Louis Stokes Cleveland VA Medical Center

Susan M. Fuehrer | Medical Center Director  
Murray Altose, MD | Chief of Staff

The Louis Stokes Cleveland VA Medical Center provides clinical care to veterans with complications due to spinal cord injuries, head injuries, or stroke, among other illnesses. Along with significant support of individual research projects, the Louis Stokes Cleveland VAMC provides the core infrastructure to further this veteran relevant mission.

#### Research Programs & Laboratories

Louis Stokes Cleveland VAMC B-E210  
10701 East Boulevard  
Cleveland, Ohio 44106  
(216) 231-3257; Fax (216) 231-3258

### Case Western Reserve University

Barbara Snyder | President

The Cleveland FES Center's inclusion at Case Western Reserve University in the Schools of Engineering and Medicine enables access to leading academic, clinical and engineering expertise, facilities and a rich learning environment result in a dynamic element for FES research and development.

#### Technical Development Laboratory

Bingham Building, Room 306  
2104 Adelbert Road  
Cleveland, Ohio 44106  
(216) 368-3153; Fax (216) 368-3115

#### Research Laboratories

Wickenden Building, Room 311  
2071 Martin Luther King Jr. Drive  
Cleveland, Ohio 44106  
(216) 368-5891; Fax (216) 368-4969

#### School of Medicine

Health Sciences Campus  
2109 Adelbert Road  
Cleveland, Ohio 44106  
(216) 368-3450

### MetroHealth Medical Center

Akram Boutros, MD, FACHE | President, CEO  
Alfred Conners, MD, EVP | Chief Medical Officer, Chief Quality Officer

Integration into the accomplished Rehabilitation Services of MetroHealth Medical Center enables valuable access to patient care and clinical expertise in Orthopaedics & Orthopaedic Surgery, Neurosciences & Neurosurgery, and Physical Medicine and Rehabilitation.

#### MetroHealth Main Campus

2500 MetroHealth Drive  
Cleveland Ohio 44109-1998  
(216) 957-3368; Fax (216) 778-4257

#### Old Brooklyn Health Center

4229 Pearl Road  
Cleveland, Ohio 44106  
(216) 957-3368; Fax (216) 778-4257

### University Hospitals of Cleveland

Daniel Simon, MD | President

University Hospitals enjoys some of the most prestigious centers of excellence in the country and the world. These include areas such as orthopaedics and spine neurological sciences, and the Neurological Institute; offering neurological and neurosurgical services delivering innovative, integrated and individualized care to patients with diseases affecting the nervous system.

University Hospitals is a research affiliate with Case Western Reserve University. Together, The Research Institute of UH Case Medical Center and CWRU form the largest biomedical research center in the state of Ohio.

#### University Hospitals of Cleveland

11100 Euclid Avenue  
Cleveland, OH 44106  
(216) 844-1000