**UF Breathing Research and Therapeutics Center (Est 2015)**

UF Breathing Research and Therapeutics (BREATHE) Center is the only center of its kind in the United States, bringing together basic researchers, engineers, and clinical researchers to better understand respiratory motor control and to translate new knowledge into novel rehabilitation strategies. Our focus concerns devastating clinical disorders that compromise breathing, including spinal cord injury and other neuromuscular disorders (e.g., ALS, Pompe disease, muscular dystrophy & Parkinson’s disease). With expertise ranging from respiratory neurobiology to muscle biology to neurorehabilitation, neurotechnology, neurology, pulmonary critical care, and sleep, members are housed in 16 different departments in 5 UF colleges. BREATHE hosts local, national, and international seminars and workshops, including the Control of Breathing & Airway Defense (CoBAD) International Online Seminar Series, Social & Science, Conversations in Breathing and Swallowing, and the Neurotherapeutic Intermittent Hypoxia Workshop. The BREATHE Center administers the NHLBI-funded BREATHE Pre & Postdoctoral Training Program, and provides campus expertise in rodent physiological (e.g., breathing, gas analysis, swallowing assessments) and electrophysiological measurements (e.g., nerve recordings and respiratory muscle EMG telemetry) as well as intermittent hypoxia exposures in humans and animal models.

*Additional Information:* Our members have state-of-the art research laboratories and clinical facilities providing a wealth of available resources. In brief, members have the expertise and equipment to enable:

* Plethysmography to measure ventilation in rodent models (EMKA, DSI, in-house).
* Electromyography (EMG) & (EEG) telemetry in unanesthetized animal models (EMKA, DSI).
* Respiratory neurophysiology in animal models (in vitro, in situ and in vivo).
* Respiratory neuroanatomy and tract tracing.
* Cell/molecular analyses (mRNA, DNA, proteins) of neural and muscle tissues.
* In vitro and in vivo studies of respiratory muscle function.
* Histological evaluation of respiratory neurons, nerves, and muscles.
* Recovery surgeries in experimental animals, including experimental models of spinal injury.
* Gene therapy, particularly utilizing adeno-associated virus (AAV) technologies (approach invented at UF).
* Respiratory physiology and neurophysiology (EMG) in humans.
* Swallowing and cough physiology and pathophysiology in humans.
* Manipulating oxygen levels to study the impact of intermittent hypoxia in humans and animal models.
* Magnetic resonance imaging and spectroscopy (MRI/MRS) in both humans and animal models.
* Measurement and analysis of human movement and performance.