

DAVID D. FULLER
CURRICULUM VITAE

PRESENT POSITION

Professor, Department of Physical Therapy <https://pt.phhp.ufl.edu/about-us/faculty/david-fuller/>

Director, Rehabilitation Science PhD Program <https://rehabsci.phhp.ufl.edu/>

Director, NIH T32 Training Program: Neuromuscular Plasticity and Rehabilitation <https://pt.phhp.ufl.edu/train-with-us/t-32/>

Associate Director, Breathing Research and Therapeutics (BREATHE) Center <https://breathe.phhp.ufl.edu/>

ADDRESS

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Department of Physical Therapy
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PERSONAL

Date of Birth: April 23, 1970

Citizenship: United States

EDUCATION

| | | |
|--------------------------------------|---|-----------|
| University of Wisconsin, Madison, WI | Post-Doctoral Fellow, <i>Respiratory Neurobiology</i> | 1999-2002 |
| University of Arizona, Tucson, AZ | PhD, <i>Physiological Sciences</i> | 1998 |
| University of Arizona, Tucson, AZ | MS, <i>Exercise Physiology</i> | 1994 |
| Miami University, Oxford, OH | BS, <i>Exercise Science</i> | 1992 |

PROFESSIONAL EXPERIENCE

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|---|-------------------------------|--------------|
| University of Florida, Gainesville, FL Dept. of Physical Therapy | Professor | 2013-present |
| University of Florida, Gainesville, FL Dept. of Physical Therapy | Associate Professor | 2009-2013 |
| University of Florida, Gainesville, FL Dept. of Physical Therapy | Assistant Professor | 2004-09 |
| University of Wisconsin, Madison, WI Dept. of Comparative Biosciences | Assistant Scientist | 2003 |
| University of Wisconsin, Madison, WI Dept. of Comparative Biosciences | Post-Doctoral Fellow | 1999-2002 |
| University of Arizona, Tucson, AZ Dept. of Physiology | Teaching & Research Assistant | 1994-98 |
| University of Arizona, Tucson, AZ Dept. of Exercise and Sports Science | Teaching & Research Assistant | 1992-94 |

HONORS & AWARDS

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| University of Florida Preeminence Term Professorship | 2018 |
| University of Florida Research Foundation Professorship | 2016 |
| College of Public Health and Health Professions Dean's Citation Outstanding Manuscript | 2016 |
| New Investigator Award, American Physiological Society, Respiration Section | 2009 |
| Giles F. Filley Memorial Award for Excellence in Respiratory Physiology and Medicine | 2005 |
| Parker B. Francis Fellowship in Pulmonary Research | 2002-04 |

PROFESSIONAL ACTIVITIES

Editorial Board Service

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| Editorial board: <i>Experimental Neurology</i> | 2020-current |
| Editorial board: <i>Journal of Applied Physiology</i> | 2007-current |
| Guest editor: <i>Experimental Neurology</i> | 2016 |
| Guest editor: <i>Respiratory Physiology and Neurobiology</i> | 2011 |
| Associate editor: <i>Frontiers in Respiratory Physiology</i> | 2010-18 |

Grant Review

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| <i>National Institutes of Health – Study Section Member</i> | |
| Respiratory Integrative Biology & Translational Research (RIBT) | 2020-2024 |
| <i>National Institutes of Health – Ad Hoc Committee Member</i> | |
| ZHD1 DSR-R(90) (T32 reviews) | 2019 |
| NIAMS AMSC (clinical trials) | 2019 |
| ZRG1 CVRS-A (SBIR) | 2018 |
| ZRG1-BDCN-W-06 | 2016 |
| ZRG1-IFCN-T-02 | 2014 |
| Cardiovascular and Respiratory Sciences (CVRS) | 2012 |
| Clinical Neuroplasticity and Neurotransmitters | 2012 |
| Neuroimmunology and Spinal Cord Injury ZRG1 BDCN-Y(02) | 2011 |
| Lung Cellular, Molecular, and Immunobiology | 2010 |
| Respiratory Integrative Biology & Translational Research (RIBT) | 2008-09, 2014, 2017-18 |
| NIH ZRG1 CVRS-B 58 R, RFA-OD-09-003: Challenge Grants Panel 19 | 2009 |
| <i>Department of Defense</i> | |
| Spinal Cord Injury Research Program (SCIRP), Clinical Trials | 2014 |
| Congressionally Directed Medical Research Programs Spinal Cord Injury Research (SCIRP) grant review panel | 2012 |
| <i>Other organizations</i> | |
| Virginia Commonwealth University, Center for Clinical and Translational Research | 2020 |
| Harvard Medical School | 2019 |
| Missouri Spinal Cord Injury/Disease Research Program | 2015, 2018 |
| Kentucky Spinal Cord and Head Injury Research Trust | 2015 |
| Muscular Dystrophy Ireland | 2014 |
| The American Physiological Society | 2008-13 |
| The Neuroscience Research Center (NRC) at the Medical College of Wisconsin | 2013 |
| The Craig H. Neilsen Foundation (USA) | 2008-12 |
| Association Française centre les Myopathies | 2011 |
| Christopher & Dana Reeve Foundation | 2010 |
| Center for Integration of Medicine & Innovative Technology (Boston, USA) | 2010 |
| The Wellcome Trust (UK) | 2010 |
| Health Research Board (Ireland) | 2006-08 |
| The Agency for Science, Technology and Research (Singapore) | 2008 |

External Advisor

Kansas University Training Program in Neurological and Rehabilitation Sciences. NIH T32 program. 2020-present

Peer review of scientific manuscripts– >200 reviews completed for peer reviewed scientific journals in the areas of physiology and neuroscience; currently averaging 3 reviews per month

Professional Societies

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| American Physiological Society | 1995-present |
| <u>Chair, Respiration Section Awards Committee</u> | 2020-present |
| Society for Neuroscience | 2000-present |

Symposium organizer

Annual Neuromuscular Plasticity Symposium. University of Florida, Gainesville, FL. This event is sponsored by an NIH T32 grant (DDF is PI) and features a poster session (>60 posters) and plenary lectures from 3 internationally recognized experts in neuromuscular plasticity.

Current approaches for measuring respiratory activity in animals: recognizing and avoiding common pitfalls. Federation of American Societies for Experimental Biology (FASEB) meeting, April 2021.

Musculoskeletal Afferents and the Control of Breathing. FASEB meeting, Orlando, FL, April 2019.

Genetic manipulation in respiratory control: basic science to clinical trials. FASEB meeting, Orlando, FL, April, 2014.

Respiratory control disorders. FASEB meeting, Washington, DC, April 2011.

Disease-induced plasticity in the neural control of breathing. FASEB meeting, San Francisco, CA, April 2006.

Breathing and walking following spinal cord injury. FASEB meeting, Washington D.C., April 2004.

Invited Lectures

Ampakines stimulate breathing after spinal cord injury. International Online Spinal Cord Research Seminar. April 1, 2020.

Can we enhance the impact of therapeutic intermittent hypoxia using pharmacological strategies? Intermittent Hypoxia and Neurotherapeutics Workshop. February 9-12, 2020. Atlantic Beach, FL.

Translational studies in Pompe disease. Mayo Clinic, Biomedical Engineering & Physiology. Rochester, Minnesota. Dec. 14, 2018

Spinal circuits, neuroplasticity and breathing. Cincinnati Children's Hospital. Cincinnati, Ohio. Oct 25, 2018.

Control of Breathing in Pompe Disease. XIV Oxford Conference on Modelling and Control of Breathing, Oxford, UK, September 17-21 2017.

Control of breathing and spinal cord injury. Miami Project to Cure Paralysis. University of Miami. Miami, FL, Nov. 2, 2016.

Gene therapy for the respiratory system in neuromuscular disease. Dept. of Physiology. University of Arizona. Tucson, AZ, Oct. 28, 2016.

Respiratory Neuroplasticity and Rehabilitation. Biomedical Engineering Seminar Series. Florida International University, Miami, FL, Feb. 12, 2016.

Breathing, Neuromuscular Plasticity, and Rehabilitation. University of Nebraska, Omaha, on November 6, 2015.

Breathing, Neuromuscular Plasticity, and Rehabilitation. Rehabilitation Institute of Chicago, Chicago, IL, October 2015.

Synaptic plasticity in respiratory control. International Hypoxia Symposium, Alberta, Canada, March 5, 2015.

Gene therapy for respiratory muscles and neurons. FASEB Annual Meeting, April 28, 2014

Neuronal injury, plasticity and respiratory rehabilitation. Kentucky Spinal Cord Injury Research Center, University of Louisville, KY, Oct 17, 2013.

Spinal plasticity and breathing. Department of Neurobiology and Anatomy, Drexel University, May 8, 2013.

Breathing and Pompe disease. Pulmonary and Critical Care Medicine, Johns Hopkins University, March 21, 2013.

Gene therapy and Pompe disease. The McGowan Institute for Regenerative Medicine and the University of Pittsburgh. Nov. 12-13, 2012.

Neuronal injury, plasticity and respiratory rehabilitation. Center for Neuroscience, Medical College of Wisconsin, Milwaukee, WI, Oct. 6, 2011.

Control of breathing and Pompe disease. FASEB Annual Meeting, Washington, DC, April 2011.

Basic science in a physical therapy department. American Physical Therapy Association Combined Sections meeting, February 2010, San Diego.

Cervical spinal cord Injury and respiratory neuroplasticity. Nanoscience Technology Center, University of Central Florida, Burnett School of Biomedical Sciences, Orlando, FL, August 31, 2009.

Gene therapy for respiratory insufficiency in a mouse model of Pompe Disease. Featured symposium "Control of breathing in chronic diseases" at the FASEB Annual Meeting, New Orleans, LA, April 2009.

Quantifying respiratory recovery after spinal cord injury. American Society for Neurochemistry annual meeting, Charleston, SC, March 7, 2009.

Cervical spinal cord injury and respiratory neuroplasticity. Physiology in Medicine: Bridging Bench and Bedside”, at the Beijing Joint Conference of Physiological Sciences. Beijing, China, October 19-22, 2008.

Respiratory related neuroplasticity. Dept. of Biology, Bates College, Lewiston, ME, September 2008.

Plasticity in neurobiological systems. “Adaptation and Learning in Neural-Biomechatronic Systems”, Sponsored by the National Science Foundation, Arizona State University, Phoenix, AZ, March 2007.

Glycogen storage disease and the neural control of breathing. Featured symposiuma “Disease-induced Plasticity in the Control of Breathing” at the FASEB Annual Meeting, San Francisco, CA, April 2006.

Respiratory plasticity and rehabilitation following spinal cord injury, platform presentation at the Society for Neuroscience Annual Meeting. Washington, DC, November 2005.

Quantifying breathing in animal models of cervical spinal cord injury and glycogen storage disease. Pulmonary research symposium in conjunction with the American Thoracic Society Annual Meeting. San Diego, CA, May 2005.

Intermittent hypoxia: influence on upper airway motor function. Pulmonary Research Group Symposium: “Sleep apnea: opportunities for drug discovery”. Shering-Plough Research Institute, Kenilworth, NJ, April 2005.

Recovery of phrenic motor function following cervical spinal cord injury. Dept. of Anatomy and Cell Biology at Wayne State University, Detroit MI, December 2004.

Spinal respiratory plasticity: implications for rehabilitation following spinal cord injury. Symposium at the FASEB Annual Meeting, Washington, DC, April 2004.

Breathing, plasticity and spinal cord injury. Dept. of Kinesiology, University of Illinois, Champaign IL, November 2002.

Spinal cord plasticity and breathing. Depts. of Exercise Science and Physical Therapy at Marquette University, Milwaukee, WI, September 2002.

University Service

Graduate education

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| Director, Rehabilitation Science PhD Program, University of Florida | 2012-present |
| Director, NIH T32HD043730 Neuromuscular Plasticity Training Grant | 2016-present |

Committees

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| Translational Biomedical Sciences Committee (University wide committee charged with evaluating seed fund grants) | 2019-present |
| Faculty search committee, OT | 2019 |
| Mid-tenure review | 2013 |
| College of PPHP: Grant writing workshop (chair) | 2010-2015 |
| Faculty search committee, CHRI/PGTC | 2012 |
| Faculty search committee, Physical Therapy Dept. (chair) | 2010, 2013 |
| Committee for research excellence, Physical Therapy Dept. (co-chair) | 2007-08 |
| College of PPHP “Incentive Plan” Committee | 2007-11 |
| Chair, Rehabilitation Science Doctoral Program Steering Committee | 2012-2019 |
| Grant review: University of Florida Opportunity Fund | 2008-10, 2016 |

Seminars

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| Organizer: “Neuromuscular Plasticity Noons” graduate student seminar | 2008-present |
| Organizer: Rehabilitation Science Seminar, Physical Therapy Dept. | 2006-18 |

Judge

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| Graduate Student Council Interdisciplinary Conference poster competition | 2011 |
| Neuromuscular Plasticity Symposium graduate poster competition | 2009-2019 |
| PHHP “Research Day” graduate and undergraduate grant and poster competition | 2007-08 |

TEACHING

University of Florida

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| PHT6935: <u>Doctoral Seminar in Rehabilitation Science</u> (1 credit graduate course, ~15 students) | 2010-2020 |
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| PHT6935C: <i>Human Physiology</i> (4 credit graduate course, ~55 students) | 2010-2016 |
| PHT6168C – <i>Neuroscience for physical therapists</i> (4 credit graduate course including lecture and neuroanatomy laboratory, ~55 students) | 2004-10, 2016 |
| PHT6318 – <i>Neuroplasticity: a foundation for rehabilitation</i> (3 credit graduate course, ~15 students) | 2005-2020 |
| PHT6935C - <i>Respiratory plasticity</i> (2 credit graduate course, ~15 students) | 2008 |

Additional lectures given at the University of Florida

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| PHT 6935C: <i>Breathing and Airway Defense: Implications for Rehabilitation</i> “Neuromuscular diseases and breathing: basic science approaches”. | 2020 |
| GMS 6096: <i>Introduction to NIH Grant writing</i> (“Successful Grant Writing”) | 2013-15 |
| PHT 6152C – <i>Exercise Physiology</i> (“ <i>The Respiratory System and Exercise</i> ” and “ <i>Exercise and Neuroplasticity</i> ”) | 2006-2021 |
| GMS 6008 – <i>Fundamentals of Physiology</i> (“ <i>Respiratory Neuroplasticity</i> ”) | 2006 |
| GMS 6002 – <i>Fundamental Neuroscience</i> (“ <i>Spinal Plasticity</i> ”) | 2007 |
| PHT 6935: <i>Translational Neuroscience Research</i> (“ <i>Respiratory Plasticity</i> ” and “ <i>Animal Models of Respiratory Dysfunction</i> ”) | 2009-10 |

University of Wisconsin

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| AHABS 301 – <i>Animal Physiology</i> | 2000-02 |
| AHABS 301 – <i>Respiratory physiology laboratory</i> | 2000-02 |

University of Arizona

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| Physiology 420 – <i>Exercise Physiology</i> | 1997 |
| Physiology 418/419 – <i>Physiology for Engineering Students</i> | 1996 |
| Physiology 601/801 – <i>Systems Physiology Laboratory</i> | 1996 |
| Exercise and Sport Sciences 378, 421, 521 – <i>Exercise Physiology Laboratory</i> | 1993-97 |
| Exercise and Sport Sciences 169A, 169B, 169C, 170, 184A | 1992-93 |

MENTORING

Post-doctoral fellows (Primary mentor)

Michael Sunshine, PhD (2021-present).

Victoria Jensen, PhD (2020-present).

Sabhya Rana, PhD (2019-present).

Prajwal Thakre, PhD (2019-present).

Lila Wollman, PT, PhD (2017-2019). Current position: Post-doctoral fellow, Dept. of Physiology, University of Arizona.

Kristi Streeter, PhD (2014-2019). Current position: Assistant Professor, Dept. of Physical Therapy, Marquette University.

Sara Turner, PhD (2013-2017). Current position: family leave.

Elisa Gonzalez-Rothi, PT, PhD (2013-15). Current position: Assistant Professor, Dept. of Physical Therapy, University of Florida

Milapjit S. Sandhu, PT, PhD (2010-13). Current position: Research Scientist, Shirley Ryan Ability Lab and Research Assistant Professor, Dept. of Physical Medicine and Rehabilitation, Northwestern University

Mai Elmallah, MD (2010-14). Current position: Associate Professor, Dept. of Pediatrics, Duke University.

Kun-Ze Lee, PhD (2008-11). Current position: Associate Professor, Dept. of Biological Science, National Yat-sen University, Taiwan.

Kai Qiu, MD, PhD (2006-10). Current position: Industry

PhD students (Primary mentor)

Ethan Benevides (2020-present) Rehabilitation Science PhD Program. *Optogenetic methods for activating the diaphragm*

Michele Singer (2019-present) Rehabilitation Science PhD Program. *Gene therapy for tongue motor dysfunction in Pompe disease.*

Michael Sunshine (2016-2020) Rehabilitation Science PhD Program. *Using temporal interference to activate phrenic motoneurons.* Current position: Post-doctoral fellow, University of Florida.

Brendan Doyle (2015-2019) Rehabilitation Science PhD Program. *Optimizing gene delivery to hypoglossal motoneurons in a mouse model of Pompe disease.* Current position: Unknown.

Jayakrishnan Nair (2012-2016) Rehabilitation Science PhD Program. *Anatomical characterization of phrenic afferent neuronal projections after spinal cord injury.* Current position: Post-doctoral fellow, Dept. of Physical Therapy, University of Florida.

Luther Gill (2009-2012) Rehabilitation Science Doctoral PhD. *Diaphragm muscle plasticity in disease: sepsis and spinal cord injury.* Current position: Assistant Professor, Dept. of Physical Therapy, Louisiana State University

Elisa Gonzalez-Rothi (2009-2012) Rehabilitation Science PhD Program. *Spinal cord injury and plasticity in cervical neurons.* Current position: Assistant Professor, Dept. of Physical Therapy, University of Florida

Brendan J. Dougherty (2007-2011) Interdisciplinary Program in Biomedical Sciences. *Transplant of serotonergic neurons into the injured spinal cord.* Current position: Assistant Professor, Division of Physical Therapy, University of Minnesota Medical School.

Milapjit S. Sandhu (2005-2010) Rehabilitation Science PhD Program. *Neuroplasticity in the phrenic motor system.* Current position: Research Scientist, Shirley Ryan Ability Lab and Research Assistant Professor, Dept. of Physical Medicine and Rehabilitation, Northwestern University

Lara R. DeRuisseau (2004-2006) Physiological Sciences PhD Program. *Ventilatory and Central Nervous System Characterization and Gene-therapy Treatment of a Mouse Model of Glycogen Storage Disease Type II.* . Current position: Associate Professor, LeMoyne College.

PhD student supervision (Committee Member)

Mia Kelly (2018-) Rehabilitation Science PhD Program.

Michaela McCrary (2016-2020) Biomedical Engineering. Development of spinal cord injury in vitro model systems and in vivo therapeutic strategies.

Latoya Allen (2016-2019). Interdisciplinary Program in Biomedical Sciences. Neurochemical plasticity in phrenic motor neurons after cervical spinal cord injury and intermittent hypoxia.

Lauren Tabor (2016-2018) Airway sensorimotor function in individuals with amyotrophic lateral sclerosis.

Nicole Little (2013-2016) Interdisciplinary Program in Biomedical Sciences. Neurodegeneration following spinal cord injury.

Lynne Mercier (2013-2016) Interdisciplinary Program in Biomedical Sciences. Closed loop spinal cord stimulation after spinal cord injury.

Adam Beharry (2012-15) Rehabilitation Science PhD Program. Mechanisms of muscle atrophy in cancer cachexia.

Shakeel Ahmed (2012-2016) Rehabilitation Science PhD Program. Optimizing respiratory muscle training paradigms in humans.

Christopher Lacko (2015-2018) Biomedical Engineering. Magnetic nanoparticles to create aligned channels of porosity within amorphous GMHA hydrogels.

Jillian Condrey (2012-current) Physiological Science PhD Program. Mechanisms of stroke and TBI induced dysfunctional breathing, swallowing, chewing and defensive reflexes.

Poonam Jaiswal (2009-14) Interdisciplinary Program in Biomedical Sciences. Respiratory load compensation following cervical spinal cord injury.

David Lopez (2011-14) Interdisciplinary Program in Biomedical Sciences. Spinal cord regeneration and injury in the axolotl.

Hsiu-Wen (Irene) Tsai (2009-current) Physiological Sciences PhD Program. Inhibitory interneurons and airway occlusion.

Lisa Lagoria (2010-12) Rehabilitation Science PhD Program. Effects of swallowing effort on bolus accommodation in healthy elderly individuals

Kathryn Pate (2007-2010) Physiological Science PhD Program. Respiratory pathways activated by airway occlusion.

Vipa Bernhardt (2007-2010) Physiological Science PhD Program. Respiratory muscle training in elite swimmers.

Tseng-Tien Huang (2005-2010) Rehabilitation Science PhD Program. Weaning from prolonged mechanical ventilation in humans.

Deoghare Harshavardhan (2005-2010) Rehabilitation Science PhD Program. Weaning from prolonged mechanical ventilation in humans.

Carie Reynolds (2009) Physiological Sciences PhD Program. Prenatal nicotine and cardiorespiratory control.

Fan Ye (2006-2009) Rehabilitation Science PhD Program. Role of IGF in Skeletal Muscle Plasticity Following Spinal Cord Injury and Locomotor Training.

Prithvi Shah (2007-2008) Rehabilitation Science PhD Program. Magnetic resonance characterization of skeletal muscle adaptations after incomplete spinal cord injury.

Pei-Ying Sarah Chan (2005-2008) Physiological Sciences PhD Program. Respiratory sensation in humans.

Min Lui (2004-2006) Rehabilitation Science PhD Program. Adaptations In Skeletal Muscle Following Spinal Cord Injury and Locomotor Training.

RESEARCH SUPPORT

Ongoing

T32 HD043730-11 Fuller (PI) 05/01/2019-04/30/2024
 Interdisciplinary Training in Rehabilitation and Neuromuscular Plasticity
 This award funds pre-doctoral graduate students. The training program reinforces interdisciplinary interactions and translational research in neuromuscular plasticity and rehabilitation.
 Role: PI, Program Director

1 R01 HL153140-01 Fuller/Smuder (MPI) 08/01/2020-08/01/2025
 Hyperbaric oxygen therapy mitigates respiratory neuromuscular pathology after spinal cord injury Role: Co-PI
 This application is currently under review. The proposed experiments focus on using brief exposure to hyperbaric oxygen to mitigate neural and muscular pathology after cervical spinal cord injury.

1R01HL139708-01A1 Fuller (PI) 08/01/2018-07/31/2023
 Ampakines and Respiratory Neuroplasticity
 This grant focuses on the use of drugs which can modulate glutamate receptor function as a treatment for spinal cord injury.
 Role: PI

2R01HD052682-11A1 Fuller/Byrne (MPI) 05/01/2020-05/01/2025
 Control of Breathing and Pompe Disease
 Role: Co-PI
 These experiments focus on systemic gene therapy to alleviate cardiorespiratory failure in an animal model of Pompe disease.

OT2 OD023854 Bolser (PI) NCE
 Functional mapping of peripheral and central circuits for airway protection and breathing
 The project investigates fundamental principles of modulation/plasticity in afferent pathways, brain networks and efferent systems controlling breathing and airway defense. The Fuller sub-project is focused on the anatomy and physiology of diaphragm sensory afferents.
 Role: Co-I

DOD SCIRP, Clinical Trial Award Fox/Mitchell (PI) 07/01/2018-06/30/2022
 Combined intermittent hypoxia and respiratory strength training to improve breathing function after SCI
 This clinical trial tests the hypothesis that combined intermittent hypoxia and respiratory strength training elicit greater improvement in breathing ability in persons with chronic spinal cord injury than either treatment alone.
 Role: Co-I

Completed (NIH)

R21 1NSD109571 Fuller (PI) 2018-2020
 Phrenic motoneuron activation using temporal interference
 Role: PI

1 R21 HD090752-01 Smith (PI) 2016-2018
Diaphragm pacing and rehabilitation in Pompe disease
 Role: Co-I

1 R01 NS080180-01A1 Fuller (PI) 2012-2017
Modulation of phrenic motoneuron plasticity after cervical spinal cord injury
 Role: PI

2R01HD052682-06A1 Fuller / Byrne (MPI) 2012-2017
Control of breathing in glycogen storage disease

1 R01 NS081112-01 Lane (PI) 2012-2016
 Optimizing functional recovery following cervical spinal cord injury
 Role: Co-I

1R21NS081431-01 (MPI) Fuller/Byrne (MPI) 2013-2015
 Spinal and brainstem respiratory neurons in Pompe disease

1 R21 HL104294-01A1 Fuller (PI) 2011 – 2013
 Training novel host-graft interfaces to enhance spinal cord repair

5R01HD052682-05 Fuller/Byrne (MPI) 2007-2012
 Control of breathing in glycogen storage disease

1 R01 NS054025-01 Reier (PI) 2005 – 2010
 Plasticity and repair in the phrenic motor system
 Role: Co-I

RO3 NS050684-01A1 Fuller (PI) 2005-2007
 Female sex hormones and spinal cord injury

Completed (non-NIH)

University of Florida Internal Award Fuller (PI) 2018-2020
 A novel approach to activate paralyzed muscles following cervical spinal cord injury
 Role: PI

Craig H. Neilsen Foundation Fox (PI) 2015-2017
Intramuscular pacing to enhance voluntary diaphragm activation
 Role: Co-I

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| W81XWH-14-1-0625 | Reier (PI) | 2014-2016 |
| Department of Defense - Office of the Congressionally Directed Medical Research Programs (CDMRP) | | |
| <i>Plasticity and Activation of Spared Intraspinal Respiratory Circuits Following Spinal Cord Injury</i> | | |
| Role: Co-I | | |
| Internal (McKnight Brain Institute Neuroimaging Pilot Grant) | Fuller (PI) | 2014 |
| <i>High angular resolution imaging of cervical respiratory pathways following spinal cord injury</i> | | |
| University of Florida Research Opportunity Fund | Fuller (PI) | 2008-2010 |
| <i>Training the transplant after spinal cord injury</i> | | |
| James & Esther King Biomedical Research Program | Davenport (PI) | 2006 – 2008 |
| <i>The role of nicotine in the neural control of respiratory & cardiovascular systems</i> | | |
| Role: Co-I | | |
| University of Florida Research Opportunity Fund | Fuller (PI) | 2004-2005 |
| <i>Mechanisms Underlying Rehabilitative Training-Induced Motor Recovery Following Spinal Cord</i> | | |
| Christopher Reeve Paralysis Foundation | Fuller (PI) | 2003-2005 |
| <i>Plasticity in spinal respiratory pathways following treadmill exercise</i> | | |

PATENTS

Web link: [COMPOSITIONS AND METHODS FOR TREATING DISEASES](#)

Inventors: BJ Byrne, DJ Falk, C Pacak, LR Deruisseau, C Mah, DD Fuller

Summary: Provides compositions and methods of use pertaining to rAAV-mediated delivery of therapeutically effective molecules for treatment of diseases such as Pompe disease. These compositions in combination with various routes and methods of administration result in targeted expression of therapeutic molecules in specific organs, tissues and cells.

Web link: [STIMULATING SPINAL CORD MOTOR NEURONS USING ELECTRICAL SIGNALS](#)

Inventors: M Sunshine, K Otto, DD Fuller

Summary: Novel method for stimulating the spinal cord to activate respiratory motor neurons and sustain breathing during conditions such as spinal cord injury or opioid overdose.

PUBLICATIONS

****Total citations: 6841***

****h-index (largest number h, such that h publications have at least h citations): 46***

****i10-index (number of publications with at least 10 citations): 110***

****, as of Feb 2021, per Google Scholar (scholar.google.com)***

Peer-reviewed Commentaries

7. Fuller, D. D. (2018) How does spinal cord injury lead to obstructive sleep apnoea? *J Physiol* 596, 2633
6. Fuller, D. D. (2017) Spinal decision making for respiratory muscle recruitment? *J Physiol* 595, 7017
5. Fuller, D. D., and Mitchell, G. S. (2017) Special Issue: Respiratory Neuroplasticity. *Exp Neurol* 287, 91-92

4. Fuller, D. D., and Mitchell, G. S. (2017) Respiratory neuroplasticity - Overview, significance and future directions. *Exp Neurol* 287, 144-152
3. Tester, N. J., Fuller, D. D., and Mateika, J. H. (2014) Ventilatory long-term facilitation in humans. *Am J Respir Crit Care Med* 189, 1009-1010
2. Powers, S. K., Smuder, A. J., Fuller, D., and Levine, S. (2013) Rebuttal from Scott K. Powers, Ashley J. Smuder, David Fuller and Sanford Levine. *J Physiol* 591, 5263
1. Fregosi, R. F., Bailey, E. F., and Fuller, D. D. (2011) Respiratory muscles and motoneurons. *Respir Physiol Neurobiol* 179, 1-2

Peer-reviewed Scientific Articles

127. Sunshine, M. D., Cassara, A. M., Neufeld, E., Grossman, N., Mareci, T. H., Otto, K. J., Boyden, E. S., and Fuller, D. D. (2021) Restoration of breathing after opioid overdose and spinal cord injury using temporal interference stimulation. *Commun Biol* 4, 107
126. Gaire, J., Varholick, J. A., Rana, S., Sunshine, M. D., Dore, S., Barbazuk, W. B., Fuller, D. D., Maden, M., and Simmons, C. S. (2021) Spiny mouse (*Acomys*): an emerging research organism for regenerative medicine with applications beyond the skin. *NPJ Regen Med* 6, 1
125. Fleury Curado, T., Pho, H., Freire, C., Amorim, M. R., Bonaventura, J., Kim, L. J., Lee, R., Cabassa, M. E., Streeter, S. R., Branco, L. G., Sennes, L. U., Fishbein, K., Spencer, R. G., Schwartz, A. R., Brennick, M. J., Michaelides, M., Fuller, D. D., and Polotsky, V. Y. (2021) Designer Receptors Exclusively Activated by Designer Drugs Approach to Treatment of Sleep-disordered Breathing. *Am J Respir Crit Care Med* 203, 102-110
124. Doyle, B. M., Singer, M. L., Fleury-Curado, T., Rana, S., Benevides, E. S., Byrne, B. J., Polotsky, V. Y., and Fuller, D. D. (2021) Gene delivery to the hypoglossal motor system: preclinical studies and translational potential. *Gene Ther* doi: 10.1038/s41434-021-00225-1. Online ahead of print
123. Wollman, L. B., Streeter, K. A., Fusco, A. F., Gonzalez-Rothi, E. J., Sandhu, M. S., Greer, J. J., and Fuller, D. D. (2020) Ampakines stimulate phrenic motor output after cervical spinal cord injury. *Exp Neurol* 334, 113465
122. Wollman, L. B., Streeter, K. A., and Fuller, D. D. (2020) Ampakine pretreatment enables a single brief hypoxic episode to evoke phrenic motor facilitation. *J Neurophysiol* 123, 993-1003
121. Sunshine, M. D., Sutor, T. W., Fox, E. J., and Fuller, D. D. (2020) Targeted activation of spinal respiratory neural circuits. *Exp Neurol* 328, 113256
120. Sunshine, M. D., Ganji, C. N., Fuller, D. D., and Moritz, C. T. (2020) Respiratory resetting elicited by single pulse spinal stimulation. *Respir Physiol Neurobiol* 274, 103339
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Book Chapter

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