

Wallace H. Coulter Foundation Biomedical Engineering Seminar Series

DR. CARLOS B. MANTILLA is a consultant and chair in the Department of Anesthesiology and Perioperative Medicine at Mayo Clinic in Rochester, Minnesota, where he holds a joint appointment in the Department of Physiology and Biomedical Engineering. Dr. Mantilla is director of the Biomedical Engineering and Physiology Ph.D. program at Mayo Clinic Graduate School of Biomedical Sciences. Dr. Mantilla earned his M.D. at Universidad del Rosario in Bogota, Colombia. He continued his training at Mayo Clinic School of Graduate Medical Education where he completed an internship in preliminary internal medicine, a residency in anesthesiology, and a fellowship in anesthesiology and pain management. He completed his Ph.D. in biomedical sciences-molecular neuroscience at Mayo Clinic Graduate School of Biomedical Sciences. Dr. Mantilla's research focuses on the neural basis for the control of breathing in humans. His research will help prevent complications and improve quality-of-life for individuals across the full spectrum of age, as well as patients with spinal cord injury and neuromuscular disorders. His research is funded by the National Institute on Aging; the National Heart, Lung, and Blood Institute; and the National Institute of Arthritis and Musculoskeletal and Skin Diseases. He has given presentations on his research to both national and international audiences, and he has authored numerous journal articles, book chapters, abstracts and other written publications.



DR. CARLOS B. MANTILLA

Chair, Department of Anesthesiology and Perioperative Medicine

Mayo Clinic

Regulation of Diaphragm Muscle Function: From Development Through Aging

ABSTRACT: Carlos B. Mantilla, M.D., Ph.D. studies the control of breathing in humans. The long-term goal of Dr. Mantilla's research team is to develop rational and effective therapies for the treatment of diseases that impair the ability to breathe independently.

Dr. Mantilla's team makes extensive use of cutting-edge and state-of-the-art techniques to evaluate the function of motor neurons and muscle fibers that include multi-color, 3-D confocal imaging, laser capture microdissection and quantitative transcriptional analyses in single cells, high-fidelity electrophysiological recordings and mathematical models of motor control.

Dr. Mantilla and his team also use whole-body plethysmography, lung mechanics and wireless telemetry of respiratory function to assess the impact of physiologic changes in motor neurons, muscle fibers and neuromuscular junctions across diseases and conditions that limit the ability to sustain breathing and perform expulsive maneuvers such as coughing and sneezing that are necessary to maintain airways clear.

Dr. Mantilla's research has been funded by the National Institutes of Health and the Paralyzed Veterans of America Research Foundation, among other organizations.



Through the generous support of the Wallace H. Coulter Foundation the Department of Biomedical Engineering facilitates weekly lectures each year during academic terms. Experts in all areas of Biomedical Engineering are invited to campus to provide a research seminar and to meet with faculty and students and to tour our academic and research facilities.

Friday, January 31, 2020
9:00AM-10:00AM Room EC 2300