STEVE MCWILLIAMS, PhD

Curriculum Vitae

School of Behavioral & Brain Sciences
University of Texas at Dallas
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Richardson, Texas 75080-3021
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PROFESSIONAL APPOINTMENTS

Assistant Professor of Instruction, Neuroscience — 2019-Present
University of Texas at Dallas
School of Behavioral & Brain Sciences
Department of Neuroscience
800 W. Campbell Rd.
Richardson, TX 75080-3021

Senior Lecturer, Neuroscience — 2013-2019
University of Texas at Dallas
School of Behavioral & Brain Sciences
800 W. Campbell Rd.
Richardson, TX 75080-3021

Lecturer, Neuroscience — 2012-2013
University of Texas at Dallas
School of Behavioral & Brain Sciences
800 W. Campbell Rd.
Richardson, TX 75080-3021

Adjunct Professor, Anatomy & Physiology — 2012-2013
Collin College
Preston Ridge Campus
9700 Wade Boulevard
Frisco, TX 75035

APPOINTMENTS/COMMITTEES

Teaching Effectiveness Committee — 2020-2021
University of Texas at Dallas
School of Behavioral and Brain Sciences

Military and Veteran Center Member 2018-Present
University of Texas at Dallas

Teaching Assistant, Anatomy & Physiology 2008-2011
University of North Texas
Department of Biological Sciences
1511 W. Sycamore
Life Science Complex
Denton, TX 76203-5015

COURSES TAUGHT

Introductory Neuroscience / Neuroanatomy / Neuroimmunology / Neurohistology
Neuroscience Laboratory Methods / Cellular Neuroscience / Systems Neuroscience /
Forensic Neuroscience

EDUCATION

Ph.D. Biology (2011) University of North Texas, Denton, Texas.

Dissertation: *Test of a new model of paclitaxel-induced neuropathy and the effects of paclitaxel on the dorsal root ganglia*.

B.S. Biochemistry (2000) University of North Texas, Denton, Texas

Dissertation Abstract:

This study examined a new model of paclitaxel-induced neuropathic pain and the effects of systemic paclitaxel on the gap junction protein subunit Cx43 and potassium inwardly-rectifying channel Kir4.1 within the dorsal root ganglia. In the new neuropathic pain model, subplantar injections of paclitaxel resulted in decreased conduction velocities of A-beta fiber compound action potentials in the sciatic (5.9%) and tibial nerves (6.8%) as well as in M (10.6%) and H (10.2%) waves. By using repeated recordings it was found that following paclitaxel injection, conduction velocities in the contralateral plantar nerve increased (9.2%). Systemic injections of paclitaxel resulted in reduced Kir4.1 immunolabeling in the dorsal root ganglia compared to vehicle injections. This reduction was observed in total labeling (32.4%) as well as in areas of intense labeling (28.7%). Reductions in overall Cx43 immunolabeling (25%) and area (25%) following systemic paclitaxel injections were not statistically significant.

The results of these studies suggest that subplantar injections of paclitaxel can result in reduced peripheral nerve conduction velocities. The results also show that a unilateral neuropathy can result in contralateral changes in conduction velocities. The effects of paclitaxel on reducing Kir4.1 levels suggest that neuropathic pain caused by paclitaxel may share mechanisms in common with other types of neuropathies which show similar changes in Kir4.1 levels.

Research Interest:

My initial research focused on the effects of chemotherapeutic drugs such as paclitaxel on the peripheral nervous system. These drugs affect both peripheral axons and dorsal root ganglia, but the exact mechanism(s) responsible for causing neuropathic pain is still not known. My interests have expanded to include neuroplasticity and neuromodulation of pain systems as well as the treatments for both chronic and neuropathic pain.

Teaching Interests:

I enjoy teaching any neuroscience class, from basic cellular neuroscience to cognition, as well as classes related to neuroscience such as molecular biology, genetics, endocrinology, and immunology. In addition, having worked for several years in forensic sciences, I also have a passion for teaching human anatomy and physiology and the pathophysiology of disease. I enjoy teaching both lecture and laboratory classes as they each allow me the opportunity to communicate with students in a different setting. Although lecture classes allow for a more detailed look into a subject matter, laboratory classes allow for a more direct teacher-student interaction and a more hands-on approach to learning.

As our knowledge of neuroscience continues to increase and the technology for delivering this knowledge continues to advance, teachers of neuroscience are continually faced with challenges of how to effectively relay this vast amount and often complex information to students. As a Senior Lecturer, I am able to devote my time and efforts towards teaching and students. This opportunity to focus solely on teaching and students allows me to analyze continuously the fundamental methods of teaching and my approach to teaching using various methods and styles. Learning is an active and often difficult process that needs to be taught to students, especially during their first year of college. A student must first learn how to learn, to do well in college and excel. A good teacher must then do his or her part by explaining complex material in as simple terms as possible, using all methods available. Simply drawing out on a dry-erase board a particular mechanism or pathway can go a long way in helping an individual to understand, as the student can then follow the instructor's line of thinking or approach for remembering.

EMPLOYMENT HISTORY

Collin College, Preston Ridge Campus, Frisco, Texas 2012 – 2013
ADJUNCT PROFESSOR/HUMAN ANATOMY & PHYSIOLOGY

University of North Texas, Denton, Texas 2003 – 2011
TEACHING ASSISTANT

University of Texas Southwestern Medical Center Transplant Services, Dallas 1996 – 2011
SURGICAL TRANSPLANT TECHNICIAN

Dallas County Medical Examiner's Office, Dallas, Texas 1990 – 2002*
FORENSIC AUTOPSY/LAB TECHNICIAN
* Employment at the Dallas County Medical Examiner was not continuous.

Military Service:

United States Navy 1982 – 1986

Deployed aboard U.S.S. Constellation (CV-64) 1985

Letter of Appreciation 1984
From Commanding Officer, Pacific Missile Test Center,
Naval Air Station, Point Mugu, CA