Department of
CHEMICAL ENGINEERING
THE UNIVERSITY OF UTAH

"Engineering Materials for Functional Nerve Regeneration"

Christine E. Schmidt

J. Crayton Pruitt Family Department of Biomedical Engineering
The University of Florida

Tuesday, April 2, 2013 (10:45-11:35AM in WEB L104)

Abstract

Damage to spinal cord and peripheral nerve tissue can have a devastating impact on the quality of life for individuals suffering from nerve injuries. Our research is focused on analyzing and designing biomaterials that can interface with neurons and specifically stimulate and guide nerves to regenerate. These biomaterials might be required for facial and hand reconstruction or in trauma cases, and potentially could be used to aid the regeneration of damaged spinal cord. In a parallel approach to foster nerve regeneration, our group has developed natural tissue scaffolds termed "acellular tissue grafts" created by chemical processing of normal intact nerve tissue. These grafts are created from natural biological tissue -- human cadaver nerves -- and are chemically processed so that they do not cause an immune response and are therefore not rejected in patients. These grafts have been optimized to maintain the natural intricate architecture of the nerve pathways, and thus, they are ideal for promoting the re-growth of damaged axons across lesions. These engineered, biological nerve grafts are currently used in the clinic for peripheral nerve injuries and are being explored for spinal cord regeneration.

Bio

Dr. Christine E. Schmidt is the Pruitt Family Professor and Department Chair of the J. Crayton Pruitt Family Department of Biomedical Engineering at the University of Florida. Dr. Schmidt received her B.S. degree in Chemical Engineering from the University of Texas at Austin in 1988 and her Ph.D. in Chemical Engineering from The University of Illinois at Urbana-Champaign in 1995. She conducted postdoctoral research at MIT as an NIH Postdoctoral Fellow, joining the University of Texas at Austin Chemical Engineering faculty in 1996. She was one of the founding faculty members of the Department of Biomedical Engineering at UT Austin, and was at UT Austin until December 2012, when she moved to become the Chair of Biomedical Engineering at the University of Florida. Dr. Schmidt's research is focused on developing new biomaterials and biomaterial composites (e.g., natural material scaffolds, processed tissues, electronic polymer composites) that can be used to physically guide and stimulate regenerating nerves. In addition, her group is investigating neuron-electronic interfacing using electrically conducting polymers as a means to ultimately develop new bioprosthetics.