SEMINAR SERIES

Supported by The Department of Biomechanics and
The Center for Research in Human Movement Variability (MOVCENTR)

A Novel Electric Current Application System for Therapeutic Applications

Featuring Dr. Siwei Zhao

University of Nebraska Medical Center

Friday, Nov. 10 | 10:00 am – 11:00 am | BRB 167

PRESENTATION ABSTRACT

Electric current has been used in the treatment of human diseases for more than 100 years in many different therapeutic areas, such as neuromuscular regeneration and rehabilitation, pain management, wound healing, and non-invasive drug delivery. Despite its long history of medical use, current clinical evidence shows that electric current-based therapy has a limited and inconsistent efficacy. For some therapeutic areas, a limiting factor is the intensity of the electric current that can be safely applied to biological tissues by conventional electrical stimulation devices. We have developed a novel electric current application system, hydrogel ionic circuit (HIC) that can apply higher current intensities to biological tissues than conventional devices without causing tissue damage. We have shown that the high-intensity current applied by our system allows us to significantly enhance the iontophoretic drug delivery efficiency and the treatment efficacy of chronic wound biofilm infections.

ABOUT DR. ZHAO

Siwei Zhao is an Assistant Professor and a Research Scientist in the Holland Regenerative Medicine Program and the Department of Surgery at UNMC. He received his B.S. in Microelectronics and his Ph.D. in Biomedical Engineering. He is highly motivated to pursue an interdisciplinary research career at the interface of life science and engineering. His current research interests include developing truly biologically matched electrical systems to enhance the efficacy and safety of electrical stimulation-based therapies for wound healing, nerve regeneration, pain management and drug delivery.

more info at **cobre.unomaha.edu**

*This seminar was supported by the National Institutes of General Medical Sciences of the National Institutes of Health under Award Number P20GM109090 Center for Research in Human Movement Variability. |

University of Nebraska Omaha