

SEMINAR SERIES

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Reflections On Mechanisms of Muscle Contraction

Featuring Dr. Walter Herzog
University of Calgary

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Friday, Sept. 23 | 12:00 - 1:15 pm | H&K 112

PRESENTATION ABSTRACT

Since the 1950s, muscle contraction has been thought to be exclusively associated with the contractile proteins, actin and myosin. In 2002, we discovered a property of muscle that is now referred to as “passive force enhancement”. This passive force enhancement was shown to contribute to the active (actin-myosin) based force and the question arose, where does it come from. We then showed that the structural protein titin is responsible for this extra force. In this presentation, I will propose a theory that explains how titin, actin and myosin interact in producing active force. This theory has great indirect support but is by no means proven. However, it is a simple and beautiful theory that would explain a series of experimental observation that cannot be explained with the current two-filament-based, actin and myosin model.

ABOUT DR. HERZOG

Walter Herzog did his undergraduate training in Physical Education at the Federal Technical Institute in Zurich, Switzerland (1979), completed his doctoral research in Biomechanics at the University of Iowa (USA) in 1985, and completed postdoctoral fellowships in Neuroscience and Biomechanics in Calgary, Canada in 1987. Currently, he is a Professor of Biomechanics with appointments in Kinesiology, Medicine, Engineering, and Veterinary Medicine, holds the Canada Research Chair for Cellular and Molecular Biomechanics and the Dr. Benno Nigg Chair in Biomechanics, Mobility and Longevity, and was the Killam Memorial Chair for Inter-Disciplinary Research from 2011 to 2021 at the University of Calgary. His research interests are in musculoskeletal biomechanics with emphasis on mechanisms of muscle contraction focusing on the role of the structural protein titin, and the biomechanics of joints focusing on mechanisms of onset and progression of osteoarthritis. Dr. Herzog is the recipient of the Borelli Award from the American Society of Biomechanics, the Career Award from the Canadian Society for Biomechanics, the Dyson Award from the International Society of Biomechanics in Sports, the Muybridge Award from the International Society of Biomechanics, and recently received the Killam Prize in Engineering from the Canada Council for the Arts for his contributions to Biomedical research. He is the past president of the International, American and Canadian Societies for Biomechanics. He was inducted into the Royal Society of Canada in 2013.

more info at cobre.unomaha.edu

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