Dr. Boriek obtained his PhD degree in computational mechanics from Rice University in 1990. After completing a four year of postgraduate training with Dr. Rodarte in the area of respiratory mechanics, Dr. Boriek joined the faculty of the Department of Medicine at Baylor College of Medicine in 1994. He is now a tenured Professor at Baylor. His research interests have been focused on respiratory muscle function in health and disease with particular focus on mechanics and mechanotransduction and role of cytoskeleton and its disruption of membrane mechanics in skeletal muscle weaknss.

Dr. Boriek will discuss how bioengineering can serve as an interface between physiology and medicine. In particular, he will discuss one research area in bioengineering, which is focused on explaining mechanisms that alter respiratory muscle function in health and disease. He will focus on models of the mechanics of the respiratory muscles, in particular, the diaphragm, certain determinants of diaphragm mechanics, and current works addressing those determinants. His discussion of determinants of diaphragm mechanics includes the unique mechanical properties of the diaphragm and structural issues such as composition and shape, current works describe numerous approaches to assess determinants of muscle mechanics, including measuring diaphragmatic curvature, displacement and shortening of the diaphragm, and muscle contractility. He will also present data on structure and function of the human diaphragm in chronic obstructive pulmonary disease patients. He will also present data on the mechanical role of specific cytoskeletal proteins in modulating respiratory muscle function and summarize recent published data from our lab on mechanotransduction in the ventilatory pump.