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SATURDAY: MARCH 20, 2021

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DISTINGUISHED BIOMEDICAL ENGINEERING WEBINAR



“Multiscale Biomechanics in Hepatic Immune Responses”

Mian Long, PhD
Institute of Mechanics, Chinese Academy of Sciences

ABOUT THE WEBINAR

A liver sinusoid consists of multiple cell types that work cooperatively in implementing hepatic functions. Peripheral immune cell adhesion and transendothelial migration are crucial in hepatic immune responses, which are governed by their binding kinetics and mechanical strength of acting pairs of cell adhesion molecules under the blood flow in sinusoidal lumen and the interstitial flow in Disse space as well as tissue stiffening in fibrosis. In this talk, functional differences of two β_2 -integrin members in neutrophil adhering onto and migrating across hepatic endothelium are discussed, using various approaches that coordinates mechanical tests and biological validations. An in vitro reconstructed 3D liver sinusoid is also developed to test the respective contributions of shear stress and substrate stiffness on neutrophil recruitment and hepatocyte functions, together with the interplay of those residing hepatic cells.

ABOUT THE SPEAKER

Mian Long, PhD

Professor of Biomechanics, Institute of Mechanics, Chinese Academy of Sciences; Director, Center for Biomechanics and Bioengineering; Director, Beijing Key Laboratory of Engineered Construction and Mechanobiology

Dr. Long is a professor at the Institute of Mechanics, Chinese Academy of Sciences and director of the Center for Biomechanics and Bioengineering and of the Beijing Key Laboratory of Engineered Construction and Mechanobiology. He received his B.S. in Mechanical Engineering at Shanghai Jiao Tong University in 1984 and his Ph.D. in Biomechanics at Chongqing University in 1990. Dr. Long's research interests focus on mechano-chemical coupling of protein-protein interactions and mechano-biological coupling of cellular interplay and tissue reconstruction related to immune responses in the liver. He is granted by the National Distinguished Young Scientists Fund. He has published over 160 peer-reviewed papers. Dr. Long served as Vice President of the Chinese Society of Theoretical & Applied Mechanics and as an executive member of the World Council for Biomechanics. He is a Fellow of AIMBE and IAMBE.



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