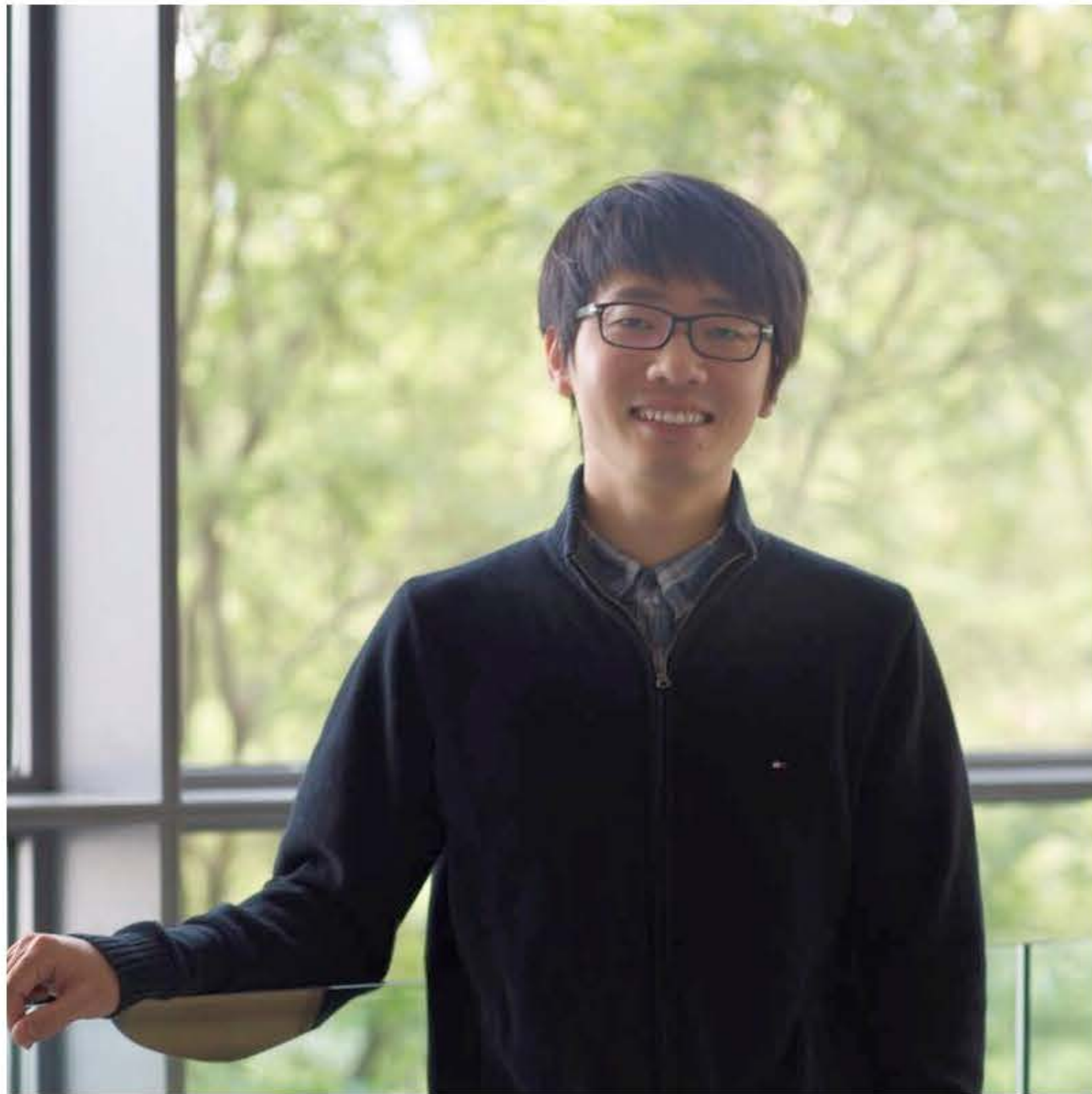


# BIOENGINEERING & BIOMEDICAL ENGINEERING RESEARCH SEMINAR

## DESIGNING SOFT BIOMATERIALS WITH UNPRECEDENTED MECHANICAL PROPERTIES FOR TISSUE REPAIR

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### ABSTRACT

Biomaterials have improved healthcare and will assume a more important role in many branches of medicine. Success examples include hard biomaterials in dentistry and prosthetics. Till now, soft biomaterials, however, haven't replicated these successes in repairing soft tissues. The reason is simple yet fundamental: artificial soft biomaterials can't match or integrate with biological tissues mechanically. For instance, existing soft biomaterials are often vulnerable to rupture and difficult to adhere on biological tissues, especially when interfacing with skin and beating heart. This talk will highlight recent advances at the intersection of biomaterials, mechanics, biomimetics and biomedical engineering. I will discuss about two types of biomaterials: tough hydrogels and tough adhesives. The former can be more robust and tougher than articular cartilage. The latter can achieve excellent biocompatibility and unprecedented adhesion performance on a variety of biological tissues, even under exposure of blood and dynamic movements. I will describe how their unique properties are exploited for biomedical applications such as surgical sealants, hemostatic dressings, cartilage repair and wound dressings.

### BIO

Dr. Jianyu Li is an Assistant Professor in the Department of Mechanical Engineering at McGill University since September 2017. In the past, he obtained his bachelor's degree from Zhejiang University in China in 2010, and a Ph.D. degree in Mechanical Engineering from Harvard University in 2015. He did postdoctoral research at the Wyss Institute for Biologically Inspired Engineering at Harvard University from 2015 to 2017. He was the recipient of Wyss Technology Development Award for enabling translational research. His research interests include biomaterials, mechanics, soft machine, drug delivery, cellular and tissue engineering.

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