

2020-2021 Assistant Professor Excellence Speaker Series



Cellular mechanotransduction: Big impact of little things

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12:15 p.m. - 1:15 p.m.

Via Microsoft Teams (Click here to attend)

Every cell in our body is surrounded by a rich three dimensional extracellular matrix laden with a multitude of physico-chemical stimuli that dictate cell fate. Yet the most common method used for mechanistic investigations in cell culture are done on one plastic or glass surfaces which lack the organization, composition, and mechanical properties of the scaffolding matrix. The biophysical stimuli encountered by cells in the eye vary with location: from surface tension and shear at the tear film interface to pressure gradient in the trabecular meshwork to compressive forces at the retina and electrical signals in the neural retina. Research from our group focuses on characterizing these fundamental properties during corneal wound repair and glaucoma, designing engineering tools to replicate the native environment for mechanistic studies. Outcomes learned will aid in the identification of novel molecular drug targets, and in the development of technologies for efficient drug-delivery and regeneration.

SPEAKER BIO: Dr. Raghunathan received his first degree in Biomedical Engineering from Visvesvaraya Technological University, India, and subsequently his M.Sc and Ph.D in Bioengineering from the University of Strathclyde in Glasgow, UK. He then completed a postdoctoral fellowship at the University of Bristol, UK investigating the safety of tribological wear released from orthopaedic implants. He then made his foray into vision science by completing a postdoctoral fellowship at the University of California Davis, jointly in Drs. Chris Murphy and Paul Russell's laboratories, investigating the principles underlying the mechanobiology of the trabecular meshwork and cornea. In July 2016, he joined UHCO as a tenure track faculty with his primary research focus: (a) to understand the role that extracellular matrix play in ocular diseases, (b) to develop and utilize engineering tools in studying biomechanics and surface phenomena at the ocular surface interface, and (c) to use materials based strategies for development and delivery of therapeutics.

The Assistant Professor Excellence Lecture Series (APeX) is intended to showcase the breadth and depth of groundbreaking research, scholarship, and creative activity being undertaken by UH early career faculty across disciplines, as well as to offer opportunities for cross-disciplinary networking.