Dalhousie University
School of Biomedical Engineering
Seminar

Thursday, Oct 3, 2019
11:45 AM
Dentistry 3157

"Tissue-on-chip technologies: seeing developmental and disease mechanobiology from a cellular perspective"

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Abstract: In addition to genes and proteins, physical factors in the microenvironment play a pivotal role in driving cell and tissue function. Ignoring these complex factors in conventional tissue culture systems makes the translational utility of in vitro cultures uncertain. Our lab focuses on reconstructing realistic miniature versions of biological tissues, using a variety of microengineering technologies. These 'on-a-chip' systems may ultimately be used to predict disease progression, stratify patient risk groups, and identify potential therapeutic strategies. More immediately however, the throughput, precision and dimensions of tissues engineered at this length scale provide a remarkable capacity to 'watch' biology happen in unique ways. For example, mechanical forces are now known to play a pivotal role in tissue homeostasis and disease progression, but our technical capacity to watch mechanics evolve in 3D tissues undergoing complex remodeling is severely limited. In this talk, I will describe recent and ongoing work in which we develop strategies to recreate the 3D tissue microenvironment, construct dynamic 'maps' of tissue mechanics during morphogenetic disease programs, and leverage this understanding to develop advanced tissue engineered platforms for drug and cell therapy screening

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Coffee and refreshments provided