McGill

MICRO & NANO BIOENGINEERING LAB

8th Annual Hands-on Workshop in

# Micro & Nano Bioengineering

**Keynote Speaker: Milica Radisic**
**Location: Trottier Building, Room 0100**
**Date: Friday, March 4 at 3 pm**

## Towards Person-on-a-Plate

### Microfabrication and Biodegradable Polymers for High Fidelity Modelling of Human Tissues

We will describe the fabrication of a scaffold ("AngioChip") that supports the assembly of parenchymal cells on a mechanically tunable matrix surrounding a perfusable, branched, three-dimensional microchannel network coated with endothelial cells. The design of AngioChip decouples the material choices for the engineered vessel network and for cell seeding in the parenchyma, enabling extensive remodelling while maintaining an open-vessel lumen. The incorporation of nanopores and micro-holes in the vessel walls enhances permeability, and permits intercellular crosstalk and extravasation of monocytes and endothelial cells on biomolecular stimulation. We also show that vascularized hepatic tissues and cardiac tissues engineered by using AngioChips process clinically relevant drugs delivered through the vasculature, and that millimeter-thick cardiac tissues can be engineered in a scalable manner. Moreover, we demonstrate that AngioChip cardiac tissues implanted via direct surgical anastomosis to the femoral vessels of rat hindlimbs establish immediate blood perfusion.

**Biography**

Milica Radisic is a Professor at the University of Toronto and a Canada Research Chair (Tier 2) in Functional Cardiovascular Tissue Engineering. She obtained her Ph.D. from the Massachusetts Institute of Technology in Chemical Engineering in 2004. Dr. Radisic has received numerous awards, including the MIT Technology Review "Top 35 Innovators under 35". In 2010, she received the McMaster Arch Award and was named "The One to Watch" by The Scientist and the Toronto Star. Dr. Radisic was a recipient of the Professional Engineers Ontario-Young Engineer Medal in 2011,the Engineers Canada - Young Engineer Achievement Award in 2012, the Queen Elizabeth II Diamond Jubilee Medal in 2013 and the NSERC E.W.R Steacie Fellowship in 2014. In 2014 she was elected to the Royal Society of Canada, College of New Scholars, Artists and Scientists and in 2015 she was the recipient of the Hatch Innovation Award by CSChE. The objective of Dr. Radisic's research is to enable cardiovascular regeneration through tissue engineering and development of new biomaterials. She is an Associate Editor for ACS Biomaterials Science & Engineering and a member of Editorial Board of Tissue Engineering.