Design and fabrication of 3D-printed interconnects and manifolds for open microfluidic devices (*New - Winter 2019*)

Faculty advisor: Prof. Edmond Young

Microfluidic devices are increasing being developed for biomedical applications, and are frequently designed with open access ports in order to allow simple delivery of fluid volumes via common instrumentation found in biology labs, including micropipettes and automated liquid handlers. Such "open" microfluidic devices, however, are limited in their ability to allow steady continuous fluid flow that is often necessary for modelling perfusion. Thus, a method is needed to enable the rapid application of steady continuous fluid flow on these "open" microfluidic devices. The objective of this project is to design and fabricate - using 3D printing - different interconnects and manifolds that can be interfaced with open microfluidic devices. The project will involve surveying the literature on current interconnects and accessories for applying fluid flow, and then designing and fabricating new interconnects to be used in conjunction with existing open microfluidic devices in the Young Lab.

Contact: Prof. Young eyoung@mie.utoronto.ca

Research Area: Microfluidics; biofluid mechanics; microscale cell-based systems; cellular microenvironments; microfabrication; cell biology; cell imaging and microscopy; biomedical engineering; and cancer.