

# PhD Position

## The research group:

We are focused on developing innovative microfluidics technologies to address challenges in biomedicine. Our lab, the [Laboratory of Fields, Flows, and Interfaces \(LoFFI\)](#) at Ryerson University, is located in downtown Toronto—one of the most culturally diverse and vibrant cities in the world. LoFFI is an integral part of the [Institute for Biomedical Engineering, Science and Technology \(iBEST\)](#)—a partnership institute between Ryerson University and St. Michael's Hospital. Students at iBEST are part of a dynamic research environment and work with scientists, trainees, and clinicians on multi- and interdisciplinary projects.

Our group is committed to nurturing a welcoming culture that values Equity, Diversity, and Inclusion (EDI). Consistent with the [Tri-Agency Statement on EDI](#), and the [Dimensions Pilot Program at Ryerson](#), we foster a safe and comfortable environment that encourages everyone to freely to speak their minds and pursue their research interests. We highly encourage students from historically underrepresented groups in engineering and science to apply for our positions.

## The project:

We have an [NSERC Idea-to-Innovation](#) funded project developing a "next-gen" microfluidic technology to address the shortcomings of current liquid biopsy techniques. Specifically, we are adapting our lab's microfluidic technologies that manipulate aqueous two phase system (ATPS) fluids, to isolate from bodily fluids, extracellular vesicles and their genetic cargo specific to cancerous cells during early stages of cancer development. Our ultimate goal is to isolate subpopulations of extracellular vesicles from the isolated pool. Moreover, this technology will improve the current liquid biopsy protocols for disease monitoring to set up a reliable platform for treatment optimization. This is an interdisciplinary project involving biomedical engineers, molecular biologists, and clinical oncologists.

## What we offer:

PhD students working in our lab are immersed in a creative and energetic research environment at the iBEST. Students have the opportunity to develop expertise in microfluidics, flow cytometry, bioimaging, and wet-bench experimentation. Besides working in a world-class and collaborative research environment, students also work alongside scientists and engineers that have an entrepreneurial mindset. We are always on the look-out for the next great idea to develop and ultimately commercialize.

All of LoFFI's PhD students are fully funded via a combination of entrance scholarships and research grants. Teaching and grading assistantships are also available as additional support.

## Eligibility requirements for doctoral education:

To be considered for a doctoral position in our group, students must meet the PhD admissions requirements of Ryerson University's [Graduate Program in Biomedical Engineering](#).

Successful candidates should also possess the following skills or traits:

- A strong background in biomedical engineering, chemical engineering, mechanical engineering, physics, or biotechnology
- A strong interest in microfluidics, liquid biopsy, and molecular biology
- Excellent oral and written communication skills in English
- Interest and experience in wet-bench experimentation
- Team-work and community-building mindset

## How to apply:

To apply for this position, submit the following documents to Dr. Scott Tsai ([scott.tsai@ryerson.ca](mailto:scott.tsai@ryerson.ca)):

1. Cover letter indicating your research interest, prior experience, and the main reasons why you should be considered for this position
2. Curriculum Vitae
3. Names and contact information of two referees that can attest to your research experience and working style
4. Transcripts (at this stage, unofficial transcripts are adequate)