

Master thesis position : Microfluidics for single-cell analysis

As the field of immunotherapy is growing, the possibility to retrieve cells after analysis for further manipulation reinjection in the patient appears as a challenging but necessary issue to tackle. We recently developed a platform enabling single-cell arraying and selective cell retrieval after observation. The viability of cells after they have been processed through the chip is an important feature that requires thorough investigation.

The project will combine microfabrication of some microfluidic parts of the chips with characterization of cells viability after retrieval from the chip. Several approaches will be investigated and compared to determine the best approach to keep the cells healthy, including cell proliferation and single cell RNA sequencing.

The project will give the students the opportunity to gain some expertise in :

- Microfluidic chip design and fabrication
- Single cell biology
- Experiments design and data analysis

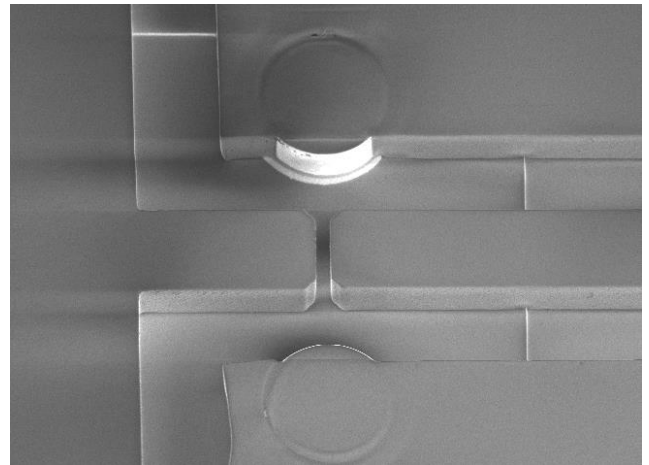


Figure 1: Single-cell arraying unit

Type of work: 10% literature study, 20% microfabrication, 40% device characterization, 30% data analyse

Duration: 4 – 6 months (Starting around February 2019)

Prerequisites: Ideally someone with a background in bio-engineering or biology, but micro-engineering, electrical engineering, physics or chemistry are also welcome. A strong motivation is required regardless your background.

Do not hesitate to contact us by email in case of interest