

Postdoctoral opportunity :
**MICROFLUIDIC MODELLING OF CANCER IMMUNOTHERAPY USING
PATIENT-DERIVED ORGANOIDS**

Physical Microfluidics and Bioengineering, Institut Pasteur, Paris, France.

Charles Baroud : charles.baroud@pasteur.fr.

Start date : Fall/winter 2022.

As part of a large public-private consortium on personalized medicine, a post-doctoral position is available in the [Physical microfluidics and Bioengineering](#) lab, which is jointly affiliated with Institut Pasteur (Paris) and Ecole Polytechnique (Palaiseau).

The objective is to quantify and understand the interactions between tumor organoids and cytotoxic T cells in microfluidic systems. For this we will use our recently published microfluidic technology (1) while increasing the biological relevance of the cancer and immune models for the clinical setting. We will particularly search for early biomarkers that predict the final outcome of the immune challenge of the 3D organoid and link them to patient outcomes.

The candidate : The ideal candidate should have a strong track record in bio-engineering, biophysics, or related area. Experimental skills in organoids or microfluidics is a plus. A desire to work in a multidisciplinary team is a prerequisite. He/she should be comfortable with quantitative image and data analysis, while working closely with other group members who bring complementary skills on theoretical and experimental aspects.

Candidate's main focus areas :

- Perform microfluidics experiments involving organoids and immune cells
- Optimize imaging and perform image analysis, compare with mathematical models
- Determine functional and molecular biomarkers of successful vs. unsuccessful killing
- Interface with collaborators for biological, microfluidics, and data analysis aspects

The consortium : The project will take place at Institut Pasteur and Ecole Polytechnique, where our research is focused on understanding the link between the single-cell characteristics and the collective properties that emerge at the scale of a population (2). The post-doc will work closely with our collaborators at the [Institut Gustave Roussy cancer hospital](#), as well as other academic and startup partners.

To apply or for further information : Applicants are invited send a CV with a publication list and the names of three referees to Charles Baroud (charles.baroud@pasteur.fr). A cover letter indicating the main achievements in the relevant field is welcome.

References

- (1) Ronteix, G., Jain, S., Angely, C., Cazaux, M., Khazen, R., Bousso, P., & Baroud, C. N. (2022). High resolution microfluidic assay and probabilistic modeling reveal cooperation between T cells in tumor killing. *Nature Communications*, 13(1), 1-13.
- (2) Sart, S. et al. (2020). Mapping the structure and biological functions within mesenchymal bodies using microfluidics. *Science advances*, 6(10), eaaw7853.

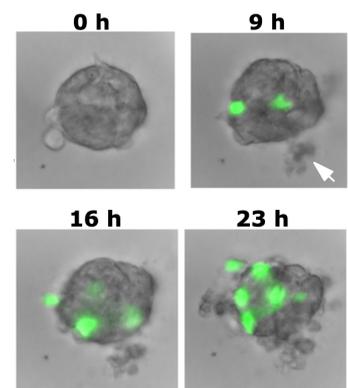


FIGURE 1 – Accumulation of cytotoxic T cells (green) on a cancer spheroid and killing (1).