ASPERT Théo

French
Ph.D in biophysics
Expert in Microfluidics
Long-term single-object imaging
Deep-learning

Contact

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Ph.D in biophysics and bioengineer, I have a strong expertise and passion in developing microfluidics, timelapse microscopy, and image processing technics to understand the dynamics of single cells in different contexts.
Future direction of my professional project: develop bio-medical/analytical devices and subsequent quantitative analysis pipelines to address translational and personalized medicine challenges.

MAIN R&D EXPERIENCES

Charvin lab

Ph.D
Institut de **G**énétique et de **B**iologie **M**oléculaire et **C**ellulaire (INSERM, CNRS, University of Strasbourg)

(2017 - Dec 2021)

Post-doc

(from Jan 2022)

R&D and scientific projects:

- Development of a high-throughput platform for asymmetric replicative aging assays, based on microfluidics and long-term single-cell imaging (published).
- Deep learning-based automated detection of cell divisions for replicative lifespan reconstruction (published).
- Measuring the statistics of extrachromosomal rDNA Circle excisions, a major event in the replicative lifespan of budding yeast cells (in prep.).
- Development of a continuous filtration device to monitor the dynamics of entry into quiescence during an unperturbed nutrient exhaustion at the single-cell level (published).
- Development of a microfluidic device to couple single-cell timelapse analysis with biochemical assays (in prep.).
- 9 collaborative projects (from Switzerland, Japan, U.K, Germany, Italy & France. See taspert.github.io/Research#collabs), requiring the development/use of single-organism tracking (3 published).

→ 2 first-author publications, 5 publications (+2 first-author in prep.). Co-reviewed 3 publications.

Technical skills developed:

Microfluidics (experimental, theoretical and simulations). **Microfabrication** (design, photo- and soft-lithography, clean room setup and management).
Long-term single-cell imaging, microscope and hardware interfacing (Micromanager & Matlab).
Classical and **deep-learning image** and **sequence processing** (CNN, LSTM, U-Net). **Data science** and **software development** (Matlab, Python).Electronics and automation.
Quantitative biology (data acquisition, processing and visualization. Deterministic and stochastic modeling). Yeast biology (notably aging and quiescence).
Classical biology tools: FACS, PCR, DNA gels, yeast and bacteria strains generation.

Saudou lab - Grenoble Institute of Neurosciences

(4 month-2016)

Description of a new mode of vesicles transport along axons (co-author in review in Neuron)
Technical skills developed:
Long-term neuronal cell culture, timelapse of single-axons using spinning disk confocal microscopy, microfluidics, image & data processing, FRAP, arduino automation, immunofluorescence tagging.

ALMA MATER

Grenoble Institute of Technology - PHELMA
*Bachelor's degree in Physics & Engineering
***Master's degree of bioengineering**
Grenoble-Alps University
***Master of Science in Nanobiology**

(2014-2017)

Ex of courses/praticals: Theoretical and experimental microfluidics, microfabrication, hydrodynamics, multi-physics modelisation, microelectronics, image processing, biomaterials & surface engineering, molecular and cellular biology, cell signaling, systems biology.
Ex of projects: Studying the influence of shear stress on *Dictyostelium discoideum* actin polymerization using a microfluidic device.

Lycée Pothier - Pre-engineering class
(2011-2014)

Intensive undergraduate preparation in maths, physics and engineering sciences for the competitive entrance exams to French «Grandes Ecoles».

OTHER SKILLS

Chatting with computers and machines
Matlab, Python, C++, Java (basic level), HTML/CSS
2D/3D drawing and modeling (AutoCAD, Fusion360)
3D printing (FDM, SLA), Arduino, basic electronics
Printed 500+ face shields for hospitals during the Covid19 pandemic
Conveying a scientific/technical message
Giving talks, Powerpoint, Adobe suite, Web design

PERSONNAL INTERESTS

Cycling (road/mountain/gravel), hiking, trekking
100+km/week

Photography (all scales)/Astrophotography, timelapse

Environment and society
Co-founder of twitter.com/sapiensecologie