

Clement Quintard

Education

- 2018–2022 CEA GRENOBLE, MICROFLUIDIC SYSTEMS AND BIO-ENGINEERING (LSMB) LABORATORY & BIOMICROTECHNOLOGY AND FUNCTIONAL GENOMICS (BIOMICS) LABORATORY, **PhD**
Microfluidic systems, Organs-on-chips, Organoids
- 2017–2018 INSTITUT PIERRE-GILLES DE GENNES (IPGG), **Master's degree, Microfluidics (M2) (Double degree with ENS Paris-Saclay)**
Microfluidics (hydrodynamics, droplet microfluidics), Capillarity and wetting phenomena, Microfabrication (theory and practice), Biology (molecular biology, genomics), Biotechnologies, Chemical engineering, Rheology, Nanofluidics
- 2014–2018 ÉCOLE NORMALE SUPÉRIEURE PARIS- SACLAY (ENS PARIS-SACLAY), **PHYTEM Program (PHYSics, Theory, Experiment, Modeling)**
Quantum and statistical physics, Solid state physics, Environmental physics, Particle physics, Soft-matter physics, Fluid mechanics, Astrophysics, Biology, Biophysics, Experimental physics
- 2011–2014 LYCÉE LA MARTINIÈRE MONPLAISIR, **Classes Préparatoires aux Grandes Écoles (CPGE)**
Physics, Mathematics, Engineering

Research Experience

- 2022-Present UNIVERSITY OF BRITISH COLUMBIA (VANCOUVER), PENNINGER LAB, **Growing vascularized and immunized organoids-on-chips - Postdoctoral Research Fellow**,
○ Generated various organoids and developed new approaches for the functional vascularization of organoids.
○ Developed new microfluidic designs aiming at higher throughput for organoids-on-chips technology.
Supervisor: Josef M. Penninger
- 2018-2022 CEA GRENOBLE, LSMB & BIOMICS, **Integrated microfluidic system dedicated to cellular secretion immunomonitoring of organ-on-chip - PhD**,
○ Collaborated with an international research team on the vascularization of hiPSC blood vessel organoids. Performed interdisciplinary work merging microfluidics and cell biology.
○ Developed microfluidic devices for automated glucose stimulation and insulin sensing of pancreatic islets.
○ 1 patent published, 2 scientific articles published, 1 scientific article in revision, 1 scientific review article in preparation. Supervised a Masters student in Biotechnology.
Supervisors: Xavier Gidrol, Yves Fouillet
- 2018 ESPCI & SANOFI, PHYSICS AND MECHANICS OF HETEROGENEOUS MEDIA LABORATORY (PMMH), **Deformation of monoclonal antibody aggregates in a microfluidic channel - research internship, 5 months**,
Microfluidics, Digital image processing, *Supervisors: Anke Lindner, Charles Duchene*
- 2016-2017 WROCLAW UNIVERSITY OF SCIENCE AND TECHNOLOGY, INSTITUTE OF ADVANCED MATERIALS, **Study of the optothermal Marangoni effect - year of pre-doctoral research abroad (ARPE)**,
Lasers, Microfluidics, Numerical simulation (COMSOL Multiphysics) *Supervisor: Andrzej Miniewicz*
- 2016 HARVARD UNIVERSITY, DEPARTMENT OF ORGANISMIC AND EVOLUTIONARY BIOLOGY, **Air propagation in a porous media: the leaf of a tree - research internship, 5 months**,
Thermodynamics, Plants biology, *Supervisors: N. Michele Holbrook, Alexandre Ponomarenko, Uri Hochberg*
- 2015 ENS PARIS-SACLAY, QUANTUM AND MOLECULAR PHOTONICS LABORATORY (LPQM), **Liquid state optical resonators and digital microfluidics for lab-on-chips - research internship, 5 weeks**,
Soft lithography, Microfluidics droplets production, Lasers, *Supervisor: Abdel El Abed*

Skills

- Microfluidics** Chip design and fabrication, Fluid handling techniques, Integration of automated secretion collection features
- Cell biology** 2D and 3D cell culture (stem cells, organoids), RNA-seq (sample preparation and data analysis), Bio-printing.
- Imaging** Confocal microscopy, Fluorescence microscopy, Light sheet microscopy, Electron microscopy (TEM, SEM).
- Data analysis** R, Python, Matlab, ImageJ / Fiji, Imaris, GraphPad Prism.
- Computer** SolidWorks, COMSOL Multiphysics, Fortran, R, Matlab, Python, Microsoft Office, \LaTeX .
- Language** English (fluent), French (native), Spanish (Intermediate).

Publications

- 2025 Organoid models of lymphoid tissues (Review Article) - under review,
Bogoslowski, A., Ren, J., Quintard, C. & Penninger, J.M., Organoids
- 2024 Engineering next generation vascularized organoid constructs (Review Article),
Werschler, N., Quintard, C., Nguyen, S. & Penninger, J.M., Atherosclerosis
- 2024 A microfluidic platform integrating functional vascularized organoids-on-chip,
Quintard, C., Tubbs, E. Jonsson, G., Jiao J., Wang, J., ..., Penninger, J.M. & Gidrol, G., Nature Communications
- 2022 Selective plane illumination microscope dedicated to volumetric imaging in microfluidic chambers,
Bissardon, C., Mermet, X., Quintard, C., Sanjuan, F., Fouillet, Y., ... & Blandin, P., Biomedical optics express
- 2022 Microfluidic device integrating a network of hyper-elastic valves for automated glucose stimulation and insulin secretion collection from a single pancreatic islet,
Quintard, C., Tubbs, E., Achard, J-L., Navarro, F., Gidrol, X. & Fouillet, Y., Biosensors and Bioelectronics
- 2020 Optimised hyperbolic microchannels for the mechanical characterisation of bio-particles,
Liu, Y., Zografos, K., Fidalgo, J., Duchene, C., Quintard, C., Darnige, T., ... & Lindner, A., Soft Matter
- 2017 On the origin of the driving force in the Marangoni propelled gas bubble trapping mechanism,
Miniewicz, A., Quintard, C., Orlikowska, H., & Bartkiewicz, S., Physical Chemistry Chemical Physics

Patents

- 2024 Method for generating perfusable microvascular networks and vascularized organoids-on-chip,
Quintard, C. & Penninger, J.M.
- 2021 Method for microfluidic perfusion of a spheroid and device suitable for implementing said method,
Quintard, C., Achard J-L. & Fouillet, Y., EP3878942A1 / US0277349, Sep 9, 2021.

Awards & Fellowships

- 2024 **Michael Smith Health Research BC Research Trainee Fellowship** \$64,500/annum (CAD), 2 years
- 2024 **ISSCR Travel Award** \$1125 (USD)
- 2024 **ISSCR Merit Award**

Conferences & Presentations

- 2024 **Poster:** "A microfluidic platform integrating functional vascularized organoids-on-chip",
ISSCR 2024 Annual Meeting (Hamburg, Germany)
- 2024 **Oral:** "A microfluidic platform integrating functional vascularized organoids-on-chip",
EUROoCS (Milan, Italy)
- 2021 **Poster:** "Microfluidic device integrating functional endothelial networks and automated fluid handling with valves",
MicroTas (Palm Springs, USA / Virtual)
- 2021 **Poster:** "An automated microfluidic platform integrating functional vascularized organoids-on-chip",
EUROoCs (Uppsala, Sweden / Virtual)
- 2019 **Oral:**"Organs-on-Chips: A Promising future for drug development", Pint of Science (Grenoble, France)

Interests

General interest in science, history, sports, wine, literature, nature and music.