

# 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*

## Laboratory Techniques

- Microfluidics / Microfabrication / Sensor integration
- Cell culture / Organoids
- Microscopy (confocal, light sheet, TEM / SEM)
- Transcriptomics (RNA-seq, preparation & analysis)

## Skills

- Microfluidics** Chip design and fabrication, Fluid handling techniques, Integration of automated secretion collection features
- Cell biology** Stem cells, 2D and 3D cell culture (spheroids, organoids), Immunoassays (ELISA), 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

- 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., Jonsson, G., Laporte, C., Bissardon, C., Pitaval, A., Werschler, Hagelkruys, A., N., Leopoldi, A., Blandin, P., Achard, J-L., Navarro, F., Fouillet, Y., 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, sports, wine, literature, nature and music.