

Education

- 2022-Present UNIVERSITY OF BRITISH COLUMBIA (VANCOUVER), JOSEF M. PENNINGER LABORATORY, **Postdoc**.
Coupling microfluidics with organoids, Organoids-on-chips, Vascularization of organoids
- 2018–2022 CEA GRENOBLE, MICROFLUIDIC SYSTEMS AND BIO-ENGINEERING (LSMB) LABORATORY & BIOMICROTECHNOLOGY AND FUNCTIONAL GENOMICS (BIOMICS) LABORATORY, **PhD**.
Microfluidic systems, Organs-on-chips, Organoids, Cell biology
- 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, **Integrated microfluidic system dedicated to cellular secretion immunomonitoring of organ-on-chip - PhD**.
 - Generated various organoids using stem cells 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 articles 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, ADVANCED MATERIALS ENGINEERING AND MODELLING GROUP, **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 (fluid handling devices, droplet microfluidics, valve-based microfluidics)
- Fluorescence microscopy (confocal, light sheet)
- Cell culture (2D and 3D, stem cells)
- RNA-seq (extraction, data analysis)
- Microfabrication (soft-lithography, micro-milling, hot embossing)
- ELISA in wells, on-chip and with beads
- 3D printing and bio-printing
- Sensors in microfluidic devices

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.
- 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

- In Preparation The role of microfluidics for microvascular networks on-chip platforms (Review Article), **Quintard, C., André, E., Navarro, F., Gidrol, X. & Fouillet, Y.**
- In revision An automated 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.** (preprint available on BioRxiv, in revision for Nature Biotechnology) [<https://www.biorxiv.org/content/10.1101/2021.12.29.474327v1>]
- 2022 Selective plane illumination microscope dedicated to volumetric imaging in microfluidic chambers, **Bissardon, C., Mermet, X., Quintard, C., Sanjuan, F., Fouillet, Y., Bottausci, F., Carriere, M., Rivera, F. & Blandin, P.** (2022), *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.** (2022), *Biosensors and Bioelectronics*.
- 2021 Patent: 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.
- 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.** (2020), *Soft Matter*, 16(43), 9844-9856.
- 2019 Experimentation and modeling of the hyperelastic membrane behavior in a microfluidic chip, **Quintard, C., Fouillet, Y., Parent C., Gidrol X., & Achard J-L.** (2019), *Actes du Congrès Français de Mécanique*.
- 2017 On the origin of the driving force in the Marangoni propelled gas bubble trapping mechanism, **Miniewicz, A., Quintard, C., Orlikowska, H., & Bartkiewicz, S.** (2017), *Physical Chemistry Chemical Physics*, 19(28), 18695-18703.

Conferences / Presentations

- 2021 "Microfluidic device integrating functional endothelial networks and automated fluid handling with valves", Poster Presentation at MicroTas (Palm Springs, USA / Virtual)
- 2021 "Organoid-on-chip device integrating functional endothelial networks and automatic fluid handling", Poster Presentation at GDR Microfluidics (Toulouse, France)
- 2021 "An automated microfluidic platform integrating functional vascularized organoids-on-chip", Poster Presentation at EUROoCs (Uppsala, Sweden / Virtual)
- 2021 "Characterization of bio-particles under extensional flow using optimised microfluidic devices", Oral Presentation at Micro and Nano Flows Conference (Virtual)
- 2019 "Experimentation and modeling of the hyperelastic membrane behavior in a microfluidic chip", Oral Presentation at Congrès Français de Mécanique (Brest, France)
- 2019 "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.