



Research Scientist

Last name: Cacheux

First name: Jean

Personnal details

Date and place of birth: 8 September 1991 (34 years old), Caen, France

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Education

2018 – PhD in Biophysics (Cancer specialization), University of Toulouse, France

2014 – Engineering Degree (Micro-nano physics & nano-bioengineering), INSA Toulouse, France

Erasmus semester – Charles University, Prague, Czech Republic

Research internships – LAAS-CNRS (France), Polytechnique Montréal (Canada)

Research experience

2024 – present – Research Scientist, LAAS-CNRS, Toulouse, France

Microfluidics, organ-on-chip systems, tumor microenvironment transport, mechanobiology.

2023 – 2024 – Senior Postdoctoral Researcher, CRCT, Toulouse, France

Development of pancreatic tumor-on-chip model integrating thick tumor tissue slices for oncolytic virus delivery and efficacy studies.

2020 – 2023 – Postdoctoral Researcher, LIMMS-CNRS / Institute of Industrial Science, The University of Tokyo, Japan

Integrated platform to observe, stimulate and characterize perfusable tissue models in vitro.

2018 – 2020 – Junior Postdoctoral Researcher, IMDEA Nanoscience, Madrid, Spain

Development of tumor-on-chip microfluidic device for nanomedicine validation.

2014 – 2018 – PhD Researcher, CRCT & LAAS-CNRS, France

Autonomous nanofluidic platform for microRNA detection and quantification for pancreatic cancer management.

Grants & awards

2026 – 2030: ANR JCJC, EXOFLEX (€314 k)

2026 – 2028: ARC Pancreas B-SMART project as partner (€130 k)

2025 – 2028: EUR CARE – PhD fellowship (€120 k)

2024 – 2027: Fondation Toulouse Cancer Santé, DISRUPT (€100 k)

2023 – 2025: FRM Postdoc (€207 k)

2020 – 2021: LIMMS-CNRS Internal Project (€3 k)

2020 – 2022: JSPS Fellowship (€78 k).

2019 – 2020: Walter Zellidja Grant (€5 k)

2017 – 2018: ARC PhD fellowship (€33.5 k).

Awards: best presentation NALS 2020 (Nature Nano), best presentation CFP 2016 (Mayoly Spindler).

Reviewing activities Lab on a chip, Star Protocol, Analytical Chemistry and project review for the Natural Sciences and Engineering Research Council (Canada)

Academic service

2026 – present: Representative of the GEETS Doctoral School, LAAS-CNRS

2025 – present: Member of the steering committees of the Characterization and CAD Platforms, LAAS-CNRS

2025 – present: Coordinator of the scientific animation of the MNBT (Micro and Nanobiotechnologies) Department, LAAS-CNRS (10+ organized conferences)

2021 – 2023: Postdoctoral researchers' representative and coordinator of monthly scientific seminars, LIMMS/CNRS
 2022: Organizer of the first Young Researchers Workshop between LIMMS/CNRS (Tokyo) and SMMiL-E (Lille, France)
 2015 – 2016: Volunteer in the NanoÉcole outreach program led by Prof. Christophe Vieu (INSA Toulouse, LAAS-CNRS), in partnership with AIME (Interuniversity Workshop on Micro-Nanoelectronics) and the Regional Science Center
 2015: Coordinator of the Youth Science Track during the Fête de la Science (National Science Festival), LAAS-CNRS

Teaching

2026 – present: 10 h/year – ISAE-SUPAERO, Elective Course in Bioengineering
 2025 – present: 30 h/year – ENSEEIHT, Dept. of Fluid Mechanics, Energy & Environment
 2016 – 2017: 64 h/year – INSA Toulouse, Dept. of Physical Engineering

Supervision

5 Ph.D. students (3 ongoing), 2 postdoctoral researchers (2 ongoing), 3 research engineers (2 ongoing), 10+ master's students (1 on going).

Career break

2020/03 – 2020/08: During my first postdoctoral position in Madrid, laboratory access was suspended for approximately six months due to COVID-19 restrictions, significantly limiting my experimental research. During this period, I prepared my subsequent postdoctoral position in Tokyo.

Selected publications and patent

My research has resulted in 20 peer-reviewed publications, including 7 as first author and 2 corresponding author, one international patent, more than 350 citations and an h-index of 9.

* denotes co-first authorship, and @ denotes corresponding author.

- [1] Cacheux, J., Brut, M., Bancaud, A., Cordelier, P. & Leichlé, T. *Spatial Analysis of Nanofluidic-Embedded Biosensors for Wash-Free Single-Nucleotide Difference Discrimination*. [ACS Sensors](#) 3, 606–611 (2018)
- [2] Dávila, S.*, Cacheux, J.* & Rodríguez, I. *Microvessel-on-Chip Fabrication for the In Vitro Modeling of Nanomedicine Transport*. [ACS Omega](#) 6, 25109–25115 (2021)
- [3] Cacheux, J.*, Bancaud, A.*, Alcaide, D., Suehiro, J.-I., Akimoto, Y., Sakurai, H. & Matsunaga, Y. T. *Endothelial tissue remodeling induced by intraluminal pressure enhances paracellular solute transport*. [iScience](#) 26, 107141 (2023)
- [4] EP4476524 A1 (18/12/2024), PCT/EP2023/053024, priority FR2201116. *Permeability measurement device and method*.
- [5] Cacheux, J., Ordóñez-Miranda, J., Bancaud, A., Jalabert, L., Alcaide, D., Nomura, M. & Matsunaga, Y. T. *Asymmetry of tensile versus compressive elasticity and permeability contributes to the regulation of exchanges in collagen gels*. [Science Advances](#) 9, eadf9775 (2023)
- [6] Cacheux, J., Quénan, T., Alcaide, D., Ordóñez-Miranda, J., Jalabert, L., Nakano, S., Nakanishi, M. P., Cordelier, P., Bancaud, A. & Matsunaga, Y. T. *Porohyperelastic modeling of collagen-gel responses to periodic pressure actuation shows that embedded senescent fibroblasts induce tissue softening associated with fibrous-network reorganization*, [Phys. Rev. Appl.](#) 24, 064015 (2025).
- [7] Alcaide, D., Bancaud, A., Cacheux, J.@ & Matsunaga, Y. *Pulsatile pressure actuation enhances solute clearance in engineered vasculature through strain accumulation–release*. Preprint at [bioRxiv](#) (2026).
- [8] Quénan, T.*, Radajewski, D.*, Alcaide, D., Toubanc, M., Barnette, A., Bancaud, A. & Cacheux, J.@ *Fabrication of PMMA-based 3D organ-on-a-chip devices with tubular tissues networks via CO₂ laser ablation*, Applied Physics Letter (2026, in review).

Scientific communications

Cacheux, J. & Cordelier, P. *Biophysical Constraints in Tumours: Impact on Drug Biodistribution and Therapeutic Efficacy*. Invited talk, GDR Microfluidique & MécaBioSanté, Compiègne, France, 25–26 November 2026.
 Cacheux, J. *Organ-on-a-Chip: Applications in Drug Development*. Invited lecture, SSM16, Toulouse, France, 4–10 July 2026.
 Cacheux, J. *Thick Tumour Slices and Microfluidics for Pancreatic Cancer*. Invited talk, Journée ABCD, Paris, France, 16 January 2025.
 Cacheux, J. *Organ-on-a-Chip: Applications in Drug Development*. Invited lecture, SSM15, Montreal, Canada, 5–11 July 2025.