






Jules Olayé, Post-doctoral researcher

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Position

- 2025 – 2027  **Post-doctoral researcher** at Institut de Mathématiques de Toulouse.
Advisors: *Sepideh Mirrahimi and Pascal Maillard*.
Subject: *Convergence of the Hopf-Cole transform of branching-coalescing Brownian motions towards a Hamilton-Jacobi equation*.

Education


- 2022 – 2025  **Ph.D. Thesis** at École Polytechnique.
Ph.D. advisors: *Marie Doumic and Milica Tomašević*.
Thesis title: *Stochastic and deterministic approaches for studying telomere shortening and other cell dynamics*.
Ph.D. committee: *Sylvie Méléard (president), Stéphane Mischler (reporter), Denis Villemonais (reporter), Andreas Kyprianou (examinator), Sepideh Mirrahimi (examinator), Marie Doumic (advisor), Milica Tomašević (advisor)*.
- 2021 – 2022  **M2 Mathematics for the Life Sciences** at Paris-Saclay University.
Graduated with highest honours.
- 2020 – 2021  **M1 Applied Mathematics** at Paris-Saclay University.
Top 1-2 in class.
- 2017 – 2020  **L3 Fundamental and Applied Mathematics** at Paris-Saclay University.
Recipient of Jacques Hadamard Foundation Excellence Scholarship.

Internships

- 2021 – 2022  **Research internship in stochastic modeling** at INRIA Paris-Saclay, 5 months.
Internship advisor: *Frédérique Clément*.
Internship subject: *Modelling embryonic neurogenesis in the cerebral cortex*.
- 2020 – 2021  **Research internship in bioinformatics** at Institut Pasteur, 3 months.
Internship advisors: *Cyril Matthey-Doret and Romain Koszul*.
Internship subject: *Detection of structural variations using machine learning algorithms*.
- 2019 – 2020  **Research internship in epidemiology** at ENS Paris-Saclay, 3 months.
Internship advisors: *Pierre-Yves Massé and Nicolas Vayatis*.
Internship subject: *Flow optimization of a metapopulation model for epidemiology*.

Publications and Preprints

Accepted

- J. Olayé, “An inverse problem in cell dynamics: Recovering an initial distribution of telomere lengths from measurements of senescence times,” *To appear in ESAIM: Mathematical Modelling and Numerical Analysis*, 2026.  DOI: <https://doi.org/10.1051/m2an/2026022>.

Journal Articles

- J. Olayé and M. Tomasevic, "Long-time behaviour of a multidimensional age-dependent branching process with a singular jump kernel modelling telomere shortening," *Electronic Journal of Probability*, vol. 31, 2026. [DOI: 10.1214/25-EJP1469](#).
- J. Olayé, H. Bouzidi, A. Aristov, A. Barizien, S. Gutiérrez Ramos, C. Baroud, and V. Bansaye, "Estimation of the lifetime distribution from fluctuations in bellman–harris processes," *Journal of Mathematical Biology*, vol. 90, no. 6, 2025. [DOI: 10.1007/s00285-025-02219-8](#).
- F. Clément and J. Olayé, "A stochastic model for neural progenitor dynamics in the mouse cerebral cortex," *Mathematical Biosciences*, vol. 372, 2024. [DOI: 10.1016/j.mbs.2024.109185](#).

Preprints

- J. Olayé, *Estimating an initial telomere length distribution from the laplace transform of its senescence times distribution*, arXiv, 2026. [DOI: 10.48550/arXiv.2603.27875](#).
- P.-Y. Massé, Q. Laborde, M. Cherifa, J. Olayé, and L. Oudre, *Flow Redirection for Epidemic Reaction-Diffusion Control*, arXiv, 2022. [DOI: 10.48550/arXiv.2202.02017](#).

Teaching and responsibilities

- 2025 – 2026 **Teaching assistant** at Institut de Mathématiques de Toulouse.
Practical sessions in probability for 2nd year students (8 hours),
Practical sessions in partial differential equations for 4th year students (12 hours),
Statistics tutorials for 3rd year students (20 hours).
- 2024 – 2025 **Co-organiser** of the Ph.D. student seminar of the CMAP.
- 2023 – 2025 **Teaching assistant** at the Bachelor of Science, École Polytechnique.
How to Write Mathematics for 1st year students (64 hours by year).
- 2022 **Tutor** for Jacques Hadamard scholarship holders.

Communications

- 2026 **Talk:** "PDE Team day", Toulouse.
- Talk:** "Workshop MUSEUM", Montpellier.
- 2025 **Talk:** "Grupo de Estadística, Probabilidad y Análisis de Datos", Online.
- Talk:** "MUSCA meeting", Palaiseau.
- Ph.D. defense:** *Stochastic and deterministic approaches for studying telomere shortening and other cell dynamics*, Palaiseau.
- Poster:** "Emerging Connections between Reaction-Diffusion, Branching Processes, and Biology", Banff.
- Talk:** "Les probabilités de demain", Paris.
- 2024 **Talk:** "Launching of the Project-team MERGE", Palaiseau.

- 📖 **Talk:** "*13th European Conference on Mathematical and Theoretical Biology*", Toledo.
- 📖 **Poster:** "*Frontiers in Interacting Particle Systems, Aggregation-Diffusion Equations and Collective Behavior*", Marseille.
- 📖 **Poster:** "*Mathematical Biology: Collective Behavior and Pattern Formation*", Marseille.
- 📖 **Poster:** "*Conference for the 50th anniversary of the CMAP*", Palaiseau.
- 📖 **Talk:** "*Kick-off meeting of the PEPR Maths VivES DyLT project*", Paris.
- 📖 **Talk:** "*Oberseminar Analysis*", Bonn.
- 📖 **Talk:** "*MERGE seminar*", Palaiseau.

Skills

- Languages 📖 French (native), English (C1), Spanish (A2).
- Coding 📖 Python, C++, R, Matlab, Latex.