

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

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](https://doi.org/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](https://doi.org/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](https://doi.org/10.1016/j.mbs.2024.109185).

Under review

- J. Olayé, *An inverse problem in cell dynamics: Recovering an initial distribution of telomere lengths from measurements of senescence times*, arXiv, 2025. DOI: 10.48550/arXiv.2501.11998.

Preprints

- 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 equation for 4th year students (12 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

- 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.
- 2025 ■ **Talk:** "Les probabilités de demain", Paris.
- **Poster:** "Emerging Connections between Reaction-Diffusion, Branching Processes, and Biology", Banff.
- **Ph.D. defense:** *Stochastic and deterministic approaches for studying telomere shortening and other cell dynamics*, Palaiseau.
- **Talk:** "MUSCA meeting", Palaiseau.

- 2026
- **Talk:** "*Grupo de Estadística, Probabilidad y Análisis de Datos*", Online.
 - **Talk:** "*Workshop MUSEUM*", Montpellier.
 - **Talk:** "*PDE Team day*", Toulouse.

Skills

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