Jules Olayé, Ph.D. Student

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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. commitee: *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, H. Bouzidi, A. Aristov, *et al.*, "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.

Under review

- J. Olayé and M. Tomasevic, *Long-time behaviour of a multidimensional age-dependent branching process with a singular jump kernel*, arXiv, 2024. DOI: 10.48550/arXiv.2408.02476.

Submitted

- 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 responsabilities

2024 – 2025 **Co-organiser** of the Ph.D. student seminar of the CMAP.

2023 – 2025 **Teaching assistant** at the Bachelor of Science, 1st year, École Polytechnique. Course: *How to Write Mathematics (LAB102)*, 64 hours.

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.

Skills

Languages French, English.

Coding Python, C++, R, Matlab, Latex.