



Maxime Estavoyer

PhD – Applied Mathematics in Biology

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EDUCATION

Postdoctoral Fellowship Applied Mathematics in Biology Under the supervision of Matthias Merkel (CNRS, Centre de Physique Théorique)	2025 (April) - CNRS Marseille
PhD Applied Mathematics in Biology Under the supervision of Thomas Lepoutre (Inria, Institut Camille Jordan)	2022-2025 Inria Lyon - ICJ
Master 2 Mathematics applied to Life Sciences With highest honour	2020-2021 Université Claude Bernard Lyon 1
Master 1 Applied mathematics and statistics With highest honour	2019-2020 Université Claude Bernard Lyon 1
Bachelor's degree Mathematics and Applications With highest honour	2018-2019 Université Claude Bernard Lyon 1

RESEARCH PROJECTS

CEMRACS (CIRM, Marseille, France): Summer school followed by five weeks research session on projects. In collaboration with two other students Adil El Abdouni and Ignacio Madrid. Under the supervision of Vincent Calvez, Florence Hubert, Julien Olivier and Magali Tournus.	2022
Master thesis: Analysis of how the placental epigenome mediates the effects of smoking Under the supervision of Olivier François (TIMC-IMAG, Grenoble)	2021
Second year Master Project : Stochastic gene expression in proliferating cells Under the supervision of Thomas Lepoutre (Inria, Institut Camille Jordan) and Olivier Gandrillon (LBMC, ENS Lyon)	2020-2021
First year Master Project : Morphogenesis and regeneration of Hydra Under the supervision of Thomas Lepoutre (Inria, Institut Camille Jordan)	2019-2020

TALKS

Presentation to non-mathematicians

- J-Biot - *Grenoble* - 2025
- Complex Systems seminar - *CPT Marseille* - 2024
- Computational Biology of Cancer - *Grenoble* - 2024
- Workshop Mignot Lab - *Centre Paul-Langevin CNRS Aussois* - 2023

Presentation to mathematicians

- Séminaire du LMAH - *Le Havre* - 2026
- SMAI - *Carcans* - 2025
- Applied Analysis seminar - *Marseille* - 2025
- GT Maths Bio - *Orléans* - 2025
- Seminar Math-Bio-Santé - *Toulouse* - 2024
- Journées Maths-Bio-Santé - *Nantes* - 2024
- Workshop on PDE and their applications- *Le Havre* - 2024
- Young analysts and modellers days - *Lyon* - 2024
- Seminar MMCS - *Lyon* - 2023
- GT Maths Bio (Lyon-Grenoble collaborative working group) - *Lyon* - 2022
- CEMRACS 2022 Transport in Physics, Biology and Urban traffic - *CIRM Marseille* - 2022

ACADEMIC ACTIVITIES

Teaching

Tutorials

Practical work and tutorials, 144 hours

2022-2024

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Scientific Service

Reviewer for *Journal of Theoretical Biology* and *Mathematical Biosciences*

SKILLS

Programming :

- Python
- FreeFem++
- Matlab/Octave
- C++
- R
- HTML, CSS et PHP

PUBLICATIONS AND PREPRINTS

- [10] C. Hermine, **M. Estavoyer**, N. Haupaix, L. Marmain and M. Manceau : *The temporal implementation of a pre-pattern controls stripe patterning in birds*, Submitted, 2026.
- [9] **Maxime Estavoyer**, Thomas Lepoutre and Marie Manceau : *Mathematical modeling of dermal competence and cellular aggregation effects on feather follicle emergence speed*, Journal of Theoretical Biology, 2025.
- [8] **Maxime Estavoyer**: *A reaction telegraph model reveals synergy between motility strategies in Myxococcus xanthus predation*, Submitted, 2025.
- [7] **M. Estavoyer**, N. Torres, J. Blohm, M. Banerjee, L. Pujo-Menjouet: *Spatial pattern analysis of a $A\beta$ -monomer model with inflammation processes for Alzheimer's disease*, Accepted in Mathematical Modelling of Natural Phenomena, 2025.
- [6] **M. Estavoyer**, M. Dufeu, G. Ranson, S. Lefort, T. Voeltzel, V. Maguer-Satta, O. Gandrillon, T. Lepoutre: *Modeling relaxation experiments with a mechanistic model of gene expression*, BMC Bioinformatics, 2024.
- [5] **Maxime Estavoyer** and Thomas Lepoutre: *Travelling waves for a fast reaction limit of a discrete coagulation-fragmentation model with diffusion and proliferation*, Journal of Mathematical Biology, 2024.
- [4] J. Restier-Verlet et al. : *Accelerated Aging Effects Observed In Vitro after an Exposure to Gamma-Rays Delivered at Very Low and Continuous Dose-Rate Equivalent to 1–5 Weeks in International Space Station*, Cells, 2024.
- [3] B. Jumentier, C-C. Barrot, **M. Estavoyer**, J. Tost, B. Heude, O. François, J. Lepeule: *High-Dimensional Mediation Analysis: A New Method Applied to Maternal Smoking, Placental DNA Methylation, and Birth Outcomes*, Environmental health perspectives, 2023.
- [2] **Maxime Estavoyer** and Olivier François: *Theoretical Analysis of Principal Components in an Umbrella Model of Intraspecific Evolution*, Theoretical Population Biology, 2022.

PROCEEDINGS

- [1] V. Calvez, A. El Abdouni, **M. Estavoyer**, I. Madrid, J. Olivier, M. Tournus: *Regime switching on the propagation speed of travelling waves of some size-structured Myxobacteria population models*, ESAIM: Proceedings and Surveys, 2024.