

# Michèle Romanos

Institut Camille Jordan – Université Claude Bernard (Lyon 1) – France

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## Current position

January 2024 **CNRS researcher (*Chargée de recherche*) in Institut Camille Jordan, Université Claude Bernard (Lyon 1), Lyon, France**

## Education

October 2022 **Post-doctoral researcher in Institut Camille Jordan, Université Claude Bernard (Lyon 1), Lyon, France**  
- 2023

**Mentor** : Vincent Calvez

**Key words** : Mathematical modeling, PDE-based models, kinetic equations, particle models, cell collective behavior, *Myxococcus Xanthus*, *E.Coli*, numerical simulations, image analysis

2018 – 2022 **PhD in Applied Mathematics, Université Paul Sabatier, Toulouse, France**

**Subject** : Mathematical modeling of the elongation of the vertebrate embryo

**Supervisors** : Ariane Trescases (Institut de Mathématiques de Toulouse) and Bertrand Bénazéraf (Centre de Biologie Intégrative, Toulouse, France)

**Key words** : Mathematical modeling, hydrodynamic models, cross diffusion, multi-agent model, incompressible limit, numerical simulations, embryology, vertebrate embryo, image analysis, biological experiments

2016 – 2018 **Masters degree, specialty: Mathematical modeling, Mathematics applied to Biological and Medical Sciences (MBIO), Sorbonne Université**

2013 – 2016 **Bachelor in Mathematics, Université Saint Joseph, Beirut, Lebanon**

## Scientific stays and internships

2022 **CEMRACS 2022: Transport in Physics, Biology and Urban traffic**, total duration: six weeks

Summer school and research project about the modelling, analysis, and the simulation of traffic jam in colonies of *Myxococcus xanthus*, in collaboration with Hélène Bloch (CEA, Aix-en provence), Jean-Baptiste Saulnier (Université Aix-Marseille), Benoît Gaudeul (Université Paris Saclay)

2019 **Semaine d'Etude Maths Entreprises (SEME) -Mathematics and Companies week-**

Project: Semantic analysis of customer reviews and skills matching using Natural Language Processing (companies: CODIGIT, TMC and FDTI consulting)  
Institut de Mathématiques de Toulouse

2018 **Internship at the Center for Social Analysis and Mathematics (CAMS), EHESS, Paris, France**

Supervisor: Amandine Aftalion  
Subject : Mathematical modeling of motivation

2017 **Internship at the Jacques-Louis Lions laboratory, Sorbonne Université**

Supervisor: Laurent Boudin  
Subject: Mathematical modeling of the hygroscopic growth of aerosol droplets in the lungs

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## Teaching, supervisions and academic activities

2022 – 2023 **Declics ambassador : *Dialogues Entre Chercheurs et Lycéens pour les Intéresser à la Construction des Savoirs***

Academic advising and counseling for high-school students to help them understand why scientific research matters and how it works, and to promote careers in scientific research

2022 – 2023 **Teaching at Ecole Centrale de Lyon**

Numerical analysis course (exercise sessions) for engineering students (28h)

2022 **Internship co-supervisor, student: Gabrielle Roullet, first year of Masters in Computational and Mathematical Biology, AMU, Marseille, France, specialty: Mathematical Modeling**

Subject: Analysis and quantification of cellular heterogeneity in a stem cell population in the vertebrate embryo (7 weeks)

2021 **Internship supervisor, student: Tuong Bao Han Phan, third year of Bachelor BIOMIP at Université Paul Sabatier**

Subject: Sensitivity analysis of a stochastic model linking cell migration, proliferation and protein concentration of a stem cell population in the vertebrate embryo (6 weeks)

2018 – 2022 **Teaching at Paul Sabatier University**, *Faculty of Science and Engineering (FSI)*

- Interdisciplinary course: *Modeling and tissue development* for first year Masters Biology students (2h - September 2022)
- Analysis course and exercise sessions for first year students of bachelor in Mathematics (64h per year, 2018-2021)
- Mathematics course (exercise sessions) for first year students of Bachelor in Biology (64h per year)
- Lecture within the course "Dynamics of cell organization" for students in the first year of Master's in Biology: Presentation on mathematical modeling and the mathematical tools used to study the migration and specification of a stem cell population (4h - April 2022)
- Speed meeting : Academic orientation for students in the third year of Bachelor and in the first and second year of Master's degree, presentation of the interdisciplinary work within the Bénazéraf team (April 2022)
- Interdisciplinary course: *Dynamics of cell organization* for first year Masters Biology students (4h - April 2022)

## Computer and experimental skills

- **Programming** : Matlab, Scilab, R, C, C++, Maple, LaTeX
- **Technology** : Microsoft Office, Photoshop, Illustrator
- **Image analysis** : ImageJ, Fiji, Imaris
- **Experimental skills** : preparation of culture medium, culture and electroporation of bird embryos

## Languages

**English**, *native*

**French**, *native*

**Arabic**, *native*

**Spanish**, *level B2*

## Activities

**Sports**: Krav Maga, boxing, thai boxing

**Volunteering**: volunteer at Viola Walk Home