

# Giorgia Ciavolella

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## Curriculum Vitae

### Personal information

Name Giorgia Ciavolella  
Date of birth 19-04-1995  
Place of birth Rome, Italy  
Email giorgia.ciavolella@inria.fr

### Work experiences

- DEC 2022 - **Postdoctoral Researcher**, *Inria Team MONC & Université de Bordeaux*, Bordeaux (France), "*Dynamics of circulating tumor cells in blood vessels - mathematical modeling and data assimilation*"  
Collaborators: ANNABELLE COLLIN and CHRISTÈLE ETCHEGARAY
- OCT 2019 - **Ph.D student in Applied Mathematics**, *cotutelle between Sorbonne Université (origin university) & Università di Tor Vergata*, Paris (France) & Rome (Italy), "*Reaction-diffusion equations with membrane conditions describing tumor invasion*"  
NOV 2022  
Advisors: BENOÎT PERTHAME and ROBERTO NATALINI

### Education

- OCT 2019 - **Ph.D student in Applied Mathematics**, *cotutelle between Sorbonne Université (origin university) & Università di Tor Vergata*, Paris (France) & Rome (Italy), "*Reaction-diffusion equations with membrane conditions describing tumor invasion*"  
NOV 2022  
Advisors: BENOÎT PERTHAME and ROBERTO NATALINI
- SEP 2018 - **Erasmus+ programme**, *Sorbonne Université*, Paris (France)  
JAN 2019
- OCT 2017 - **Master's degree in Applied Mathematics (M1+M2)**, *Università La Sapienza, Rome (Italy)*, "*Macroscopic mathematical models for cell migration through membranes*", 110/110 cum laude  
JUL 2019  
Advisors: ROBERTO NATALINI and EUGENIO MONTEFUSCO
- OCT 2014 - **Bachelor's degree in Mathematics (Licence)**, *Università La Sapienza, Rome (Italy)*, "*Microscopic Derivation of the Diffusion, Drift and Reaction Equation*", 110/110 cum laude  
JUL 2017  
Advisor: GIADA BASILE
- SEP 2009 - **Scientific High School Diploma**, *Liceo G.B. Morgagni*, Rome (Italy), 100/100  
JUN 2014

## Publications and Preprints

The following publications and preprints are available on my webpage at <https://gciavoletta.perso.math.cnrs.fr>

### Published articles in peer-review journals

1. Ciavoletta G., Perthame B., *Existence of a global weak solution for a reaction-diffusion problem with membrane conditions*, J. Evol. Equ., 21, (2), 1513-1540, 2020
2. Ciavoletta G., *Effect of a membrane on diffusion-driven Turing instability*, Acta Appl. Math., 178, (1), 1-21, 2022
3. Ciavoletta G, Ferrand N, Sabbah M, Perthame B, Natalini R., *A model for membrane degradation using a gelatin invadopodia assay*, 86, (30), 1-19, Bull. Math. Biol., 2024
4. Ciavoletta G., David N., Poulain A., *Effective interface conditions for a porous medium type problem*, Interfaces Free Bound., 2024

### Preprints

1. Ciavoletta G., Granet J., Goetz J. G., Osmani N., Etchegaray C., Collin A., *Deciphering circulating tumor cells binding in a microfluidic system thanks to a parameterized mathematical model*, under review, 2023

## Experience

### Administrative Responsibilities

SEP 2020 - **PhD representative in the laboratory board**, Laboratoire Jacques-Louis Lions,  
SEP 2021 Sorbonne Université, Paris (France)

### Organisation of Scientific Events

MAY 2021 **MBMC 2021: Living matter growth, migration and interaction models**,  
Second online edition of MBMC conference, 3 days, 64 participants, <https://mbmc2021.sciencesconf.org>

AUG-SEP 2022 **MBMC 2022 School and Workshop**, Third edition of MBMC conference (FORTH, Crete, Grece), 1 week summer school and 2 days workshop, 50 participants , <https://mbmc22.iacm.forth.gr>

OCT 2023 **MC2D: Mathematical Challenges in Modelling Cancer Dynamics** , (LJLL, Paris, France), 3 days, 48 participants, <https://mc2d.sciencesconf.org>

### Talks given at Seminars or Conferences/Workshop

JAN 2020 **Groupe de travail des thésards**, *A Keller-Segel model with transmission describing metastasis formation*, LJLL, Sorbonne Université, Paris, France

DEC 2020 **Giornata Giovani ricercatori IAC-CNR**, *Existence of a global weak solution for a reaction-diffusion problem with membrane conditions*, Online talk

JAN 2021 **Mamba Group talk**, *Membrane problems: existence of solutions and numerical analysis*, Online talk

- JUN 2021 **SMAI- 10ième Biennale Française des Mathématiques Appliquées et Industrielles**, *Reaction-diffusion problems with membrane conditions*, La Grande-Motte, Montpellier, France
- NOV 2021 **StAMBio Seminar**, *Effective interface conditions for a model of tumour invasion through a membrane*, Online talk
- FEB 2022 **Groupe de travail des thésards**, *Effective interface conditions and application to cell invasion*, LJLL, Sorbonne Université, Paris, France
- MAR 2022 **Seminar at Politecnico di Torino**, *Evolution equations with membrane conditions*, Politecnico di Torino, Turin, Italy
- JUN 2022 **Nonlinear PDEs and Applications**, *Reaction-diffusion membrane problems: existence of weak solutions*, CNR, Rome, Italy
- OCT 2022 **Modelling cell and tissue biomechanics workshop**, *Reaction-diffusion equations with membrane conditions describing tumor invasion*, LJLL, Sorbonne Université, Paris, France
- MAY 2023 **Séminaire de Physique Mathématique-EDP**, *Derivation of membrane conditions for a model of tumor invasion*, Institut de Mathématiques de Bordeaux, France
- SEP 2023 **21st IMACS World Congress, Mini-symposium**, *Dynamics of Circulating Tumor Cells in Blood Vessels: Mathematical Modeling and Data Assimilation*, University of Rome 'La Sapienza', Italy
- NOV 2023 **JMBS 2023: Journées Math Bio Santé**, *Adhesion dynamics of Circulating Tumor Cells: data analysis through mathematical modeling*, Université Gustave Eiffel, Champs sur Marne, France
- FEB 2024 **Séminaire d'Analyse Appliquée**, *Tumor invasion: from mathematical theory to application with real data*, Université de Picardie Jules Verne, Amiens, France
- MAR 2024 **Séminaire EDP**, *Tumor invasion: from mathematical theory to application with real data*, Université de Rennes I, France
- Posters
- JAN 2022 **Tissue growth and movement**, *Membrane problems and application to cell invasion*, Institut Henri Poincaré, Paris, France
- Attended Workshops and Schools without talks
- NOV 2019 **LIA COPDESC and Lions Magenes Days**, *French-German-Italian meetings*, Laboratoire Jacques-Louis Lions, Sorbonne Université, Paris, France
- NOV 2019 **Shape analysis in biology**, Laboratoire Jacques-Louis Lions, Sorbonne Université, Paris, France
- NOV 2019 **Modélisation, analyse et simulation - Le Laboratoire Jacques-Louis Lions fête ses 50 ans**, Campus des Cordeliers, Sorbonne Université, Paris, France
- FEB 2020 **Recent Advances in Degenerate Parabolic Systems with Applications to Mathematical Biology**, *PDE Workshop 2020*, Laboratoire Jacques-Louis Lions, Sorbonne Université, Paris, France
- FEB 2020 **WinterSchool - Mathematics of Complex Systems in Biology and Medicine**, CIRM, Marseille, France

- JUN 2020 **IbOMaN : Interplay between Oncology, Mathematics and Numerics: focus on pre-treatment studies**, Online Conference
- JUN-JUL 2020 **Virtual Seminar on Modeling Biocomplexity: Cancer Invasion and Progression**, Online Conference
- JUN-JUL 2020 **Seminar In the Analysis and Methods of PDE (SIAM PDE)**, Online Conference
- NOV-APR 2020-2021 **AIM: Artificial Intelligence and Mathematics (CNR-IAC)**, Online Conference
- DEC 2020 **Giornata Giovani ricercatori IAC-CNR**, Online conference
- JUN 2021 **SMAI- 10ième Biennale Française des Mathématiques Appliquées et Industrielles**, La Grande-Motte, Montpellier, France
- JUL 2021 **Summer School - Multi-scale modeling for pattern formation in biological systems**, Online Conference
- SEP 2021 **Mathematical Modelling and Control for Healthcare and Biomedical Systems**, Online Conference
- JAN-FEB 2022 **Mathematical modeling of organization in living matter**, *Institut Henri Poincaré, Paris, France*

### Teaching activity

- 2019-2020 **Teaching assistant (TD) - Mathématiques pour les études scientifiques II, L1 - undergraduate**, (in french, 2\*36h, around 30 students), Sorbonne Université, Paris, France
- 2020-2021 **Teaching assistant (TD) - Analyse numérique, L3 - undergraduate**, (in french, 2\*24h, around 30 students), Sorbonne Université, Paris, France
- 2020-2021 **Teaching assistant (TD) - Mathématiques pour les études scientifiques II, L1 - undergraduate**, (in french, 36h, around 30 students), Sorbonne Université, Paris, France

### Languages

- Italian Mother tongue
- English Independent user (B1-B2)
- French Proficient user (C1-C2)

### Computer skills

*Systems:* Windows, Linux, Apple

*Programming languages and Scientific software:* Fortran90, C++, MATLAB, R, Monolix, Python

*Others:* L<sup>A</sup>T<sub>E</sub>X