Laboratoire Jean Perrin (UMR 8237 CNRS)
Sorbonne Université
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France

Silvia Grigolon

CNRS Research Fellow

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Italian — Born on October, 7th 1987

Experience

2021 – today **CNRS Research Fellow**, *Sorbonne Université, Laboratoire Jean Perrin*, Paris, France
Ranked 1st ex aequo (CID 51 and Section 5, former 2).

2020 – today **Visiting Research Scientist**, *The Francis Crick Institute*, London, UK
Caroline Hill's Lab

2020 – 2021 **Postdoctoral Research Fellow**, *Sorbonne Université, Laboratoire Jean Perrin*, Paris, France
Main topic of study: Collective cell migration and bleb formation.

Supervisor: Raphaël Voituriez.
Main experimental collaborator: Matthieu Piel (Institut Pierre-Gilles de Gennes, Paris).

2015 – 2020 **Postdoctoral Research Fellow**, *The Francis Crick Institute*, London, UK
Main topic of study: Models of active-gel theory and complex molecular networks for vertebrates' early morphogenesis at cell and tissue scales.

Supervisor: Guillaume Salbreux.
Main experimental collaborators: C.-P. Heisenberg (IST Austria) and Caroline Hill (The Francis Crick Institute, UK).

2012– 2015 **Early Stage Researcher**, *LPTMS, Université Paris-Sud XI*, Orsay, France
Part of the Marie Curie Training Network NETADIS,
(NETworks Across DISciplines, grant no. FP7 290038).

Main topics of study:
• Models of molecular networks governing plant morphogenesis at cell and tissue scales;
• Inference methods for protein sequences.
Supervisors: Silvio Franz and Olivier C. Martin.

Education

2015 **Ph.D. in Theoretical Physics**, *Université Paris-Sud XI*, Orsay, France
Supervisors: Silvio Franz and Olivier Martin

2012 **Master's Degree in Theoretical Physics**, *Sapienza Università di Roma*, Italy

Supervisors: Enzo Marinari and Francesca Di Patti

Mark: 110/110 cum laude

2009 **Bachelor's Degree in Physics**, *Sapienza Università di Roma*, Italy

Supervisor: Enzo Marinari

Mark: 110/110 cum laude

Awards, distinctions & qualifications

2024 **ANR JCJC** by Agence Nationale de la Recherche for the project LiPhysiX (280 k€). Role: Main PI.

2024 **CEFIPRA** for France and India collaborations (1 Ph.D. fellowship and fundings for travel). Principal coordinators: Arejit Samal and Olivier C. Martin. Role: Main Collaborator.

2024 **80Prime** by MITI CNRS for one PhD scholarship and yearly allowance (11.5 k€) for the project CELL-MIGRA-GLASS with Benoit Ladoux. Role: Main PI.

2023 **PEPR Santé Numérique** by France 2030 and ANR within the French network AI4scMED. Principal coordinator: Franck Picard (ENS Lyon). Role: PI for Sorbonne Université.

2022 **ICL-CNRS fellowship** by Imperial College London for a three-months stay (6 k£). Role: Main Recipient.

2022 **Tremplin@INP 2022** by CNRS (20 k€). Role: Main PI.

2020 Qualified as Maître de Conférence in France in the disciplinary sections 28 (condensed matter) and 29 (elementary constituents).

2015 **Postdoctoral Research Fellowship** at the Francis Crick Institute, London, UK.

2012 **Winner** of a competitive Marie Sklodowska-Curie PhD scholarship at LPTMS, Université Paris-Sud XI, France within the network NETADIS (FP7 290038).

2008-2010 **Twice winner** of *Borsa di Collaborazione* at Deparment of Physics - Sapienza Università di Roma aimed at tutoring students in the afternoon sessions of the Computational Labs.

Languages

Italian	Native
English	Fluent
French	Fluent

Technical Expertise

Programming	C, Matlab, Mathematica, Bash
OS	Unix, Windows
Software and Tools	Microsoft Office applications, Adobe Illustrator and Photoshop, ImageJ, Chimera, PyMol, LaTex

Teaching

since 2024 **12 hours** of tutoring for Mathematics I at ESPCI, Paris, France

2021-2023 **50 hours per year** of tutoring for the programming projects (Master's level) at Chimie ParisTech, France

2016-2019 **16.5 hours** of tutoring (problem classes) for the afternoon sessions of **Matlab Classes by SysMic** at UCL, UK

2016 **14 hours** of tutoring (problem classes) for **Mathematical Methods I (PHAS1245)** at UCL, UK

2014 **8 hours** of **Introduction to Genome Analysis and Noise-Reduction Techniques** (lectures) within the course of Inference, Learning and Big Data held by Prof. Silvio Franz, Sorbonne Université (former UPMC), Paris, France

2008-2010 **About 300 hours** of tutoring (problem classes) students during the afternoon sessions of the **Computational Physics Lab courses** at Sapienza Università di Roma, Italy

Student supervision

2025 Alexandre Flament (L2, Sorbonne Université, Paris)

2025 Raffaella Renzulli (equivalent of M2, Politecnico di Torino, Italy). Co-supervised with Prof. Carla Bosia

2024 Suchetana Mitra (Paris-Saclay). Ph.D. student under the joint supervision of myself and Olivier C. Martin. Defence expected October 2027

2024 Paul Sitoleux (M2, ENS Paris-Saclay). Now Ph.D. student under the joint supervision of myself and Thierry Mora and Aleksandra Walczak. Defence expected October 2027

2024 Mathéo Aksil (M2, ENS Paris). Now Ph.D. student under my supervision. Defence expected October 2027

2023-2024 Felix Wang (M2, Imperial College London), co-supervised with Barbara Bravi

2023 Kristiana Mihali (M2, Université Paris-Saclay, Orsay)

2023 Sam-Rayden Malanda (L2, Sorbonne Université, Paris)

2023 Vincent Hulot (L2, Engineering School De Vinci, Paris)

2022 Roberto Netti, co-supervised with O. C. Martin (M2, Politecnico di Torino, Italy, & Sorbonne Université, Paris, France)

Conference and meeting (co-)organisation

2025 Co-organiser with Hugo Wioland (IJM, Paris) and Morgan Chabanon (Centrale Supélec, Saclay) of the annual conference of Physics of Living Systems for Societé Française de Physique, Paris.

2023 Co-organiser with Pierre Ronceray (CENTURI, Marseille) of the mini-conference of Physics of Living Systems at Congrès Général de la Societé Française de Physique, Paris

2021-2023	Organiser with Clément Nizak of the seminars at Laboratoire Jean Perrin, Sorbonne Université, Paris
2019	Salbreux and Arroyo Lab Retreat, La Cerdanya, Spain
2015-2020	Friday Physics Club at the Francis Crick Institute, London, UK
2017	Salbreux and Tapon Lab Retreat, Lyndhurst, UK
2016	Biophysics meeting of Lates at LIMS, London, UK
2014 & 2015	Paris Biological Physics Community day, Paris, France

Research visits

Aug 2025 - Sep 2025	IMSc, Chennai, India
Aug 2024 - Sep 2024, Nov 2024, May 2025 - June 2025	Dipartimento di Fisica, Sapienza Università di Roma, Italy
Feb 2024 - Apr 2024	Department of Mathematics, Imperial College London, UK
Sep 2019	Politecnico di Torino, Italy
Jan 2017	HuGef & Politecnico di Torino, Italy
Nov 2015	Heisenberg Lab at IST Austria
Jul 2015	Salbreux Lab at the Francis Crick Institute, UK
Apr 2015	Bennett Lab at the University of Nottingham, UK
Jun 2014 - Dec 2015	Multiple times at Quantitative Life Science group at ICTP, Trieste, Italy
Oct 2013 - Dec 2013	Disordered Systems group at King's College London, UK
Feb 2013	Chimera group, Sapienza Università di Roma, Italy

Service to the community

Ph.D. committees	M. Coraggioso (2021-2025, Sorbonne, yearly reviewer), A. H. Ardebily (2025-, U. Paris-Saclay, yearly reviewer), G. Spera (U. Paris-Cité, 2024, committee member)

- Member of CNRS national committees Section 05 (Theoretical Physics) and CID 51 (Interdisciplinary applications) for the mandate 2025-2029
- Peer Review for several interdisciplinary journals among which ELife, Nature Physics, Physical Review Letters, Physical Review Research and Plos Computational Biology
- Peer Review for Agence Nationale de la Recherche, Alexander von Humboldt-Stiftung Foundation Post-doctoral Fellowship, L'Oréal-UNESCO Femmes pour la Science, Prix de thèse de la Société Française de Physique

2021-2025	Member and secretary of the office of Physics of Living Systems at Société Française de Physique
2021-2025	2Member of the council of the Faculty of Physics (UFR Physique) at Sorbonne Université, Paris

Academic interests

Mathematical Biology, Developmental Biology, Statistical and Out-of-equilibrium Physics, Bioinformatics.

Invited and contributed talks and posters

since 2012 More than 50 talks (invited and contributed) and poster presentations at international conferences.

List of publications

2025 M. Aksil, C. Britton, G. Pruessner, **S. Grigolon**

in preparation

2025 **S. Grigolon**, A. Economou, A. van Boxtel, C. S. Hill, G. Salbreux

to be submitted

2025 E. Lardet, R. Voituriez, **S. Grigolon***, T. Bertrand*

`Disordered Yet Directed: The Emergence of Polar Flocks with Disordered Interactions`

under revision, `https://arxiv.org/pdf/2409.10768`

2025 X. Yang, T. Ferraro, K. Molnar, S. R. Malanda, N. Maghelli, L. Royer, J. Pontabry, S. Grill, G. Myers, **S. Grigolon**, M. Labouesse

`Repeated extraneous tensional inputs and lower surface tension promote polarised adherens junction extension`

S1534-5807(25)00367-3, *Dev. Cell.*, (2025) DOI: 10.1016/j.devcel.2025.06.012

appeared also as communication on CNRS Biologie news

2024 J. M. Garcia-Arcos, J. Ziegler, **S. Grigolon**, L. Reymond, G. Shajepal, A. Lomakin, C. J Cattin, D. Müller, V. Ruprecht, S. Wieser, R. Voituriez, M. Piel

`Advected percolation in the actomyosin cortex drives amoeboid cell motility`

Dev. Cell, 59, 1-18 (2024) DOI: 10.1016/j.devcel.2024.06.023

2021 **S. Grigolon**

`Morfogenesi: una sfida interdisciplinare`

Ithaca, 18 (in italian)

2021 L. Montel, I. Golovkova, **S. Grigolon**, E. Wandersman, A. M. Prevost, T. Bertrand, L.-L. Pontani

`Adhesion percolation determines global deformation behavior in biomimetic emulsions,`

Frontiers in Physics, 9, 547, DOI:10.3389/fphy.2021.744006

2020 E. Ferro, C. Enrico Bena, **S. Grigolon***, C. Bosia*,

`microRNA-mediated noise processing in cells: a fight or a game?,`

Computational and Structural Biotechnology Journal, 18, 642-649, DOI:10.1016/j.csbj.2020.02.020, ∗ co-last authors

2019 E. Ferro, C. Enrico Bena, **S. Grigolon***, C. Bosia*,

From Endogenous to Synthetic microRNA-Mediated Regulatory Circuits: An Overview,

Cells, 8(12), 1540, * co-last authors, DOI:10.3390/cells8121540

2019 N. Petridou, **S. Grigolon**, G. Salbreux, E. Hannezo, C.-P. Heisenberg,

Fluidization-mediated tissue spreading by mitotic cell rounding and non-canonical Wnt signalling,

Nat. Cell Biol., 21, 169-178 DOI:10.1038/s41556-018-0247-4

2018 M. Del Giudice, C. Bosia, **S. Grigolon**, S. Bo,

Stochastic sequestration dynamics: a minimal model with extrinsic noise for bimodal distributions and competitors correlation,

Scientific Reports, 8(1), 10387, DOI:10.1038/s41598-018-28647-9

2018 M. Del Giudice, S. Bo, **S.Grigolon***, C. Bosia*,

On the role of extrinsic noise in microRNA-mediated bimodal gene expression,

Plos Comp. Biol., 14(4): e1006063, * co-last authors DOI:10.1371/journal.pcbi.1006063

2018 **S. Grigolon**, B. Bravi, O. C. Martin,

Responses to auxin signals: an operating principle for dynamical sensitivity yet high resilience,

R. Soc. Open Science, 5 (1), 172098, DOI:10.1098/rsos.172098

2017 M. Smutny, Z. Ákos, **S. Grigolon**, S. Shamipour, ..., B. Hof, T. Vicsek, G. Salbreux, C.-P. Heisenberg,

Friction forces position the neural anlage,

Nat. Cell Biol., 19 (4), 306, DOI:10.1038/ncb3492

2017 H. Morita, **S. Grigolon**, M. Bock, G. S. F. Krens, G. Salbreux, C.-P. Heisenberg,

The physical basis of coordinated tissue spreading in zebrafish gastrulation,

Dev. Cell, 40 (4), 354-366. e4, DOI:10.1016/j.devcel.2017.01.010

2016 **S. Grigolon**, F. Di Patti, A. De Martino, E. Marinari,

Noise processing by microRNA-mediated circuits: the incoherent feed-forward loop, revisited,

Heliyon, 2 (4), e00095, DOI:10.1016/j.heliyon.2016.e00095

2016 **S. Grigolon**, S. Franz., M. Marsili,

Identifying relevant positions in proteins by Critical Variable Selection,

Mol. Biosystems, 12 (7), 2147-2158, DOI:10.1039/C6MB00047A

2015 **S. Grigolon**,

`Modelling and inference for biological systems: from auxin dynamics in plants to protein sequences`,

Ph. D. thesis available on theses.fr/2015PA112178

2015 **S. Grigolon**, P. Sollich, O. C. Martin,

`Modelling the emergence of polarity patterns for the intercellular transport of auxin in plants`,

J. R. Soc. Interface, 12 (106), 20141223, DOI:10.1098/rsif.2014.1223