

Matthieu Gilson

General Information

Education and Research Experience

2022-now	Chair of Junior Professor, Institut de Neurosciences de la Timone (INT, UMR7289), Marseille (France)
2022	Post-doct researcher at ‘Dynamic Mapping of the Brain’, Institut de Neurosciences des Systèmes (INS, UMR1106), Marseille (France)
2020-2021	Post-doct researcher at ‘Theory of multi-scale neuronal networks’, INM-6, Jülich Forschungszentrum (Germany)
2014-2020	Post-doct researcher at ‘Computational Neuroscience Group’, Universitat Pompeu Fabra, Barcelona (Spain)
2010-2013	Post-doct researcher at ‘Lab for Neural Circuit Theory’, RIKEN Brain Science Institute, Wako-shi (Japan)
2005-2009	Ph.D. at Electrical and Electronic Engineering Department, The University of Melbourne (Australia) Thesis: Biological learning mechanisms in spiking neuronal networks
2001-2003	M.Sc.A. at Electrical and Electronic Engineering Department, École Polytechnique de Montréal, (Canada) Research project in machine learning in artificial neural networks
1998-2001	Engineer student at École Polytechnique, Palaiseau (France), https://ax.polytechnique.org/addressbook/fullsearch/index Major in applied mathematics and computer science

Funding

2023-2026	PhD scholarship + mini-RHU, Laënnec Institute, AMidex, Aix-Marseille University, 170 k€
2022-2025	Chair of Junior Professor, Agence Nationale pour la Recherche (ANR) + AMidex, 250 k€
2016-2018	Marie Skłodowska-Curie Action IF fellowship (H2020-MSCA-656547, NeuArc2Fun “Biological neural networks: from structure to function”), European Commission, 200 k€ PhD scholarship and NICTA top-up scholarship from The University of Melbourne (Australia), 50 kAUD
2005-2009	

Selected Publications

- Nestler S, Helias M**, Gilson M** (2023) Neuronal architecture extracts statistical temporal patterns. *Phys Rev Res* 5: 033177; doi: [10.1103/PhysRevResearch.5.033177](https://doi.org/10.1103/PhysRevResearch.5.033177)
- Gilson M, Tagliazucchi E, Cofré R (2023) Entropy production of multivariate Ornstein-Uhlenbeck processes correlates with consciousness levels in the human brain. *Phys Rev E* 107: 024121; doi: [10.1103/PhysRevE.107.024121](https://doi.org/10.1103/PhysRevE.107.024121)
- Adhikari MH, Griffis J, Siegel JS, Thiebaut de Schotten M, Deco G, Instabato A, Gilson M**, Corbetta M** (2021) Effective connectivity extracts clinically relevant prognostic information from resting state activity in stroke. *Brain Commun* 3: fcab233; doi: [10.1093/braincomms/fcab233](https://doi.org/10.1093/braincomms/fcab233)
- Gilson M, Zamora-López G, Pallarés V, Adhikari MH, Senden M, Tauste Campo A, Mantini D, Corbetta M, Deco G, Insabato A (2020) Model-based whole-brain effective connectivity to study distributed cognition in health and disease. *Netw Neurosci* 4: 338-373; doi: [10.1162/netn.a.00117](https://doi.org/10.1162/netn.a.00117)
- Gilson M, Moreno-Bote R, Ponce-Alvarez A, Ritter P, Deco G (2016) Estimation of directed Effective Connectivity from fMRI Functional Connectivity Hints at Asymmetries of Cortical Connectome. *PLoS Comput Biol* 12: e1004762; doi: [10.1371/journal.pcbi.1004762](https://doi.org/10.1371/journal.pcbi.1004762)
- Gilson M, Fukai T (2011) Stability versus Neuronal Specialization for STDP: Long-Tail Weight Distributions Solve the Dilemma. *PLoS ONE* 6: e25339; doi: [10.1371/journal.pone.0025339](https://doi.org/10.1371/journal.pone.0025339)

Commissions of Trust

2023-now	Program Committee of OCNS annual meeting (https://www.cnsorg.org/program-committee)
2023	Comité scientifique de la Commission CE45 (funding selection committee) for Agence Française de Recherche (ANR), (https://anr.fr/fileadmin/aap/2023/selection/Compilation_Listes_Mbres_1_56_AAPG2023.pdf)
2019	Comité scientifique de la Commission CE37 (funding selection committee) for Agence Française de Recherche (ANR), (https://anr.fr/fileadmin/documents/2019/Ces-aapg-2019.pdf)
2013-2015	Guest editor for special topic on ‘Emergent Neural Computation from the Interaction of Different Forms of Plasticity’ in <i>Frontiers in Computational Neuroscience</i>
2009-now	Reviewer for scientific journals: PLoS Computational Biology, Biological Cybernetics, <i>Frontiers in Computational Neuroscience</i> , <i>Journal of Computational Neuroscience</i> , <i>Journal of Mathematical Neuroscience</i> , <i>Neural Computation</i> , <i>Journal of Neuroscience Research</i> , <i>Brain Structure and Function</i> , <i>Scientific Reports</i> , <i>Mathematical Biosciences and Engineering</i> , <i>Journal of Neural Engineering</i> , <i>eNeuro</i> , <i>Nature Computational Science</i> , PNAS
2010, 2016, 2018, 2019, 2021	Reviewer for conferences OCNS annual meeting (Organization for Computational Neuroscience), COSYNE

Scientific Animation and Contributions to Conferences

- Coordinator of CONECT center on computational neuroscience at Institut de Neurosciences de la Timone (<https://conect-int.github.io/>)
- Co-organization of workshops and tutorials during OCNS annual meeting 2019, 2017, 2016, 2015 (www.cnsorg.org), NeuroFrance 2023 (<https://www.neurosciences.asso.fr/SN23/>)
- Invited oral presentations: Neural Coding 2016, Köln, Germany; Satellite workshop ‘The Complex Brain’ of EECS’14, Lucca (Italy) in 2014; Workshop on ‘Inhibitory synaptic plasticity’, COSYNE 2012; Workshop on Learning and Plasticity, in Marseille (France) en 2011; Joint BCCN Freiburg-Berlin Workshop on Point Processes in Neuroscience en 2011
- Poster presentations at OCNS 2007, ICONIP 2007, OCNS 2008, NeuroComp 2008, COSYNE 2009, OCNS 2009, ICCN 2011, OCNS 2011, Barccsyn 2014, OCNS 2014, OCNS 2015, Barccsyn 2016, OCNS 2016, Neural Coding 2016, Brain Modes 2016, OCNS 2017, Coupling and Causality in Complex Systems 2017, Barccsyn 2018, Neural Coding 2018, Cosyne 2019, OCNS 2019, Bernstein Conference 2019, OCNS 2021

Teaching and Supervision

2022 - now	Teaching and organization of courses on computational neuroscience of master Neuroscience and master AI & Health Biomarkers, Aix-Marseille University
2019, 2020, 2021	Course on neuronal plasticity for the master in computational neuroscience at Maastricht University
2018, 2019	Courses “Introduction to analysis of neuronal data and brain connectivity” et “Hands-on course on neural data science” during ‘XII and XIII Summer School UPC-UB’ de l’Universitat Politècnica de Catalunya in Barcelona
2018, 2019, 2021	EITN Spring/Fall School in Computational Neuroscience (https://www.eitn.org/index.php/calendar-event/eventdetail/715/-/spring-school)
2017	5th Human Brain Project School on Future Medicine (https://education.humanbrainproject.eu/web/5th-school/scientific-programme-application)
2010 - now	Supervision of 3 post-docs, 8 PhD students, 30+ M1-M2 master students at Jülich Research Center (Germany), Universitat Pompeu Fabra (Spain), Riken Brain Science Institute (Japan), University of Melbourne, (Australia)