

Curriculum Vitae

Nathalie ROUACH

Neuroglial Interactions in Cerebral Physiology and Pathologies
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Research interests

Neuroglial interactions
Synaptic transmission, plasticity, network activity
Development, memory, brain disorders

Current Position

Since 2012 **Group leader** Team Neuroglial Interactions in Cerebral Physiology and Pathologies, CIRB, Inserm U1050/CNRS UMR7241 - College de France (France)
Since 2019 **Research Director 1st class**, Inserm, College de France (France)
Since 2022 **French Government Overseas Fellow**, Churchill College, University of Cambridge (UK)
Since 2022 **Co-founder and Scientific Advisor of PannTherapi**

Previous Positions

2019 (3 mths) **Visiting Professor**, University of Cambridge, Dpt Chemical Engineering and Biotechnology/ Cavendish Laboratory
2012-2018 **Research Director 2nd class**, Inserm, College de France (France)
2017 (3 mths) **Visiting Professor**, University of Cambridge, Dpt Chemical Engineering and Biotechnology
2015-2016 **Visiting Professor**, University of Cambridge, Dpt Chemical Engineering and Biotechnology
2007-2011 **Research scientist 1st class** (Charge de Recherche 1), Inserm, College de France (France)
2004-2007 **Research scientist 2nd class** (Charge de Recherche 2), CNRS, College de France (France)
2002-2004 **Postdoc**, laboratory of R. Nicoll, University of California San Francisco (USA)

Education

2019-2020 **HEC Challenge Plus program** (HEC Paris)
2011 **HDR** (Habilitation thesis), University Paris 6 (France)
2002 **PhD in Neuroscience**, University Paris 6 (France)-Weizmann Institute of Science (Israel)
Advisors: C. Giaume (France) and M. Segal (Israel)

Track Record

. 87 peer-reviewed publications
. 5 papers highlighted (Science, F1000 Biology, Nat Rev Neurosci, Cell Sci, Neur Glia Biol, Neurosci Bull...)
. 119 invited conferences in national/international meetings and institutes
. 120 abstracts/posters in national and international meetings
. 7916 citations, h-index: 40 (as of 03/11/22, source Google Scholar)
. Grants and awards: 10.23M€ raised since 2005 (72 grants), including 2.721M€ (35 grants) for postdocs/PhD
. 1 patent "Probenecid for use in treating epileptic diseases, disorders or conditions" published in Jan. 2019

Prizes and Awards

2022 FRM Rachel Ajzen and Leon Iagolnitzer Prize (30 000 €)
2018 Research and Mentoring Award granted by Inserm (France) (14 000 €)
2016-2022 ERC Consolidator Grant in Neurosciences and Neural Disorders (LS5 panel) (2 000 000 €)
2014 Research and Mentoring Award granted by Inserm (France) (24 000 €)
2012 Emergence Award and Silver Medal of the City of Paris (France) (300 000 €)

2010	Scientific Excellence Award granted by Inserm (France) (14 000 €)
2006	Career Development Award by Human Frontier Science Program Organization (300 000 \$)

Research project coordinator

2022	FRC Projet Exceptionnel Rotary Espoir en Tête (PI) (200 000 €), partnership with 6 teams College de France (Prochiantz, Brunet, Cohen-Salmon, Selimi, Garel, Fuchs)
2016-2019	Lejeune Foundation (PI) (26 000 €) Partnership with UMR7355-CNRS (A. Menuet) (France)
2015-2019	ANR Programme Blanc Neurosciences (PI) (492 000 €), Partnership with CNRS UMR7241 (M. Zugaro) (France)
2011-2015	ANR Programme Blanc Neurosciences (PI) (548 000 €), Partnership with CNRS UMR7241 (M. Cohen-Salmon) and MIRCen (C. Escartin, N. Déglon) (France)
2013	Equipment grant (BiOVie platform: Biological Optical imaging Video-EEG), College de France Foundation, partnership with 4 teams (Prochiantz, Zugaro/Wiener, Milleret, Touboul)
2010-2013	Translational research hospital project, La Pitié Salpêtrière hospital/Inserm (PI) (54 000 €), Partnership with La Pitié Salpêtrière hospital (M. Baulac, G. Huberfeld) and MIRCen (Molecular Imaging Research Center) (C. Escartin, N. Déglon) (France)

Short visits in international institutes

2022	Cambridge University (1 month)
2019	Cambridge University (3 months)
2017	Cambridge University (3 months)
2015-2016	Cambridge University (10 months)
2007	Weizmann Institute of Science (1 month)
2005	University of California San Francisco (1 month)
1996	University of California Berkeley (3 months)

Supervision of students and postdoctoral fellows (2006-2022)

. 23 Postdocs: U. Pannasch*, M. Derangeon, O. Chever, C.Y. Lee*, G. Dallérac, E. Dossi*, G. Cheung-Johnson*, J. Zapata, D. Bataveljic*, J. Sibille, A. Villers*, H. Pivonkova*, G. Ghézali, N. Cresto, D. Mazaud, B. Letribot, G. Milior*, I. Arnoux, J. McHugh*, E. Hardy, J. Moulard, J. Visser*, R. Gibbel-Russo (foreigners:*)

. 10 PhD students: J. Sibille (PhD 2013), G. Ghézali (PhD 2016), L.E. Pillet (PhD 2018), F. Vasile (PhD 2019), A. Capano (PhD 2020), J. Moulard (PhD 2021), J. Visser (PhD 2022), R. Breton, D. Mozheiko, A. Matthys

. 9 Master Students: A. Barkova, F. Vasile, A. Capano, J. Moulard, D. Aisenberg, R. Breton, D. Mozheiko, M. Garnerio, F. Boutet Porretta, A. Venard

. 13 Undergraduate students: N. Olszewska, K. Samama, S. Rouach, J. Moulard, B. Ravon, E. Orendorff, S. Fineman, A. Uribe, A. Fawaz, S. Gupta, M. Courret, M. Cieutat, B. Boufenouche

Teaching

2021	University of Copenhagen , Conference PhD course “Neuron-glia signalling underlying brain behaviour”
Since 2006	Paris 6 University (France). Teaching “Astrocytes and synaptic plasticity” in Master of Physiology and Integrative Biology, specialty Neurosciences
2014	Pasteur course (France) « Development and plasticity of the nervous system » teaching “Neuroglial interactions in brain physiology”
2013	Spring school “Glia and Neurons: a symbiotic partnership” , John Van Geest Center for Brain Repair, Magdalene College (Cambridge, UK). Teaching “Astroglial metabolic networks tune neuronal activity”
2013	International Astrocyte School (Bertinoro, Italy). Teaching “Astrocytes in brain energy metabolism” and “Role of astroglial networks in synaptic transmission and plasticity”

2011	10th European meeting on glial cells in health and disease (Prague, Czech Republic). Teaching “Role of astrocytes in neurotransmission and plasticity” in the Introductory Course of the meeting on Glial Biology
2009	Paris 7 University (France). Teaching “Astrocytes and synaptic plasticity” in Master in Genetics “Cellular Neurobiology and Development”
2009	First Kemali-IBRO Mediterranean neuroscience school Stazione Zoologica A. Dorn (Naples, Italy). Teaching “Glia and their interactions with neurons” and “Astrocytic modulation of synaptic transmission and plasticity” and practicals
1999-2000	Paris 5 University (France). Teaching in Genetics to Psychology BSc students

Workshops

Jan 2019	“Initiation to experimental surgery”, Inserm workshop (Paris, France)
Dec. 2018	“Protection of animals used for scientific purposes”, Oniris workshop (Paris, France)
May 2010	“Animal Experimentation Level I”, Inserm workshop (Paris, France)
March 2010	“Lentiviral vectors: tools for fundamental and clinical research”, Inserm workshop (Saint Raphael, France)
June 2008	“Investigating brain function using light”, CNRS- Jacques Monod workshop (Roscoff, France)
Sept. 1999	“Microelectrode Techniques for Cell Physiology”, Laboratory of the Marine Biology (Plymouth, UK)

Organization of scientific meetings

- 1) Organizer of the symposium “Perisynaptic astroglial processes: activity-dependent regulation and function”. XV European Meeting on Glial Cells in Health and Disease (Virtual, 06/2021). Participants: M. Arizono (Magendie Center, France), N. Rouach (College de France, France), D Rusakov (UCL, UK), M. Verheijen (VU University, The Netherlands)
- 2) Organizer of the Biology Society symposium: “Connexins and Neuroscience: from fundamental to translational research”. C. Martin (Paris Diderot University, France), E. Dossi (College de France, France), B. Guiard (P. Sabatier University, France), M. Cohen-Salmon (College de France, France) (06/2020).
- 3) Organizer of European Training Networks EU-GliaPhD (Paris, France, 12/2018)
- 4) Organizer of the seminar series Fyssen foundation 2018: “News insights into neuro-glia communication”. Participants: C. Eroglu (Duke University, USA), E. Audinat (IGF, France), V. Prevot (Inserm, France), B. Weber (University of Zurich, Switzerland), D. Rusakov (UCL, UK), C. Cirelli (University of Wisconsin, USA), J. Bains (University of Calgary, Canada), E. Dossi (Collège de France, France), W. Gan (NYU, USA), M. Greter (University of Zurich, Switzerland), M. Matteoli (Humanitas University, Italy), F. Peri (EMBL, Germany), M. Thion (ENS Paris, France)
- 5) Organizer of the Biology Society symposium: “Decoding the multiple roles of glial cells in the brain” (Paris, France, 04/2018). Participants: S. Garel (ENS, France), M.C. Angulo (Psychiatry and Neuroscience Center, France), A. Charlet (Cellular and integrative neuroscience institute, France), E. Dossi (College de France, France).
- 6) Organizer of the 29th ion channel meeting (Sete, France, 09/2018).
- 7) Organizer of the 28th ion channel meeting and chair of the symposium “Glial ion channel and the part they play in neurotransmission” (Sete, France, 09/2017). Participants: J. Lee Institute of Science and Technology, South Korea), H. Sontheimer (Virginia Tech, USA), R. Estevez (Barcelona, Spain).
- 8) Organizer and Chair of the symposium “Glia in neuronal information processing: from synapses to behaviour” in FENS (Milan, Italy, 07/2014). Participants: N. Allen (Salk Institute, USA), R. Robitaille (Montreal Univ., Canada), N. Rouach (College de France, France), F. Kirchhoff (Saarland Univ, Germany)
- 9) Organizer and Chair of the symposium “New insights on connexin and pannexin functions in neuroglial interactions” in the 10th European meeting on glial cells in health and disease (Prague, Czech Republic, 09/2011). Participants: K. McCarthy (North Carolina Univ., USA), E. Scemes (Albert Einstein College of Medicine, USA), K. Willecke (Bonn Univ., Germany) and N. Rouach (College de France, France)

Responsibilities, research evaluation and translational activity

Group leader Team “Neuroglial interactions and Cerebral Physiology and Pathologies” 15 members:

3 tenured researchers: N. Rouach (DR1 Inserm), A. Rancillac (CRCN Inserm), E. Dossi (CRCN Inserm)

5 postdocs: G. Milior, I. Arnoux, J. McHugh, J. Moulard, R. Gibbel-Russo

4 PhD students: A. Walter, R. Breton, D. Mozheiko, A. Matthys

3 Engineers/Technicians: J. Ribot (IR College de France), P. Ezan (AI College de France), L. Lecoin (IR CNRS)

Research evaluation

Scientific expert for ITMO Neurosciences, Cognitive sciences, Neurology and Psychiatry (since 2020)

Member of AERES/HCERES committees (national evaluation of French research groups) (since 2008)

Member of Fyssen foundation scientific committee (research grant and award evaluation) (2013-2020)

Member of university (Paris 5) recruiting committee for professor position in neuroscience (sections 65 and 69) (2020 and 2022)

Member of INSERM Specialized Scientific Committee 1 (CSS1) Neurosciences, Neuroendocrinology,

Neurology (evaluation and recruitment of researchers/research groups) (2008-2012)

Member of PhD (17), HDR (4), mid-PhD (10) and master committees (4) in Paris 5, Paris 6, Paris Sud, PSL, Bordeaux 1, Caen, Dijon, Toulouse, Marseille, Helsinki (Finland), Milan (Italy) and Bonn (Germany) universities

Referee for scientific journals/agencies

Editorial Board member of *Glia* (since 2020), *eNeuro* (since 2020), *Frontiers in Neuroscience* (since 2018),

Progress in Brain Research (since 2014), *Frontiers in Neuroenergetics* (since 2010)

Reviewer for Journals: *Science*, *Nat Rev Neurosci*, *Neuron*, *Nat Neurosci*, *Nat Com*, *TINS*, *J Neurosci*...

Reviewer for scientific agencies: ERC, Agence Nationale de la Recherche, Ligue française contre l'épilepsie, Israeli Science Foundation (Israel), Wellcome Trust (UK), DFG (Germany), Swiss National Fund...

Translational research

Patent N°WO 2019012109 “Probenecid for use in treating epileptic diseases, disorders or conditions”

Main Collaborations

Local

. M. Zugaro, College de France, “Astroglial modulation of hippocampal oscillatory network activity”

. S. Garel, ENS-College de France “Microglia in the wiring of Inhibitory circuits during sensory cortex critical periods”

. A. Prochiantz, College de France “Molecular crosstalks in critical periods”

. M. Cohen-Salmon, College de France “Molecular composition of perisynaptic astroglial processes”

. C. Llorens-Cortes, College de France “Astroglial regulation of social behavior”

National

. A. Menuet, Orleans University, “Role of astrocytes in Fragile X syndrome”

. P. Billuart, Cochin Institute, “Neuronal and astroglial contribution to intellectual disability”

. S. Etienne-Manneville, Pasteur Institute, “Cell biology of migration and polarity in astrocytes”

. T. Blauwblomme, La Pitie Salpetriere/Necker hospitals, “Role of astrocytes in human epilepsy”

. D. Holcman, Ecole Normale Supérieure, “Mathematical modeling of neuroglial interactions”

. C. Escartin/A. Bemelmans, CEA, “Astroglial reactivity and viral vectors targeting astrocytes *in vivo*”

International

. N. Déglon, EPFL, Switzerland “Viral vectors targeting astrocytes *in vivo*”

. J. Lübke, Research Centre Jülich (Germany) “Structural neuroglial interactions with electron microscopy”

. C. Kaminski, University of Cambridge, “Superresolution microscopy of tripartite synapse”

. U. Keyser, University of Cambridge, “Nanopipette physiology”

. L. Vargova, Charles University (Czech Republic) “Extracellular space and ion measurements”