Giulia Quattrocolo

Personal information

First name, Surname:	Giulia, Quattrocolo		
Date of birth:	29-01-1985	Sex:	F
Nationality:	Italian		
Researcher unique identifier(s) (ORCID, ResearcherID, etc.):	0000-0001-6508-8910		
URL for personal website:	https://quattrocololab.com/		

Education

Year	Faculty/department - University/institution - Country
2014	Ph.D. in Neuroscience; Department of Physiology; Northwestern University; USA
2009	Master in Neurobiology, University of Pavia, Italy
2007	Bachelor in Biological Sciences, University of Pavia, Italy

Positions - current and previous

Year	Job title – Employer - Country
2023-2033, *current*	Associate Professor, Kavli Institute for Systems Neuroscience, NTNU; Norway
2021-2033, *current*	Group leader, Kavli Institute for Systems Neuroscience, NTNU; Norway
2017-2020	Postdoctoral fellow; Prof. Edvard Moser lab; NTNU; Norway
2014-2017	Postdoctoral fellow; Prof. Gord Fishell lab; New York University; USA

Career breaks

Year	Reason
2019	Maternity leave (full March-August; partial September-December, 212 days total)

Project management experience

Year	Project owner - Project - Role - Funder
Jan 2024- Jan 2026	NARSAD Young Investigator Award, ~70K Euros. Role: Principal Investigator. Funder: Brain and Behavior Research Foundation
July 2023-June 2033	Centre for Algorithms in the Cortex – Centre of Excellence scheme ~35M Euros total centre grant (~10M Euros from Research Council of Norway). Role: Co-Principal Investigator. Funder: Research Council of Norway.
Dec 2022-Feb 2024	POS-ERC (grant supporting an ERC application after not receiving funding at Step 2 of evaluation), ~44k Euros. Role: Principal Investigator. Funder: Research Council of Norway
Dec 2021-Nov 2025	FRIPRO Researcher Project for Young Talents, ~1.5M Euros (~0.8M Euros from Research Council of Norway). Role: Principal Investigator. Funder: Research Council of Norway
Oct 2021- Sept 2026	The TMS Brain Research Initiative, ~5M Euros (~0.8M Euros to GQ). Role: Principal Investigator and node coordinator. Funder: Trond Mohn Forskningsstiftelse
2020-2021	Marie Sklodowska-Curie Action Individual Fellowship (CaRe-Space), ~200k Euros. Role: Principal Investigator. Funder: European Commission

Supervision of students

Master's students	Ph.D. students	University/institution - Country
9 completed/2 ongoing	1 completed/ 3 ongoing	NTNU, Norway; University of Verona, Italy

Other relevant professional experiences

Year	Description - Role
Teaching	
2025-	Program Coordinator for the Master in Neuroscience, at the NTNU, Norway
2025-	Course Coordinator NEVR3901-Thesis in Neuroscience, in the Master in Neuroscience, at NTNU, Norway

2024-	Guest Lecturer for the Master/PhD in Neuroscience; Topic: Development of the central nervous system. Faculty of Medicine, University of Lisbon
2021-	Guest Lecturer for NEVR3002-Sensory and Motor Neuroscience; Topic: Development of the central nervous system. Master's degree in Neuroscience; Kavli Institute for Systems Neuroscience, NTNU, Norway
2024-2025	Guest Lecturer for SPRÅK3300- Language and cognition; Topic: Neurobiology of Learning. Master level course; Department of Language and Literature, NTNU, Norway
2021-2024	Guest Lecturer for NEVR3001-Cellular and Systems Neuroscience; Topic: Basic neuronal cell biology; Cellular Neurophysiology: Intracellular Signaling. Master's degree in Neuroscience; Kavli Institute for Systems Neuroscience, NTNU, Norway
Organization of Scientific Meetings	
2019-2020	Chair of the Program Committee and member of the Organizing Committee of the Kavli Institutes in Neuroscience Forum, Yale University, New Haven, CT, USA, (planned for 20-21 April 2020, canceled due to COVID-19). Also co-organizer of Kavli NeuroFuture Forum (digital event)
2017	"Career Day" for the Neurobiology Master, University of Pavia, Italy, co-organizer (19-12-2017)
Institutional responsibilities	
2021-	Co-Organizer of the Kavli Institute for Systems Neuroscience Seminar Series
2021-	Node leader of the Mohn Research Center for the Brain
2019-2021	President (member since 2017, secretary in 2018) of the YROCK (Young Researcher Organization) of the Centre for Neural Computation and the Kavli Institute for Systems Neuroscience
Commission of trust	
2020	Topic Editors for the Research Topic "Biogeography of the cortex: Cell-Type diversity across cortical regions and its functional implications" for Frontiers in Neural Circuits
2020-	Reviewer for the Italian Ministry of Health, UK Research and Innovation (UKRI), French National Research Agency (ANR), European Commission (MSCA Postdoctoral Fellowship)
2018-	Reviewer for Hippocampus, Frontiers in Cell and Developmental Biology, Frontiers in Neuroanatomy, European Journal of Neuroscience, International Journal of Molecular Sciences, Current Biology, PLOS Biology, Progress in Neurobiology
Memberships:	
2024-	International Society for Developmental Neuroscience
2023-	European Molecular and Cellular Cognition Society
2017-	Federation of European Neuroscience Societies; Italian Society of Neuroscience
2009-	Society for Neuroscience

Selected invited presentations:

- University di Pavia, Pavia, Italy. September 24, 2026
- Hippocampus Green Meeting, Barcelona, Spain. May 11-12, 2026.

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- Developmental and Cell Biology Ph.D. Conference, Prague, Czech Republic. October 22-23, 2025.
- VIB-KU Leuven Center for Brain & Disease Research, Leuven, Belgium. September 25, 2025
- PANERIS Summer School, Vilnius University, Lithuania. August 25-29, 2025
- Cortical Development meeting, Giardini Naxos, Italy. May 25-28, 2025.
- Instituto de Medicina Molecular, University of Lisbon, Lisbon, Portugal. October 28, 2024.
- Nordic Neuroscience, Copenhagen, Denmark. January 15-17, 2024. Invited Symposium speaker.
- Norwegian Chemistry Society, Trondheim, Norway. October 30, 2023.
- Italian Society of Neuroscience annual meeting, Symposium chair and speaker. Torino, Italy. September 14-17, 2023.
- European Molecular and Cellular Cognition Society meeting, Pula, Italy. May 18-21, 2023.
- Instituto Cajal, Madrid, Spain. February 17, 2023.
- "Next generation neurobiology training: a new era begins at University of Pavia" meeting, University of Pavia, Italy. September 23, 2022.
- The Australasian Developmental Neuroscience Forum (ADNF), online seminar series hosted by the Australian Neuroscience Society. May 26, 2022
- Cells Webinar "Nervous system development and plasticity". Online seminar series hosted by Dr. Sepand Rastegar, Institute of Biological and Chemical Systems, Karlsruhe Institute of Technology, Germany. December 6, 2021.
- Symposium honoring Prof. Jacopo Magistretti, University of Pavia, Italy. November 22, 2021
- US-Nordic Precision Neuroscience speed networking event. Hosted by Virginia Tech. August 26, 2021
- Kavli NeuroFuture Forum. April 12, 2021
- University of Bristol, UK. November 19, 2020
- Center of Excellence for Neural Plasticity and Brain Disorders BRAINCITY, Warsaw, Poland. BRAINCITY Symposium. 9-10 June 2020
- University of Pavia, Italy. "Career Day" for the master's degree in Neurobiology. December 20, 2019
- University of Oslo, Oslo, Norway. August 20, 2019
- Instituto de Neurociencias, Alicante, Spain. Christmas Meeting, 19-20 December 2018

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RESEARCH ACHIEVEMENTS

My research focuses on understanding how cortical circuits are built during development. I am particularly interested in the specific contribution of different types of neurons to the establishment and function of these circuits. I have more than 15 years of experience in studying cortical circuit development with multiple techniques, including the use of transgenic mouse lines, physiology, immunohistochemistry, molecular biology and omics analysis. My greatest contribution to date is the investigation of the role that Cajal-Retzius cells play in the postnatal hippocampal circuit. Cajal-Retzius cells are a transient population of cells present in all the regions of the cortex. These cells disappear from several neocortical regions soon after birth but they survive for several months in the hippocampal region. During my Ph.D. studies at Northwestern University (Chicago, USA) I demonstrated that these cells are an integral part of the hippocampal network during postnatal development and was the first to identify the sources of the synaptic inputs and the postsynaptic targets of these cells (Quattrocolo and Maccaferri 2013, 2014). In 2019, I was awarded a prestigious **Marie Skłodowska-Curie Action Individual European Fellowship (CaRe-Space)** to determine the role of Cajal-Retzius cells in the development of the spatial navigation system. I performed this work under the supervision of Nobel Prize Laureate and ERC grant holder Prof. Edvard Moser. In January 2021, I established my own research group (Circuit Development Group) at the Kavli Institute for Systems Neuroscience at NTNU. A major focus of the group has been the analysis of the role of Cajal-Retzius cells in the maturation of the hippocampal circuit (Moan et al, 2025; Glærum et al. 2024). In these studies, we have combined anatomical, physiological and transcriptomic analyses and our results demonstrate how the early ablation of hippocampal Cajal-Retzius cells differentially affects distinct synaptic pathways (Glærum et al. 2024), leading to severe changes in both spatial navigation (Sachuriga et al, bioRxiv) and spatial memory (Glærum et al, in preparation). The research in my laboratory has been supported by a **prestigious and very competitive four-year FRIPRO Researcher Project for Young Talents from the Research Council of Norway** that I secured in 2021. In the same year, my colleagues at KISN and the University of Bergen, Norway, and I were awarded a five-year collaborative grant, funded by **the Trond Mohn Foundation**, for which I am both Co-Principal Investigator and leader of the KISN node. My laboratory is embedded in the Centre for Algorithms in the Cortex (CAC), a Research Council of Norway Centre of Excellence, and is effectively supported by the Kavli Foundation. In 2023 I was also awarded the **2023 NARSAD Young Investigator Award** from the Brain and Behavior Research Foundation.

During the course of our work on Cajal-Retzius cells, observing at how only specific subcircuits were affected by the ablation of these cells, I became very interested in understanding how axons can be so specifically segregated in different subregions and layers in the hippocampal region. This new line of research produced a a first study on the developmental and subregion-specific changes of the hippocampal and Dentate Gyrus growth cones proteomes (Krause et al, 2026). In this work, we show that growth cones from both subregions share a proteomic signature at postnatal day (P) 1, dominated by energy metabolism and protein synthesis, before taking distinct developmental trajectories. In fact, hippocampal growth cones undergo a rapid transition, from RNA-related processes to synapse formation. Dentate gyrus growth cones, however, maintain a similar proteomic profile at P3 and P5, suggesting a prolonged exploratory behaviour, consistent with later ingrowth of entorhinal cortex fibres. At these early timepoints, hippocampal and dentate gyrus growth cones are characterized by several temporally regulated proteins, suggesting dynamic and different developmental trajectories.

Publications list

I have 13 publications and one manuscript currently under revision. Since starting my group in 2021, I have authored 6 publications, including one pre-print currently under revision, in 4 of them I am corresponding author. My h-index is 7 and I have 184 citations, without self-citation (Web of Science, as 26-01-2026). (* designates co-first author, ^ designates corresponding author).

1. Sachuriga, Moan K, Dunville K, Seiffert N, Glærum IL, Fiori G, **Quattrocolo G**^. (2026). Spatial representation in CA1 superficial pyramidal cells is impaired after postnatal ablation of hippocampal Cajal Retzius cells. *BioRxiv* doi: https://doi.org/10.64898/2026.03.24.711525.

2. Krause M, Kronberg KA, Girão PJB, Strohmeier LSF, **Quattrocolo G**^. Proteomic profile of hippocampal growth cones through early postnatal development. *Development,* 153(12):dev205342.

3. Moan K, Machold R, **Quattrocolo G**^. (2025). Differences in Cajal-Retzius cells density and postnatal persistence across cortical areas revealed by a novel intersectional genetic labeling approach. *Journal of Comparative Neurology* 533(11):e70106.

4. Potenza ML, Blankvoort S, Carvalho MM, Grimstvedt JC, Di Maria V, Nair RR, Flatset MS, Zhang Q, Thomas LF, Moan K, Pauzin FP, da Silva Mazzarini Baldinotti R, **Quattrocolo G**, Bramham CR, Sætrom P, Witter MP, Kentros C. (2024). Generation of an Enhancer-Driven Gene Expression viral tool specific to Dentate Granule cell types through direct hippocampal injection. *Frontiers in Neuroscience* 18:1274174.

5. Glærum IL*, Dunville K*, Moan K, Krause M, Montaldo NP, Kirikae H, Nigro MJ, Sætrom P, van Loon B, **Quattrocolo G**^. (2024). Postnatal persistence of hippocampal Cajal-Retzius cells has a crucial role in the establishment of the hippocampal circuit. *Development* 151(1): dev202236.

6. Šimić G, Krsnik Z, Knezović V, Kelović Z, Lysholt Mathiasen M, Junaković A, Radoš M, Mulc D, Španić E, **Quattrocolo G**, Hall VJ, Zaborszky L, Vukšić M, Olucha Bordonau F, Kostović I, Witter MP, Hof PR. (2022). Prenatal development of the human entorhinal cortex. *Journal of Comparative Neurology* 530(15), 2711-2748.

7. **Quattrocolo G^**, Dunville K, Nigro MJ^. (2021). Resurgent sodium current in neurons of the cerebral cortex. *Frontiers in Cellular Neuroscience* 15:760610.

8. Wamsley B*, Jaglin XH*, Favuzzi E*, **Quattrocolo G**, Nigro MJ, Yusef Y, Khodadadi-Jamayran A, Rudy B, Fishell G. (2018). Rbfox1 mediates cell-type-specific splicing in cortical interneurons. *Neuron* 100(4), 946-859.

9. Anstötz M*, **Quattrocolo G***, Maccaferri G. (2018). Cajal-Retzius cells and GABAergic interneurons of the developing hippocampus: close electrophysiological encounters of the third kind. *Brain Research* 1697, 124-133.

10. **Quattrocolo G**, Isaac M, Zhang Y, Petros TJ. (2018). Homochronic transplantation of interneuron precursors into early postnatal mouse brains. *Journal of Visual Experiments* (136), e57723.

11. **Quattrocolo G**, Fishell G, Petros TJ. (2017). Heterotopic transplantations reveal environmental influences on interneuron diversity and maturation. *Cell Reports* 21(3), 721-731.

12. **Quattrocolo G**, Maccaferri G. (2014). Optogenetic activation of Cajal-Retzius cells reveals their glutamatergic output and a novel feed-forward circuit in the developing mouse hippocampus. *Journal of Neuroscience* 34, 13018-13032.

13. **Quattrocolo G**, Maccaferri G. (2013). Novel GABAergic circuits mediating excitation/inhibition of Cajal-Retzius cells in the developing hippocampus. *Journal of Neuroscience* 33, 5486-5498.

14. Nigro MJ, **Quattrocolo G**, Magistretti J. (2012). Distinct developmental patterns in the expression of transient, persistent, and resurgent Na+ currents in entorhinal cortex layer-II neurons. *Brain Research* 1463, 30-41.

List of acquired funding

- 2025-2029 Ph.D. position. Role: Principal Investigator. Founder: NTNU
- 2025-2026: Skills development stipend for female associate professor. Role: Recipient. Founder: NTNU.
- 2024-2026: 2023 NARSAD Young Investigator Award. Role: Principal Investigator. Funder: Brain and Behavior Research Foundation.
- 2023-2033: Centre for Algorithms in the Cortex – Centre of Excellence scheme. Role: Co-Principal Investigator. Funder: Research Council of Norway.
- 2022-2026: Outstanding Academic Fellow Program 4.0. Role: Fellow. Founder: NTNU
- 2022-204: POS-ERC (grant supporting an ERC application after not receiving funding at Step 2 of evaluation). Role: Principal Investigator. Funder: Research Council of Norway
- 2021-2025: FRIPRO Researcher Project for Young Talents. Role: Principal Investigator. Funder: Research Council of Norway
- 2021-2026: The TMS Brain Research Initiative. Role: Principal Investigator and center co-leader. Funder: Trond Mohn Foundation
- 2020-2021: Marie Sklodowska-Curie Action Individual Fellowship (CaRe-Space). Role: Principal Investigator. Funder: European Commission (awarded 2019)
- 2020: FENS-IBRO/PERC grant award, to attend the FENS Virtual Forum 2020 (11-15 July 2020)
- 2019: IBRO International Travel Grants award, to attend the Cortical Development Conference, in Milazzo, Italy, between 18-22 May 2020 (declined due to COVID-19 postponement)
- 2018-2019: NTNU-Faculty of Medicine Internal Postdoctoral fellowship-MCSA seal of excellence. Role: Fellow. Founder: NTNU.
- 2018: Travel grant to attend the 2018 FENS meeting in Berlin, Germany, awarded from the Italian Society for Neuroscience (SINS)
- 2017: Best Poster Award at the XVII National Congress of the Italian Society for Neuroscience (SINS)
- 2013-2014: affiliate trainee of the Neurobiology of Information Storage Training Program (NIH T32MH067564 Principal Investigator: Aryeh Routtenberg, Ph.D.)

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Teaching and supervision experience

2025- Program Coordinator for the Master in Neuroscience, at the NTNU, Norway

2025- Course Coordinator for NEVR3901-Thesis in Neuroscience, Master in Neuroscience, at the NTNU, Norway

2025 Guest Lecturer at the PANERIS Summer School on Neurodevelopment. Topic: Building the Hippocampal Circuit: From Growth Cones to Place Cells. Vilnius University, Lithuania

2024- Guest Lecturer for the Master/PhD in Neuroscience; Topic: Development of the central nervous system. Faculty of Medicine, University of Lisbon, Portugal.

2021- Guest Lecturer for NEVR3002-Sensory and Motor Neuroscience; Topic: Development of the central nervous system. Master's degree in Neuroscience; Kavli Institute for Systems Neuroscience, NTNU, Norway

2024-2025 Guest Lecturer for SPRÅK3300- Language and cognition; Topic: Neurobiology of Learning. Master level course; Department of Language and Literature, NTNU, Norway

2021-2024 Guest Lecturer for NEVR3001-Cellular and Systems Neuroscience; Topic: Basic neuronal cell biology; Cellular Neurophysiology: Intracellular Signaling. Master's degree in Neuroscience; Kavli Institute for Systems Neuroscience, NTNU, Norway

Since 2020 - supervised 11 Master students (8 from the Master in Neuroscience, NTNU; 1 from the Master in Biotechnology, University of Verona, Italy. 9 graduated, 2 current)

Since 2021- supervised 4 PhD students. 1 has already graduated, 1 has completed their studies and will defend in December 2026, 2 ongoing

Since 2021- supervised 3 postdocs, 1 ongoing, 2 currently in postdoctoral positions in highly competitive labs.

Pedagogical competence: completed 75% of the required training for qualification (total 200 hours).

- General module (110 hours)
- PhD supervision module
- Development of Pedagogical Portfolio module