

Fanny Jaudon, PhD

Research Fellow

Department of Life Sciences
University of Trieste, Italy



Personal Information

Date and place of Birth: 20/08/1985,



Nationality:



Profile

I am a neuroscientist with over 14 years of research experience in neurobiology, neurodevelopmental disorders, and translational neuroscience. My research combines molecular, cellular, electrophysiological, and behavioral approaches to investigate the mechanisms underlying brain function and dysfunction, with a particular focus on autism spectrum disorder, epilepsy, and neuronal circuit development. I have extensive expertise in experimental neuroscience methodologies, including genome editing, molecular biology, functional analyses, imaging, and the development of disease models to investigate disease mechanisms and identify novel therapeutic approaches.

Alongside my research, I have substantial experience in teaching and mentoring undergraduate, master's, and doctoral students in neuroscience, including courses on molecular biology techniques and genome editing applications.

Education

- 2008-2012:** Ph.D in Biological Sciences for Health-Neurobiology.
Title of the thesis: "Function of Rho GTPase signalling during cerebellum development"
University Montpellier II, Montpellier, France.
- 2006-2008:** Master degree in Biology, option Neurobiology and Endocrinology.
University Montpellier II, France.
- 2003-2006:** Licence in Biochemistry. University Montpellier II, France.

Research Appointments

- Department of Life Sciences, University of Trieste, Trieste, Italy.

Supervisor: Prof. Lorenzo Cingolani

Research Fellow (Contrattista di Ricerca) | Apr 2026 - Present

Senior Postdoctoral Researcher (Assegnista di Ricerca) | Apr 2020 - Mar 2026

- Leading molecular and behavioral studies on the role of cell adhesion molecules and calcium channels in neuronal function and pathology.
- Designing and implementing CRISPR/Cas9-based gene-editing strategies to model and correct genetic defects associated with neurological disorders.
- Coordinating experimental design, data analysis, and mentoring junior researchers and students.
- Contributing to the conceptualization and writing of research grants.

- Center for Synaptic Neuroscience and Technology (NSYN), Istituto Italiano di Tecnologia (IIT), Genova, Italy.

Postdoctoral fellow | Nov 2016 - Mar 2020

Supervisor: Prof. Lorenzo Cingolani

- Investigated the role of integrin family cell adhesion molecules in neuronal circuit formation and synaptic plasticity.

- Developed innovative genome-editing approaches for therapeutic applications in neurological disorders.
- Contributed to grant writing and interdisciplinary collaborations.

Postdoctoral fellow | Jun 2014 - Oct 2016

Supervisor: Dr Fabrizia Cesca

- Studied the role of Kidins220/ARMS in adult mouse brain function and astrocyte biology.

- Cell Biology Research Center of Montpellier, CRBM-CNRS UMR5237, Montpellier, France.

PhD student | Oct 2008 - Jul 2012

Supervisors: Dr Anne Debant and Dr Susanne Schmidt

- Investigated RhoGTPase signaling in cerebellar development using molecular, cellular and *in vivo* approaches.

Career interruption: Jul 2012 - Dec 2013 due to health issues following a car accident.

Publication list

Total number of publications: 22

h-index: 11 > 430 citations



- Original research

Musante I, Cangelosi D, Muzzi L, **Jaudon F**, Di Duca M, Guerrisi S, Chiquinquirá Castillo de Spelozzi Y, Cingolani LA, Zara F and Scudieri P. *CACNA1A loss-of-function affects neurogenesis in human iPSC-derived neural models*. **Cell Mol Life Sci** (2025) Jun 14;82(1):234. doi: 10.1007/s00018-025-05740-7.

Vitale C*, **Jaudon F***, Luján R, Bertolucci M, Celora L, Reisoli E, Ruggeri R, Petretto A, Thalhammer A and Cingolani LA. *Dysregulated cortical excitability and Tau phosphorylation in $\beta 3$ integrin mouse model of autism*. **Brain** (2025) Apr 10:awaf089. doi: 10.1093/brain/awaf089. *equal contribution

Cingolani LA, Thalhammer A, **Jaudon F**, Muià J and Baj G. *Nanoscale organization of Cav2.1 splice isoforms at presynaptic terminals: Implications for synaptic vesicle release and synaptic facilitation*. **Biol Chem** (2023) Sep 4;404(10):931-937. doi: 10.1515/hsz-2023-0235

Celora L*, **Jaudon F***, Vitale C and Cingolani LA. *Regulation of dendritic spine length in corticopontine layer V pyramidal neurons by autism risk gene $\beta 3$ integrin*. **Mol Brain** (2023) Jun 9;16(1):49. doi: 10.1186/s13041-023-01031-z. *equal contribution

Moretto E, Longatti A, Miozzo F, Bonnet C, Coussen F, **Jaudon F**, Cingolani LA and Passafaro M. *The tetraspanin TSPAN5 regulates AMPARs exocytosis by interacting*. **eLife** (2023) Feb 16;12:e76425. doi: 10.7554/eLife.76425.

Jaudon F, Thalhammer A, Zentilin L and Cingolani LA. *CRISPR-mediated activation of autism Gene Itgb3 Restores Cortical Network Excitability via mGluR5 Signaling*. **Mol Ther Nucleic Acids**. (2022) Jul 20;29:462-480. doi: 10.1016/j.omtn.2022.07.013

Riccardi S, Cingolani LA and **Jaudon F***. *CRISPR-mediated activation of αV integrin subtypes promotes neuronal differentiation of neuroblastoma Neuro2a cells* **Front. Genome Ed.** (2022) Apr 12;4:846669. doi: 10.3389/fgeed.2022.846669. *corresponding author

Almacellas-Barbanoj A, Albin M, Satapathy A, **Jaudon F**, Michetti C, Krawczun-Rygmaczewska A, Huang H, Managò F, Papaleo F, Benfenati F and Cesca F. *Kidins220/ARMS Modulates Brain Morphology and Anxiety-Like Traits in Adult Mice*. **Cell Death Discov.** (2022) Feb 9;8(1):58. doi: 10.1038/s41420-022-00854-4.

- Jaudon F**, Albin M, Ferroni S, Benfenati F and Cesca F. *A developmental stage- and Kidins220-dependent switch in astrocyte responsiveness to BDNF*. **J Cell Sci.** (2021) Jul 19:jcs.258419. doi: 10.1242/jcs.258419.
- Jaudon F**, Chiacchiaretta M, Albin M, Ferroni S, Benfenati F and Cesca F. *Kidins220/ARMS controls astrocyte calcium signaling and neuron-astrocyte communication*. **Cell Death Differ.** (2020) May;27(5):1505-1519. doi: 10.1038/s41418-019-0431-5.
- Thalhammer A, **Jaudon F** and Cingolani LA. *Combining Optogenetics with Artificial microRNAs to Characterize the Effects of Gene Knockdown on Presynaptic Function within Intact Neuronal Circuits*. **J Vis Exp.** (2018) Mar 14;(133):57223. doi: 10.3791/57223.
- Jaudon F**, Raynaud F, Wehrlé R, Bellanger JM, Doulazmi M, Vodjdani, Gasman S, Fagni I, Dusart I, Debant A and Schmidt S. *The RhoGEF DOCK10 is essential for dendritic spine morphogenesis*. **Mol Biol Cell** (2015) Jun 1; 26(11):2112-27 doi: 10.1091/mbc.E14-08-1310.
- Lebrun C, Avci HX, Wehrlé R, Doulazmi M, **Jaudon F**, Morel MP, Rivals I, Ema M, Schmidt S, Sotelo C, Vodjdani G, and Dusart I. *Klf9 is necessary and sufficient for Purkinje cell survival in organotypic culture*. **Mol Cell Neurosci** (2013) May;54:9-21. doi: 10.1016/j.mcn.2012.11.010.
- Boslama-Oueghlani L, Wehrlé R, Doulazmi M, Chen X, **Jaudon F**, Lemaigre- Dubreuil Y, Rivals I, Sotelo C, and Dusart I. *Purkinje cell maturation participates in the control of oligodendrocyte differentiation: role of Sonic Hedgehog and Vitronectin*. **PLOS One** (2012); 7(11):e49015 doi: 10.1371/journal.pone.0049015.
- Plageman TF Jr, Chauhan BK, Yang C, **Jaudon F**, Shang X, Zheng Y, Lou M, Debant A, Hildebrand JD, Lang RA. *A Trio-RhoA-Shroom3 pathway is required for apical constriction and epithelial invagination*. **Development** (2011) Dec; 138(23):5177-88 doi: 10.1242/dev.067868.
- Lassot I, Robbins I, Kristiansen M, Rahmeh R, **Jaudon F**, Magiera MM, Mora S, Vanhille L, Lipkin A, Pettmann B, Ham J, Desagher S. *Trim17, a novel E3 ubiquitin- ligase, initiates neuronal apoptosis*. **Cell Death Differ** (2010) Dec; 17(12):1928-41 doi: 10.1038/cdd.2010.73.

- Reviews

- Jaudon F** and Cingolani LA. *Unlocking Mechanosensitivity: Integrins in Neural Adaptation*. **Trends Cell Biol.** (2024) Dec;34(12):1029-1043. doi: 10.1016/j.tcb.2024.02.011.
- Jaudon F**, Baldassari S, Musante I, Thalhammer A, Zara F and Cingolani LA. *Targeting alternative splicing as a potential therapy for episodic ataxia type 2*. **Biomedicines** (2020), 8, 332 doi.org/10.3390/biomedicines8090332.
- Jaudon F**, Thalhammer A and Cingolani LA. *Integrins: Implications for neuropsychiatric disorders*. **Eur J Neurosci** (2020) Jun 12. doi: 10.1111/ejn.14859.
- Thalhammer A, **Jaudon F** and Cingolani LA. *Emerging roles of activity-dependent alternative splicing in homeostatic plasticity*. **Front Cell Neurosci** (2020) 14:104. doi: 10.3389/fncel.2020.00104.

- Commentaries

- Jaudon F** and Cingolani LA. *Integrin-mediated adhesion drives microglial entry into the developing CNS*. **Dev Cell** (2026) Jan 14;61(1):7-8 doi: 10.1016/j.devcel.2025.12.006
- Jaudon F** and Cingolani LA. *RNA-targeted complement modulation: a new strategy to preserve synapses in the aging brain*. **Mol Ther** (2025) Dec 3;33(12):5930-5932. doi: 10.1016/j.ymthe.2025.11.008

Teaching and Mentoring

- **Lecturer for the course on ‘Molecular biology techniques in Neuroscience: Genome editing in the brain’**, as part of the Neurofunctional techniques module of the International Master’s degree in Neuroscience, University of Trieste (Academic Years 2020-2021, 2021-2022, 2022-2023, 2023-2024 and 2024-2025).

- **Lecturer in the Molecular Biomedicine PhD program** (University of Trieste): '*CRISPR-Mediated Activation of Autism Gene Itgb3 Restores Cortical Network Excitability via mGluR5 Signaling*'.
(Academic Year 2021-2022)

- **Thesis opponent** for MSc candidates:

2026: Valeria Clai, MSc in Neuroscience, University of Trieste. Title of the thesis: Exploring the interplay between TRIM32 and DFCP1 in autophagy regulation in a motor neuron-like cellular model

2026: Fabiana Cusimano, MSc in Neuroscience, University of Trieste. Title of the thesis: Functional assessment of primary auditory cortex involvement in the discrimination of amplitude-modulated sounds.

2024: Michele Di Maio, MSc in Neuroscience, University of Trieste. Title of the thesis: Epitranscriptomic Insights: N6-Methyladenosine RNA Machinery Dynamics in a Model of Neuronal Differentiation

2023: Marta Borecka, MSc in Functional Genomics, University of Trieste. Title of the thesis: In vitro study of the mechanism patterning the mouse primitive streak

2022: Maddalena Collatuzzo, MSc in Functional Genomics, University of Trieste. Title of the thesis: Role of DNA demethylation in Spinal Muscular Atrophy

2021: Sara Pecoraro, MSc in Neuroscience, University of Trieste. Title of the thesis: Exploiting multimodal bioelectrical imaging to study multiscale neuronal information

- **Supervisor** for the following students:

Bachelor's students:

2025: Ludovica Cipressi, BSc in Biological Sciences and Technologies, University of Trieste. Title of the thesis: Optimization of postsynaptic GCaMP8 and G-Flamp2 constructs for functional imaging of synaptic activity.

2023: Cosma Aurelio Sgaramella, BSc in Biotechnology, University of Trieste. Title of the thesis: A new way to display synaptic activity: GECIs and jG-CaMP8.

2018-2019: Davide Franzone, BSc in Biotechnology, University of Genoa. Title of the thesis: CRISPR/Cas9-mediated introduction of InDel mutations for modulating calcium channel alternative splicing.

2018-2019: Eleonora Garré, BSc in Biotechnology, University of Genoa. Title of the thesis: Modulation of calcium channel alternative splicing by dual CRISPR/Cas9-mediated deletion.

Master's students:

2026: Davide Bosello, MSc in Neuroscience, University of Trieste. Title of the thesis: Analysis of neuronal activation following social behavior in mice with altered $\beta 3$ integrin expression.

2024: Constantinos Thoma, MSc in Neuroscience, University of Trieste. Title of the thesis: CRISPRa-Mediated Modulation of $\beta 3$ Integrin: Insights into ASD-Related Neuroplasticity and Signalling Pathways.

2023-2024: Kankana Dutta, MSc in Neuroscience, University of Trieste. Title of the thesis: Investigating the Regulatory Role of Hippocalcin and HPCAL4 in P/Q Voltage-Gated Calcium Channels.

2020-2021: Sara Riccardi, MSc in Medical-Pharmaceutical Biotechnology, University of Genoa. Title of the thesis: CRISPR activation of specific integrin subunits promotes neuronal differentiation of N2a cells.

2014-2015: Denise Gastaldo, MSc in Medical-Pharmaceutical Biotechnology, University of Genoa. Title of the thesis: Study of the role of the protein Kidins220 in the adult brain through characterization of the conditional knockout mouse Kidins220^{lox}/CaMKII-Cre.

2011-2012: Paloma Valverde, MSc in Neurosciences, University of Montpellier, France. Title of the thesis: Characterization of new effectors of the GTPase TC10 regulating neuronal morphogenesis.

PhD students in Molecular Biomedicine, University of Trieste:

2021 – 2024: Jessica Muià. Title of the thesis: Investigating sex-specific effects of cortical $\beta 3$ integrin on autism and epilepsy: a behavioral characterization study.

- **Co-supervisor** for the following PhD students in Molecular Biomedicine, University of Trieste:

Since 2022: Asja Ragnini. Title of the thesis: CACNA1A-associated disorders: *in vitro* and *in vivo* investigations to explore novel therapeutic strategies.

2020 – 2023: Riccardo Ruggieri. Title of the thesis: Calcium channels and integrins in cortical synaptic transmission: relevance for new therapeutical targets in epilepsy.

2019 – 2022: Lucia Celora. Title of the thesis: Combining bioinformatics with whole-cell patch-clamp recordings to investigate the role of $\alpha V\beta 3$ integrin in mouse models of ASD and epilepsy.

Communications - Posters

- Oral presentations

- 2025** **NeuroFrance**, Montpellier, France.
New genome editing strategies for episodic ataxia and absence epilepsy: Optimizing splice isoforms for enhanced calcium channel function.
- 2025** **XXII Convention Telethon**, Rimini, Italy.
New genome editing strategies for episodic ataxia and absence epilepsy: Optimizing splice isoforms for enhanced calcium channel function.
- 2024** **SynMech consortium meeting**, Trieste, Italy
Engineering of CRISPRa-mediated biomechanical sensors.
- 2024** **Trieste Next**, Trieste, Italy.
Can we repair the brain with magnets? How to restore communication between nerve cells?
- 2015** **XVI Congress of Italian Society for Neuroscience**, Cagliari, Italy.
The neuronal protein Kidins220/ARMS is a functional mediator of nervous system development, maturation and plasticity.

- Posters

- 2025** **XXII Convention Telethon**, Rimini, Italy.
New genome editing strategies for episodic ataxia and absence epilepsy: Optimizing splice isoforms for enhanced calcium channel function.
F. Jaudon, A. Ragnini, R. Ruggeri, I. Musante, S. Riccardi, P. Scudieri, L. Muzzi, F. Guida, F. Zara and LA. Cingolani
- 2024** **14th FENS Forum meeting**, Vienna, Austria.
Understanding $Ca_v2.1$ dysfunction in neurological disorders: Insights from novel CRISPR/Cas9 mouse model and iPSC-derived neurons.
F. Jaudon, R. Ruggeri, I. Musante, S. Riccardi, P. Scudieri, L. Muzzi, F. Guida, F. Zara and LA. Cingolani
- 2023** **XXI Convention Telethon**, Riva del Garda, Italy. *Regulation of alternative splicing of Ca^{2+} channels by CRISPR/Cas9-mediated genome editing as an all-purpose genetic therapy for loss-of-function CACNA1A mutations.*
F. Jaudon, I. Musante, R. Ruggeri, P. Scudieri, L. Muzzi, F. Guida, F. Zara and LA. Cingolani
- 2022** **13th FENS Forum meeting**, Paris, France.
*CRISPR-Mediated Activation of Autism Gene *Itgb3* Restores Cortical Network Excitability via mGluR5 Signaling.* **F. Jaudon**, A. Thalhammer, L. Zentilin and LA. Cingolani
- 2018** **11th FENS Forum meeting**, Berlin, Germany.
CRISPR/dCas9-mediated transcriptional activation of $\beta 3$ integrin as a therapeutic approach for Autism Spectrum Disorder.
F. Jaudon, A. Thalhammer and LA. Cingolani
- 2015** **66th SIF National Congress**, Genova, Italy.
Kidins220/ARMS is a novel modulator of astrocyte physiology.
F. Jaudon, F. Benfenati and F. Cesca.

- 2015 XII European Meeting on Glial Cells in Health and Disease**, Bilbao, Spain.
Kidins220/ARMS is a novel modulator of astrocyte physiology.
F. Jaudon, F. Benfenati and F. Cesca.
- 2011 VIIth Conference on small GTPases**, Poitiers, France.
RhoQ/TC10 is essential for dendritic spine morphogenesis in cerebellar Purkinje cells.
F. Jaudon, G. Vodjdani, I. Dusart, A. Debant and S. Schmidt.
- 2011 10th Conference of French Neuroscience Society**, Marseille, France.
Function of Rho GTPase signalling during postnatal Purkinje cell differentiation.
F. Jaudon, G. Vodjdani, I. Dusart, A. Debant and S. Schmidt.
- 2010 7th FENS Forum Meeting**, Amsterdam, Netherlands.
Gene expression profiling of RhoGTPase Signalling during postnatal Purkinje cell differentiation.
F. Jaudon, A. Debant and S. Schmidt.
- 2009 Conference J. Monod “Regulation and function of small GTPases”**, Aussois, France.
Gene expression profiling of RhoGTPase Signalling during postnatal Purkinje cell differentiation.
F. Jaudon, A. Debant and S. Schmidt.

Patents

Identification of genomic sequences for the treatment of ataxias and epilepsies

Inventors: Lorenzo Cingolani and Fanny Jaudon

Italian Patent Application No. 102023000024186

Grant Writing & Funding Involvement

I have actively contributed to the conceptualization, writing, and development of several competitive national and international research grants. My involvement focused particularly on molecular strategies, genome editing, disease models, and behavioral characterization.

- Telethon Foundation Grant (2026)

"Targeting blood-brain barrier dysfunction in GLUT1 deficiency syndrome: mechanistic insights and endogenous gene activation therapy in human and mouse models". – PI: Paolo Scudieri, University of Genova.

Role: Partner; Responsible of the *in vivo* validation of CRISPRa-mediated *Slc2a1* activation in GLUT1 Deficiency Syndrome mouse model.

Status: Submitted

- Human Technopole – National Facility for Genomics (26-G-ROUND-1)

"Spatial transcriptomic mapping of neuromodulatory signaling during social experience in normal and ASD-relevant conditions."

Role : Scientific lead; project conception and full proposal writing.

Status: Submitted (formal submission by PI due to eligibility requirements)

- Cariplo–Telethon Joint Grant (2023)

"Targeting Hippocalcin-like protein 4 (HPCAL4) provides new therapeutic opportunities for episodic ataxia type 2 and epileptic encephalopathy 42". Grant ID: GJC22053 – PI: Lorenzo Cingolani, University of Trieste.

Role: Conceptual planning; coordination of research activities

- Italian Ministry of Health – call “Ricerca Finalizzata, Giovani Ricercatori” (2022)

"The role of the glutamatergic neurotransmission in post-partum depression: an integrated molecular-pharmaco-imaging study (DRACULA)". Grant ID: GR-2021-12375009 – PI: Valentina Ciappolino, IRCCS Ca' Granda - Ospedale Maggiore Policlinico, Milan.

Role: Responsible for the behavioral characterization component

- European Research Council (ERC) Pathfinder Grant (2022)

"SynMech - A synaptic mechanogenetic technology to repair brain connectivity".

Grant ID: 101099579 – PI: Lorenzo Cingolani, University of Trieste.

Role: Supervision of the molecular strategy for the entire consortium of 8 research groups across Europe (www.synmech.eu)

- Fondazione Cariplo Grant (2019)

"Integrins and protocadherins in glutamatergic circuits: identification of common signaling pathways and molecular targets in anxiety and major depressive disorders". Grant ID: 2019–3438 – PI: Maria Passafaro, CNR, Milan.

Role: In charge of the behavioral characterization of the mouse models

- Telethon Foundation Grant (2019)

"Genome-editing regulation of alternative splicing provides new therapeutic opportunities for episodic ataxia type II". Grant ID: GGP19181 – PI: Lorenzo Cingolani, University of Trieste.

Role: Conceptual planning; coordination of molecular strategy and behavioral experiments

Reviewer activity

Cell Reports; Frontiers in Genome Editing; Frontiers in Molecular Neuroscience; Frontiers in Cellular Neuroscience; Frontiers in Pharmacology

Technical skills

Molecular biology	Cloning, DNA & RNA extraction, PCR, quantitative RT-PCR
Cell biology	Cell culture (cell lines, primary neurons & astrocytes), cerebellar organotypic cultures, transient transfection, lentiviral production & infection In situ hybridization, immunohistochemistry, confocal microscopy FACS cell sorting
Biochemistry	Western blot, immunoprecipitation, pull down, ELISA
Physiology	Calcium imaging, Multielectrode array recording
Mouse handling	Maintenance of mouse transgenic lines, intracardiac perfusion, intraventricular injection, behavioral tests
Language	French (native), English, Italian

References

Lorenzo Cingolani	Fabrizia Cesca	Anne Debant
Department of Life Sciences, University of Trieste, Italy	Dptmt of Biomedical Sciences, University of Padova, Italy	CRBM-CNRS UMR 5237, Montpellier, France

Autorizzo il trattamento dei dati personali nelle modalità previste dal Regolamento UE 2016/679

 26/06/2026

