

## CURRICULUM VITAE

<b>NAME</b> <b>Laura Cancedda</b>	<b>CURRENT POSITION AND TITLE</b> Senior Group Leader (tenured), Italian Institute of Technology (Genoa, Italy) Assistant Scientist, Dulbecco Telethon Institute, Italy FENS-KAVLI network of excellence scholar  Web pages: <a href="https://www.iit.it/people/laura-cancedda">https://www.iit.it/people/laura-cancedda</a> <a href="https://www.telethon.it/en/institutes/dulbecco-telethon-institute/">https://www.telethon.it/en/institutes/dulbecco-telethon-institute/</a> <a href="http://www.fens.org/Outreach/FENS-Kavli-Network-of-Excellence">http://www.fens.org/Outreach/FENS-Kavli-Network-of-Excellence</a>
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### Education

Institute/location	Degree	year	Field of study
Scuola Normale Superiore , Pisa, Italy (Ecole Normale Superieure)	Ph.D.	2003	Neurophysiology, Neurodevelopment
Genoa University, Genoa, Italy	MSc Med. Chemistry	1999	Neuropharmacology

### Research/professional Experience

2016-	The Italian Institute of Technology, Genoa, Italy	Senior group leader (tenured)
2016-	Dulbecco Telethon Institute	Assistant scientist
2013- 2016	The Italian Institute of Technology, Genoa, Italy	Senior group leader
2008-2013	The Italian Institute of Technology, Genoa, Italy	Junior group leader
2003-2007	University of California at Berkeley, USA	Post doctoral fellow (Advisor: Poo MM)
2004	Chinese Academy of Sciences, Shanghai	Visiting fellow (Host: Yuan X)
2000-2003	Scuola Normale Superiore, Pisa, Italy	Graduate student (Advisor: Maffei L)
2000	Brain Institute RIKEN Wako-Shi, Japan	Visiting fellow (Host: Hensch TK)

**Publications** (see google scholar profile at <http://scholar.google.it/citations?user=-DlucK0AAAAJ&hl=it>)

### Research Publications

#### **Senior Author Research Publications**

Cwetsch AW, Ziogas I, Narducci R, Savardi A, Bolla M, Pinto B, Perlini LE, Bassani S, Passafaro M, **Cancedda L** (2022).

A rat model of a focal mosaic expression of PCDH19 replicates human brain developmental abnormalities and behaviours. *Brain Communication*; Apr 5;4(3):fcac091. doi: 10.1093/braincomms/fcac091. eCollection 2022. PMID: 35528232

*This article was mentioned as the editor's choice.*

Parrini M, Naskar S, Alberti M, Colombi I, Morelli G, Rocchi A, Nanni M, Piccardi F, Charles S, Ronzitti G, Mingozzi F, Contestabile A\*, **Cancedda L\*** (2021).  
Restoring neuronal chloride homeostasis with anti-NKCC1 gene therapy rescues cognitive deficits in a mouse model of Down syndrome. *Molecular Therapy*, May 28:S1525-0016(21)00305-1. doi: 10.1016/j.ymthe.2021.05.023.

*This article was featured in the cover page of the journal.*

Borgogno M, Savardi A, Manigrasso J, Turci A, Portioli C, Ottonello G, Mandrup Bertozzi SM, Armirotti A, Contestabile A, **Cancedda L\***, De Vivo M\* (2021).  
Design, synthesis, in vitro and in vivo characterization of selective NKCC1 inhibitors for the treatment of core symptoms in Down syndrome and other brain disorders. *Journal of Medicinal Chemistry*, Jul 22;64(14):10203-10229.

*This article was featured in the cover page of the journal.*

Pinto B, Morelli G, Rastogi M, Savardi A, Fumagalli A, Petretto A, Bartolucci M, Varea E, Catelani T, Contestabile A, Perlini L.E.\*, **Cancedda L\*** (2020).  
Rescuing over-activated microglia restores cognitive performance in juvenile animals of the Dp(16) mouse model of Down syndrome. *Neuron*, Dec 9;108(5):887-904.e12.

*This article was commented in:*

Whalley, K.  
Microglia drive dysfunction in Down syndrome.  
*Nature Review Neuroscience*. 21, 667.

Shaw PR, Haydar TF (2020)  
Mitigating Cognitive Deficits in Down Syndrome by Managing Microglia Activation.  
*Neuron*. Dec 9;108(5):799-800.

Selected for the JRNLclub initiative ([www.JRNLclub.org](http://www.JRNLclub.org)) and Sci-talk platform ([www.sci-talk.org](http://www.sci-talk.org)).

Savardi A, Borgogno M, Narducci R, La Sala G, Ortega JA, Summa M, Armirotti A, Bertorelli R, Contestabile A, De Vivo M\*, **Cancedda L\*** (2020).  
Discovery of a small molecule drug candidate for selective NKCC1 inhibition in brain disorders. *Chem*, Aug 6;6(8):2073-2096.

*This article was commented in:*

Raveendran VA, Pressey JC, Woodin MA (2020)  
A Novel Small Molecule Targets NKCC1 To Restore Synaptic Inhibition.  
Trends in Pharmacological Science. Dec;41(12):897-899.

Naskar S, Narducci R, Balzani E, Cwetsch A.W. Tucci V\*, **Cancedda L\*** (2019). The development of synaptic transmission is time-locked to early social behaviors in rats. Nature Communications, Mar 13;10(1):1195.

*This article was commented in:*

Faculty 1000 prime (2015). Rated Exceptional. [f1000.com/prime/735318897](https://f1000.com/prime/735318897).

Vagni P, Perlini LE, Chenais NAL, Marchetti T, Parrini M, Contestabile A, **Cancedda L\***, Ghezzi D\* (2019). Gene Editing Preserves Visual Functions in a Mouse Model of Retinal Degeneration. Frontiers in Neuroscience. Sep 10;13:945.

Szczurkowska J, Pischedda F, Pinto B, Managò F, Haas CA, Summa M, Bertorelli R, Papaleo F, Schäfer MK, Piccoli G\*, **Cancedda L\*** (2018). NEGR1 and FGFR2 cooperatively regulate cortical development and core behaviours related to autism disorders in mice. Brain, Sep 1;141(9):2772-2794.

*This article was commented in:*

Contreras X, Hippenmeyer S (2018). Incorrect trafficking route leads to autism. Brain. 2018 Sep 1;141(9):2542-2544.

Szczurkowska J, Cwetsch AW, Dal Maschio M, Ghezzi D, Ratto GM, **Cancedda L** (2016)

Targeted *in vivo* genetic manipulation of the mouse or rat brain by *in utero* electroporation with a tripleelectrode probe. Nature Protocols, Mar;11(3):399-412.

*The Protocol exchange of this manuscript was commented in:* Nature facebook at <https://www.facebook.com/nature>.

Deidda G, Parrini M, Naskar S, Fernandez I, Contestabile A°, **Cancedda L°** (2015)

Reversing excitatory GABA<sub>A</sub>R signaling restores synaptic plasticity and memory in a mouse model of Down Syndrome. Nature Medicine, 21(4):318-26.

*This article was commented in:*

Costa C (2015). Intracellular chloride accumulation: a possible mechanism for cognitive deficits in Down syndrome. Nature Medicine, 21: 312–313 &

Faculty 1000 prime (2015). Rated Exceptional. [10.3410/f.725390463.793506606](https://doi.org/10.3410/f.725390463.793506606).

&

VanHook A.M. (2015). Excited by GABA. Science Signaling. 8, ec121.

Deidda G, Allegra M, Cerri C, Naskar S, Bony G, Zunino G, Bozzi Y, Caleo M\*, **Cancedda L\*** (2015)

Early depolarizing GABA controls critical-period plasticity in the rat visual cortex. Nature Neuroscience, 18(1):87-96.

*Data from this article were included in the NeuroMorpho.Org Project at:*

<http://neuromorpho.org/neuroMorpho/index.jsp>

Perlini LE, Szczurkowska J, Ballif BA, Sacchetti S, Piccini A, Giovedì S, Benfenati F\*, **Cancedda L\*** (2015)  
Synapsin III Acts Downstream of Semaphorin 3A/CDK5 Signaling to Regulate Radial Migration and Orientation of Pyramidal Neurons *in Vivo*. Cell Reports, 11(2):234-48.

*This article was featured in the cover page of the journal.*

*This article has been commented in:*

Perlini LE, Benfenati F, **Cancedda L** (2016). Synapsin III in brain development. Oncotarget, Mar 29;7(13):15288-9.

*This article will be commented on 'Atlas of Science' (www.atlasofscience.org)*

Zuccaro E, Bergami M, Vignoli B, Bony G, Pierchala B A, Santi S, **Cancedda° L**, Canossa° M (2014) Polarized Expression of p75<sup>NTR</sup> Specifies Axons During Development and Adult Neurogenesis. Cell Reports, 10;7(1):138-52.

*This article was featured as a video abstract at:*

[http://www.cell.com/cell-reports/abstract/S2211-1247\(14\)00153-3](http://www.cell.com/cell-reports/abstract/S2211-1247(14)00153-3)

Bony G, Szczurkowska J, Tamagno I, Shelly M, Contestabile A, **Cancedda L** (2013) Non hyperpolarizing GABA<sub>B</sub> receptor activation regulates neuronal migration and neurite growth and specification by cAMP/LKB1. Nature Communications, 4:1800.

Dal Maschio M, Ghezzi D, Bony G, Alabastri A, Deidda G, Brondi M, Sulis Sato S, Proietti Zaccaria R, Di Fabrizio E, Ratto GM, **Cancedda L** (2012) High-performance and Site-directed *in Utero* Electroporation by a Triple-electrode Probe. Nature Communications, 3:960.

\* Equal contribution.

° Co-corresponding author

### **First Author Research Publications:**

**Cancedda L\***, Fiumelli H\*, Chen K, Poo M-M (2007)

Excitatory GABA Action is Essential for Morphological Maturation of Cortical Neurons *in Vivo*. Journal of Neuroscience, 27: 5224-35.

*This article was commented in:*

Wefelmeyer W (2007). The influence of GABA on dendritic development *in vivo*. Journal of Neuroscience, 27:10649-50. &

Ben-Ari Y (2007). GABA excites and sculpts immature neurons well before delivery: modulation of the development of ventricular progenitor cells. Epilepsy Curr. 7:167-9.

Fiumelli H\*, **Cancedda L\***, Poo M-M (2005)

Modulation of GABAergic Transmission by Activity Via Postsynaptic Ca<sup>2+</sup>-dependent Regulation of KCC2 Function. Neuron, 48:773-86

**Cancedda L\***, Putignano E\*, Sale A\*, Viegi A, Berardi N, Maffei L (2004)

Acceleration of Visual System Development by Environmental Enrichment. Journal of Neuroscience, 24: 4840-8.

**Cancedda L\***, Putignano E\*, Impey S, Maffei L, Ratto GM, Pizzorusso T (2003)

Patterned Vision Causes CRE-mediated Gene Expression in the Visual Cortex Through PKA and ERK. Journal of Neuroscience, 23: 7012-20.

Bartoletti\* A, **Cancedda**\* L, Reid SW, Tessarollo L, Porciatti V, Pizzorusso T, Maffei L (2002) Heterozygous Knock-out Mice for BDNF Show a Pathway-specific Impairment of LTP, but Normal Critical Period for Monocular Deprivation. Journal of Neuroscience, 22: 10072-7.

\* Equal contribution.

### **Other Research Publications:**

Zhao Y, Roy K, Vidossich P, **Cancedda** L, De Vivo M, Forbush B, Cao E (2022). Structural basis for inhibition of the Cation-chloride cotransporter NKCC1 by the diuretic drug bumetanide. Nature Communication. May 18;13(1):2747.

Trovato F, Parra R, Pracucci E, Landi S, Cozzolino O, Nardi G, Cruciani F, Pillai V, Mosti L, Cwetsch AW, **Cancedda** L, Gritti L, Sala C, Verpelli C, Maset A, Lodovichi C, Ratto GM (2020). Modelling genetic mosaicism of neurodevelopmental disorders in vivo by a Cre-amplifying fluorescent reporter. Nat Communications. Dec 3;11(1):6194.

Szczurkowska J, Lee SI, Guo A, Cwetsch AW, Khan T, Rao S, Walz G, Huber TB, **Cancedda** L, Pautot S, Shelly M. (2020). A Localized Scaffold for cGMP Increase Is Required for Apical Dendrite Development. Cell Reports. Apr 14;31(2):107519.

Onesto V, Villani M, Narducci R, Malara N, Imbrogno A, Allione M, Costa N, Coppedè N, Zappettini A, Cannistraci CV, **Cancedda** L, Amato F, Di Fabrizio E, Gentile F. (2019). Cortical-like mini-columns of neuronal cells on zinc oxide nanowire surfaces. Scientific Reports. Mar 11;9(1):4021.

Costa RO, Martins H, Martins LF, Cwetsch AW, Mele M, Pedro JR, Tomé D, Jeon NL, **Cancedda** L, Jaffrey SR, Almeida RD (2019). Synaptogenesis Stimulates a Proteasome-Mediated Ribosome Reduction in Axons. Cell Reports. Jul 23;28(4):864-876.e6.

Ferretti V, Maltese F, Contarini G, Bonavia A, Nigro M, Huang H, Gigliucci V, Morelli G, Castellani G, Scheggia D, Managò F, **Cancedda** L, Chini B, Grinevich V, Papaleo F. (2019). Oxytocin signaling in the central amygdala modulates emotion discrimination in mice. Current Biology. Jun 17;29(12):1938-1953.

Awad PN, Amegandjin CA, Szczurkowska J, Carriço JN, Fernandes do Nascimento AS, Baho E, Chattopadhyaya B, **Cancedda** L, Carmant L, Di Cristo G (2018). KCC2 Regulates Dendritic Spine Formation in a Brain-Region Specific and BDNF Dependent Manner. Cerebral Cortex, Aug 31.

Onesto V, Narducci R, Amato F, **Cancedda L**, Gentile F (2018).  
The effect of connectivity on information in neural networks.  
Integrative Biology (Cambridge). Feb 19;10(2):121-127.

Keshavan S, Naskar S, Diaspro A, **Cancedda L**, Dante S. (2018)  
Developmental refinement of synaptic transmission on micropatterned single layer graphene. Acta Biomaterial, 65:363-375. Epub 2017 Nov 6.

Bassani S, Cwetsch AW, Gerosa L, Serratto GM, Folci A, Hall IF, Mazzanti M, **Cancedda L**, Passafaro M (2018).

The female epilepsy protein PCDH19 is a new GABA<sub>A</sub>R-binding partner that regulates GABAergic transmission as well as migration and morphological maturation of hippocampal neurons. Human Molecular Genetics, 27(6):1027-1038.

Parrini M, Ghezzi D, Deidda G, Medrihan L, Castroflorio E, Alberti M, Baldelli P, **Cancedda L**, Contestabile A. (2017).

Aerobic exercise and a BDNF-mimetic therapy rescue learning and memory in a mouse model of Down syndrome. Scientific Reports, 7(1):16825.

Sulis Sato S, Artoni P, Landi S, Cozzolino O, Parra R, Pracucci E, Trovato F, Szczurkowska J, Luin S, Arosio D, Beltram F, **Cancedda L**, Kaila K, Ratto GM. (2017)

Simultaneous two-photon imaging of intracellular chloride concentration and pH in mouse pyramidal neurons *in vivo*. Proceedings National Academy of Science U S A (PNAS), 114(41):E8770-E8779.

Onesto V, **Cancedda L**, Coluccio ML, Nanni M, Pesce M, Malara N, Cesarelli M, Di Fabrizio E, Amato F, Gentile F. (2017)

Nano-topography Enhances Communication in Neural Cells Networks.  
Science Reports,7(1):9841.

Gobbo F, Marchetti L, Jacob A, Pinto B, Binini N, Pecoraro Bisogni F, Alia C, Luin S, Caleo M, Fellin T, **Cancedda L**, Cattaneo A (2017). Activity-dependent expression of Channelrhodopsin at neuronal synapses. Nature Communications, 8(1):1629.

Baroncelli L, Cenni MC, Melani R, Deidda G, Landi S, Narducci R, **Cancedda L**, Maffei L, Berardi N (2017) Early IGF-1 primes visual cortex maturation and accelerates developmental switch between NKCC1 and KCC2 chloride transporters in enriched animals. Neuropharmacology, Feb;113(Pt A):167-177.

Paredes JM, Idilli AI, Mariotti L, Losi G, Arslanbaeva LR, Sato SS, Artoni P, Szczurkowska J, **Cancedda L**, Ratto GM, Carmignoto G, Arosio D (2016).

Synchronous Bioimaging of Intracellular pH and Chloride Based on LSS Fluorescent Protein. ACS Chem Biology, 11(6):1652-60.

Awad PN, Sanon NT, Chattopadhyaya B, Carriço JN, Ouardouz M, Gagné J, Duss S, Wolf D, Desgent S, **Cancedda L**, Carmant L, Di Cristo G (2016)

Reducing premature KCC2 expression rescues seizure susceptibility and spine morphology in atypical febrile seizures. Neurobiology of Disease, Feb 10;91:10-20.

Piccini A, Perlini LE, **Cancedda L**, Benfenati F, Giovedì S (2015)

Phosphorylation by PKA and Cdk5 Mediates the Early Effects of Synapsin III in Neuronal Morphological Maturation. Journal of Neuroscience, 35:13148-59.

Marinaro G, La Rocca R, Toma A, Barberio M, **Cancedda L**, Di Fabrizio E, Decuzzi P, Gentile F (2014) Networks of Neuroblastoma Cells on Porous Silicon Substrates Reveal a Small World Topology. Integrative Biology (Camb). Dec 17.

Pischedda F, Szczurkowska J, Cîrnaru MD, Gisiert F, Vezzoli E, Ueffing M, Sala C, Francolini M, Hauck SM, **Cancedda L**, Piccoli G (2013)  
A Cell Surface Biotinylation Assay to Reveal Membrane Associated Neuronal Cues: Negr1 Regulates Dendritic Arborization. Molecular and Cellular Proteomics, Mar;13(3):733-48. *This article was featured in the cover page of the journal.*

Succol F, Fiumelli H, Benfenati F, **Cancedda L**, Barberis A (2012)  
Intracellular Chloride Concentration Influences the GABA<sub>A</sub> Receptor Subunit Composition. Nature Communications, 3:738.

Shelly M, **Cancedda L**, Lim BK, Cheng P, Gao H, Poo MM (2011, IIT affiliation only)  
Semaphorin3A Regulates Neuronal Polarization by Suppressing Axon Formation and Promoting Dendrite Growth. Neuron, 71: 433-46.

*This article was commented in:*

Howell AS, Shen K (2011). Semaphorin breaks symmetry. Neuron, 71:381-2.

Shelly M, Lim BK, **Cancedda L**, Heilshorn SC, Gao H, Poo MM (2010, IIT & UCB affiliations).  
Local and Long-Range Reciprocal Regulation of cAMP and cGMP in Axon/Dendrite Formation. Science, 327: 547-52.

Harauzov A, Spolidoro M, DiCristo G, De Pasquale R, **Cancedda L**, Pizzorusso T, Viegi A, Berardi N, Maffei L. (2010).

Reducing Intracortical Inhibition in the Adult Visual Cortex Promotes Ocular Dominance Plasticity. Journal of Neuroscience, 30: 361-71.

Shelly M, **Cancedda L**, Heilshorn S, Sumbre G, Poo MM (2007)  
LKB1/STRAD Promotes Axon Initiation During Neuronal Polarization. Cell, 129: 565-77.

*This article was commented in:*

Winckler B (2007). BDNF instructs the kinase LKB1 to grow an axon. Cell, 129:459-460.

Putignano E, Lonetti G, **Cancedda L**, Ratto GM, Costa M, Maffei L, Pizzorusso T (2007)  
Developmental Downregulation of Histone Posttranslational Modifications Regulates Visual Cortical Plasticity. Neuron, 53: 747-759.

*This article was commented in:*

Faculty 1000 (2007). Rated 10, exceptional. Rapp P, [F1000.com/1066124](http://F1000.com/1066124).

Sale A, Putignano E, **Cancedda L**, Landi S, Cirulli F, Berardi N, Maffei L (2004)  
Enriched Environment and Acceleration of Visual System Development. Neuropharmacology, 47: 649-60.

Di Cristo G, Berardi N, **Cancedda L**, Pizzorusso T, Putignano E, Ratto GM, Maffei L (2001) Requirement of ERK Activation for Visual Cortical Plasticity. Science, 292: 2337-40.

Bonanno G, Sala R, **Cancedda L**, Cavazzani P, Cossu M, Raiteri M (2000) Release of Dopamine from Human Neocortex Nerve Terminals Evoked by Different Stimuli Involving Extracellular Calcium. British Journal of Pharmacology, 129:1760-6.

### **Review and Editorial Articles**

Portioli C, Munevar MJ, De Vivo M, **Cancedda C** (2021) Cation-coupled chloride cotransporters: chemical insights and disease implications Trends in Chemistry, Oct;3(10):832-849.

*This article was featured in the cover page of the journal.*

Savardi A, Borgogno M, M. De Vivo M\* and **Cancedda L**\* (2021). Pharmacological tools to target NKCC1 in brain disorders. Trends in Pharmacological Sciences, Oct 4:S0165-6147(21)00176.

Savardi A, Ziogas I, Bolla M, **Cancedda L** (2019). Chloride Transporters in Physiological Brain Development and Neurodevelopmental Disorders: the Case of the Down Syndrome. “Neuronal Chloride transporters in Health and Disease” book, publisher Elsevier.

Cwetsch AW, Pinto B, Savardi A, **Cancedda L** (2018). *In vivo* methods for acute modulation of gene expression in the central nervous system. Progress in Neurobiology. Apr 22.

Contestabile A°, Magara S, **Cancedda L**° (2017) The GABAergic hypothesis for cognitive disabilities in Down syndrome. Frontiers in Cellular Neuroscience, Front Cell Neuroscience, Mar 7;11:54.

Perlini LE, Benfenati F, **Cancedda L** (2016) Synapsin III in brain development. Oncotarget, Mar 29;7(13):15288-9.

Deidda G, Bozarth IF, **Cancedda L** (2014) Modulation of GABAergic Transmission in Development and Neurodevelopmental Disorders: Investigating Physiology and Pathology to Gain Therapeutic Perspectives. Frontiers in Cellular Neuroscience, 22;8:119.

Assad J, Berdondini L, **Cancedda L**, Diaspro A, Dipalo M, DeAngelis F, Fellin T, Panzeri S, Maccione A, Sileo L (2014) Brain Function: Novel Technologies Driving Novel Understanding. Bioinspired Approaches for Human-Centric Technologies. Springer International Publishing Switzerland, book chapter, 299-334.



Ben Ari Y, Woodin MA, Sernagor E, **Cancedda L**, Vinay L, Rivera C, Legendre P, Luhmann HJ, Bordey A, Wenner P, Fukuda A, Van den Pol AN, Cherubini E, Gaiarsa JL (2012)  
Refuting the Challenges of the Developmental Shift of Polarity of GABA Actions: GABA More Exciting than Ever! Frontiers in Cellular Neuroscience, 6:35.

*This article was commented in:*

<https://publons.com/p/8784>.

Di Cristo G, Pizzorusso T, **Cancedda L**, Sernagor E (2011)

GABAergic Circuit Development and its Implication for CNS Disorders. Neural Plasticity, 2011:623705

Sernagor E, Chabrol F, Bony G, **Cancedda L** (2010)

GABAergic Control of Neurite Outgrowth and Remodeling During Development and Adult Neurogenesis: General Rules and Differences in Diverse Systems. Frontiers in Cellular Neuroscience, 4:11.

**Cancedda L** and Poo MM (2008)

Synapse Formation and Elimination: Competition and the Role of Activity. New Encyclopedia of Neuroscience, book chapter.

## **Patents**

Aminobenzenesulfonamide derivatives as Modulators of Intracellular Chloride Concentration For Treatment of Down Syndrome and Brain Disorders with Depolarizing GABAergic Transmission.

Inventors: **Cancedda L**, De Vivo M, Contestabile A, Borgogno M, Savardi S, Ortega Martinez JA. Patent deposit: IT 102019000004929, 2019.

Modulators of intracellular chloride concentration for treating Down syndrome. Granted US 9,822,368; EP 3083959; JP 6490077, 2019.

Inventors: **Cancedda L**, Contestabile A, Ben-Ari Y.

A vector and pharmaceutical composition for reducing the Expression of NKCC1 in a subject in need thereof, as well as the related therapeutic treatment method. Patent application: Application WO 2018/189225.

Inventors: Mingozi F, Ronzitti G, Contestabile A, **Cancedda L**.

Electroporation device. Patent application: TO2011A000411, WO2012153291, 2012.

Inventors: **Cancedda L**, Ratto GM.

License agreement with BEX, Co, LTD (Japan) for commercialization of the device. The device is currently on the market (BEX, cat. number LF653).

## **Professional Activities**

2022 Founder and scientific advisor for IAMA therapeutics.

Scientific responsible and member of the steering committee for Clinical trial EudraCT 2015-005780-16 at the Bambino Gesù Hospital based on my research.

Organizer of the meeting cation-chloride co-transporters in neurodevelopmental diseases, Marseille, France.

Faculty of the student mentoring program at IIT

Scientific committee member for Pfizer event “The Big Date Pfizer”

Organizing committee of the meeting T21 Research Society, meeting, Rome, Italy 2024  
Committee member for the promotion to Tenured Research position, Technologist position (2X) and  
Head of the neurofacility position at IIT.  
Scientific advisory board member for the Pisan Science Foundation

- 2021 Guest editor for special issue of Frontiers in Neuroscience on “GABA signaling in development and maldevelopment” Volume II.  
Collaboration (with Dr. Vicari, Bambino Gesù Hospital, Rome) on a clinical trial for the use of modulators of Cl transporters to rescue cognitive impairment in individuals with Down syndrome. Recruiting in the summer.  
Co-organizing editor of a special issue of Frontiers in Neuroscience “Connecting the developing brain to the rest of the body: implications for health and disease”.  
External referee for a promotion to tenured PI at UCL, United Kingdom.  
External referee for a promotion to tenured PI at Fondazione Pisana per la Scienza, Pisa, Italy.  
External referee for a promotion to tenured PI at Istituto Italiano di Tecnologia, Genoa, Italy.  
Jury committee member National Prize Famelab event
- 2020- Associate editor of the founding editorial board of Neurodevelopment, specialty section in Frontiers in Neuroscience.  
Member of Trs21 association, Europe
- 2020 Sponsored research agreement with RegenxBio for establishing a gene therapy approach in DS.  
Organizer of the Neurodevelopmental disease section of the World Wide Neuro conferences” Oxford University, online event.  
Co-organizing editor of a special issue of Frontiers in Neurology “Viral Vector-based Gene Therapy in Neurological Disease: The Future is Now”.  
Selection committee member for the IIT-EMBL postdoctoral programme (8 candidates)  
Selection committee member for three principal investigator (PI) position at Fondazione Pisana per la Scienza, Pisa, Italy.  
Member of the evaluation committee for six PhD candidates, University of Genoa, Italy.  
Selection committee member for one technician position at IIT, Naples, Italy.  
Scientific and organizing committee member for the Down syndrome: From diagnosis to therapy meeting”.  
Jury committee member National Prize GiovedìScienza 9th edition.
- 2019 Programme committee member of the European federation for Neuroscience (FENS) meeting 2020; Glasgow, United Kingdom.  
Organizer of the Fens-Kavli workshop for postdocs, FENS Meeting, Glasgow, United Kingdom.  
Programme committee member of the FENS-KAVLI network of excellence scientific meeting 2019, Crete, Greece.  
Programme committee member of the “Down syndrome from therapy to diagnosis” meeting 2019, Naples, Italy.  
Remote tutor and advisor of two PhD students (from first year); University of Rovereto, Trento, Italy & Institute of Science and Technology Austria, Vienna, Austria.  
Member of the evaluation panels for 5 IIT researchers and 1 technologist IIT positions. Site visit as an advisory board member at the Fondazione Pisana per la Scienza.

- 2018 Site visit as an advisory board member at the Fondazione Pisana per la Scienza.  
 Organizer of the Fens-Kavli workshop for postdocs, FENS Meeting, Berlin, Germany.  
 Member of the recruitment committee for 2 researcher positions at the National research Council CNR, Italy.  
 Member of Ph.D. dissertation committee at University of Milan.  
 Member of Ph.D. dissertation committee at University of Padova.
- 2017- Advisory board member for the Neuroscience of Fondazione Pisana per la Scienza, Pisa, Italy
- 2017 Commissioned review for book proposal, at Elsevier.  
 Member of the recruitment committee for a researcher position at Scuola Normale Superiore, Pisa.  
 Member of the Ph.D. recruitment committee at University of Genoa, Italy.  
 Member of the evaluation panels for 1 IIT Researcher and 1 IIT technologist positions.
- 2016 Member of the FENS-KAVLI network of excellence  
 Scientific committee for the organization of the DTI-TIGEM-TIGET meeting, Roma, Italy  
 Member of the evaluation committee for carrier advancement, IIT  
 Member of Ph.D. dissertation committee, Institut du Fer à Moulin, Paris  
 Lead editor on a book on synaptogenesis by Elsevier
- 2015 Member of the Ph.D. recruitment committee at Scuola Normale Superiore, Pisa, Italy
- 2015-2009 Member of Ph.D. dissertation committee at Scuola Normale Superiore, Pisa, Italy (once/year)
- 2014 Guest editor for special issue of Frontiers in Neuroscience on “GABAergic system in CNS development and maldevelopment”  
*Listed among the top 10 research topic of the year by Frontiers*
- 2012 Organizer of the symposium “Activity-dependent modifications of neuronal circuits: plasticity, adaptation and tenacity”, Italian Society of Neuroscience meeting, Italy
- 2011 Guest editor for special issue of Neural Plasticity on “GABAergic circuit development and its implication for CNS disorders”
- 2012 Member of dissertation Ph.D. committee Università degli Studi di Pisa, Italy
- 2004 Organizer of the “Neuro super group” meetings, U.C. Berkeley

Article reviewer: Science, Nature Review Neuroscience, Nature Neuroscience, Progress in Neurobiology, Nature Communications, Cell Research, Cell Reports, PNAS, Brain, Neuroscience & Biobehavioral Reviews, Elife, Journal of Neuroscience, Journal of Physiology, Scientific Reports, Cellular and Molecular Life Sciences, European Journal of Neuroscience, Hippocampus, Journal of Neurochemistry, Review Commons, Translational psychiatry, Frontiers in Neuronal Circuits, Frontiers in Cellular Neuroscience, Frontiers in Molecular Neuroscience, Frontiers in Pediatrics, Medical Research archives, Molecular Neurobiology, Brain Structure and Function, Molecular Autism, Molecular Neuroscience, PLOS ONE, Journal of Neurochemistry, Developmental Neurobiology, Neuroscience, Neuroscience and behavioral review, International Journal of Developmental Neuroscience, Star Protocols, Journal of Autism and Developmental Disorders, OMICS, Molecular Genetics

and Metabolism, European Journal of Medical Genetics, Neural plasticity, International Journal of Developmental Neuroscience, BMC Psychiatry, Human Mutation, Neuroscience Letter, Neurochemistry international, Neurochemical Research, oxford open neuroscience, World Journal of Surgical Oncology, Neurological Sciences, Acta Neurobiologiae Experimentalis, Bio- and Medical Informatics and Cybernetics (BMIC).

Grant reviewer: National Science Foundation (NSF), U.S.; European Innovation Council (EIC) Pathfinder OPEN call 2022; H2020- Future and Emerging Technologies (FET) OPEN-2016-2017, EU; FP7-ICT-2011-C (FET), EU; Novel ideas for radically new technologies, Canada Foundation for Innovation Competition (CFI); Epilepsy Canada Foundation, Canada; Natural Sciences and Engineering Research Council of Canada (NSERC); Medical Research Council (MRC), United Kingdom; Research Councils United Kingdom (RCUK), UK Research and Innovation Research Council (BSRC); Neurosciences and Mental Health Board, Medical Research Council (UKRI MRC), United Kingdom; UK Dementia Research Institute (UK DRI), United Kingdom; French National Research Agency (ANR), France; French Foundation for the Research on Epilepsy (FFRE); A\*MIDEX International Call, France; France Netherlands Organization for Scientific Research (NWO), Netherlands; Irish Research Council (IRC); Estonian Research Council (ETAg); Austrian Science Fund (FWF); Lejeune Foundation (postdoc program), France; Seed project, IIT, Italy.

Advisory board member: Fondazione Pisana per la Scienza (2017- )

Editorial Board member: Associate editor in Frontiers in Cellular Neuroscience, Frontiers in Neurophysiology, Frontiers in Neurodevelopment, and PeerJ.

Societies: ERC Italy, SINS, SFN

### **Honors and Awards**

2019 Program Committee officer member for the Federation of European Neuroscience Societies (FENS) (proposed by Italian Society for Neuroscience).

2018 National habilitation as full professor of Pharmacology National habilitation as full professor of Physiology

2017 Selected among the best 100 young Italian scientists operating in Italy or abroad (Cartaditalia magazine)

2016 Awarded the European Research Council (ERC) consolidator grant.

*The project was featured in the press release (7 projects featured out of 314 funded) for announcing the results of 2016 ERC CoG by the communication unit of the ERC.*

Appointed scholar of the FENS-KAVLI network of excellence.

Young researcher award, memorial Mario Mai.

2015 Appointed assistant scientist at the Dulbecco Telethon Institute, Italy 2014

National habilitation as assistant professor of Physiology.

TRADECOM society adopted Telethon Project on Rett syndrome for communication to the lay public.

2013 Mention of honor, poster award, Convention Telethon, Italy.

Finalist at the scientific picture award “Beyond science”, Genova, Italy.

2011 Best poster award, Molecular Mechanisms in Neuroscience meeting, Rome, Italy.

2009 Young investigator award, Italian Society of Physiology (SIF), Italy.

2008 Best speaker award, Italian Society for Neuroscience (SINS), Milan, Italy.

2003 Ph.D. earned with Honors, Scuola Normale Superiore, Pisa, Italy.

2001 Travel award for participation to summer course “Structure, Function and Development of the Visual System”, Cold Spring Harbor Laboratory (CSHL), U.S.A.

1999 Graduation with Honors and Distinction in Major, University of Genoa, Italy.

1997 Scholarship for extracurricular departmental activities, University of Genoa, Italy.

Various members of the laboratory have received awards and honors, including:

- 2022 FENS-EJN image competition finalist (Rosati S)
- 2021 Epitech prize from the Italian Society of Neuroscience (Pinto B)  
Invited speaker at the SFN annual meeting in the symposium “Advancing Gene Therapy for Central Nervous System (CNS) Diseases” (Contestabile A).  
Selected speaker at the annual Italian Congress on Down syndrome (Ziogas I)
- 2020 Winner of a full scholarship and selected for oral presentation at NEURONUS 2020 IBRO Neuroscience Forum, Kraków, Poland (Bolla M)  
Awarded the Marie Skłodowska-Curie (Fumagalli A)  
Elected as a member of the Communication Workgroup of the Trisomy 21 Research Society (I Ziogas).  
Invited as a speaker at the Italian Down syndrome annual meeting (virtual event; Savardi A).  
Invited as a speaker at the Italian Down syndrome annual meeting (virtual event; Morelli G).
- 2019 Winner of the Grattarola prize (Colombi I) for the best PhD thesis, National Bioengineering Group.  
Awarded the Marie Skłodowska-Curie (Corinne P) Seal of excellence Marie Skłodowska-Curie (Morelli G)  
Selected for oral presentation & travel award, T21RS meeting, Barcelona (Rastogi M).  
Selected for nanosymposium presentation, American society for Neuroscience meeting (SFN), 2019, Washington, United States (Contestabile A)  
Selected for nanosymposium presentation, American society for Neuroscience meeting (SFN), 2019, Washington, United States (Portioli C)  
Selected for oral presentation 17th European School of Neuroimmunology Course (Pinto B)  
Scholarship for "Biology of Brain Disorders 2019" course, Trinity College, Dublin, Ireland (Bolla M).  
Travel grant for EMBO Practical Course in Developmental neurobiology: From worms to mammals. King's College London, UK (Bolla M).  
Abstract selected for press release Society for Neuroscience meeting, Chicago (Savardi A).
- 2018 Invited for a flash talk presentation at the Down syndrome social at Society for Neuroscience meeting (SFN), San Diego, U.S.A. (Pinto B).  
Selected for flash talk presentation, EMBO Workshop: Microglia 2018. Heidelberg-Germany (Pinto B)  
Full scholarship for attending Summer school in Brain Disorders Research, MRC Centre for Neuropsychiatric Genetics and Genomics. Cardiff, United Kingdom (Bolla M)  
Full scholarship for chronobiology and sleep medicine summer school (NDCN SCNi) Oxford (Bolla M)
- 2017 Winner of the Excellent Paper in Neuroscience Award (EPNA, 2016, Deidda G)  
Selected for the FENS and IBRO-PERC stipend for attending the course Neural Circuit and Development Plasticity Course, Netherlands (Bolla M).  
Selected for oral presentation, Trisomy 21 Research Society (T21RS), Chicago United States (Contestabile A).  
Full scholarship for attending OIST DevNeuroCourse, Japan (Bolla M).  
Selected for nanosymposium presentation SFN meeting Washington, United States (Contestabile S).
- 2016 Travel grant 1<sup>st</sup> IN Ph.D. Student & Postdoc Meeting, Alicante, Spain (Cwetsch A).  
Full scholarship for attending OIST DevNeuroCourse, Japan (Savardi A).
- 2015 Selected for nanosymposium presentation SFN meeting Chicago, United States (Naskar S).  
Selected for oral presentation MBPC, Neurizons meeting, Göttingen, Germany (Naskar S).  
IBRO International Travel Grant Program (Naskar S).

- Selected at the CSHL course on autism (Bruno Pinto).  
 PERC-FENS World Congress Travel Grant to Brazil (Cwetsch A).  
 Selected for oral presentation EMBO meeting on Cortical Development (Szczyrkowska J).  
 Selected for oral presentation EMBO meeting on Cortical Development (Naskar S).  
 Travel grant and selected for oral presentation to the Neuronus meeting Krakow, Poland (Naskar S).  
 Selected for oral presentation, Neuronus meeting Krakow, Poland (Cwetsch A).  
 Full scholarship for attending OIST DevNeuroCourse, Japan (Szczyrkowska J).  
 Mention of honor, Aldo Fasolo Neuroscience Award, University of Turin, Italy, 2015 (Deidda). Selected at the picture award “Art or Science?”. Trieste, Italy, 2015 (<http://www.artescienza.it/leopere-migliori-edizione-2015/>) (Deidda G)
- 2014 Best Poster Award, FENS-SFN Summer School, Bertinoro, Italy (Szczyrkowska J).  
 Full travel and lodging bursary, ISDN meeting, Montreal, Canada (Szczyrkowska J).  
 Selected for oral presentation & best presentation Neuronus meeting, Krakow, Poland (Szczyrkowska J).  
 Best oral presentation International Young Scientists Conference, Poland (Kopanska M).  
 Scholarship, Neurobiology Summer School, SISSA, Trieste, Italy (Naskar S).  
 Full scholarship for attending OIST DevNeuroCourse, Japan (Cwetsch A).  
 Winner of the Art of Neuroscience competition, FENS meeting (Deidda G).  
 Honorable Mention, Photomicrography Competition, Nikon (Dal Maschio M).  
 Second classified at the Arte o Scienza contest, Trieste (Deidda G).  
 Mention of honor, picture award, Olympus Bioscapes competition (Szczyrkowska J).
- 2013 Best poster award, Neurizons meeting, Germany (Szczyrkowska J).  
 Selected for oral presentation, best speaker award; ENCODS, Bordeaux, France (Szczyrkowska J).  
 Selected for oral presentation; ENCODS; Bordeaux, France (Deidda G).  
 Mention of honor poster award, Telethon Convention, Italy (Szczyrkowska J).  
 Winner of European Project Practice in the Erasmus Program fellowship (Kopanska M).  
 Third classified at the picture award IIT Photo contest (Deidda G).  
 Finalist of the Photocontest Arte o Scienza; Trieste, Italy; 2013 (Szczyrkowska J).
- 2012 Second classified at the scientific picture award “Art or Science?” Contest at The European Meeting of Innovation and Scientific Research, Trieste, Italy (Dal Maschio M).
- 2011 Best poster award at the Molecular Mechanisms in Neuroscience meeting, Rome, Italy (Deidda G).  
 Winner of European Project FP7 fellowship, Leonardo da Vinci Program (Szczyrkowska J).  
 Selected for oral presentation, Young Researchers in Physiology meeting, Italy (Bony G).

### **Invited Speaker at National and International Meetings:**

- 2022** Invited speaker 18<sup>th</sup> Armenise-Harvard Foundation Symposium, “Neuroscience at the Edge: Frontiers of Knowledge”, Bologna, Italy.  
 Invited speaker and chair at cation-chloride co-transporters in neurodevelopmental diseases meeting, Marseille, France.  
 Invited speaker at the Italian Society of Physiology, Rome  
 Invited speaker IIT-EMBL joint meeting  
 Invited speaker, Key note, plenary lecture, BraYn conference, Rome, Italy.  
 Invited speaker, keynote, FEBS-IUBMB-ENABLE, Seville, Spain  
 Invited speaker at the Biology of Brain Disorders School, Dublin Ireland.  
 Invited speaker at the Society of prenatal medicine, Genoa, Italy

**2021** Invited speaker and chair at symposium FENKS KAVLI Vienna, Austria.

Invited speaker at the European Society of Medicine's meeting, Vienna, Austria (keynote)

Invited speaker at the symposium “Neurodevelopmental disorders: from molecular impairments to new therapeutic opportunities” SINS (online event), Italy

Invited speaker 49th Meeting of the European Brain and Behaviour Society (EBBS)

Invited speaker at the FENS-Hertie Winter School 2020 “Multiscale approaches to probe psychiatric disorders”, University of Innsbruck, Austria (postponed).

Invited speaker 2nd International Conference on Neurology & Neuro Disorders (postponed)

Invited speaker at the “Fibroblast Growth Factors in Development and Disease” Gordon Research Conference, Italy (postponed).

Invited speaker at the summer School of Neuroscience “Brain developmental diseases: genetics, environment and models, School of Neuroscience 2020”, Lake Como, Italy.

**2020** Invited speaker at the “World Wide Neuro conferences” Oxford University, online event.

Invited speaker at the 33rd European College of Neuropsychopharmacology Congress of Applied and Translational Neuroscience, Vienna, Austria, online event.

Invited speaker at the Webinar Neuronline American Society for Neuroscience (SFN).

Invited speaker at the American Society for Neuroscience (SFN) Meeting 2020 Symposium “Advancing Gene Therapy to target the CNS”, Washington, United States (declined).

**2019** Invited speaker at the 11th Biomedical Transporters Conference 2019 (BMT2019), Lucerne, Switzerland.

Invited speaker at FENS KAVLI of Excellence scientific meeting 2019, Crete, Greece.

Invited speaker the meeting “Down syndrome: from diagnosis to therapy”, Naples, Italy.

Invited speaker keynote lecture at the Italian Society for Neuroscience 2019 (SINS), Perugia, Italy.

Invited speaker at the symposium “Future development in pharmacotherapy”, Mendrisio medical meeting 2019, Switzerland.

**2018** Invited speaker at the symposium “Drug repurposing for treating genetic disorders” at the European Society of Human Genetics Conference 2018, Milan, Italy.

Invited speaker at the symposium “Autism and Neurodevelopmental Disorders” at the 4<sup>th</sup> Neurological Disorders Summit, Los Angeles, California, USA

Invited speaker at the Neural Circuit Development and Plasticity” school Utrecht, Nederland.

Invited speaker at the “Genetics, Genomics, and Evolution of the Eye” Gordon Research Conference, Italy (declined).

**2017** Invited speaker at the symposium “From Genetic to Functional Cell-Type Diversity in the Cerebral Cortex” at the 19th International Neuroscience Winter Conference, Solden Austria

Invited speaker at the symposium “Intracellular Cl<sup>-</sup> sensing in cell signaling and ion transport” at the 38th World Congress of the International Union of Physiological Sciences (IUPS), Rio de Janeiro, Brazil.

Invited speaker at the symposium “Neurodevelopmental disorders: from molecular mechanisms to therapeutic inroads”, Telethon Convention, Riva del Garda, Italy

Invited speaker at the symposium “Circuit Function and Disease”, the Neuronal Surfaceome in Circuit Formation meeting, Verbania, Italy

Invited speaker at the retreat of the Clinical & Experimental Epilepsy Department, University College of London (UCL), Siena, Italy.

Invited speaker at the retreat of Theoretical and Computational Neuroscience Vogels laboratory, Oxford University, Brescia, Italy.

Invited speaker at the symposium “Genomics in Therapy”, The Future of Genetics in Medicine and beyond, Torino, Italy.

Invited speaker at the symposium “Of mice and men: murine models and human brain organoids for the mechanistic dissection of neurodevelopment disorders”, Italian Society for Neuroscience (SINS), Ischia, Italy.

Invited speaker at the symposium “Therapy for Down Syndrome: dreams or reality?”, Down Syndrome: from diagnosis to therapy Meeting, Napoli, Italy.

**2016** Invited speaker at the “Epilepsy and Neuronal Synchronization” Gordon Research Conference, Spain.

Invited speaker at the mini-symposium “Neuronal differentiation, specification and outgrowth in the developing cerebral cortex?” & invited speaker at “Useful techniques in developmental neuroscience” Developmental neuroscience social at the Society for Neuroscience (SFN), San Diego, U.S.

Invited speaker at the symposium “Chloride regulation, inhibitory function and neurological disease” Federation of European Neurosciences Societies (FENS) meeting, Copenhagen, Denmark.

Invited speaker at the symposium “Channelopathies”, meeting of the Società Italiana di Genetica Umana (SIGU), Torino, Italy.

Invited plenary lecture at the Italian Institute of Neuroscience retreat, Padova, Italy.



- Invited speaker at the Telethon (TIGEM, TIGET, DTI) three-retreat, Rome, Italy.
- 2015 Invited speaker at the “Inhibition in the CNS” Gordon Research Conference, United States.
- Selected for oral presentation at the “Fragile X and other Early-Onset Cognitive Disorders” Workshop, Strasbourg, France
- Invited speaker at the “Nanoscopy 2.0”, advanced microscopy school, Genoa, Italy.
- 2014 Invited speaker and invited chair of the “Molecular Neuroscience” session at Neuronus meeting, Krakow, Poland.
- 2013 Invited speaker at the Engineering in Medicine and Biology Society (IEEE-EMBS) annual conference, Osaka, Japan.
- Selected for oral presentation at the meeting “Inhibitory control of brain plasticity bio-imaging methods reveal brain physiology”, Krakow, Poland.
- 2012 Invited speaker and invited chair of the “Neurogenesis” session at Jacques Monod conference “Mechanisms of intellectual disabilities: from genes to treatment”, Roscoff, France.
- Invited speaker and chair of the symposium “Activity-dependent modifications of neuronal circuits: plasticity, adaptation and tenacity”, Italian Society of Neuroscience (SINS) meeting, Italy.
- 2011 Selected for oral presentation at the meeting “Wiring the brain: making connections”, Powerscourt, Co Wicklow, Ireland.
- Selected for oral presentation at the meeting “Cell biology of the neuron: polarity, plasticity and regeneration”, Crete, Greece.
- 2010 Invited speaker at the symposium “Neuronal Development, Neurotransmission and Neurodegeneration”, Italian Society of Biochemistry (SIB) meeting.
- Invited speaker, “Plasticise” meeting, Pisa, Italy.
- Invited speaker, “NeuroIITScience”, Genoa, Italy.
- 2009 Invited speaker Minisymposium “Depolarizing GABA in development, maldevelopment and seizures: friend or foe?” Society for Neuroscience (SFN).
- The presentation was included in the “Hot Topic” database Neuroscience*
- Invited speaker at the Symposium “Neurodevelopmental alterations leading to epilepsy”, Italian Society for Neuroscience (SINS).

2008 Selected for oral presentation, Molecular Mechanisms in Neuroscience meeting, Italian Society for Neuroscience (SINS), Milan, Italy.

### Invited Talks

2021	Tor Vergata University	Rome, Italy	Host Farini D
	Instituto de Neurociencias de Alicante (online)	Alicante, Spain	G Lopez-Bendito
2021	RWTH Aachen University (online)	Aachen, Germany	Host Spehr M
2020	Molecular Biotechnology Center (online)	Torino, Italy	Host Altruda F
2019	Baylor College of Medicine		Huston, United States
	Host Zhou M EPFL Brain and Mind Institute		
	Lausanne, Switzerland	Host Ghezzi D	
	Interdisciplinary Center for Neuroscience (IZN)	Heidelberg, Germany	Host Patrizi, A
	Istituto Veneto di Medicina Molecolare (VIM)	Padova, Italy	
	Host Scorrano L	Center for Neuroscience & Cognitive Systems (CNCS)	Rovereto, Italy
	Host Gozzi A		
2018	Brain Research Institute, Uni Zurich	Zurich, Italy	Host Földy C
	Carlo Besta Neurological Institute		Milan, Italy
	Host De Curtis M University of Bonn		
	Bonn, Germany		Host Beck H
	Minded Project	Genoa, Italy	Host De Cuzi P
2017	Institut de Génomique Fonctionnelle		Montpellier, France
	Host Bertaso F Institute of Science and Technology (IST)		Klosterneuburg,
	Austria	Host Hipenmeyer	
	Neuroscience Institute Cavalieri Ottolenghi (NICO)	Torino, Italy	Host Merlo GR
2016	King's College London		London, United
	Kingdom	Host Marin O Max Plank Institute	
	Dresden, Germany	Host Calegari F	
	INSERM	Paris, France	Host Poncer C
	University of Mainz	Mainz, Germany	Host Schäfer M
	University of Padova	Padova, Italy	Host Pietrobon D
	Telethon Institute of Genetics and Medicine (TIGEM)	Napoli, Italy	Host Di
Bernardo	2015 University of Geneva		
	Genève, Switzerland	Host Jabaudon D	
	Universitat de Valencia	Valencia, Spain	Host Nacher J
	Scuola Normale Superiore		Pisa, Italy
	Host Cattaneo A	2014 Janssen (Johnson & Johnson pharmaceuticals)	
	Beerse, Belgium	Host Kemp J National Research Council (CNR)	
	Pisa, Italy	Host Ratto G	
	Humanitas		Milan,
	Italy	Host Matteoli M San Raffaele Hospital	
	Milan, Italy		Host Broccoli V

	CHU Ste-Justine/Université de Montréal	Montreal, Canada	Host Di Cristo G
2013	Novartis Institutes for Biomedical Research (NIBR)	Boston, United States	Host Dolmetsch R The Allen
	Institute for Brain Science	Seattle, United States	Host Dolmetsch R
	Sanford Health Research Institute	Sioux Falls, United States	Host Pearce D
	Lejeune Foundation		Paris, France
	Host Potier MC	Universit de la Mediterran	
	Marseille, France	Host Ferhat L	
	European Molecular Biology Laboratory (EMBL)	Monterotondo, San Marino	Host Gross C
	Centro di Biologia Integrata, CIBIO	Trento, Italy	Host Quattrone A
	Università Cattolica	Rome, Italy	Host Janiri L
	National Research Council (CNR)	Milan, Italy	Host Sala C
	Institut de neurobiologie de la méditerranée (INMED)	Marseille, France	Host Manent JB
2012	Georgetown University	Washington, United States	Host Donoghue M
	Institut de neurobiologie de la méditerranée (INMED)	Marseille, France	Host Manent JB
	University of Vermont	Burlington, United States	Host Delay R
2011	Stony Brook University		New York, United
	States	Host Shelly M	Rudolf Magnus Institute
	Utrecht, Nederland's	Host Pasterkamp J	
2010	University of Padova		Padova, Italy
	Host Carmignoto	University of Pavia	
		Pavia, Italy	Host D'Angelo E
	Research Council (CNR)		National
	Host Ratto G	Pisa, Italy	

### **Advanced Courses**

- 2022 Professional Mentoring course, IIT Genoa
- 2018 Course on legislation and writing of animal license, Istituto superiore di Sanità, Rome, Italy.
- 2014 Leading high impact teams, IIT, Genoa.
- 2005 Rodent survival surgery, University of California, Berkeley (UCB).  
How to give an effective presentation, University of California, Berkeley (UCB).
- 2001 Structure, Function and Development of the Visual System, Cold Spring Harbor Laboratory (CSHL).
- 1999 Neuroscience *in vitro*. Advance Biotechnology Center (ABC), Genoa, Italy.

### **Teaching Experience**

- 2022 Teacher of the course “Animal Models for Biotechnology”, master degree in medical – pharmaceutical biotechnology, University of Genoa.  
Teacher at the Neuroscience Summer Doctoral school, Genoa, Italy.  
Invited speaker at the Biology of Brain Disorders School, Dublin Ireland.
- 2021 Instructor at the FENS-Hertie Winter School, University of Innsbruck, Austria.  
Instructor at the summer School of Neuroscience, Lake Como, Italy.
- 2019 Organizer the workshop “Starting and mid-career PI hurdles workshop” FENS meeting GlasgowUK
- 2018 Instructor at the Neural Circuit Development and Plasticity” school Utrecht, Nederland.

- Organizer and speaker of the workshop “Start your lab”, FENS meeting, Berlin Germany.  
Lecturer for Genova University (honors, students).
- 2017 Neurodevelopmental physiology teacher at the Scuola Normale Superiore, Pisa.  
Lecturer for the Gaslini Hospital, Genoa.  
Lecturer for Torino University  
Lecturer for Genova University (honors, students).
- 2016 Lecturer for the TIGEM School of doctorate.
- 2009-2015 Teacher of the course in Development and functioning of cortical microcircuits, IIT, Ph.D. program.  
Teacher of special classes at the Ph.D. course at the Scuola Normale Superiore, Pisa.  
Teacher of special classes at the Faculty of Biotechnology, University of Genoa.
- 2014 National habilitation as assistant professor of Physiology.
- 2011-2014 Experimental thesis advisor for the Biotechnology master, University of Genoa.
- 2010 Teaching assistant for Ph.D. program in Neurobiology at University of Milan, Padova, Pavia, Genoa.
- 2008 Teaching assistant for Ph.D. program in Neurobiology at University of Genoa.
- 2002-2004 Teaching assistant for Ph.D. program in Neurophysiology at Scuola Normale Superiore Pisa, Italy.

### **Outreach activity**

- 2022 Documentary on the lab and company life for the VIS startup of Scuola Normale Superiore  
Interview for Radio Uno.  
Interview for radio Radio 24  
Special lecture at [Economics Department, Unige](#)  
Fanta Scienza: collaboration on a narrative book of novels on stories about science  
Focus talk: online talk for Focus magazine for the lay public  
Ambrosetti day dialogue between the media and the start-uppers  
Talk at the Alzheimer’s association
- 2021 Scientists meet the public in a coffee place at the Annual Science Festival, Genoa, Italy  
SciencemeetsDown: researchers working in the field of Down syndrome meets people with Down syndrome and their families.  
Member of the jury for the final of the famelab event, Italy  
Invited speaker for X-Talk "Go above and beyond training event for Enel X.
- 2020 Host of the divulgation neuroscience program "Thinking loud, cosa succede nel cervello" on the Twitch platform (12 interviews to IIT and for IIT neuroscientists;  
[https://www.youtube.com/results?search\\_query=thinking+loud+cosa+succede+nel+cervello](https://www.youtube.com/results?search_query=thinking+loud+cosa+succede+nel+cervello)).  
Invited speaker at the GiovedìScienza 34<sup>th</sup> edition, Turin, Italy.  
Invited speaker at the event Le reti del futuro (organizzato dalla La stampa e il secolo XIX).  
Interview at the Unomattina TV national program.  
Interview for the “Two chats on innovation” program of the at the European Institute for Innovation and Technology  
IIT Open Talk interview  
Released a number of interviews for the general public on my science for international (The scientist and national media (Il Secolo XIX, la Stampa).
- 2019 Invited speaker at Italian Consulate in Basel, Switzerland.  
Invited speaker at the Scientific journalists association, Piacenza, Italy.  
Invited speaker at the European Parliament's Science Week, Brussel, Belgium.  
Invited speaker to the journalists of the European parliament, Brussel, Belgium.

- Interview for movie maker for the ERC week  
 Interview at the Feltrinelli library on a dialogue with the public, Genova  
 Italy Invited speaker at the Federmanager Minerva meeting, Genova, Italy.  
 Writer for the Trs21 society of a lay public article.  
 Interview for Radio Rai  
 Interview for “Il messaggero” newspaper
- 2018 Lecturer for BerERC outreach event (an ERC winner meets the public in a pub).  
 Lecturer for the Sardinian Down syndrome association, Italy.  
 Invited speaker at the symposium: European Research Council (ERC): funding opportunities for investigator-driven research in Europe, FENS meeting.  
 Invited speaker at Trieste Next: session on ERC funding opportunities (organized by the ERC, 2 talks)  
 Invited speaker at the International event for the 60 years of ANFFAS (association for people with intellectual disability), Rome, Italy.
- Released a number of interviews for the general public on my science for national media (Rai Galileo (two interviews), Radio Rai, Corriere della Sera, La Stampa (two interviews), Groupe AB France, Prevenzione oggi, Telethon news, Nostrofiglio.it).  
 Lay public article published on the insert Salute of the Il Sole 24 ore newspaper.  
 Participated at "We Change" event on artificial intelligence as invited guest speaker, Milan, Italy  
 Special lecture for the associations of journalists (Milan, Genoa).  
 A number of outreach activity as a member of the FENS-KAVLI network of excellence (see <http://www.fens.org/Outreach/FENS-Kavli-Network-of-Excellence/> )
- 2017 Participated to the Fondazione Marisa Bellisario "Power to women" meeting as a lecturer, Bari, Italy  
 Served as a testimonial for the Telethon foundation on the Telethon week.  
 Lay public article published on the insert Tutto scienza of La Stampa newspaper.  
 Lecturer for a series of outreach meetings “La scienza condivisa”, Genova, Italy  
 Lecturer for Immersioni Virtuali nella Scienza (VIS), Scuola Normale Superiore Pisa.  
 Lecturer for Camogli Communication festival, Genova, Italy.  
 Released a number of interviews for the general public on my science for national media (Panorama e La Stampa, Tg Leonardo, and regional Tg3).  
 Lecturer for BerERC outreach event (an ERC winner meets the public in a pub).  
 Lecturer for the Rotary club, Rome.  
 A number of outreach activity as a member of the FENS-KAVLI network of excellence (see <http://www.fens.org/Outreach/FENS-Kavli-Network-of-Excellence/> ) Special lecture for the Italian association of journalists.
- 2016 A number of outreach activity as a member of the FENS-KAVLI network of excellence (see <http://www.fens.org/Outreach/FENS-Kavli-Network-of-Excellence/> ) Invited seminar at Down Syndrome Italian Association, Livorno, Italy.  
 Invited seminar at the Down DADI association, Padova, Italy.  
 IIT tells - Caffè scientifici, IIT scientists meet the lay public in a coffee place.  
 Special lecture for the Italian association of journalists.  
 Interview for the journalism master, SISSA, Trieste, Italy on my research  
 European stem cell day (Unistem), lecture to high school students and teachers.  
 Released a number of interviews for the general public on my science for national media (La Repubblica, Telegiornale Regionale, Telegiornale Leonardo, Telenord, ANSA).
- 2015 IIT at the movie theater, IIT scientists meet the lay public to comment on recent movies with science topics.

Selected for the “excitatory-inhibitory balance” symposium at the National Festival of Science, Genoa. Special lectures for the Italian association of journalists and for high-school teachers.

Participant to the IIT family open day.

Released a number of interviews for the general public on my science for national (La Repubblica, il Sole 24 ore, Secolo XIX, Telethon magazine) and international (Alzheimer Forum; the Scientist; United States) media and organizations.

Collaborating with the TRADECOM society that “adopted” the Telethon Project on Rett syndrome for communication to the lay public

2012 Special lectures for high-school students.

2008 Served as a speaker in public debates (returning scientist from abroad).

### **Research Support**

2022-2024	IAMA Therapeutics disorders	2021-2022	Angelini	Coordinator	Coordinator	Selective NKCC1 inhibitors for brain Treatment of social, cognitive, and sleep impairment
2021-2023	Lejune Foundation			Hosting PI		in a mouse model of Prader-Willi syndrome by repurposing of the FDA-approved diuretic Bumetanide.
2021-2024	Helmholtz European Partnering			Co-PI		Early NKCC1 Inhibition to treat epilepsy and hyperactivity in Down syndrome. Innovative high-performance computing approaches for molecular neuromedicine.
2021-2023	Marie Skłodowska-Curie			Hosting PI		Deciphering the Negr1 interacting network in physiological conditions and in psychiatric and neurodevelopmental disorders (to A. Fumagalli).
2020-2023	Marie Skłodowska-Curie (seal)			Hosting PI		Developmental trajectory of threatening/traumatic life experience in mice during critical periods (to G. Morelli).
2020-2022	Sponsored research agreement			Coordinator		REGENXBIO, Rockville, Maryland, United States AAV gene therapy for Down syndrome
2019-2021	Marie Skłodowska-Curie			Hosting PI		Interdisciplinary approach to characterize the structure of the ion transport mechanism of NKCC1, a key target for brain disorders (to C. Portioli).
2017-2022	European Research Council (ERC)			Coordinator		Rescuing Cognitive Deficits in Neurodevelopmental Disorders by Gene Editing in Brain Development: the Case of Down Syndrome (GenEdiDS).
2017-2022	Telethon Foundation (Italy)			Coordinator		Targeting aberrant Cl <sup>-</sup> homeostasis and GABA <sub>A</sub> transmission to design innovative therapeutic approaches in Down syndrome ( <u>Career grant</u> ).
2015-2017	Lejeune Foundation (France)			Collaborator		Experimental and clinical evaluation of a clinically-

			used Cl transporter inhibitor to rescue cognitive functions by reverting excitatory GABA in Down syndrome (Second tranche, clinical trial).
2014-2016	Lejeune Foundation (France)	Coordinator	Experimental and clinical evaluation of a clinically-used Cl transporter inhibitor to rescue cognitive functions by reverting excitatory GABA in Down syndrome (First tranche, experimental part).
2014-2017	Telethon Foundation (Italy)	PI	Unravelling the Rett syndrome: effects of mutations on synaptic function.
2014-2016	Lejeune Foundation (France)	Co-PI	Targeting neurotrophin signaling to rescue synaptic plasticity and cognitive functions in a mouse model of Down syndrome.
2014-2016	Cariplo Bank (Italy)	PI	Phenotype characterization of PCDH19 mutations underlying “Epilepsy with Mental Retardation limited to Females” (EFMR) syndrome using <i>in vitro</i> and <i>in vivo</i> models.
2015	GOAP (Bayer, Germany)	Co-PI	Gene editing to treat genetic photoreceptor degeneration.
2013-2015	Lejeune Foundation (France)	Co-PI	Safe modulation of GABAergic transmission by clinically-tested drugs to rescue cognitive functions in Ts65Dn mice.
2013-2015	Interdisciplinary project IIT	Coordinator	Novel site-directed <i>in utero</i>  electroporation by temporal modulation of a multi- electrode array.
2010-2014	Telethon Foundation (Italy)	Coordinator	Role of GABA <sub>A</sub> -receptor mutations in idiopathic generalized epilepsy and development.
2011-2013	Research Ministry (Italy)	Consultant	<i>In vivo</i> and <i>in vitro</i> morpho functional analysis of neuronal populations in rodent models of Rett syndrome, the MeCP2 null mice and in animals transfected <i>in utero</i> with different forms of mutated MeCP2.

2009-2013 Compagnia di San Paolo (It) Coordinator Early interference with GABA action

by exposure to therapeutic drugs:

circuit development, epilepsy

and

cognition.

Pending:

HFSP 2020

### **Mentoring**

2022 Teacher at the career day of the FEBS-IUBMB-ENABLE 2022 Conference, Rome, Italy.

Mentor for the interdisciplinary PhD mentoring program at IIT.

2021 Thesis committee advisor from first to fourth year (Alan Guo), Stony Brook University, United States.

2020 Thesis committee advisor from first to fourth year (Lisa Knaus), IST, Vienna, Austria.

Thesis committee advisor from first to fourth year (Alexia Stuefer),

Thesis committee advisor from first to fourth year (Filomena Grazia Alvino), IIT, Rovereto, Italy.

Organizer of the Starting and mid-career PI hurdles workshop, FENS meeting, 2020.

2018 Organizer and speaker of the start your lab event, FENS meeting, 2018.

Advisor for PI Patrizi, Annarita Dkfz, Heidelberg, Germany