

# GIULIA COLOMBO

PostDoc @ Istituto Italiano di Tecnologia

## PERSONAL PROFILE

Neuroscientist, electrophysiologist and (sometimes) science communicator

## MEMBERSHIPS

Gruppo Italiano per lo studio della Neuromorfologia, 2020 - 2023

Società italiana di Neuroscienze, 2021 - present

ALBA Network, 2024 - present

World Women in Neuroscience, 2024 - present

## TECHNICAL SKILLS

- Patch-clamp on excised membrane patches, single cells and brain slices; MEA on brain slices; electrophysiological data analysis (pClamp, Clampfit, MiniAnalysis, Matlab) and statistical analysis (OriginLab, GraphPad, R).
- Histological stainings and immunohistochemistry; optical, fluorescence and confocal microscopy, and image analysis (FIJI, Arivis, InkScape).
- In vitro cell culture (E. coli, immortalized mammalian cell lines; primary neuronal cultures); transient transfections; PCR and RT-PCR; protein extraction, SDS PAGE and column chromatography (affinity and HPLC). RNA extraction and library preparation for NGS.
- Handling of animal models and simple colony management (mouse and C. elegans); in vivo surgeries for viral injections and behavioral tests; good laboratory practices.

## EDUCATION & PROFESSIONAL PROFILE

### Post Doc Researcher

February 2022 - present, Italian Institute of Technology, Laura Cancedda, PhD

### Ph.D. in Translational & Molecular Medicine

2018-2022, University of Milano-Bicocca, Thesis: Orexinergic and cholinergic function in the brain ascending modulatory system and its implications in sleep-related pathologies – Tutor: Andrea Becchetti, PhD; Co-tutor: Anne Vassalli, PhD

### Visiting scientist

July-Sep. 2021, University of Lausanne, Anne Vassalli, PhD

### M. Sc. in Biology

2016-2018, University of Milano-Bicocca, 110 cum Laude/110 – Thesis: Functional study of the nicotinic acetylcholine receptor  $\alpha 2$ -Y252H subunit associated with sleep-related hypermotor epilepsy – Andrea Becchetti, PhD

### B. Sc. in Biological Sciences

2013-2016, University of Milano-Bicocca, 110 cum Laude/110 – Thesis: The role of glucose in slow-wave sleep induction by means of the excitation of hypothalamic ventrolateral preoptic nucleus neurons – Andrea Becchetti, PhD



## CERTIFICATIONS

- Professional qualification (abilitazione a Biologo, 2018)
- Quantitative Methods for Biology (HarvardX, 2020)
- Elementi base per l'approccio dei ricercatori all'utilizzo degli animali ai fini scientifici (13 ECM, IZSLER, 2022)
- Training course in laboratory animal science for scientists responsible for the design or conducts of animal experiments (FELASA accredited course F002/03 Functions A+B+C+D 5 ECTS, Universitat Autònoma de Barcelona, AY 2022-2023)
- Legislazione nazionale ed etica, biologia e gestione degli animali da laboratorio, etica e concezione dei progetti (secondo DM 5 AGOSTO 2021, IZSLER, 2024)

## AD HOC REVIEWER FOR

Journal of Neuroscience  
PNAS Nexus

## AWARDS

Sorbelli Scholarship for NSAS, 2018; FEPS Travel Award, 2019; VIB Travel Grant, 2020; FENS Travel Award, 2020

## PUBLICATIONS & PRESENTATIONS

- Villa C\*, **Colombo G\***, Meneghini S, Gotti C, Moretti M, Ferini-Strambi L, Chisci E, Giovannoni R, Becchetti A and Combi R (2019) CHRNA2 and Nocturnal Frontal Lobe Epilepsy: Identification and Characterization of a Novel Loss of Function Mutation. *Front. Mol. Neurosci.* 12:17. doi: 10.3389/fnmol.2019.00017 \*These authors have contributed equally to this work.
- Becchetti, A, Grandi, L C, **Colombo, G**, Meneghini, S, & Amadeo, A (2020). Nicotinic Receptors in Sleep-Related Hypermotor Epilepsy: Pathophysiology and Pharmacology. *Brain Sciences*, 10(12), 907. doi: 10.3390/brainsci10120907
- Meneghini, S, Modena, D, **Colombo, G**, Coatti, A, Milani, N, Madaschi, L, ... & Becchetti, A (2022). The  $\beta 2V287L$  nicotinic subunit linked to sleep-related epilepsy differently affects fast-spiking and regular spiking somatostatin-expressing neurons in murine prefrontal cortex. *Progress in Neurobiology*, 214, 102279. doi: 10.1016/j.pneurobio.2022.102279
- Bandarabadi, M, Li, S, Tafti, M, **Colombo, G**, Becchetti, A, & Vassalli, A (2022). Orexin action on the dopaminergic system modulates theta during REM sleep and wakefulness. *Molecular Psychiatry*, 1-15. doi: 10.1038/s41380-023-02329-z

## TALKS & POSTERS

**Talk** - Regulation by hypocretin (orexin) of excitatory postsynaptic potentials in layer V pyramidal neurons of murine prefrontal cortex (PFC), Colombo G, Coatti A, Vassalli A, Becchetti A - FEPS SIF 2019 Joint Meeting, Bologna

**Poster** - Hypocretin (orexin) peptides regulate glutamatergic transmission in layer V of the frontal area 2 (Fr2) of the murine prefrontal cortex (PFC), Colombo G, Coatti A, Vassalli A, Becchetti A - FENS Virtual Forum 2020

**Poster** - Pre- and postsynaptic effects of hypocretin (orexin) on excitatory neurotransmission in layer V pyramidal neurons of murine premotor cortex, Colombo G, Coatti A, Vassalli A, Becchetti A - ESRS Virtual Congress 2020

**Poster** - The Ascending Reticular Activating System in cortical excitability modulation: physiological features and implications in sleep-related pathologies, Colombo G, Coatti A, Vassalli A, Villa C, Modena D, Amadeo A, Combi R, Ferini-Strambi L, Becchetti A - ENCODS Virtual Meeting 2021

**Poster** - Electrophysiological Properties and Excitatory/inhibitory Balance of Parvalbumin and Somatostatin-positive Interneurons Are Altered in the Hippocampus of the Ts65Dn mouse model of Down Syndrome, Colombo G, Potenzieri A, Contestabile A, Cancedda L - SINS Meeting 2023

## LAUNGUAGES

Italian (native), English (Level C1, FCE), French (A2).

## TEACHING

Developmental Neurobiology @ UniGe, 2023 (6 hours)

## COURSES

- AISAL Annual course – The three Rs in animal facilities management – Entry Level, 27-28th Oct 2017, Unimib
- The neuroanatomical basis and morphological analysis methods of central nervous system in experimental models, 6-8th Feb 2018, Unimi
- Productivity tools for (young) researchers, 13th Nov - 11th Dec 2018, Unimib
- Writing of scientific papers, 16th Feb-20th Mar 2019, Unimib
- Economical, operational and scientific impacts of breeding strategies on genetically engineered models, 7th May 2019, Unimib
- Introduction to statistics with R, 7-30th January 2020, Unimib
- Author Workshops on Academic Writing and Publishing, 14 February 2020, Unimib, by Enago Academy
- Quantitative Methods for Biology, 7th May – 10th June 2020, HarvardX on EdX
- Gene Expression Data for Beginners, 1st-5th February 2021, online, Unimib by Leonid Bystrykh, PhD
- Research Grant Writing, 25th February – 12th March 2021, Unimib by Chiara Gabbi MD, PhD

## SUMMER SCHOOLS

- Introduction to Cognitive Neuroscience: From Molecules to Behaviour, 8-12th August 2016, Radboud University, Nijmegen
- 4th Alpine Sleep Summer School, 3-7th July 2017, University of Italian Switzerland, Lugano
- Neuroscience School of Advanced Studies, 9th June – 7th July 2018, Venice, Cognitive Neuroscience Module of NSAS – Circuit Dynamics and Cognition, chair: Gyorgy Buzsaki; Social Decision Making, chair: Michael Platt; Cell Types, Coding and Cognition, chair: Christof Koch; Consciousness: From Theory To Practice, chair: Giulio Tononi
- Development of Neural Circuits Course, Okinawa Institute of Technology, Japan, 11th – 23th July 2023, course directors: David Van Vactor, Ichiro Masai, Sam Reiter, Yoko Yazaki-Sugiyama

## MEETINGS

- NeuroMi 2017 – International Symposium on Personalised Medicine in Multiple Sclerosis, 13-15th September 2017, University of Milano-Bicocca
- Second Neuroscience Meeting @ UniMI, 27th March 2018, University of Milano
- NeuroMi 2018 – Brain Stimulation and Brain Plasticity: From Basic Research to Clinical Practice, 21-23th November 2018, University of Milano-Bicocca
- Nanomedicine 2019 Annual Meeting 2nd-3rd May 2019, University of Milano-Bicocca
- Federation of European Physiological Societies and Italian Physiological Society joint meeting 2019, As FEPS Travel Award awardee, 10-13th September 2019, University of Bologna
- VIBes in Biosciences 2020, As VIB Travel Grant awardee, 11-13th March 2020, VIB, Leuven (Belgium), Virtual attendance due to COVID-19 pandemic
- Federation of European Neuroscience Societies Virtual Forum 2020, As FENS Travel Award awardee, 11-15th July 2020
- European Sleep Research Society Virtual Congress 2020, 22-24th September 2020
- Gruppo Italiano per lo studio della Neuromorfologia Meeting 2020, 12-14th November 2020
- NeuroMi Annual Virtual Meeting 2020 (COVID-19 Focus), 18th December 2020
- ENCODS Virtual Meeting 2021, 4-6th June 2021
- SINS Virtual Meeting 2021, 9-11th September 2021
- How to be a Researcher in the XXI Century, 14-17th September 2021, CNR Milano
- Neurotechnologies 2022, 27-29th September 2022, Leuven, Belgium
- SINS Meeting 2023, 14-17th September 2023, Turin

## COURSES

- Effective communication, 18th Jan – 1st Apr 2019, Assolombarda
- Public perception of Science: young researchers facing scientific topics of great public, political and mediatic relevance (IT), 27-28th Apr 2020, UniStem (Senator Elena Cattaneo, director)
- COVID-19: How to chase and beat a vi-rus (IT), 28-29th May 2020, UniStem (Senator Elena Cattaneo, director)
- Tutoring: how to get the best out of yourself and others, 15-16th Sept 2020, Unimib
- Reading the world through gendered lens: a methodological reflection, 14th Jan – 23th Feb 2021 · Unimib
- Between 2021 Civic Engagement: Climate crisis: environmental, social and economical impacts, 26th Jan – 3rd Mar 2021, Unimib
- A future outside of Academia? The curious case of transferable competences, 17-24th Feb 2021, Unimib
- Communicating research in the era of social media, 19th Feb – 10th Mar 2021, Unimib
- European Agenda 2030 and the Sustainable Development Goals, 21th Feb 2021, Unimib

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## VOLUNTEERING & SCIENCE COMMUNICATION

Temporary volunteer: Environmental scientific information and urban care, 2019-2021, LIPU Milano

Current volunteer: ADI Milano and Genova (Associazione dei Dottorandi e Dottori di Ricerca in Italia); Women's Brain Project

My passions are literature, poetry (I've been lucky enough to manage to see some of my verses published in a book, *Coordinate*; I also have a poetry&photography blog, *Quasicomedire*), art and, of course, science communication (over time, I've collaborated with *Monnalisa Bytes Visual Science Magazine*, *PhD Bioscienze Italia*, *Meet Science*, *MicrobiotaMi* and I'm the Twitter Ambassador for the Italian European Animal Research Association *Twitter account*)

## REPRESENTATIVE ROLES

PhD representative in the Doctoral School Council (30th March 2021 – 3rd May 2022)