Cecilia Steinwurzel

Post-Doc Research Fellow
Department of Translational Research and New Technologies in Medicine and Surgery – Pisa University
Via San Zeno 31, 56123, Pisa

Email:
Cecilia.steinwurzel@med.unipi.it
Nationality: Italian
Date of Birth: 29/10/1990

WORK EXPERIENCE in Research

Positions

2023-present	Post-Doc Research Fellow – Dep. Transl Research & NTMS, Pisa University, Italy
2022-2023	Post-Doc Research Associate – Dep. Of Psychology, Cambridge University, UK
2021-2022	Post-Doc Research Fellow – Dep. Transl Research & NTMS, Pisa University, Italy
2021-2022	Visiting Researcher – Dep. Of Psychology, Cambridge University, UK
2018	Research Fellow – Dep. Transl Research & NTMS, Pisa University, Italy

EDUCATION

2018-2021	PhD Neuroscience, Florence University, Italy
2020-2021	Visiting PhD Student, Cambridge University, UK
2016	Medical Licence, Ordine dei Medici di Milano – n° 44427
2009-2015	Doctor of Medicine (M.D.), Milan University, Italy. Final Grade: 110/110 cum laude

FUNDING and SCIENTIFIC AWARDS

2024	European Summer School in Visual Neuroscience, Marburg, Germany - selected
2020	Bright Night 2020 – Scientific contest (2.000 €, 2nd classified)
2018-2021	Pegaso 2018 - PhD Scholarship fully funded by Regione Toscana
2018	Italian Medical Specialization Exam (MIUR) – selected

PROFESSIONAL MEMBERSHIPS

2025-present	Member of the SINS (Italian Society for Neuroscience) Youth Committee Board

Collaboration on Projects and Conferences

2026	Member of the Organising Committee, 1st SINS Youth Conference, Naples
2025-present	Member of the Indibrain (MSCA-Doctoral Network) working group
2025-present	PredActive (ERC Consolidator Grant) - Prof. Paola Binda, Pisa University
2024-present	Member of the AURORA project and working group
2019-2024	PUPILTRAITs (ERC Starting Grant) - Prof. Paola Binda, Pisa University
2019-2024	GenPercept (ERC Advanced Grant) - Prof. David Burr, Florence University
2014-2018	ECSPLAIN (ERC Advanced Grant) - Prof. M. C. Morrone, Pisa University

TEACHING

2026-present	Physiology of the Nervous System – School of Dentistry (Unipi)
2024-present	Physiology of Reproduction – School of Obstetrics (Unipi)
2023-present	Human Functional Imaging - EEG data analysis - Master in Neuroscience (Unipi)
2015-2016	Sexual health and prevention of sexually transmitted diseases, Anlaids Onlus
2015-2016	Anatomy, dermatology and hygiene - Politecnico del Commercio e del Turismo

PUBLICATIONS in peer reviewed journals

11. Steinwurzel, C., Pennella, G., Morrone, M.C., Sandini, G., and Binda, P. (2026). “Visually guided voluntary actions boosts short-term ocular dominance plasticity”. *Scientific Reports*, 16, 21243 (2026).
10. Benedetto, A., Steinwurzel, C., Turco, F., Bonanni, E., Cantello, R., Strigaro, G. (2026). “Altered cortical synchronization in photosensitive idiopathic generalized epilepsy”. *Epilepsia*, 2026; 00:1-14
9. Steinwurzel, C., Pennella, G., Binda, P. (2025). “Short-term monocular deprivation in adult humans: a meta-analysis and new perspectives”. *Proceedings of the Royal Society B*, 1 December 2025; 292 (2061): 20252487
8. Steinwurzel, C., Pennella, G., Morrone, M.C., Sandini, G., and Binda, P. (2025). “Monocular delay during visually guided actions is as effective as monocular deprivation in driving ocular dominance plasticity”. *Scientific Reports*, 15, 34743
7. Steinwurzel, C., Morrone, M.C., Ferranini, E., Frijia, F., Montanaro, D., Daniele, G., Binda, P. (2025). “Acute Supplementation of Beta-Hydroxybutyrate Increases Visual Cortical Excitability in Humans: A Combined Electro-Encephalography and Magnetic Resonance Spectroscopy Study.” *European Journal of Neuroscience*, Oct;62(7): e70270.
6. Jia, K., Wang, M., Steinwurzel, C., Ziminski, J.J., Xi, Y., Emir, U., Kourtzi, Z. (2024) “Recurrent Inhibition refines mental templates to optimize perceptual decisions”. *Science Advances,* 10 - eado7378
5. Steinwurzel, C., Morrone, M.C., Sandini, G., and Binda, P. (2023) “Active vision gates ocular dominance plasticity in human adults”. *Current Biology,* 33 (20), R1038-R1040
4. Acquafredda M., Sari I.D., Steinwurzel C., Lunghi C., and Binda, P. (2023) “Measuring the reliability of binocular rivalry”. *Journal of Vision* 23(10):5-5
3. Animali, S., Steinwurzel, C., Dardano, A., Sancho-Bornez, V., Del Prato, S., Morrone, M.C., Daniele, G., and Binda, P. (2023). “Effect of fasting on short-term visual plasticity in adult humans”. *European Journal of Neuroscience,* 57(1)
2. Turco, F., Bonanni, E., Milano, C., Pizzanelli, C., Steinwurzel, C., Morganti, R., Fornai, F, Maestri, M., Siciliano, G.,and Giorgi, F.S. (2021). “Prolonged epileptic discharges predict seizure recurrence in JME: Insights from prolonged ambulatory EEG”. *Epilepsia*; 62:1184–1192
1. Steinwurzel, C., Animali, S., Cicchini, G. M., Morrone, M. C. and Binda, P. (2020). "Using psychophysical performance to predict short-term ocular dominance plasticity in human adults." *Journal of Vision,* 20(7):6-6

Conference abstracts

6. Binda, P., Steinwurzel, C., Acquafredda M., Sandini, G., Morrone, M.C. (2023). “Active vision endorses ocular dominance plasticity in human adults”. [conference abstract] Journal of Vision 23 (15), 84-84
5. Binda, P., Steinwurzel, C., Daniele, G.A., Ferannini, E., Frijia, F.,Montanaro, D., and Morrone, M.C. (2022). “Impact of ketonic metabolism on cortical visual processing.” [conference abstract] Journal of Vision 22(14),3596-3596
4. Turco, F., Giorgi, F.S., Milano, C., Pizzanelli, C., Steinwurzel, C., Morganti, R., Menicucci, D., Fornai, F, Maestri, M., Siciliano, G., and Bonanni, E. (2021). “In JME patients, prolonged and short epileptiform discharges have an opposite relationship with the sleep-wake cycle”. [conference abstract] Journal of the Neurological Sciences 429
3. Animali, S., Steinwurzel, C., Daniele, G., Dardano, A., Del Prato, S., Morrone, M.C., and Binda, P. (2021). “Skipping breakfast changes visual processing: incretins contribution to short-term visual plasticity”. [conference abstract] Journal of Vision 21(9), 2365-2365

2.Steinwurzel, C., Animali, S., Morrone, M.C., and Binda, P. (2019). “Inter-individual Variability of Short-Term Ocular Dominance Plasticity in Human Adults.” [conference abstract] PERCEPTION 48, 114-114
1.Steinwurzel, C., Animali, S., Binda, P., and Morrone, M.C. (2019). “Adult cortical Plasticity Peaks After Every Meal”. [conference abstract] PERCEPTION 48, 88-88

CONFERENCES

Oral presentations

2025 25th Vision Sciences Society (VSS) Meeting, St.Pete Beach, Florida, USA
2023 45th European Conference on Visual Perception (ECVP), Pafos, Cyprus
2022 Human and Robots Workshop – How action shapes vision, Pisa, Italy

Posters

2026 76th Congress of the Italian Physiology Society (SIF),Brescia, Italy
2026 Genova
2026 Youth SINS (Italian Society for Neuroscience) meeting, Napoli, Italy
2025 75th Congress of the Italian Physiology Society (SIF), Turin, Italy
2025 SINS (Italian Society for Neuroscience) meeting, Pisa, Italy
2024 42nd European Workshop on Cognitive Neuropsychology, Bressanone, Italy
2022 Armenise Harvard Foundation 18th Symposium, Varignana (Bologna), Italy
2021 Vision Sciences Society (VSS) Annual meeting, online
2019 BraYn (Brainstorming Research Assembly for Young Neuroscientists), Milan, Italy
2019 CNR Retreat, Pisa, Italy
2019 42nd European Conference on Visual Perception (ECVP), Leuven, Belgium
2019 Child Vision Research Society (CVRS) meeting, Pisa, Italy
2019 New Perspective in Neuroscience (SINS), Naples, Italy
2019 NextGenVis Workshop, Pisa, Italy
2018 Sensory Plasticity, Adaptation and Development (SPADe) Workshop, Pisa, Italy
2018 41st European Conference on Visual Perception (ECVP), Trieste, Italy

RESEARCH fields

My research is focused on the study of perceptual systems’ plasticity and their inter-individual variability, using investigation techniques based on psychophysics and neuroimaging, including EEG, fMRI, (ultra-high field), and MRS spectroscopy. My scientific training took place under the supervision of Prof. Maria Concetta Morrone and Prof. Paola Binda (University of Pisa). I continued my training under the guidance of Prof. Zoe Kourtzi (University of Cambridge, UK) at the Adaptive Brain Lab, where employed ultra-high field laminar fMRI to study the plastic mechanisms that enable the translation of visual sensory experience into adaptive behaviour.

Workshop and trainings

2025 Indibrain Kick-off meeting, Groningen, Netherlands
2025 International Neuropsychological Symposium (INS) meeting, Portoferraio, Italy
2024 European Summer School in Visual Neuroscience, Marburg, Germany
2022 Human and Robots Workshop – How action shapes vision, Pisa, Italy
2021 EEGlab Workshop, online
2021 Principles of fMRI 2 – John Hopkins University, online
2020 Principles of fMRI 1 – John Hopkins University, online
2020 Fundamental Neuroscience for Neuroimaging – John Hopkins University, online
2019 AFNI Bootcamp - IMT School for Advanced Studies, Lucca, Italy

2019 GenPercept (Generative Perception) workshop, Matera, Italy

WORK EXPERIENCE in Medical Field

2014-2015 Internship in Infectious Disease, Ospedale Luigi Sacco, Milan, Italy

SCIENTIFIC SKILLS

Expertise in scientific programming (MATLAB, R, Python) and in managing different dataset, including EEG data and fMRI data (also at laminar level) pre-processing and analysis (EEGLAB, BrainVoyager, AFNI, FSL, SPM, FreeSurfer). Competent in analyzing MR spectroscopy data (Gannet, LCModel). Experience in psychophysics, including binocular rivalry, and in programming psychophysical stimuli using Psychtoolbox for MATLAB and CRS ViSaGe system, Psycophy, as well as experience in managing different scientific setups, including CRS Goggles, Oculus, and stereoscope.

PROGRAMMING SKILLS and SCIENTIFIC SOFTWARES

MATLAB, R (basic), JASP, SPSS, Office, BraynVoyager, AFNI, FSL, FreeSurfer, SPM, EEGlab, Gannet, LCModel

LANGUAGE SKILLS

Italian (native), English (fluent), Spanish (intermediate)

ADDITIONAL INFORMATION

2018-2021 Master in Acupuncture and Traditional Chinese Medicine at ALMA-AGOM
2016-2017 Gap-year, travelling and medical volunteering in South America
2013 12-months Erasmus Project – fully funded – at Uniwersytet Warszawski (Poland)