Dr. Cecilia T. Herbert

PhD in experimental neuroscience

- Extracellular electrophysiology and behavior
- Open science, technical training and science outreach

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WORK EXPERIENCE

Open Ephys Production Site — *Scientific Director*

JULY 2022 – PRESENT, Lisbon, Portugal

- Training, Support and Community Engagement
- Course Director of the Extracellular Electrophysiology Acquisition Cajal NeuroKit asynchronous and synchronous course
- Training materials and documentation developer
- Exhibitor at FENS 2022 and Neuroscience 2022

EDUCATION AND RESEARCH EXPERIENCE

University of Buenos Aires, Physiology and Molecular Biology Department and Physics Institute of Buenos Aires (IFIBA), CONICET — *PhD in Biology*

APRIL 2016 – MAY 2022, Buenos Aires, Argentina

- Thesis: Study on the neural coding of song production in oscine birds. Advisor: Dr. A. Amador in the Mindlin Dynamical Systems Lab.
- Adapted tetrode microdrives from rodents for use in songbirds and trained four people to establish these techniques in the lab.
- Built the experimental setups and developed the methods to record extracellularly from freely-moving songbirds for up to two months.
- Performed all stages of the recording process for 4 seasons spanning 4-6 months of experimental work with multiple animals simultaneously.
- Designed an analysis pipeline in Matlab for audio and neural signal processing to correlate information from spikes and LFP with behavior.

University of Buenos Aires — *Licenciatura in Biological Sciences (Master's degree equivalent)*

APRIL 2009 – MARCH 2016, Buenos Aires, Argentina

- Thesis: An automatic method for the identification of significant motor instances in birdsong. Advisor: Dr. G. Mindlin, Dynamical Systems Lab.
- Specialized in Animal Physiology and Neuroscience.
- Emphasis in analytical subjects to complement biological core subjects.
- Performed interdisciplinary work and internships in a variety of settings.

OPEN SOURCE DISSEMINATION: COURSES, SEMINARS, WORKSHOPS

2022 - Talk+workshop "Open Tools for Neuroscience" about Open Ephys at IFIBYNE, Buenos Aires, Argentina

2021 – 2022, Open Source Neuro Seminar Series about open source tools and methods for Neuroscience in open-neuroscience.com — *Organizer, hostess*

2020 – 2021, Spanish Open Source Workshops — *Co-founder, organizer, trainer*

NOVEMBER 2021, IBRO funded workshop Insights into neural signal acquisition: an open, hands-on approach — *Organizer, speaker*

SELECTED TRAINING

2022 - **Miniscope Workshop** in Buenos Aires, Argentina (1 week).

2022 - **Transylvanian Experimental Neuroscience Summer School** in Pike Lake, Romania (3 weeks).

2021 - **Cajal NeuroKit Course**: Extracellular Electrophysiology Acquisition organised by The CAJAL Advanced Neuroscience Training Programme in partnership with Open Ephys & OEPS (1 week).

2018 - **Neural Systems and Behavior at the Marine Biological Laboratory** in Woods Hole, MA, USA (2 months).

2014 - **Undergraduate Summer Research Program at EPFL (BioRob lab)**, Lausanne, Switzerland (2 months).

POSTGRADUATE COURSES

2019 - Electronics Laboratory by Prof. Miguel Larotonda (96 hours) in the Physics Dept., FCEN, UBA

2018 - Machine Learning by Prof. Agustín Gravano (64 hours) in the Computing Dept., FCEN, UBA

2017 - Seminar on Advanced tools in Statistical Analysis by Profs. Andrés Farall and Marina Valdora (54 hours) in the Maths Dept., FCEN, UBA

2017 - Data Science in R: Fundamentals by Profs. Mariela Sued and Ana Bianco (54 hours) in the Institute of Calculus, FCEN, UBA

2016 - Systems Neuroscience by Prof. Rodrigo Quian Quiroga (30 hours) in the Physics Dept., FCEN, UBA

GRANTS AND AWARDS

2016–2022 **Doctoral grant** from CONICET (National Research Council)

2022 **Travel grant** from Boehringer Ingelheim Fonds and **Financial aid award** to attend TENSS in Pike Lake, Romania.

2021 **Meetings Support** from IBRO-LARC and the Metropolitan Fund of the City of Buenos Aires to hold the IBRO-LARC workshop on

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TEACHING AND MENTORING EXPERIENCE

NOVEMBER 2022, Modern Approaches to Behavioral Analysis **Cajal NeuroKit Course** — *Teaching assistant*

NOVEMBER 2022, Hands-on module "Closed-loop behavior with Bonsai" of the **SfN Latin American Training Program** in Montevideo, Uruguay — *Teacher*

MAY 2022, DECEMBER 2021, Open Ephys Extracellular Electrophysiology Acquisition **Cajal NeuroKit Course** — *Teaching assistant*

MARCH 2020 - MARCH 2021, Licenciatura student Fiamma Liz Leites at the University of Buenos Aires. Advisor: Dr. Amador — *Assistant advisor*

MARCH 2016 - DECEMBER 2016, Physiology and Molecular Biology Department of the University of Buenos Aires — *Undergraduate teaching assistant*

SPEAKING ENGAGEMENTS

DECEMBER 2022 – Guest speaker at Open Hardware Makers.

APRIL 2022 – Invited speaker at Open Hardware Makers.

AUGUST 2021 – Invited to talk about the Open Neuroscience project in the **IBRO-LARC/PEDECIBA Neuroscience and AI for all Virtual Associate School**.

JULY 2021 – Talk about "Talleres Open Source" for the **reGOSH circuit**.

MARCH 2021 – Invited to talk in an event of the **BA City Government** that showcased women in technology.

PUBLICATIONS List on Google Scholar

2020 - Herbert, C. T., Boari, S., Mindlin, G. B., & Amador, A. "Dynamical model for the neural activity of singing *Serinus canaria*". Chaos 30, 053134. https://doi.org/10.1063/1.5145093

2019 - Lassa Ortiz, J. N., Herbert, C. T., Mindlin, G. B., & Amador, A. "Significant instances in motor gestures of different songbird species". Frontiers in Physics, 7, 142. https://doi.org/10.3389/fphy.2019.00142

CONFERENCE PRESENTATIONS AS FIRST AUTHOR

MAY 2022 - Poster "Low-dimensional neural dynamics during the generation of a rhythmic vocal behavior". C. T. Herbert, G. B. Mindlin, A. Amador, presented at the **XIX Regional Congress of Statistical Physics and Applications to Condensed Matter (TREFEMAC)** in La Plata, Argentina.

OCTOBER 2021 - Poster "A consolidated view of neural activity in a cortical avian nucleus supports an integrated model for birdsong production". C. T. Herbert, S. Boari, G. B. Mindlin, A. Amador, presented at the **XXXVI Annual Meeting SAN 2021** held virtually.

OCTOBER 2020 - Interactive talk in English "Grouped single-unit activity in a cortical avian nucleus supports a population model of birdsong production in *Serinus canaria*". C. T. Herbert, S. Boari, G. B. Mindlin, A. Amador, presented at the **Neuromatch Conference 3.0** held virtually.

OCTOBER 2020 - Poster "Grouped single-unit activity in a cortical avian nucleus supports a population model of birdsong production in *Serinus canaria*". C. T. Herbert, S. Boari, G. B. Mindlin, A. Amador, presented at the **XXXV Annual Meeting SAN 2020** held virtually.

OCTOBER 2019 - Poster "Local field potential in cortical avian nucleus supports a circular model for birdsong production". C. T. Herbert, S. Boari, G. B. Mindlin, A. Amador, presented at the **XXXIV Annual Meeting SAN 2019** in Villa Carlos Paz, Córdoba, Argentina.

SEPTEMBER 2017 - Poster "HVC neural activity supports a circular model for birdsong production". C. T. Herbert, S. Boari, M. Belluscio, G. B. Mindlin, A. Amador, presented at the **XXXII Annual Meeting SAN 2017** in Mar del Plata, Buenos Aires, Argentina.

neural signal acquisition.

2018 **Travel grant** from Boehringer Ingelheim Fonds and **Financial aid scholarship** sponsored by IBRO, NIH Grant for NS&B and Lola Ellis Robertson Endowed Scholarship to attend the course Neural Systems and Behavior in Woods Hole, MA, USA.

2014 **Financial aid scholarship** to participate in the Undergraduate Summer Research Program in EPFL, Lausanne, Switzerland.

2013 **Academic Merit Award** from Santander Río Universidades

SKILLS

- Extracellular electrophysiology
- Microwire tetrode fabrication and microdrive assembly
- Stereotaxic surgery on small animals
- Ephys and behavioral data acquisition (Open Ephys, Bonsai)
- Data analysis and visualization (Matlab, Python, R)
- Spike sorting (Waveclus)
- Scientific and technical reporting (Research articles, protocols, SOPs)
- Public speaking and seminar host
- Graphic design (Illustrator) and CAD modeling (FreeCAD, Fusion360)
- Management, organization and team coordination

PROFESSIONAL AFFILIATIONS

- Argentine Neuroscience Research Society (SAN)
- reGOSH – Latin American network of Global Open Science Hardware
- Certified Carpentries instructor with MetaDocencia
- 2021 Open Life Science cohort 4 team lead. Graduation call.
- Open-neuroscience.com contributor

LANGUAGES

Spanish (native speaker)

English (bilingual, AICE diploma)

French (conversational, A2)

Portuguese (conversational)