Jeremi Chabros

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https://jeremi-chabros.github.io/

Education

University of Cambridge School of Clinical Medicine *2021–2024 (expc.)*
MB BChir in Medicine and Surgery

University of Cambridge *2018–2021*
BA (Hons) in Physiology, Development and Neuroscience
Thesis: *The Emergence of Network Dynamics in Developing Cortical Circuits*
Supervisor: Dr Susanna Mierau (Brigham and Women's Hospital, Harvard Medical School)

Research experience

Dept. of Neurosurgery, Brigham & Women's Hospital, Harvard Medical School Jun 2023–Present
Research trainee *Boston, MA*

Computational Neuroscience Outcomes Center (Dr Timothy R Smith)
- Exploring the role of MR-guided focused ultrasound in glioblastoma treatment
- Machine learning for optimization of patient selection and improving outcomes in AVM embolization
- Deep learning for prediction of spinal surgery outcomes (lumbar stenosis, DCM, cervical fractures)
- Analysis of factors influencing medical malpractice litigation in cranial neurosurgery

Div. of Neurosurgery, Dept. of Clinical Neurosciences, University of Cambridge Apr 2022–Present
Student researcher *Cambridge, UK*

Brain Physics Laboratory (Dr Peter Smielewski, Mr Alexis Joannides)
- Improving diagnostics of cerebrospinal fluid (CSF) disorders
- Developed a novel Bayesian approach for the analysis of CSF dynamics with robustness and accuracy superior to the state-of-the-art gradient descent methods

NIHR Global Health Research Group on Acquired Brain and Spine Injury (Prof Peter Hutchinson)
- Researching patient outcomes using Trauma Audit and Research Network (TARN) datasets.

Dept. of Physiology, Development & Neuroscience, University of Cambridge Apr 2020–Present
Student researcher *Cambridge, UK*

Synapse and Network Development group (Dr Susanna Mierau)
- Studying cellular-scale network dynamics in 2D cortical cultures and 3D human cerebral and spinal cord organoids
- Developing computational tools for the analysis of microelectrode array (MEA) recordings
- Current project: *Average Controllability Predicts Network-Level Response to Single Node Stimulation in Cellular-Scale Cortical Circuits*

Publications & Presentations

1. Mierau et al. 2023. *A Cellular-Scale Network Approach to Understanding Cognitive Dysfunction in Rett Syndrome and Autism Spectrum Disorder (ASD)*. Poster. International Society for Autism Research Annual Meeting, 3-6 May 2023, Stockholm, Sweden

2. Chabros et al. 2023. *Improving assessment of CSF dynamics in infusion studies using a Bayesian approach*. Oral. Society of British Neurological Surgeons, 29–31 March 2023, Cork, Ireland

3. Chabros et al. 2023. *Exploring the incidence and patterns of cycling-related craniospinal injuries: insights from a Major Trauma Centre*. Oral. Society of British Neurological Surgeons, 29-31 March 2023, Cork, Ireland

4. Chabros et al. 2022. *Optimisation of a mathematical model of cerebrospinal fluid dynamics using infusion studies*. Oral. International Symposium on ICP and Brain Monitoring, 14–18 November, Cape Town, South Africa

5. Sit*, Feord*, Dunn*, Chabros* (shared 1st authorship) et al. 2022. *Computational tool for comparing development of cellular-scale network activity from microelectrode array (MEA) recordings of 2D neuronal cultures and 3D human cerebral organoids*. Poster. FENS Forum 2022, 9–13 July, Paris, France

6. Dunn et al. 2020. *Comparing spike detection in 2D murine cortical culture and 3D human cerebral organoid microelectrode array (MEA) recordings*. Poster. FENS Forum 2020, 12 July 2020 [Online due to the COVID-19 pandemic]

Skills

Programming Languages	MATLAB, Julia, Python, R, LaTeX
Experimental Skills	Electrophysiology (Microelectrode Arrays), Cell Cultures
Data Analysis Skills	Time-Frequency Analysis, Network Neuroscience, Control Engineering, Mathematical Modeling, Optimisation (incl. Bayesian and Nonlinear), Deep Learning (CNNs), Machine Learning

Accomplishments

UK National Neuroanatomy Competition (2022 and 2023 editions) – Winner (Clinical Category and Overall)
Gordon Holmes Prize in Clinical Neurosciences (Royal Society of Medicine) – Top 5
European Union Contest for Young Scientists – 2nd Award
E(x)plory Science Contest (MILSET Expo-Sciences Europe) – Special Award
Neuronus IBRO&IRUN Neuroscience Forum – Most Active Participant Award
Path to Harvard (Harvard Club of Poland) – Laureate
Minister of Education Scholarship – Merit-based Award for Outstanding Students in Poland
Prime Minister of Poland Scholarship – Merit-based Award for Outstanding Students in Poland

Leadership & Extracurriculars

International Brain Bee Jun 2017–Present
National Coordinator

I am overseeing UK's chapter of the largest global neuroscience competition that inspires 50,000+ students from 60+ countries annually to pursue careers in neuroscience. Leading team of 20+ in fundraising, charity management, outreach and student engagement

Cambridge Handball Club & Cambridge University Handball Club Oct 2018–Present
Goalkeeper *Cambridge, UK*

I am a first team player on Premier Handball League and university teams (Placed 3rd in National University Championship). Recipient of the Cambridge Half-Blue Award for sports excellence and the Paul Day Sports Scholarship.

Project Access Oct 2018–Present
Mentor

Project Access is a non-profit organization dedicated to helping underprivileged applicants by offering mentorship from current university students. I volunteer in helping multiple students to get into their dream universities to study medicine and biomedical sciences