Jeremi Chabros

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Education

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

BA (Hons) in Physiology, Development and Neuroscience, University of Cambridge 2018 – 2021

Thesis: *The Emergence of Network Dynamics in Developing Cortical Circuits*

Supervisor: Dr Susanna Mierau (Neurologist & PI, Brigham and Women's Hospital, Harvard Medical School)

Research experience

Student researcher Apr 2022 – Present

Brain Physics Lab, Division of Neurosurgery, Dept of Clinical Neurosciences, University of Cambridge

Improving diagnostics of cerebrospinal fluid (CSF) disorders. Developed a novel method of analysing CSF dynamics using Bayesian optimisation with robustness and accuracy superior to the state-of-the-art methods.

Computational Supervisor: Dr Peter Smielewski (Principal Investigator)

Clinical Supervisor: Dr Alexis Joannides (Honorary Consultant Neurosurgeon)

Student researcher Mar 2022 – Present

NIHR Global Health Research Group on Neurotrauma, University of Cambridge

Researching neurotrauma and patient outcomes using Trauma Audit and Research Network (TARN) datasets.

Supervisor: Prof Peter Hutchinson (Professor of Neurosurgery)

Student researcher Apr 2020 – Present

Synapse & Network Development Group, Dept of Physiology, Development & Neuroscience, University of Cambridge

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.

Supervisor: Dr Susanna Mierau (Neurologist & PI, Brigham and Women's Hospital, Harvard Medical School)

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 Nov, Cape Town, South Africa
5. Mierau et al. 2022. *Computational tool for comparing development of cellular-scale network activity from micro-electrode 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 micro-electrode array (MEA) recordings*. [Poster]. FENS Forum 2020, 12 July 2020, Online due to COVID-19 pandemic.

Skills

Experimental & data analysis skills

Time-Series Analysis ○ Time-Frequency Analysis ○ Network Neuroscience ○ Nonlinear Dynamical Systems ○ Parallel Computing ○ Control Theory ○ Graph Theory ○ Mathematical Modeling ○ Fluid Dynamics ○ Electrophysiology (MEA) ○ Optimisation (Bayesian & Nonlinear)

Programming languages

MATLAB (MEX, UI Applications, Parallel Computing)	Proficient
Python	Intermediate
Julia	Intermediate
LaTeX	Intermediate

Accomplishments

UK National Neuroanatomy Competition – 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 – Special Award (MILSET Expo-Sciences Europe)
Neuronus IBRO&IRUN Neuroscience Forum – Most Active Participant Award
Path to Harvard (Harvard Club of Poland) – Laureate
Brain Bee Neuroscience Competition – Winner (Poland)
Minister of Education Scholarship (a merit-based award for the most outstanding students in the country)
Prime Minister of Poland Scholarship (a merit-based award for the most outstanding students in the country)

Extracurricular activities

National Coordinator, International Brain Bee — February 2023 – Present

National Coordinator for British Brain Bee, overseeing UK's chapter of the largest global neuroscience competition that inspires 50,000+ students from 60+ countries annually to pursue careers in neuroscience. Lead team of 20+ in fundraising, charity management, outreach and student engagement.

Associate Clinical Supervisor, University of Cambridge School of Clinical Medicine — Sep 2022 – Present

Teaching physical examinations and foundations of clinical medicine to undergraduates and junior clinical students.

Student, Collegium Invisibile, Warsaw, Poland — May 2022 – Present

Collegium Invisibile is a prestigious academic society enabling outstanding Polish students to undertake individual studies under guidance of distinguished scholars. Admitted among ten best students in Poland.

Goalkeeper, Cambridge University Handball Club & Premier Handball League — Oct 2018 – Present

Cambridge Half-blue award for sports excellence. Paul Day Sports Scholarship. Placed 3rd in National University Championships.

Mentor, Project Access — May 2018 – Present

Project Access is a non-profit organization dedicated to helping underprivileged applicants by offering mentorship from current university students. I mentor neuroscience, medicine and medical sciences applicants.

Interests

Data science & visualisation ○ Fly fishing & fly tying ○ Typography ○ Paleontology ○ Skiing