

Jeremi Chabros

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Education

MB BChir, University of Cambridge School of Clinical Medicine

2021 – 2024 (expc.)

BA (Hons), University of Cambridge

2018 – 2021

Physiology, Development and Neuroscience

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, Department of Clinical Neurosciences, University of Cambridge

Improving diagnostics of cerebrospinal fluid (CSF) disorders. Developed a novel method of analysing CSF dynamics using Bayesian optimisation. Eliminated unphysiological parameter predictions and significantly reduced the model fitting error compared to the current state-of-the-art gradient descent method.

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

Department of Physiology, Development and Neuroscience, University of Cambridge

Synapse & Network Development Group. Studying cellular-scale neural network dynamics in 2D cortical cultures and 3D human cerebral and spinal cord organoids. Refining existing and developing new 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

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]

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]

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

Mierau 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

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 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

L^AT_EX

Intermediate

Accomplishments

UK National Neuroanatomy Competition – Winner (clinical category and overall)

Gordon Holmes Prize in Clinical Neurosciences – 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 – Laureate (Run by the Harvard Club of Poland)

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

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.

Collegium Invisible, Warsaw, Poland

May 2022 – Present

Collegium Invisible 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