Jeremi Chabros

5th Year Medical Student
School of Clinical Medicine
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Summary

I am a medical student with a strong interest in Neurosurgery and engineering. Currently, I am looking for reserach opportunities in the fields of neuroengineering (deep brain stimulation, brain-computer interfaces) and brain physics (neurocritical monitoring, cerebrospinal fluid dynamics, cerebral autoregulation).

Education

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

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

Research experience

Student researcher — Apr 2022 – Present
Division of Neurosurgery, Department of Clinical Neurosciences,University of Cambridge, Cambridge, UK
Developing computational methods for mathematical modelling of cerebrospinal fluid dynamics using infusion studies.
Clinical Supervisor: Mr Alexis Joannides (Honorary Consultant Neurosurgeon)
Computational Supervisor: Dr Peter Smielewski (Principal Investigator)

Student researcher — Apr 2020 – Present
University of Cambridge, Cambridge, UK
Studying neuronal network dynamics in 2D cortical cultures and 3D human cerebral and spinal cord organoids.
My work includes refining existing and developing new computational tools for the analysis of microelectrode array (MEA) recordings with focus on cellular-scale functional connectivity and network dynamics. Methods include control engineering, graph theory, and time-frequency analysis.
Supervisor: Dr Susanna Mierau (Brigham and Women's Hospital, Harvard Medical School)

Research Intern — Nov 2017 – Dec 2017
Institute of Organic Chemistry, Polish Academy of Sciences, Warsaw, Poland
Synthesis, purification, structural and functional evaluation of a new class of dendrimes, drug transporting molecules with potential applications in the treatment of glioblastoma.
Supervisor: Prof Zofia Urbanczyk - Lipkowska

Projects

Mierau et al. *A Cellular-Scale Network Approach to Understanding Cognitive Dysfunction in Rett Syndrome and Autism Spectrum Disorder (ASD)*. [TBC].

Chabros et al. *Cycling-related craniospinal injuries admitted to a Major Trauma Centre in the cycling capital of the UK*. [TBC].

Chabros et al. 2022. *Optimisation of a mathematical model of cerebrospinal fluid dynamics using infusion studies*. [Accepted]. International Symposium on Intracranial Pressure and Brain Monitoring, 14 - 18 November, 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

Skills

Experimental & data analysis skills

Time Series Analysis ○ Mathematical Modeling ○ Fluid Dynamics ○ Bayesian Optimization ○ Nonlinear Dynamics ○ Nonlinear Optimization ○ Parallel Computing ○ Electrophysiology (MEA) ○ Control Engineering ○ Graph Theory ○ Neural Networks ○ Time-frequency Analysis

Programming languages

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

Accomplishments

National Neuroanatomy Competition - Winner (both in clinical category and overall)

European Union Contest for Young Scientists - 2nd award

E(x)plory Science Contest - Special Award (MILSET Expo-Sciences Europe 2018)

Neuronus IBRO&IRUN Neuroscience Forum - Most Active Participant Award

Minister of Education Scholarship

Prime Minister of Poland Scholarship

Extracurricular activities

Collegium Invisibile, Warsaw, Poland 2022 – Present

Collegium Invisibile is an elite academic society that enables outstanding Polish students to undertake individual studies based on tutorial from distinguished scholars. I have been admitted alongside 10 other top students.

Associate Clinical Supervisor 2022 – Present

Supervising junior clinical students.

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 medicine and medical sciences applicants.

Interests

Handball (Cambridge Half-Blue Award) ○ Fly fishing ○ Typography ○ Paleontology