

Danielle Lauren Kurtin

<https://daniellekurtin.github.io/>
<https://www.imperial.ac.uk/people/danielle.kurtin18>

London, UK
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Current Employment

Research assistant: Neural Correlates of Reward and Emotion in opioid dependence (NCORE) January 2023 – Present

Department of Brain Sciences, Imperial College London.

- I am designing and implementing fMRI analyses investigating the different effects of Aprepitant on reward processes in healthy control and methadone-dependent participants with Opioid Use Disorder.
- Line managers: Prof Anne Lingford-Hughes, Dr. Louise Paterson

Research assistant: Developing Temporal Interference as a clinical neuromodulatory tool January 2023 – Present

Department of Brain Sciences, Imperial College London.

- I am designing and implementing studies characterizing the neurological and behavioral effects of Temporal Interference (TI), a novel, noninvasive brain stimulation technique. TI will be delivered to the human hippocampus in participants with Alzheimer's Disease, as well as healthy control participants during a window of neuroplasticity facilitated by a psychedelic experience. The aim of this work is to develop a mechanistic understanding of how TI stimulation modulates brain function and behavior.
- Line manager: Dr. Nir Grossman

Education and Research

PhD Computational Neuroscience October 2019 – Present

Department of Psychology, Faculty of Health and Medical Sciences, University of Surrey, Guildford, UK, GU2 7XH

- I investigated the context-dependent changes in brain state topology and dynamics within tasks, between tasks, and in response to stimulation. I often employed Leading Eigenvector Dynamic Analysis (LEiDA) to characterize brain states, and utilize information theoretical metrics to characterize brain state dynamics and topology. My thesis concluded that the brain is a dynamical system exhibiting context-dependent state topology and dynamics and responds in a similarly context-dependent manner to a novel form of noninvasive brain stimulation, Temporal Interference (TI).
- Supervised by: Dr. Ines Violante, Prof Anne Skeldon, Dr. Adam Hampshire, Dr. Romy Lorenz

MSc Translational Neuroscience October 2018 – October 2019

Imperial College London, London, UK

Awarded: Distinction

- Relevant Courses: Functional Neuroanatomy • Cellular and Molecular Neuroscience • Neurodegenerative Disorders • Neuroinflammation, Stroke, and CNS Trauma • Neuroimaging • Computational Neuroscience
- Research project: I characterized the mechanisms driving the effects of tDCS by modulating parameters such as brain state, stimulation polarity, and white matter structure (through study of traumatic brain injury patients). By developing an understanding of these parameters through the lens of activation and connectivity of neural networks, I hoped to further develop the therapeutic potential of tDCS.
- Supervised by: Dr. Lucia Li, Prof David Sharp

Research Internship January 2018 – September 2018

Netherlands Institute for Neuroscience, Amsterdam

- I investigated the behavioral effects of deep brain stimulation with pilot technology in an OCD rat model. My methods included DBS, elevated plus maze, ultrasonic vocalizations, brain clearing, schedule induced polydipsia, and histology. I assisted another project studying the optogenetic inhibition of orexin neurons and assessed their role in acquiring habitual and goal-directed behaviors.
- Supervised by: Dr. Ingo Willuhn

BSc Biological Sciences January 2016 – August 2017

Florida State University, Tallahassee, FL, USA

Major: Biological sciences, Minor: Chemistry, Cumulative GPA: 3.3

- Research project: I optimized purification of clathrin-coated vesicles (CCVs) and prepared them for cryogenic electron microscopy. My methods included use of a visual quality assessment of bovine brain tissue and the introduction of a sucrose gradient for CCV separation.
- Supervised by: Dr. Scott Stagg

Publications and Literary Involvement

Publications:

- **Danielle L. Kurtin**, Gregory T. Scott, Henry Hebron, Anne C. Skeldon, Ines R. Violante. “Task-based differences in brain state dynamics and their relation to cognitive ability”, *Neuroimage* (2023) <https://doi.org/10.1016/j.neuroimage.2023.119945>
- Ania Maria Jones, **Danielle. L. Kurtin**, Tianshu Liu, Alisia Southwell. “Enhancing the Wider Postgraduate Experience: Student Partnership in Co-creating Online Learning” *In press, Collaboration in Higher Education* (2023)
- **Danielle L. Kurtin**, Valentina Giunchiglia, Jakub Vohryzek, Joana Cabral, Anne C. Skeldon, Ines R. Violante. “Moving from phenomenological to predictive modelling: Progress and pitfalls of modelling brain stimulation in-silico”, *In press, Neuroimage*, (2023) <https://doi.org/10.1016/j.neuroimage.2023.120042>
- **Danielle L. Kurtin**, Garazi Araña-Oiarbide, Romy Lorenz, Ines R. Violante, Adam Hampshire. “Planning ahead: Predictable switching recruits task-active and resting-state networks”, *Accepted, Human Brain Mapping*, (2023)
- **Danielle L. Kurtin**, Adam Hampshire, Niels Kuster, Edward S. Boyden, Alvaro Pascual-Leone, Nir Grossman. “Non-invasive temporal interference electrical stimulation of the human hippocampus”, *Submitted to Nature Neuroscience* (2022)
- Maria Balaet, **Danielle L. Kurtin**, Dragos Gruia, Annalaura Lerede, Darije Custovic, Willian Trender, Amy Jolly, Peter Hellyer, Adam Hampshire. “Who and why: a study of British distrust in the government and media during the COVID-19 pandemic”, *Research Square* (2022)
- **Danielle L. Kurtin**, Matthew Jaquiere, Tibor Auer, Adam Hampshire, Ines R. Violante “Introducing the Task Switching Game: a paradigm for neuroimaging studies.” *F1000Research* (in press, 2022).
- **Danielle L. Kurtin**, Ines R. Violante, Karl Zimmerman, Robert Leech, Adam Hampshire, Maneesh C. Patel, David W. Carmichael, David J. Sharp, Lucia M. Li. “Investigating the interaction between white matter and brain state on tDCS-induced changes in brain network activity.” *Brain Stimulation* (2020).
- **Danielle L. Kurtin**, Daniel AJ Parsons, and Scott M. Stagg. "VTES: a stochastic Python-based tool to simulate viral transmission." *F1000Research* (2020).
- Paraan, Mohammadreza, Joshua H. Mendez, Savanna Sharum, **Danielle L. Kurtin**, Huan He, and Scott M. Stagg. "The structures of natively assembled clathrin coated vesicles." *Science Advances* (2020).

Literary involvement:

- [Founder and a member of the Mini Hack Collection Board of Advisors on F1000 Research.](#)

Peer Review:

- Peer review Report For: The Double Task-Switching Protocol: an investigation into the effects of similarity and conflict on cognitive flexibility in the context of mental fatigue. PLOS One 2022
- Abstract review for 2022 Doctoral College Conference Exploring New Possibilities. April 2022
- Violante I and **Kurtin D.** Peer Review Report For: Transcranial direct current stimulation with functional magnetic resonance imaging: a detailed validation and operational guide. Wellcome Open Res 2021, 6:143
(<https://doi.org/10.21956/wellcomeopenres.18392.r47626>)

Coding repositories:

- **Kurtin, D.**, MutualInformationFunctionalConnectivity_TaskSwitching (Version 1.0.0). GitHub, 2022
https://github.com/daniellekurtin/MutualInformationFunctionalConnectivity_TaskSwitching
- **Kurtin, D.**, Scott, G., Hebron, H., Skeldon, A., Violante, I. BrainStateDynamics-LEiDA-InformatTheory (Version 1.0.0). GitHub, 2022 <https://github.com/daniellekurtin/BrainStateDynamics-LEiDA-InformatTheory>
- **Kurtin, D.**, Orasan, C., Menendez Gonzalez, V., Mantilla Ramos, Y., Balaet, M., Rezvani, R., & Zhaoying, Y. Natural Language Processing Mini Hack (Version 1.0.0). F1000Research, 2022 https://github.com/daniellekurtin/NLP_MiniHack
- **Kurtin, D.** task_switching_paradigm (Version 1.0.0). F1000Research, 2022
https://github.com/daniellekurtin/task_switching_paradigm
- **Kurtin, D.** BuildingAnMLP (Version 1.0.0). F1000Research, 2021 <https://github.com/daniellekurtin/BuildingAnMLP>

Poster Presentations

Poster Title: “Noninvasive Temporal interference stimulation of the human hippocampus selectively modulates its resting state functional connectivity”

Authors: Danielle L. Kurtin, Ketevan Alania, Edward Rhodes, Alvaro Pascual-Leone, Nir Grossman, Ines R. Violante
Presenting at: Organization for Human Brain Mapping, Montreal, June 2023

Poster Title: “Planning ahead: Predictable switching recruits task-active and resting-state networks.”

Authors: Danielle L. Kurtin, Garazi Araña-Oiarbide, Romy Lorenz, Ines R. Violante, Adam Hampshire
Presenting at: British Neuroscience Association Festival of Neuroscience, June 2023, Organization for Human Brain Mapping, Montreal, June 2023

Poster Title: “Information theoretical metrics capture differences in brain state dynamics among cognitive tasks.”

Authors: Danielle Kurtin, Henry Hebron, Prof Anne Skeldon, Dr. Gregory Scott, Dr. Ines R Violante

Presented at: Organization for Human Brain Mapping, Glasgow, June 2022, Centre for Neurotechnology Symposium, Imperial College London, July, 2022, BrainBox Initiative Conference, London, September 2022

Poster Title: “Using open data and code to investigate brain-behaviour relationships”

Authors: Danielle Kurtin, Henry Hebron, Prof Anne Skeldon, Dr. Gregory Scott, Dr. Ines R Violante

Presented at: Inaugural University of Surrey Annual Open Research Lecture, University of Surrey, April 2022

Poster Title: “Introducing: Adapt to Postgrad”

Authors: Danielle Kurtin, Georgia Simmons, Ania-Maria Jones

Presented at: Medical Education Research Unit 2020 Conference, Remote conference, September 2020

Poster Title: “Investigating the interaction between white matter and brain state in tDCS induced changes in brain network activity”

Authors: Danielle L. Kurtin, Ines R Violante, Karl Zimmerman, Rob Leech, Adam Hampshire, Maneesh Patel, David W Carmichael, David J Sharp, Lucia M Li.

Presented at: BrainBox Initiative, Remote Conference, September 2020

Poster Title: “Switch it Up: Targeting the Switch Cost”

Authors: Danielle Kurtin, Dr. Lucia Li, Dr. Adam Hampshire, Prof Anne Skeldon, Dr. Ines Violante

Presented at: New Horizons 2020 Conference, University of Surrey, June 2020

Poster Title: “Using TBI patients as a model of white matter injury to understand mechanisms of noninvasive brain stimulation”

Authors: Danielle L. Kurtin, Ines R Violante, Karl Zimmerman, Rob Leech, Adam Hampshire, Maneesh Patel, Amy Jolly, David W Carmichael, David J Sharp, Lucia M Li.

Presented at: Frontiers in Traumatic Brain Injury, Imperial College London, June 2020

Poster Title: “Electric Anatomy”

Authors: Danielle Kurtin, Dr. Lucia Li, Prof Anne Skeldon, Dr. Ines Violante

Presented at: Lifelong Health Launch, University of Surrey, October 2019 • Postgraduate Research Showcase, University of Surrey, January 2020 • Meeting of the Minds, Imperial College London, January 2020

Poster Title: “Developing a mechanistic understanding of transcranial direct current stimulation”

Authors: Danielle Kurtin, Dr. Lucia Li

Presented at: Translational Neuroscience Presentations, Imperial College London, July 2019 • Dementia Research Symposium, Imperial College London, July 2019 • Crick Partnership Master Conference, Crick Institute, June 2019

Poster Presentation: “Optimization of clathrin coated vesicle purification from bovine brain tissue.”

Authors: Danielle Kurtin, Dr. Scott Stagg

Presented at: 2017 Undergraduate Research Symposium, Florida State University, March 2017 • Research Day, Cells/NUSA, March 2017.

Supervision

Medical student

Anusha Prabhu – March 2023 – Present

Undergraduate students

Rahul Kakiya – September 2019 – April 2020

Lectures and Speaking Events

Lecture: “Applications of information theoretic metrics to brain state data”

Presented for Imperial College London, May 2023

Interview: “Interview with Danielle Kurtin: – Finding a place where I could be my authentic self was important to me”

LGBTQ+ Brains, Imperial College London, April 2023

Lecture: “Orchestrating how we think: an exploration of communication between brain regions”

Presented for SoapBox Science, Brighton, April 2023

Lecture: “Exploring brain function, dysfunction, and the effects of psychedelics”

Presented for Cafe166 Bar and UniArk, London, April 2023

Flash talk: “Increased mutual information functional connectivity during sequentially predictable switches”

Presented for IamBrain Conference, University College London, April 2023

Lecture: “An introduction to dynamical functional connectivity methods and their applications”

Presented for Imperial College London, March 2023

Lecture: “From Bare Feet to Brains: A journey through computational neuroscience”

Presented for LGBTQ Brains in STEM, Imperial College London, February 2023

Interactive stand: “Visualising addiction in the brain”

Presented for Imperial Lates Drug Experiments, Imperial College London, February 2023

Lecture: “Art as an educational tool for neuroscience”

Presented for MSc Translational Neuroscience Students, Imperial College London, September 2020, 2021, 2022

Flash talk: “Moving from phenomenological to predictive modelling: Progress and pitfalls of modelling brain stimulation in-

silico”

Recorded for NeuroMatch Conference, September 2022

Workshop: “Introduction to non-invasive brain stimulation”

Presented for East Sussex College Continuing Professional Development, Imperial College London, July 2022

Lecture: “Timing is everything: Using information theory to distinguish task-specific state dynamics”

Presented for CPR Lecture Series in the CIPPRes Clinic, Imperial College London, June 2022

Lecture: “Zooming In and Out: assessing three different network-level relationships of brain and behavior”

Presented for British Neuroscience Association Annual Members Meeting, April 2022

Lecture: “Science on the big screen: the cost of our current publishing model”

Presented for Imperial College London, March 2022; University of Surrey, April 2022

Speaker: “Using big data and open code to identify relationships between neural network dynamics and behaviour

Presented at the Celebrating Women in Neuroscience, Imperial College London, March 2022

Two-day hackathon: “Introduction to Natural Language Processing”

Presented for the [Mini Hack Consortium](#), January 2022

Lecture: “Overseas Degrees: educational experiences outside the U.S.”

Presented for Florida State University, September 2021

Lecture: “Introduction and demonstration of brain stimulation”

Presented at a Widening Participation Day, University of Surrey, September 2021

Presented as a guest lecture at East Sussex College, September 2021

Guest speaker: “Mean-field oscillatory models of neural networks and leading eigenvector dynamic analysis”

[Semillero de Neurociencias Computacionales, Universidad de Antioquia, July 2021](#)

Co-host: Community Building discussion and Q&A

OHBM 2021, Open Science Special Interest Group, June 2021

Panel Member: “How to Start a local Open Science Initiative?”,

OHBM 2021, Open Science Special Interest Group, June 2021

Lecture: “Great Expectations-Supporting the student transition to PGT study in an online context”

Presented for the Teaching and Learning Conference by Advance HE, July 2021

Lecture: “Reflecting on Student Reflections: Lessons learnt from delivering an online pre-arrival course to prepare students for remote PGT study”

SEDA conference, May 2021

Lecture: “Adapt To Postgrad: Improving the Student Experience”

Presented for Student Voice Conference, The International Collaboratory for Leadership in Universally Designed Education (INCLUDE) and the International Conference on Education Quality (ICEQ), April 2021

Lecture: “Adapt To Postgrad: An online pre-arrival course to support the student transition to PGT”

Presented remotely for Talking Teaching at Imperial College London, April 2021

Lecture: “SuperModels: using mean-field oscillatory models of neural network dynamics”

Presented remotely for the PhD Showcase, University of Surrey, December 2020

Presented remotely for Brain Meetings, Imperial College London, November 2020

Workshop Facilitator: “Surrey Reproducibility Society Discussion Session”

Presented remotely for the University of Surrey, December 2020

Interview: ‘I was taught by scientists and clinicians who are leaders in their field’

Interview for Alumni Brains Blog, Imperial College London, September 2020

Workshop Facilitator: “Open Data and Open Coding”

Presented remotely for the University of Surrey, September 2020

Lecture: “Understanding the Physiological Effects of Stimulation”

Presented at: Dementia Research Symposium Imperial College London, July 2019.

Panel Member: “Careers Panel”, Imperial College London, UK, July 2019

Interview: “Art and Neuroscience.”

Interview for The Arts Freak, London, May 2019. Subject.

Lecture: “Transcranial Direct Stimulation and it’s therapeutic potential in Traumatic Brain Injury patients.”

Presented at: Neuroscience Society Seminars, Imperial College London, February 2019.

Lecture: “Optimization of clathrin coated vesicle purification from bovine brain tissue.”

Presented at: Seminars in Biological Frontiers, Florida State University, May 2017.

Leadership and Involvement

UniArk, UK

[Board of directors, education mentor](#)

Athena Swan Committee: University of Surrey, Guildford, UK

Committee Member

Mentor: ProfessioNOLE Mentor, Florida State University, USA

June 2021 – Present

November 2020 – September 2022

October 2020 – August 2022

Mentor: “Alumni Mentor”, Imperial College London, UK	October 2020 – August 2022
Mentor: “Work Shadowing Scheme”, Imperial College London, UK	July 2020 – July 2022
Surrey Reproducibility Society	September 2019 – July 2022
<i>Acting Vice President, Treasurer, Mini Hack Coordinator, Conference Co-organizer</i>	
Mini Hack Consortium	November 2020 – May 2022
<i>Founder, Steering Committee Lead, Advisor</i>	
Mentor: PhD Buddy, University of Surrey, Guildford, UK	October 2020 – May 2021
Judging Panel: PhD Summer Showcase, Imperial College London, UK	July 2020
Monthly Mini Hacks , University of Surrey, UK	November 2019 – May 2022
<i>Founder, HackMaster, Workshop Coordinator, COVID-19 Officer</i>	
I have delivered >10 workshops for the Monthly Mini Hacks	
Frontiers in Traumatic Brain Injury , Imperial College London, London, UK	January 2020 – June 2020
<i>Committee Member</i>	
Conference Committee , Meeting of the Minds, Imperial College London, London, UK	June 2019 – January 2020
<i>Art Director</i>	
OxBridge Brain Hackathon , Cambridge, UK	November 2019
<i>Project Leader</i>	
MSc Translational Neuroscience , Imperial College London, UK	October 2019 – December 2019
<i>Neurotutor</i>	
Board of Education , Faculty of Medicine, Imperial College London, London, UK	November 2018 – October 2019
<i>Postgraduate Representative</i>	
MSc Translational Neuroscience , Imperial College London, London, UK	September 2018 – September 2019
<i>Class Representative</i>	

Awards and Certifications

British Neuroscience Association Travel Grant	March 2023
<i>Recipient, £220</i>	
Fredrick Douglas Writing Award	January 2023
<i>Founder</i>	
Lewis Elton Award , University of Surrey, UK	November 2022
<i>Certificate, trophy, and £500 grant</i>	
Mentor of the Year , UniArk, UK	November 2022
Postgraduate Researcher of the Year , Faculty of Healthy and Medical Science, University of Surrey, UK	October 2022
Runner-up to best poster prize , Centre for Neurotechnology Symposium, Imperial College London, UK	July 2022
<i>Certificate with £100 prize</i>	
Graduate Certification in Learning and Teaching Program	December 2020 – September 2022
<i>Completed</i>	
Neuromatch Academy	July 2021
<i>Completed</i>	
Surrey Reproducible Society Annual Award	October 2020-Present
<i>Co-founder</i>	
Summer School on Open and Reproducible Science , University of Oxford, Oxford, UK	September 2019
<i>Scholarship</i>	
Vice-Chancellors Award , University of Surrey, Surrey, UK	July 2019
<i>Studentship</i>	
People’s Choice Art in Neuroscience Award , Meeting of the Minds, Imperial College London, UK	January 2019
<i>Award</i>	
British Neuropsychiatry Association Annual General Meeting , London, UK	January 2019
<i>Student Grant</i>	
Academic Leadership Award , College of Arts and Sciences, Florida State University, Tallahassee, Florida	April 2017
<i>Award</i>	
First Place Presentation , Research Day 2017, Cells/NUSA, Florida State University, Tallahassee, Florida	March 2017
<i>Award</i>	
Presidential Humanitarian Undergraduate Service , Florida State University, Tallahassee, Florida	February 2017
<i>Nominee</i>	

Selected Employment History

Imperial College London , UK	January 2022 – February 2022
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<i>Graduate Teaching Assistant</i>	
StudentShaper , Imperial College London, UK	January 2020 – September 2021
<i>Online course developer</i>	
Institute of Advances Studies Aid , University of Surrey, UK	October 2020 – January 2021
<i>Conference and Event Technical Support</i>	
University of Surrey , UK	October 2019 – January 2020
<i>Graduate Teaching Assistant</i>	
Medical illustration artist	October 2017 – October 2018
<i>Content Creator</i>	

Volunteering and Societal Memberships

British Neuroscience Association	November 2020 – Present
<i>Member</i>	
Society for the Improvement of Psychological Science	March 2021 – February 2022
<i>Member</i>	
Neuroscience Society , Imperial College London, London, UK	February 2019 – January 2021
<i>Member</i>	
Medical Reserve Corp , Martin County Health Department, Stuart, Florida	August 2017 – August 2018
<i>Volunteer</i>	
Donate Love ToTally , Tallahassee, Florida	January 2016 – August 2017
<i>Founder</i>	
Red Cross , Capital Circle Chapter, Tallahassee, Florida	August 2016 – December 2017
<i>Volunteer</i>	
