

Navona Calarco

Department of Medical Biophysics, Faculty of Medicine, University of Toronto
Krembil Research Institute, Toronto Western Hospital, University Health Network
navona.calarco@mail.utoronto.ca | navonacalarco.ca

EDUCATION

Doctor of Philosophy, Medical Biophysics, University of Toronto Supervisor: Dr. Kâmil Uludağ	2022 – present
Master of Science, Institute of Medical Science, University of Toronto Supervisor: Dr. Aristotle Voineskos [thesis]	2018 – 2021
Honours Bachelor of Arts, Cognitive Science, York University Advisors: Drs. Shayna Rosenbaum and Raymond Mar	2012 – 2015

EMPLOYMENT

Course Instructor

2023-winter Estimation, Testing, and Learning, post-graduate certificate program, Data Science Institute, University of Toronto

Teaching Assistantships *[all at the University of Toronto]*

2023,22,21,20-fall Computational Biostatistics in R (MSC1090), graduate, Medical Science
2022-fall Introduction to Biostatistics (LMP2004), graduate, Laboratory Medicine
2022-summer Probability, Statistics, and Data Analysis II (STA238), undergraduate, Statistics
2022-summer Design and Analysis of Experiments (STA305), undergraduate, Statistics

Research Employment

2018/9 - 2022/9 Research Analyst, Neurobiology of Depression & Aging Lab, CAMH (part-time)
2016/8 - 2018/8 Research Analyst II, Imaging-Genetics Lab, Research Imaging Centre, CAMH (full-time)
2015/8 - 2016/8 Research Analyst I, Slight Centre for Youth in Transition, CAMH (full-time)
2014/9 - 2015/8 Lab Manager, Cognitive Neuroscience Lab, York University (part-time)
2013/9 - 2014/8 Research Assistant, Cognitive Neuroscience Lab, York University (part-time)

RESEARCH VISITS

2024, Korea [UPCOMING] Visiting Researcher, Centre for Neuroscience Imaging Research, Sungkyunkwan University. Supervised by Dr. Seong-Gi Kim [May 1 - June 30]
2023, Germany Visiting Researcher, Institute of Science and Medicine, Forschungszentrum Jülich. Supervised by Prof. Dr. med. Katrin Amunts [Oct 16 - Nov 18]

RECOGNITIONS *[graduate studies only]*

2023 Michael Smith Foreign Study Supplement [\$6000]
2023 Helmholtz HIDA Visiting Researcher Grant [\$4060 EUR]
2023-2026 CIHR Vanier Canada Graduate Scholarship [\$150,000]
2023-2026 CIHR Canada Graduate Scholarship - Doctoral (CGS-D) [\$105,000] - *declined*
2023 Ontario Graduate Scholarship - PhD Program [\$15,000] - *declined*
2022-2026 Intel ACM SIGHPC Computational & Data Science Fellowship [\$45,000 US]
2022-2023 Massey College Junior Fellow
2022 UofT Department of Medical Biophysics Excellence Award [\$2000]
2022 UofT Medicine Unilever/Lipton Graduate Fellowship in Neurosciences [\$1700]
2022 UHN Research Trainee Conference Participation Award [\$500]
2022 UofT Medicine Dr. Jesse Keshin Graduate Student Award [\$2000]
2022 Ontario Graduate Scholarship - PhD Program [\$15,000]
2020 SOBP Predoctoral Scholars Travel Fellowship Award [\$2000 US]

2019	UofT Graduate Studies Conference Grant [\$940]
2019	UofT Medicine Cleghorn Studentship Award for Schizophrenia Research [\$27,500]
2019	Ontario Graduate Scholarship - Master's Program (CGS-M) [\$15,000]
2018	CIHR Canada Graduate Scholarships - Master's Program [\$17,500]
2018	CAMH Discovery Fund Talent Development Competition [\$32,500]
2018	UofT Medicine Institute of Medical Science Entrance Award [\$5000]

PUBLICATIONS

→ [Google Scholar](#)

Peer-Reviewed Papers

- 15 Bingham, [Calarco](#), Dickie, Alexopoulos, Butters, Meyers, Marino, Neufeld, Rothschild, Whyte, Mulsant, Flint, Voineskos (2023). *The relationship of white matter microstructure with psychomotor disturbance and relapse in remitted psychotic depression*. *Journal of Affective Disorders*.
- 14 [Calarco](#), Oliver, Joseph, Hawco, Dickie, DeRosse, Gold, Foussias, Argyelan, Malhotra, Buchanan, Voineskos (2023). *Multivariate associations among white matter, neurocognition, and social cognition across individuals with schizophrenia spectrum disorders and healthy controls*. *Schizophrenia Bulletin*.
- 13 Shuster, Miles, Heyland, [Calarco](#), Voineskos, Nikolova, Diniz (2023). *Neuroimaging features of depression-frail phenotype in older adults: A pilot study*. *International Psychogeriatrics*.
- 12 [Calarco](#), Cassidy, Selby, Hawco, Voineskos, Diniz, Nikolova (2022). *Associations between locus coeruleus integrity and diagnosis, age, and cognitive performance in older adults with and without late-life depression: An exploratory study*. *NeuroImage: Clinical*.
- 11 Richie-Halford, Cieslak ... [The Fibr Community Science Consortium](#) [one of 150 consortia co-authors], Satterthwaite, Rokem (2022). *An open, analysis-ready, and quality controlled resource for pediatric brain white-matter research*. *Scientific Data*.
- 10 Schilling ... [Calarco](#) [mid author of 100+ authors] ... Descoteaux (2021). *Tractography dissection variability: what happens when 42 groups dissect 14 white matter bundles on the same dataset?* *NeuroImage*.
- 9 Martin-Chang, Kozak, Levesque, [Calarco](#), Mar (2020). *What's your pleasure? Exploring the predictors of leisure reading for fiction and nonfiction in adults*. *Reading and Writing*.
- 8 Marečková, Hawco, Bakht, [Calarco](#), Voineskos, Sibille, Hariri, Nikolova (2020). *Novel polygenic risk score as a translational tool linking depression-related changes in the corticolimbic transcriptome with neural face processing and anhedonic symptoms*. *Translational Psychiatry*.
- 7 Dickie, Anticevic, Smith, Coalson, Manogaran, [Calarco](#), Viviano, Glasser, Van Essen, Voineskos (2019). *ciftify: A framework for surface-based analysis of legacy MR acquisitions*. *NeuroImage*.
- 6 Shahab, Mulsant, Levesque, [Calarco](#), Nazeri, Wheeler, Foussias, Rajji, Voineskos (2019). *Brain structure, cognition, and brain age in schizophrenia, bipolar disorder, and healthy controls*. *Neuropsychopharmacology*.
- 5 Hawco, Buchanan, [Calarco](#), Mulsant, Viviano, Dickie, Argyelan, Gold, Iacoboni, DeRosse, Foussias, Malhotra, Voineskos (2019). *Separable and replicable neural strategies during imitation of emotional faces related to social cognitive and neurocognitive performance*. *American Journal of Psychiatry*.
- 4 Viviano, Buchanan, [Calarco](#), Gold, Foussias, Bhagwat, Stefanik, Hawco, DeRosse, Argyelan, Turner, Chavez, Kochunov, Kingsley, Zhou, Malhotra, Voineskos (2018). *Resting-state connectivity biomarkers of cognitive performance and social function in Schizophrenia Spectrum Disorders and healthy controls*. *Biological Psychiatry*.
- 3 Hawco, Viviano, Chavez, Dickie, [Calarco](#), Kochunov, Argyelan, Turner, Malhotra, Buchanan, Voineskos. (2018). *A longitudinal human phantom reliability study of multi-center T1-weighted, DTI, and resting state fMRI data*. *Psychiatry Research: Neuroimaging*.
- 2 Dickie, Ameis, Shahab, [Calarco](#), Smith, Miranda, Viviano, Voineskos. (2018). *Personalized intrinsic network topography mapping and functional connectivity deficits in Autism Spectrum Disorder*. *Biological Psychiatry*.
- 1 Herdman, [Calarco](#), Moscovitch, Hirshhorn, Rosenbaum. (2015). *Impoverished descriptions of familiar routes in three cases of hippocampal/medial temporal lobe amnesia*. *Cortex*.

Book Chapters

- 2 Zacks, Mar, [Calarco](#). (2018). The cognitive neuroscience of discourse: Covered ground and new directions. In Schober, Britt, & Rapp (Eds.), *Handbook of Discourse Processes* (269-294). Routledge.
- 1 [Calarco](#), Fong, Rain, Mar. (2017). Absorption in narrative fiction and its possible impact on social abilities. In Hakemulder, Kuijpers, Bálint, Doicaru, & Tan (Eds.), *Narrative Absorption* (293-313). John Benjamins.

Papers In Press (IP) / In Revision (RVS) / In Review (RVW) / In Submission (SUB) / In Preprint (PRE)

- PRE** Ebrahimi, [Calarco](#), Campbell, Hawco, Voineskos, Khisti. *Time-resolved fMRI shared response model using Gaussian process factor analysis*.
- RVS** Amunts et al. [one of ~100 consortia co-authors]. *The coming decade of digital brain research: A vision for neuroscience at the intersection of technology and computing*.

PRESENTATIONS [presenting author only, † virtual due to COVID-19 pandemic][→ select PDFs](#)**Refereed Conference Presentations**

- 2023 The Human Claustrum in BigBrain and in vivo 7T MRI. *Krembil Research Day*, Toronto -- **best presentation award**.
- 2022 Using BigBrain to establish a histologically-informed MRI reference of the human claustrum. *BigBrain Workshop: From microstructure to functional connectomics*, Zadar Croatia -- **supported by travel award**.
- 2021 † Multivariate associations among white matter microstructure, neurocognition, and social cognition in people with a schizophrenia spectrum disorder, *UofT Institute of Medical Science Scientific Day*, Toronto.
- 2021 † Exploring multivariate patterns of brain and behaviour with Canonical Correlation Analysis: An application in schizophrenia, *Canadian Computational Neuroscience Spotlight (CCNS)*, Toronto.
- 2021 † Exploring multivariate patterns of brain and behaviour with Canonical Correlation Analysis: An application in schizophrenia, *CANSSI-NISS Health Data Science Workshop*, Toronto -- **top 5 paper**.
- 2021 † Multivariate associations among white matter microstructure, neurocognition, and social cognition in people with a schizophrenia spectrum disorder, *Schizophrenia International Research Society (SIRS)*, Toronto.
- 2019 Case-control differences and scanner variability in white matter microstructure in a multi-centre study of schizophrenia spectrum disorder and healthy control participants, *UofT Department of Psychiatry Research Day*, Toronto.
- 2018 Machine learning using brain imaging and neurocognitive data supports accelerated aging in schizophrenia spectrum, but not bipolar spectrum disorders, *UofT Department of Psychiatry Research Day*, Toronto.

Refereed Poster Presentations

- 2023 Establishing an anatomical gold standard of the human claustrum, *The International Society for Magnetic Resonance in Medicine (ISMRM) Workshop on Current Issues in Brain Function*, Padua, Italy.
- 2023 Establishing a MRI reference for the human claustrum, *Organization for Human Brain Mapping (OHBM)*, Montreal.
- 2023 Establishing a MRI reference for the human claustrum. *UofT Medical Biophysics Symposium*, Toronto.
- 2022 Neuromelanin in the locus coeruleus is associated with neurocognitive performance in older adults with depression and healthy controls, *Society of Biological Psychiatry (SOBP)*, New Orleans, USA -- **supported by travel award**.
- 2021 † Multivariate associations among white matter microstructure, neurocognition, and social cognition in people with a schizophrenia spectrum disorder and healthy control participants, *UofT Department of Psychiatry Research Day*, Toronto.
- 2021 † Multivariate associations among white matter microstructure, neurocognition, and social cognition in people with a schizophrenia spectrum disorder and healthy control participants, *Society of Biological Psychiatry (SOBP)*, San Diego, USA.
- 2020 † Association among deep white matter tracts and social cognition in schizophrenia and healthy

- controls, *Society of Biological Psychiatry (SOBP)*, New York, USA -- **supported by travel award.**
- 2020 † Pilot testing of neuromelanin as a biomarker of late-life depression, *Imaging Network Ontario (ImNO)*, Toronto.
- 2019 A graph signal processing analysis of an emotional fMRI task in a large, multi-centre study of schizophrenia and healthy controls, *XSeed Seeding Innovation*, Toronto.
- 2019 Case-control differences and scanner variability in white matter microstructure in a multi-centre study of schizophrenia spectrum disorder and healthy control participants, *UofT Institute of Medical Science Scientific Day*, Toronto.

Guest Lectures, Rounds, Panels, & Outreach Presentations

- 2023/11 Düsseldorf Institute of Neuroscience and Medicine Besprechung | 'Integrating the claustrum into the Jülich Brain Atlas'
- 2023/04 Montreal Feindel Brain Imaging Lecture Series, McConnell Brain Imaging Centre at the MNI (with Kâmil Uludağ) | 'Investigating the claustrum in BigBrain ... and via 7T MRI?'
- 2021/11 † Toronto BrainHack Global Toronto | Panelist, 'Fun and challenges in analyzing MRI data'
- 2021/06 † Toronto CAMH Trainee Seminar Series | 'Multivariate analyses of brain imaging data'
- 2021/03 † Toronto 3 Minute Thesis Competition (3MT), UofT | 'Social cognition is in the connections'
- 2021/02 † Toronto Krembil Neuroimaging Rounds, UHN | 'Multivariate associations with white matter microstructure in schizophrenia'

ADDITIONAL TRAINING [all 1 week intensive]

→ [GitHub](#) | [RPubs](#)

- 2021 Teaching The Carpentries Instructor Training [virtual]
- 2019 Scientific Diffusion Imaging in Python (DiPy) Workshop [Bloomington]
- 2019 Scientific ABCD Neurocognitive Prediction Challenge, satellite of MICCAI 2019 [virtual]
- 2017 Computational SciNet Compute Ontario Summer School: Data Science [Toronto]
- 2016 Computational SciNet Compute Ontario Summer School: High Performance Computing [Toronto]

SERVICE

Reviewing

→ [Web of Science](#)

Ad hoc: Psychiatry Research (2); Psychiatry Research: Neuroimaging (6); Schizophrenia Bulletin (1)
Mentored: Nature Communications (1); Human Brain Mapping (2); Biological Psychiatry (2)

Undergraduate Mentorship [all summer-long research programs]

- 2023 Skerdi Progrî, Biomedical Sciences, Toronto Metropolitan University
 (with Dr. Kâmil Uludağ | UHN Summer Undergraduate Research Program)
- 2022 Lindsay Heyland, Neuroscience, Mount Saint Vincent University
 (with Dr. Yuliya Nikolova | Amgen Scholar Program)
- 2018 Priya Patel, Engineering, University of Waterloo
 (with Dr. Yuliya Nikolova | Waterloo-CAMH co-op program)

Conference Volunteerism

- 2021 Volunteer The 24th Annual Conference on Artificial Intelligence and Statistics (AISTATS)
- 2020 Reviewer NeurIPS Workshop: Algorithmic Fairness (AFCI2020)
- 2020 Reviewer Black in Neuro Conference 2020

COMMUNITY

- 2021/12 - present Carpentries Instructor (Software Carpentry and Data Carpentry)
 [Teach R, Python, and Bash to students and scientists over full-day workshops]
- 2020/9 - present Advisory Board, Child Welfare Political Action Committee
 [Advocacy for former Crown Wards re: post-secondary education support]
- 2018/9 - 2022/12 Programming Instructor, Yonge Street Mission
 [Teach HTML & CSS and Python to 'at-risk' youth; 2020 Volunteer of the Year]