

Kaitlin Sullivan

PhD Candidate – Cembrowski Lab

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Room 3.351 – 2350 Health Sciences Mall,
University of British Columbia, Vancouver, BC, Canada

Education

- PhD in Neuroscience** – University of British Columbia **2021 - Present**
Thesis: “Identifying and manipulating neuronal subpopulations participating in fear memory.”
Supervisor: Dr. Mark S. Cembrowski
- MSc in Neuroscience** – University of British Columbia **2019 - 2021**
Supervisor: Dr. Mark S. Cembrowski
(*Transferred to PhD in January 2021*)
- BA&Sc in Cognitive Science** – McGill University **2012 - 2016**
Major Focus: Philosophy & Neuroscience
Minor: Cell & Molecular Biology
Thesis: “A morphological and functional analysis of a novel TTX-resistant sodium channel in the mammalian cerebellum”
Supervisor: Dr. Derek Bowie

Employment

- PhD Candidate **2021 - Present**
Cembrowski Lab, UBC – Vancouver, Canada
- MSc Student **2019 - 2021**
Cembrowski Lab, UBC – Vancouver, Canada
- Laboratory Technician **2019 - 2019**
Cembrowski Lab, UBC – Vancouver, Canada
- Science and Mathematics Tutor **2018 - 2019**
Bloom Education – Vancouver, Canada
- Assistant Language Teacher **2017 - 2018**
Interac Japan – Atsugi, Kanagawa, Japan
- Undergraduate Researcher **2015 - 2016**
Bowie Lab, McGill University – Montreal, Canada

Awards & Recognitions

- University of Utah Neuroscience Rising Star Award **2023**
International competition that recognizes ~10 recipients each year, awarded to "exceptional late-stage graduate students in neuroscience."
- NSERC CGS-D (\$105,000) **2022 - 2024**
Canada Graduate Scholarship – Doctoral from the Natural Sciences and Engineering Research Council of Canada for "rewarding and retaining high-calibre doctoral students at Canadian institutions"
- UBC 4 Year Fellowship (\$90,000, declined) Accepted in title only **2022 - 2024**
Financial support stipend from the University of British Columbia for "ensuring UBC's best PhD, DMA, and MD-PhD students are provided with financial support"
- DMCBH General Award (\$5,000) **2021 - 2022**
Djavad Mowafaghian Centre for Brain Health General Awards recognize top students in the Graduate Program in Neuroscience

Best Talk – UBC SBME Research Day (\$300) <i>School of Biomedical Engineering Research Day Best Talk Award</i>	2021
Best Publication – UBC Neuroscience (Master's) (\$200) <i>Best Publication in Graduate Program in Neuroscience at UBC for 2020 eLife paper</i>	2021
CONP Research Scholar Award (\$25,000, declined) <i>Accepted in title only</i> <i>Canadian Open Neuroscience Platform Scholar award for excellence in Open Science research</i>	2020 - 2021
IMH Marshall Scholarship (\$25,000, declined) <i>UBC's Institute of Mental Health Fellowship Program for advancing treatment of psychiatric disorders</i>	2020 - 2021
CIHR CGS-M (\$17,500) <i>Canada Graduate Scholarship – Masters from the Canadian Institutes of Health Research which "provides financial support to high-calibre scholars" in a Master's program</i>	2020 - 2021
Royal Canadian Legion Scholarship – CIMVHR (\$30,000) <i>Canadian Institute for Military and Veteran Health Research scholarship for research pertaining to veteran health. Sole awardee in 2019 national competition.</i>	2019 - 2021
Faculty of Medicine Graduate Award (\$5,600) <i>Entry Award for UBC's Faculty of Medicine</i>	2019
GÉPROM Summer Studentship Award (\$3,000) <i>Groupe d'étude des protéines membranaires (GÉPROM) summer studentship award for undergraduates studying membrane protein structure and function</i>	2016

Publications

- Sullivan, K.E.**, Kraus, L., Wang, L., Stach, T., Lemire, A., Clements, J., Cembrowski, M.S. (2022). Sharp cell-type-identity changes differentiate the retrosplenial cortex from the neocortex. *Cell Reports*, accepted. ([Preprint on bioRxiv](#))
- O'Leary, T.P.*, Kendrick, R.M.*, Bristow, B.N., **Sullivan, K.E.**, Wang, L., Clements, J., Lemire, A.L., Cembrowski, M.S. (2022). Neuronal cell types, projections, and spatial organization of the central amygdala. *iScience*, **25(12)**: 105497
- Sullivan, K. E.***, Kendrick, R. M.*, & Cembrowski, M. S. (2021). Elucidating memory in the brain via single-cell transcriptomics. *Journal of Neurochemistry*, **157(4)**, 982-992. *In the top 20 most downloaded *J Neurochem* articles of 2021
- Erwin, S. R., Bristow, B. N., **Sullivan, K. E.**, Kendrick, R. M., Marriott, B., Wang, L., ... & Cembrowski, M. S. (2021). Spatially patterned excitatory neuron subtypes and projections of the claustrum. *Elife*, **10**, e68967.
- O'Leary, T. P. *, **Sullivan, K. E.***, Wang, L., Clements, J., Lemire, A. L., & Cembrowski, M. S. (2020). Extensive and spatially variable within-cell-type heterogeneity across the basolateral amygdala. *Elife*, **9**, e59003. *"Striking Image" awardee and website cover image.

Oral Presentations

- Tools for mFISH Visualization and Analysis (2021) CONP Scholar Update, UBC, Canada. (*Institutional*)
- Using Spatial Transcriptomics to Understand the Molecular Mechanisms of Memory. (2021). GenomeWeb Webinar, United States ([Invited Speaker](#) – [International](#))

2. Multiplexed smFISH and Memory. (2021) Advanced Cell Diagnostics RNAscope Webinar, UBC, Canada ([Invited Speaker](#) – *Institutional*)
3. The Cellular Landscape of the Retrosplenial Cortex. (2021) School for Biomedical Engineering Research Day, UBC, Canada (*Institutional*)
4. Visualization and Analysis of Spatial Transcriptomic Data. (2020) [CONP Scholar Symposium](#), UBC, Canada. (*Institutional*)
5. Using single cell transcriptomics to understand memory at the cellular level. (2020) Cellular and Physiological Sciences Retreat, UBC, Canada (*Institutional*) (MSc)
6. The study of memory mechanisms to identify new therapeutic targets for PTSD (2020), Select Science, United Kingdom ([Video Interview](#) – *International*)
7. Using single cell transcriptomics to understand memory at the cellular level. (2020) School for Biomedical Engineering Virtual Seminar, UBC, Canada (*Institutional*)
8. Multiplexed in situ Hybridization. (2019), Data Binge Series, UBC (*Institutional*)
9. A Novel TTX-Resistant Sodium Channels in the Mammalian Cerebellum. (2016) GEPROM Summer Student Symposium - McGill University, Canada (*Institutional*)

Posters

1. **Sullivan, K.E.***, Larissa Kraus, Mark S Cembrowski. (2022). Sharp cell-type-identity changes differentiate the retrosplenial cortex from the neocortex. Canadian Association for Neuroscience Meeting, Canada (*National*)
2. **Sullivan, K.E.***, Larissa Kraus, Mark S Cembrowski. (2021). The cellular landscape of the retrosplenial cortex. Canadian Association for Neuroscience Meeting, Canada ([Online](#) - *National*)
2. **Sullivan, K.E.***, Larissa Kraus, Mark S. Cembrowski. (2021). The cellular landscape of the retrosplenial cortex. Canadian Student Health Research Forum, Canada (*National*)

Teaching & Mentoring

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|---|---------------------|
| Teaching Assistant – CAPS 431
<i>Teaching Assistant for course content on using R to analyze biological data. Included 6 laboratory hours, 4 office hours, and grading.</i> | 2023 |
| Teaching Assistant – CAPS 430
<i>Teaching Assistant for course content on using R to analyze biological data. Included 18 laboratory hours, 8 office hours, and grading.</i>
Evaluations: 100% %Favourable ratings across all categories | 2021 |
| Teaching Assistant – CAPS 430
<i>Teaching Assistant for course content on using R to analyze biological data. Included 12 laboratory hours, 6 office hours, and grading.</i>
Evaluations: 100% %Favourable ratings across all categories | 2020 |
| Tutor – Introduction to R
<i>Tutor for UBC's NeuroImaging and NeuroComputation (NINC) program on introductory programming in R. ~15 hours of programmed tutoring per year.</i> | 2021-present |
| REX Mentor
<i>Mentoring 4 undergraduate students on a scRNA-seq research project.</i> | 2021 - 2022 |

Research Skills

Big Data Analysis

- Developed a Fiji plugin for multiplexed *in situ* hybridization (mFISH) analysis
- Developed an R package for dimensionality reduction and clustering of mFISH
- Proficient in analysis of single cell RNA sequencing via cluster computing
- Proficient in R & Fiji Macro Language; Familiar with Python, Java, Bash

Microscopy

- Lattice light sheet microscopy (Zeiss LLS 7)
- Confocal microscopy (Leica SP8)

Histology

- Developed mFISH experiments in the Cembrowski lab
- Immunohistochemistry
- SHIELD tissue clearing

Mouse Work

- Stereotaxic surgery for intracranial AAV injections
- Contextual fear conditioning
- Intraperitoneal injection
- Transcardial perfusions