

Margarita Kapustina

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2350 Health Sciences Mall, Life Sciences Institute
University of British Columbia, Vancouver, BC, Canada

EDUCATION

MSc in Neuroscience September 2023-Present
University of British Columbia, Cembrowski Laboratory

BSc in Biology 2018-2023
University of British Columbia
GPA 4.33/4.33

RESEARCH EXPERIENCE

MSc Student – UBC Cembrowski Lab September 2023-Present
PI: Dr. Mark S. Cembrowski
Identifying functionally distinct cell-types in mouse and human neocortex layer 6b. Combining single-cell RNA sequencing analysis, *Xenium* spatial transcriptomics and *ex vivo* electrophysiology recordings to investigate cell-type substrates of wakefulness.

Directed Studies, NSERC USRA Student – UBC Cembrowski Lab 2022-Present
PI: Dr. Mark S. Cembrowski
Identifying neuronal subpopulations in mouse and human neocortex layer 6b. Applied machine learning techniques to analyze single-cell RNA sequencing and spatial transcriptomic data in R, performed immunohistochemistry, multiplexed fluorescent *in situ* hybridization and confocal microscopy.

Undergraduate Research Assistant, Directed Studies Student – UBC Altshuler Lab 2022
PI: Dr. Douglas Altshuler
Examined how visual stimulus features influence zebra finch forward flight patterns. Conducted avian flight behavioural assays, designed behavioural paradigm and analyzed flight trajectories in R (OptiTrack Motive recording, OptiTrack pathviewr R package).

Directed Studies Student – UBC Gordon Lab 2022
PI: Dr. Michael Gordon
Conducted comprehensive literature review and lead oral presentations on the novel mechanisms regulating olfactory stimulus sparse coding in *Drosophila Melanogaster*.

Research Assistant – UBC Forest and Conservation Sciences 2019
PhD candidate's Advisor: Dr. Suzanne Simrad, Dr. Robert Guy.
Examined the effects of nitrogen deposition on tree seedling phytobiomes, simulating effects of climate warming. Partially funded by Project Learning Tree Canada.

AWARDS & RECOGNITIONS

NSERC Undergraduate Student Research Award (\$6000) 2022

CIHR Canada Graduate Scholarships – Master’s (\$17500) 2023

Awarded by the Canadian Institutes of Health Research to provide “financial support to high-calibre scholars”.

PUBLICATIONS:

Zhang, A. A., **Kapustina, M.*** & Tsai, J. Y. J.*, Sullivan, K. E., Kraus, L., Bristow, B. N., Erwin, S. R., Wang, L., Stach, T. R., Clements, J., Lemire, A. L., Cembrowski, M. S. (2023) The cell-type-specific organization of the anterior thalamic nuclei of the mouse brain. *Cell Reports*, in Revision. * : co-authorship.

Sullivan, K. E., Kraus, L., **Kapustina, M.**, Wang, L., Stach, T. R., Lemire, A. L., ... & Cembrowski, M. S. (2023). Sharp cell-type-identity changes differentiate the retrosplenial cortex from the neocortex. *Cell Reports*, 42(3).

Kapustina, M. *Drosophila Melanogaster* Olfactory Processing & Mushroom Body Sparse Coding: A review on the mechanisms regulating olfactory stimulus sparse coding of the mushroom body in *Drosophila Melanogaster*. *Pursue: Undergraduate Research Journal*. Under Review

Kapustina, M. (2022). Behavioural Inventory of Bald Eagle (*Haliaeetus leucocephalus*) Chicks of Northeast Florida. *The Expedition*, 13(1).

POSTER PRESENTATIONS

Kapustina, M., Kraus, L., Cembrowski, M. (2023). Identifying L6b neuronal subpopulations in the mouse and human brain. UBC School of Biomedical Engineering Research Day, Canada. *Institutional*.

Kapustina, M., Tarik, A., Iyer, S., Kraus, L., Sullivan, K., Cembrowski, M. (2023). Identifying neocortex L6b neuronal diversity and subpopulations in the mouse and human brain. Canadian Association for Neuroscience Meeting, Canada. *National*.

Kapustina, M., Kraus, L., Cembrowski, M. (2023). Identifying L6b neuronal subpopulations in the mouse and human brain. UBC Multidisciplinary Undergraduate Research Conference, Canada. *Institutional*.

TEACHING & MENTORING

- Peer Tutor - BIOL 371*** 2022
Peer tutor for course content and paper discussions for Principles of Neurobiology I. Included 12 review sessions.
- Biology Undergraduate Diversity in Research Mentor*** 2022-Present
Mentoring 7 (2 current, 5 past) Biology undergraduate students from underrepresented groups in gaining research experience and overcoming EDI-based challenges in research. Includes 1hr weekly meetings.
- Women in Science Mentor*** September 2023-Present
Mentoring 2 students in gaining research experience and navigating gender-based challenges in STEM and neuroscience fields, includes 1.5hr monthly meetings.
- Science Undergrad Society Mentor*** 2023
Mentoring one science undergraduate student in gaining research experience. Includes 1.5hr monthly meetings.
- Science Undergrad Society Panel Speaker*** 2023
Navigate your degree Biology and Neuroscience speaker, UBC, Canada.
- UBC Data Science Club (Workshop Lead)*** 2022
Led 1hr workshop in exploratory data analysis and visualization techniques in R.