Jacqueline R. Thompson, PhD | Curriculum Vitae

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Personal Website | Google Scholar | GitHub | LinkedIn

EDUCATION

State University of New York, Upstate Medical University — **Syracuse, NY**
PhD, Department of Neuroscience — April 2024
Advisor: Yingxi Lin

University of Portland — **Portland, OR**
B.S. in Biology, Secondary major in Spanish — 2012 - 2015
Graduated *Cum Laude*

RESEARCH EXPERIENCE

Johns Hopkins University — **Baltimore, MD**
Bloomberg School of Public Health, Dept. Biostatistics — May 2024 - Present
Postdoctoral Researcher
Supervisor: Stephanie C. Hicks

- Leading a spatial RNA-sequencing case-control project probing the novel insights of how the lamina in the human prefrontal cortex contribute to sex-specific biological mechanisms of disease in mood disorders. Integrating with genomics for genetic risk assessment and causal inference.
- On-going work explores long-read RNA-sequencing to investigate the role of transcript isoforms in the function of the human dentate gyrus from infancy to adulthood.
- Collaborated with previous project leaders to publish a spatial transcriptomics atlas of the postmortem human hippocampus, utilizing gene expression factorization to integrate with single-nucleus RNA-sequencing data and allow for extrapolation to external datasets.

SUNY Upstate Medical University — **Syracuse, NY**
Neuroscience Program, Dept. Neuroscience — Aug. 2019 – April 2024
Graduate Research Assistant
Advisor/Supervisor: Yingxi Lin

- Worked as part of a team exploring the intersection of activity-dependent transcription and neuron development in the mouse hippocampus.
- Specialized in the analysis of complex next-generation sequencing projects (multiple timepoints, cellular reporter status, multiomic datasets).
- Identified a candidate signaling pathway regulating the experience-dependent maturation of dentate gyrus granule cells in the mouse hippocampus.

Oregon Health and Science University **Beaverton, OR**
Oregon National Primate Research Center June 2015 – Aug. 2019
Research Assistant
Advisor/Supervisor: Elinor L. Sullivan

- Worked in a behavioral neuroscience lab that utilized a nonhuman primate model to examine the association between neuropsychiatric risk and perinatal environment and nutrition.
- Handled the collection and analysis of behavioral, physiological, and histological samples, with involvement extending to the communication of these data in publications.
- Responsible for the analysis of several longitudinal datasets and worked with collaborators to execute mathematical models exploring the intersecting influences of diet, metabolic state, and inflammatory markers on behavior.

SKILLS AND PROFICIENCIES

Technical Data Skills

- Data wrangling, Quality control and exploratory data analysis, Cluster analysis, Hypothesis testing, Regression modeling, Enrichment analysis, Data visualization, Machine learning (autoencoder)

Data Tools and Languages

- R, Python, Jupyter Notebook, GitHub, conda package manager, Linux-based high-performance computing environments, Slurm workload manager, Microsoft Azure, Microsoft Excel, SPSS, GraphPad
- Top-used packages: tidyverse, ggplot2, SingleCellExperiment, Scater, Seurat, Signac, ArchR, Limma, gdgeR, DESeq2, GenomicRanges, NumPy, Pandas, Matplotlib, Scanpy, Scikit-learn
- Command line tools: fastqc, minimap2, samtools, MACS2

FIRST AUTHOR PUBLICATIONS

Thompson, J.R.*, Nelson, E.D.*, Tippani M.*, Ramnauth, A.D., Divecha, H.R., Miller, R.A., Eagles, N.J., Pattie, E.A., Kwon, S.H., Bach, S.V., Kaipa, U.M., Yao, J., Hou, C., Kleinman, J.E., Collado-Torres, L., Han, S., Maynard, K.R., Hyde, T.M., Martinowich, K., Page, S.C., Hicks, S.C. An integrated single-nucleus and spatial transcriptomics atlas reveals the molecular landscape of the human hippocampus. Nat Neurosci (2025) 28:1990–2004. DOI: 10.1038/s41593-025-02022-0
*JRT, EDN, and MT contributed equally to the work.

Thompson, J.R., Lin, Y. (2024). Nature and Nurture Converge in the Nucleus to Regulate Activity-Dependent Neuronal Development. In: Saha, R.N., Dudek, S.M. (eds) Transcriptional Regulation by Neuronal Activity. Springer, Cham. DOI: 10.1007/978-3-031-68550-7_10

Dunn, G.A*, **Thompson, J.R.***, Mitchell, AJ, Papadakis, S., Selby, M., Fair, D.A., Gustafsson H.C., Sullivan, E.L. Perinatal Western-style diet alters serotonergic neurons in the macaque raphe nuclei. Front Neurosci (2023) 16:1067479. DOI: 10.3389/fnins.2022.1067479
*GAD and JRT contributed equally to the work.

DeCapo M.*, **Thompson J.R.***, Dunn G., Sullivan E.L. Perinatal Nutrition and Programmed Risk for Neuropsychiatric Disorders: A Focus on Animal Models. Biol Psychiatry (2019) 85(2):122-134. DOI: 10.1016/j.biopsych.2018.08.006.

*MD and JRT contributed equally to the work.

Thompson J.R., Gustafsson H., DeCapo M., Takahashi D.L., Bagley J.L., Dean T., Kievit P., Fair D.A., Sullivan E.L. Maternal diet, metabolic state, and inflammatory response exert unique and long-lasting influences on offspring behavior in non-human primates. Front Endo (2018) 9:161. DOI: 10.3389/fendo.2018.00161.

Thompson J.R., Valleau J.C., Barling A.N., Franco J.G., DeCapo M., Bagley J.L., Sullivan E.L. Exposure to a high-fat diet during early development programs behavior and impairs the central serotonergic system in juvenile non-human primates. Front Endo (2017) 8:164. DOI: 10.3389/fendo.2017.00164.

SELECTED PUBLICATIONS

Shah, K., Hou, C., **Thompson, J,R.**, Hicks, S.C. BatchSVG: identifying batch-biased genes in the application of spatially variable gene detection. bioRxiv (2025). DOI: 10.64898/2025.12.09.693192 (under revision at Bioinformatics).

Ramnauth, A.D., Tippani, M., Divecha, H.R., Papariello, A.R., Miller, R.A., Nelson, E.D., **Thompson, J.R.**, Pattie, E.A., Kleinman, J.E., Maynard, K.R., Collado-Torres, L., Hyde, T.M., Martinowich, K., Hicks, S.C., Page, S.C. Spatiotemporal analysis of gene expression in the human dentate gyrus reveals age-associated changes in cellular maturation and neuroinflammation. Cell Reports (2025) 44(2):115300. DOI: 10.1016/j.celrep.2025.115300.

Xue, J., Brawner, A.T., **Thompson, J.R.**, Yelhekar, T.D., Newmaster, K.T., Qiu, Q., Cooper, Y.A., Yu, C.R., Ahmed-Braima, Y.H., Lin, Y. Spatiotemporal Mapping and Molecular Basis of Whole-brain Circuit Maturation. bioRxiv (2024). DOI: 10.1101/2024.01.03.572456 (under revision at Neuron).

Thompson, J.R. Novel signaling pathways driving experience-dependent maturation in dentate gyrus granule cells: a deep-sequencing approach. Doctoral dissertation (2024). URI: 20.500.12648/14794.

ORAL PRESENTATIONS

“Getting more out of NGS: From reporter mouse models to psychiatric case-control studies”. Dec 16, 2025. Invited speaker at One Neuro Initiative Postdoc Talks. Baltimore, MD.

“Predicting the activity status of single nuclei”. March 31, 2023. Invited participant at SUNY Upstate Medical University Neuro Research Day 2023. Syracuse, NY.

“How Neuronal Communication Shapes the Brain: Single cell analyses reveal a novel gene network driving brain maturation”. April 6, 2022. Selected participant at SUNY Upstate Medical University Student Research Day 2022. Syracuse, NY.

“Aberrant behavioral regulation in juvenile Japanese macaques is associated with HGF-SF, perinatal diet, and gestational environment”. April 13, 2018. Selected participant at Society for Neuroscience Oregon and Southwest Washington Chapter Meeting 2018. Troutdale, OR.

“Perinatal influences of offspring behavior and neurodevelopment in Japanese macaques”. March 5, 2018. Invited participant for OHSU Department of Behavioral Neuroscience Seminar. Portland, OR.

“Developmental exposure to high-fat diet programs neural development and anxiety behaviors in juvenile non-human primates”. Sept 21, 2017. Institutional invited participant at 2017 Annual ONPRC Scientific Symposium. Beaverton, OR.

POSTER PRESENTATIONS

Thompson JR, Xue J, Zhang-James Y, Lin Y. “Single cell RNA sequencing and machine learning reveal novel mechanisms driving activity-dependent neuronal maturation”. November 9-12, 2022. Presented at Cold Spring Harbor Biological Data Science Meeting. Cold Spring Harbor, NY.

Thompson JR, Mitchell AJ, Papadakis S, Fair DA, Sullivan EL. “Probing the Diversity of Raphe Serotonergic Nuclei: The Impact of Perinatal Western-Style Diet”. April 12, 2019. Presented at Society for Neuroscience Oregon and Southwest Washington Chapter Meeting 2019. Troutdale, OR.

TEACHING EXPERIENCE

“Data Analysis in R for Neuroscientists” 1/2 CR. Fall, 2022. SUNY Upstate Medical University. Syracuse, NY.

Created a new course for biomedical graduate students interested in gaining coding experience. Designed the syllabus and material and instructed 8 lectures covering the basics of R utility for data wrangling, visualization, and simple statistical analysis.

AWARDS AND HONORS

Best Oral Research Presentation Award. April 6, 2022. Charles Ross Memorial Student Research Day 2022. Syracuse, NY.

Best Student Oral Presentation Award. April 13, 2018. Society for Neuroscience Oregon and Southwest Washington Chapter Meeting 2018. Troutdale, OR.

Arthur A. Schulte Jr. Scholars Award. 2012 – 2015. University of Portland Merit Scholarship.