SRIDEVI VENKATESAN

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Postdoctoral fellow at Hospital for Sick Children and University of Toronto. 2023 Schmidt Science Fellow.

EDUCATION

2017 - 2023	**Doctor of Philosophy** Department of Physiology, University of Toronto, Canada Supervisor: **Dr. Evelyn Lambe** Thesis: *Multimodal investigation of Chrna5 nicotinic receptors: cellular and synaptic mechanisms of cholinergic modulation in the prefrontal cortex*
2013 - 2017	**Bachelor of Science, Biology** Indian Institute of Science, Bangalore, India CGPA: 7.0 (/8) | Graduated top of the class Honors thesis supervisor: **Dr. Deepak Nair** Thesis: *Synaptic nano-organization in hippocampal neurons during homeostatic scaling*

RESEARCH POSITIONS

10/23- Current	**Schmidt Science Fellow** Co-PIs: Dr. Yun Li, The Hospital for Sick Children (SickKids) & Dr. Jesse Gillis, Donnelly Centre for Cellular and Biomolecular Research, University of Toronto *Deciphering cell type-specific developmental trajectories in autism: Comparative analysis and experimental validation in human brain organoids*
02/2023 – 09/23	**Postdoctoral Fellow**, Dr. Evelyn Lambe's lab Department of Physiology, University of Toronto, Canada *Investigated neurophysiological changes caused by NMDA receptor patient mutations to identify mechanisms causing epilepsy and targeted treatments*

AWARDS & FELLOWSHIPS

2025	Restracomp Fellowship, SickKids (declined)	100,000$
2025	Canadian Institutes for Health Research Fellowship	210,000$
2025	Mclaughlin Centre Accelerator Grant (co-applicant)	90,000$
2024	Trainee Professional Development Award, Society for Neuroscience	1000 $
2023-25	Schmidt Science Fellow	220,000 USD
2022	Doctoral Completion Award, University of Toronto	6000 $
2021 - 22	Ontario Graduate Scholarship	15,000 $
2020 - 21	Ontario Graduate Scholarship	15,000 $
2019 - 20	Mary H Beatty Fellowship, University of Toronto	10,000 $
2018	Faculty of Medicine merit scholarship for international students	5000 $
2018	International Brain Research Organization travel award	750 $
2017	Gold medal in Bachelor of Science (Biology), Indian Institute of Science	
2016	Khorana Program for Scholars	5000 USD
2013 – 17	Kishore Vaigyanik Protsahan Yojana (KVPY) fellowship	3,52,000 INR

- Undergraduate scholarship awarded by Department of Science and Technology, Government of India

PUBLICATIONS

1. **Venkatesan S**, Werner JM, Li Y, Gillis J (2025) *"Cell type agnostic transcriptomic signatures enable uniform comparisons of human neurodevelopment".* bioRxiv (In review at PLOS Biology, PBIOLOGY-D-25-02208R1)
2. **Venkatesan S**, Nazarkina D, Sullivan M, Tan YF, Qu S, Ramsey AJ, Lambe EK, (2024) "*Context matters: integrative NMDA receptor dysfunction reveals effective seizure treatment in mice with a human patient GluN1 variant*". bioRxiv (In revision at iScience, ISCIENCE-D-25-06942)
3. Sullivan MT, Tidball P , Yan Y, Intson K, Chen W, Xu Y, **Venkatesan S**, Horsfall W, Georgiou J, Finnie PSB, Lambe EK, Traynelis SF, Salahpour A, Yuan H, Collingridge GL, Ramsey AJ (2024) *"Grin1$^{Y647S/+}$ Mice: A Preclinical Model of GRIN1-Related Neurodevelopmental Disorder".* bioRxiv (In review at Annals of Neurology ANA-24-1539)
4. Power SK, **Venkatesan S**, Qu S, McLaurin J, Lambe EK (2024) "*Enhanced prefrontal nicotinic signaling as evidence of active compensation in Alzheimer's disease models*". bioRxiv (Accepted at Translational Neurodegeneration TNEU-D-23-00529R1)
5. **Venkatesan S**, Binko MA, Mielnik CA, Ramsey, AJ, & Lambe, EK. (2023). "*Deficits in integrative NMDA receptors caused by Grin1 disruption can be rescued in adulthood".* Neuropsychopharmacology, 1-10.
6. **Venkatesan S**, Chen T, Liu Y, Turner EE, Tripathy S, Lambe EK (2023) "*Chrna5 and Lynx Prototoxins Identify Acetylcholine Super-Responder Subplate Neurons*". iScience, 105992.
7. Power SK, **Venkatesan S**, Lambe EK (2023) "*Xanomeline restores endogenous nicotinic acetylcholine receptor signaling in mouse prefrontal cortex*". Neuropsychopharmacology, 1-12.
8. **Venkatesan S**, Lambe EK (2020) "*Chrna5 is essential for a rapid and protected response to optogenetic release of endogenous acetylcholine in prefrontal cortex".* Journal of Neuroscience, 40 (38): 7255–7268.
9. **Venkatesan S**, Jeoung H-S, Chen T, Power SK, Liu Y, Lambe EK (2020) "*Endogenous Acetylcholine and Its Modulation of Cortical Microcircuits to Enhance Cognition".* Behavioral Pharmacology of the Cholinergic System, 47–69. Springer, Berlin, Heidelberg.
10. **Venkatesan S**, Subramaniam S, Rajeev P, Chopra Y, Jose M, Nair D (2020) "*Differential scaling of synaptic molecules within functional zones of an excitatory synapse during homeostatic plasticity".* eNeuro, 7(2).
11. Nguyen R*, **Venkatesan S*** **[equal contribution]**, Binko M, Bang JY, Cajanding JD, Briggs C, Sargin D, Imayoshi I, Lambe EK, Kim JC (2020) "*Cholecystokinin-Expressing Interneurons of the Medial Prefrontal Cortex Mediate Working Memory Retrieval".* Journal of Neuroscience, 40 (11): 2314–2331. **Featured Article**.
12. Sparks D, Tian M, Sargin D, **Venkatesan S**, Intson K, Lambe, EK (2018) "*Opposing cholinergic and serotonergic modulation of layer 6 in prefrontal cortex".* Frontiers in Neural Circuits 11, 107

RESEARCH PRESENTATIONS

SELECTED TALKS

1. 08/2024 **iGluR 2024 Ion Channel Conference, Toronto, Canada**
   Context is key: NMDA receptor dysfunction in prefrontal cortex identifies effective seizure treatment for GRIN disorder
2. 06/2024 **Donnelly Centre Retreat, University of Toronto, Canada**
   How old is an organoid? Robust Developmental Staging of Human Neural Organoids using Fetal Brain Reference
3. 05/2024 **Canadian Association for Neuroscience, Vancouver. Parallel symposium**
   Multi-scale perspective to decipher and treat NMDA receptor dysfunction in GRIN disorder

4. 11/2022 **Society for Neuroscience, San Diego. Nanosymposium**
Discrepancy between NMDA receptor effects at synapse and dendrite in patient derived GRIN1 mutant mouse leads to unexpected treatment opportunity.
5. 10/2020 **Canadian Association for Neuroscience Trainee research feature**
Chrna5 is essential for a rapid and protected response to optogenetic release of endogenous acetylcholine in prefrontal cortex

INVITED TALKS

6. 2022, 2024 **Developmental and Perinatal Biology, International exchange program with Karolinska Institute, University of Toronto**
08/2024: *Unlocking hidden signals in human neurodevelopment with meta-analysis of single cell RNAseq data*
08/2022: *Mechanisms of hyperexcitability in a mouse model of epileptic encephalopathy*
7. 05/2024 **BRAIN Initiative Cell Atlas Network (BICAN) Spring Consortium Meeting**
Developmental Joint Analysis Working Group: Integrating multiple analytical pipelines to study the developing brain
8. 01/2024 **Tata Institute for Fundamental Research, Mumbai, India. Host: Dr. Vidita Vaidya**
Deciphering multi-scale NMDA receptor dysfunction to treat epilepsy caused by human NMDA receptor mutations
9. 11/2023 **Francis Crick Institute, London, UK. Host: Dr. Katharina Schmack**
NMDA receptors in disease: Understanding and treating GRIN disorder
10. 01/2023 **Centre for Neuroscience, Indian Institute of Science, Bangalore, India.**
Multimodal investigation of Chrna5 nicotinic receptors: cellular and synaptic mechanisms of cholinergic modulation in the prefrontal cortex

RELEVANT POSTERS

11. 05/2025 **EMBO workshop on Developmental Timing Across Species: From Mechanisms to Evolutionary Insights, Paris, France**
Cell Type-Agnostic Transcriptomic Signatures Enable Uniform Comparisons of Neurodevelopment. Venkatesan S, Werner JM, Li Y, Gillis J
12. 10/2024 **Lake conference on Comparative and Evolutionary Neurobiology, Seattle, USA**
Brains in sync: Unified transcriptomic signatures of neurodevelopment across contexts and systems. Venkatesan S, Werner JM, Li Y, Gillis J
13. 10/2024 **BRAIN Initiative Cell Atlas Network annual meeting, Chicago**
Developmental Joint Analysis: Integrating analytical pipelines to study the developing brain. Venkatesan S, Werner J, Nano P, Herb B, Bhaduri A, Gillis J
14. 10/2024 **Society for Neuroscience, Chicago (Professional Development Award winner)**
Functional context is critical: Impaired patient-variant GluN1 NMDA receptors prolong dendritic excitation to increase seizure vulnerability. Venkatesan S, Nazarkina D, Sullivan M, Tan YF, Qu S, Ramsey AJ, Lambe EK
15. 12/2023 **American College of Neuropsychopharmacology, virtual**
Unrestrained Dendritic Excitation and Epilepsy Caused by GRIN1 Patient Variant Can Be Prevented by Boosting Negative Feedback of NMDA Receptors. Venkatesan S, Nazarkina D, Sullivan M, Qu Sarah, Ramsey AJ, Lambe EK
16. 03/2023 **Gordon Research Conference, Dendrites: Molecules, Structure and Function Lucca, Italy.**
Characterizing synaptic and dendritic effects of a patient-derived NMDA receptor mutation to develop novel treatments for GRIN1 epileptic encephalopathy. Venkatesan S, Sullivan M, Ramsey AJ, Lambe EK

17. 11/2022 **Society for Neuroscience, San Diego, USA**
Chrna5 marks acetylcholine super responder subplate neurons with specialized expression of nicotinic modulator proteins. Lambe EK, Chen T, Liu Y, Turner EE, Tripathy SK, Venkatesan S
18. 05/2022 **Canadian Association for Neuroscience, Toronto**
Discrepancy between NMDA receptor effects at synapse and dendrite in patient derived GRIN1 mutant mouse leads to unexpected treatment opportunity. Venkatesan S, Ramsey AJ, Lambe EK

INTERNATIONAL TRAINING PROGRAMS

1. 06/2022 **Transylvanian Experimental Neuroscience Summer School,** Romania
Selected among 14 international candidates to participate in this intensive 3-week program where I developed expertise building sophisticated microscopes, imaging techniques, and behavioral tracking with in vivo electrophysiology.
2. 08/2019 **Summer course in Developmental and Perinatal Biology,**
Karolinska Institute, Sweden
3. 07/2017 **Computational Approaches to Memory and Plasticity**
National Center for Biological Sciences (NCBS), Bangalore, India
Intensive two-week summer school on computational neuroscience.

TEACHING

2023	Guest lecturer, HMB402, Topics in Translational Medicine, UofT
2022	Teaching assistant, PSL 1445, Neuroscience: cellular and molecular, UofT
2018, 19	Teaching assistant, PSL 1026: Experimental physiology techniques, UofT
2018 - 22	Lecturer, Neuroscience 101, Collaborative Program in Neuroscience, UofT

LEADERSHIP

SCIENTIFIC LEADERSHIP

2023-Ongoing **Co-Chair, Developmental Joint Analysis Working Group, BRAIN Initiative Cell Atlas Network (BICAN), National Institutes of Health, USA**
Spearhead monthly consortium meetings, driving efforts to map cell types in the developing human brain.

2024 **Program Committee**, **BICAN Consortium Semi-Annual Meeting, Chicago**
Developed agenda and speakers for the BICAN conference as a planning committee member. Coordinated event logistics for lightning talks and breakout sessions.

LEADERSHIP TRAINING

11/2023 **Schmidt Science Fellows Global Meeting, Oxford, UK**
Developed advanced skills in science communication, lab leadership, funding management, and policy development in this intensive leadership program.

02/2024 **Schmidt Science Fellows Scientific Leadership Program, Stanford & UC Berkeley, California, USA.** Gained expertise in negotiation, innovation, scientific entrepreneurship, and applying science for global impact.

07/2024 **Schmidt Science Fellows Scientific Leadership Program, Toronto, Canada**
Enhanced capabilities in teaching, conflict resolution, and time management.