VAISHNAVI NAGARAJAN
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PROFILE

Passionate teacher with an experience of over 7 years of teaching laboratory and lecture courses to undergraduate students, driven to staying current with recent articles, committed to creating a stimulating classroom, ensuring every student's learning abilities are addressed, and highly motivated to foster academic growth in students to inspire them to pursue careers in relevant fields while celebrating cultural diversity and inclusion in the classroom.

EDUCATION

Doctor of Philosophy (PhD) in Molecular, Cellular & Developmental Biology — Aug 2019
University of Kansas, Lawrence, KS. — GPA – 3.64/4

Bachelor of Technology (B. Tech) in Biotechnology — May 2010
VIT University, Vellore, India — CGPA – 7.9/10

TEACHING EXPERIENCE

Assistant Professor, Human Physiology — *Mar 2025 – Current*
Northwest Missouri State University, Maryville, MO

- Designing course materials, syllabus and exams for lecture and laboratory courses.
- Recording attendance and grades using 'Canvas'.
- Teaching laboratory experiments relevant to professional courses viz. nursing, medical and graduate school.
- Measuring learning outcomes using various assessments including practical applications and exams.

Assistant Professor, Allied Health Physiology — *Mar 2025 – Current*
Northwest Missouri State University, Maryville, MO

- Designing and delivering dynamic lectures for allied health undergraduate students.
- Implementing student assessment strategies including quizzes, homework and examinations.
- Training and supervising lab assistants to ensure preparedness and consistency in delivery of laboratory exercises.

Instructor, BIOL 247 Principles of Human Physiology Laboratory — May 2016 - July 2016
University of Kansas, Lawrence, KS

- Designed and taught laboratory sections of human physiological principles and processes.
- Provided one-on-one attention to ensure student understanding of the concepts.
- Facilitated students to work in groups and complete experiments with desired results.
- Recorded and published student grades using 'Blackboard' learning management system.
- Inspired students to pursue careers in nursing and other health professions to translate knowledge into real world applications.

Teaching Assistant, BIOL 647 Mammalian Physiology Laboratory — Aug 2012 – May 2019
University of Kansas, Lawrence, KS

- Led laboratory sections that examined the interactions of human organ systems for junior/ senior undergraduates.
- Demonstrated physiological control systems using vertebrate and invertebrate animal dissections.
- Illustrated the use of LabChart software and PowerLab instruments for recording/ analyzing data.

- Recommended as an applicant of Bernstein Award for Teaching excellency based on evaluations by course director.
- Evaluated students on presentations and reports and provided constructive feedback.

Teaching Assistant, BIOL 247 Principles of Human Physiology Laboratory Aug 2012 – May 2019
University of Kansas, Lawrence, KS

- Assisted in the drafting of curriculum and laboratory manual.
- Hands-on experience with the use of medical and physiological equipments like Gas Analyzer, spirometer, sphygmomanometer, respirometer etc.
- Encouraged students to follow best practices like using plagiarism checkers and citing primary sources in their reports.
- Awarded Richard Himes's Best Graduate Teaching Assistant Award

Teaching Assistant, BIOL 672/ BIOL 772 Gene Expression Jan 2016 – May 2016
University of Kansas, Lawrence, KS

- Taught the molecular biology of gene expression in all review sessions before exams.
- Held office hours to provide additional support to students with class materials.
- Proctored and graded exams of graduate students.
- Assisted professor in preparation of class materials.

Teaching Assistant, BIOL 350 Genetics Summer 2013, 2014
University of Kansas, Lawrence, KS

- Interacted with students individually to promote conceptual understanding of mendelian, molecular and population genetics.
- Taught difficult concepts, conducted problem solving sessions for classes of over 60 students and addressed student questions.
- Administered tests and recorded student assessments.

MENTORSHIP EXPERIENCE

- Trained 5 graduate students and 14 undergraduate students technically and provided guidance with research projects in graduate school.
- Leveraged interpersonal and communication skills to mentor PhD and graduate students during postdoctoral research.

PROFESSIONAL DEVELOPMENT

- 'Course Development' workshop - University of Kansas.
- Staff Leadership Summit, Theme - Coming Together: The Power of Human Connection – University of Kansas

RESEARCH EXPERIENCE

Postdoctoral research - "Alzheimer's Disease (AD) pathology" Sep 2019 – Present
PI - Dr. Michael Wolfe
Department of Medicinal Chemistry, University of Kansas, Lawrence, KS

- Conceptualized, designed and developed a novel *C. elegans* model to study the pathogenesis of Alzheimer's disease
- Published the results after the analysis of data acquired from confocal microscopy, lifespan, brood size and embryonic viability experiments of transgenic vs wildtype animals.
- Prepared human cell lines for Global Transcriptomics of Alzheimer's Disease and identified differentially expressing genes.
- Initiated and maintained cultures of neuroblastoma and HEK cell lines in a sterile environment to study the effects of mutant amyloid precursor protein (APP) on human tau protein.

- Mentored undergraduate and graduate students in conducting experiments, gathering data and presenting results.
- Collaborated with colleagues to conduct research in neuroblastoma cell lines and gather results.

PhD thesis - "Gene Silencing in the nucleus: mechanisms and new phenomena" Aug 2012 – Aug 2019
PI - Dr. Lisa Timmons
Department of Molecular Biosciences, University of Kansas, Lawrence, KS

- Formulated an RNAi methodology and published RNAi reagents that have improved effectiveness in eliciting *C. elegans* male progeny.
- Wrote and reviewed standard operating procedures in the laboratory.
- Executed molecular genetics experiments towards characterizing the functional protein partners of ABC transporters.
- Effectively communicated scientific data through write-ups, posters and in-lab and departmental presentations.
- Demonstrated a novel *nrde-3* dependent nuclear silencing in an endogenous locus in *C. elegans*.

Bachelor's Thesis - "Resistance mechanism of certain micro-organisms against Silver nanoparticles"
PI - Dr. Amitava Mukherjee,
VIT University, Vellore, India Jul 2006 – Aug 2010

- Investigated the mechanism of resistance against silver nanoparticles (SNP) in bacterial population
- Tested the use of natural dyes to stain biological molecules like protein and DNA.
- Optimized biochemical isolation experiments, wrote protocols for lab, edited the manuscript for my findings and maintained bacterial stocks.

SERVICE

Vice President Dec 2022 – Jun 2024
University of Kansas Postdoctoral Association (KUPA)

Treasurer Sep 2021 – Dec 2022
University of Kansas Postdoctoral Association (KUPA)

Member
National Postdoctoral Association (NPA)

PUBLICATIONS

- Sujan Devkota, Rui Zhou, **Vaishnavi Nagarajan**, Masato Maesako, Hung Do, Arshad Noorani, Caitlin Overmeyer, Sanjay Bhattarai, Justin T. Douglas, Anita Saraf, Yinglong Miao, Brian D. Ackley, Yigong Shi and Michael S. Wolfe Familial Alzheimer's mutations stabilize synaptotoxic γ- Secretase- substrate complexes. Cell Reports. PMID: 38349793.
- Vaishnavi Nagarajan, Caitlin Overmeyer, Brian D. Ackley and Michael Wolfe A *C. elegans* model of familial Alzheimer's disease shows age-dependent synaptic degeneration independent of amyloid β-peptide. Manuscript submitted.
- Vaishnavi Nagarajan, Brian Sanderson, Michael Wolfe Differentially Expressed Genes in Familial Alzheimer's Disease highlighting the role of PCSK1- In preparation.
- Timmons, L., Luna, H., Martinez, J., Moore., Z, **Nagarajan, V**., and Asad, N., Systematic comparison of bacterial feeding strains for increased yield of C. elegans males by RNA interference-induced non-disjunction. FEBS Letters. PMID: 25066299.
- Hua Xiao, Patrick K. T. Shiu, Marta Gabryleska, Simon J. Conn, Abhishek Dey, Kausik Chakrabarti, Manuel Regouc, Martin Pichler, Ulf Andersson Vang Ørom, Gaetano Santulli, Satoshi Nishiwada, Ajay Goel, **Vaishnavi Nagarajan**, Lisa Timmons, Suresh K. Alahari, Noemi Laprovitera, Manuela Ferracin, Po Hu and Hailing Jin. The Non-Coding RNA Journal Club: Highlights on Recent Papers—7. Non-Coding RNA 2019, 5, 40.

- Khan, SS., Srivatsan, P., **Nagarajan, V**., Mukerjee, A., and Chandrasekaran, N. Interaction of silver nanoparticles (SNPs) with bacterial extracellular proteins (ECPs) and its adsorption isotherms and kinetics. Journal of Hazardous materials. 192(1):299-306.

CONFERENCES AND PRESENTATIONS

- St. Jude's Children's Research Hospital, Memphis, TN | *Sci-RoI Annual Meeting* | Sep 2024 "Stable E-S complexes trigger synaptic degeneration in *C. elegans*"
- The University of Arizona | *International Research Conference on Neurodegenerative Diseases* | Oct 2023 "FAD mutations stabilize γ-secretase – substrate complexes and cause synaptotoxicity"
- The University of Kansas | *Mossberg Symposium* | Jan 2022 "Development of *C. elegans* models for familial Alzheimer's disease"
- The University of Missouri | *Mizzou epigenetics Symposium* | Nov 2016 "Atypical Foreign Genome Silencing in *C. elegans*"
- The University of Wisconsin, Madison | *Aging, Metabolism, Pathogenesis, Stress, and Small RNAs Conference* | Jul 2014 "Transcritional Gene Silencing in an endogenous locus in wildtype *C. elegans*"
- The University of California, Los Angeles | *19th International Caenorhabditis elegans meeting* | Jun 2013 "RNAi-induced non-disjunction of X chromosomes"

AWARDS AND SCHOLARSHIPS

- University of Kansas Postdoctoral (KUPA) Travel Award; 2024
- Richard Himes Award - **Best Graduate Teaching Assistant**; 2018
- Candlin Memorial Fund Award; 2017
- Ritter Travel Award; 2014
- Robert F. Weaver Scholarship; 2012