

Hamsi Radhakrishnan

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📍 1424 Biological Science III, University of California, Irvine, CA, 92697, United States

🎓 Education

2017 – present

PhD Candidate, Stark Lab

University of California, Irvine ☑

PI: Dr. Craig Stark, Professor, Department of Neurobiology and Behavior

Department: Mathematical, Computational and Systems Biology

Thesis: Diffusion to densities: Using Diffusion-Weighted Imaging to study gray matter microstructure

2013 – 2017

Biotechnology Engineering, BS

BMS College of Engineering, Bangalore, India ☑

Thesis: Ground nutshell derived nano-carbons: Synthesis, characterization and *in vitro* antibacterial activity

📄 Publications

2021

More than just a single shell game: Higher-order diffusion measures complement tensor metrics and volume in gray matter when predicting age and cognition.

Neuroimage (Under review)

Radhakrishnan, H., Bennett, I.J., Stark, C.E.L.

2021

Tacrolimus protects against aging-associated microstructural changes in the beagle brain ☑

Journal of Neuroscience

Radhakrishnan, H., Ubele, M., Krumholz, S., Boaz, K., Mefford, J., Denhart, E., Meacham, B., Smiley, J., Puskás, L., Powell, D., Norris, C., Stark, C.E.L., Head, E.

2020

Microstructural Alterations in Hippocampal Subfields Mediate Age-Related Memory Decline in Humans ☑

Frontiers in Aging Neuroscience

Radhakrishnan, H., Stark, S., Stark, C.E.L.

2017

Natural Biowaste of Groundnut Shell Derived Nano Carbons: Synthesis, Characterization and Its In-Vitro Antibacterial Activity ☑

Nano-structures & Nano-objects (12), 84-90.

Yallappa, S., DR, D., Sammeta, Y., **Radhakrishnan, H.,** Chandraprasad, M., Kumar, A., Hegde, G.

Select Presentations

- 2021 **Estimating neuronal and glial counts non-invasively using diffusion-weighted imaging**
Global Connectome, SfN (Poster)
- 2020 **The structural and cognitive consequences of Calcineurin inhibition in a preclinical canine model of Alzheimer's Disease**
Annual Alzheimer's Association International Conference - Neuroscience Next (Poster)
- 2020 **Estimating neuronal and glial counts non-invasively using diffusion weighted imaging**
Neurobiology and Behavior Retreat, UC Irvine (Invited Talk)
- 2020 **Tacrolimus as a potential anti-Alzheimer's therapy in a preclinical canine model**
Neurobiology and Behavior Neuroblitz, UC Irvine (Talk)
- 2020 **Investigating Brain Microstructure in Humans Using Advanced Diffusion Weighted Imaging**
Biophysics and Systems Biology Seminar Series, UC Irvine (Talk)
- 2020 **Microstructural Alterations in DG/CA3 Mediate Age-Related Decline in Verbal Recall**
Winter Conference on Learning and Memory, Park City (Talk)
- 2019 **Mapping Long Range Connections in the Pig Brain Using Diffusion Weighted Imaging and Light Sheet Microscopy**
Neurobiology and Behavior Neuroblitz, UC Irvine (Talk)
- 2019 **Age-Related Changes in Gray and White Matter Neurite Density and Diffusion Within Hippocampal Subfields and the Medial Temporal Lobe Reflect Memory Performance**
Neuroscience, SfN, Chicago (Poster)
- 2016 **Unveiling the Role of ncRNAs in Autism Spectrum Disorders**
National Symposium for Next Generation Sequencing (Poster)

Relevant Skills

Neuroimaging

Diffusion Weighted Imaging, Magnetic Resonance Spectroscopy, Arterial Spin Labelling, Traditional Structural MRI



MRI Analysis

AFNI, ANTS, FSL, MRTrix3, MIRACL, NODDI, MDT, DSI Studio



Bash Scripting

Automation, pipeline development



Python

Image Processing, Machine Learning with Keras, Data Analysis



Other coding

R, MATLAB, C++, JavaScript



Statistics

Generalized linear models, Analysis of Variance, Hypothesis Testing, Parametric and Non-Parametric Methods, Data Distributions and Analytics, Data Visualization



Tissue Clearing

iDISCO+



Immunohistochemistry



Stereotaxic Surgery

Intracranial viral injections, mouse



Microscopy

Light-sheet, Confocal, Brightfield



Awards and Honors

2021

Gordon and Rose McAlpine Foundation Award

Gordon and Rose McAlpine Foundation for Neuroscience Research

Paper on "Tacrolimus protects against aging-associated microstructural changes in the beagle brain"

2021

Third Place Finalist

UCI Grad Slam

Talk on "Diffusion Diagnosis: Using Water to Image the Brain"

2020

Trainee Professional Development Award

Society for Neuroscience

2016

2nd Place, Project Presentation

National Symposium for Next Generation Sequencing, India

Poster on "Unveiling the Role of ncRNAs in Autism Spectrum Disorders"

Teaching

2021




Molecular Biology




Teaching Assistant

This class explored DNA replication, transcription, translation and epigenetics. I was responsible for grading, leading discussions and holding office hours.




- 2020 **Human Neuroimaging Lab**
Teaching Assistant
This was a flipped lab course that was an introduction to MRI analysis and taught students how to use software like AFNI, ANTs, and FSL, along with some bash scripting. I was responsible for holding office hours, as well as grading all assignments and lab reports.
- 2019 **Transparent Brain**
Instructor
This was a lab course that went through the entire pipeline of clearing brains through iDISCO+ and imaging them with a light-sheet microscope. I was responsible for designing the course, conducting the lab lectures.
- 2019 **UCI Brain Camp**
Instructor and Pedagogical Fellow
This was an immersive neuroscience camp that engaged middle and high school students over a two-week program. I was responsible for designing and presenting lessons and hands-on demonstrations and labs, as well as mentoring a group of students in designing their own experiment.

Leadership, Mentoring and Outreach

- 2020 – present **Peer Review**
Assisted in peer review for the journals Neuroimage and Neuroimage-Clinical
- 2019 – present **NeuroScholars** 
Program Mentor
Mentored minority undergraduate students, and led a four week summer laboratory course that taught them experimental and computational skills to make them competitive in the job market.
- 2019 – present **Brain Explorer Academy** 
Mentor
Weekly neuroscience pedagogy and mentoring for K-12 students in Orange County.
- 2018 – present **Center for Neurobiology of Learning and Memory Ambassador Program** 
Chair, K-12 Outreach Committee
This program aims to advance public understanding of brain science through outreach and educational activities through the UCI Center for the Neurobiology of Learning and Memory (CNLM). I manage the committee that designs, executes, and evaluates neuroscience-related events for K-12 students, with a focus on those in Title I schools in Orange County and surrounding communities.
- 2017 – present **Undergraduate Research Mentoring**
I have supervised and mentored 5 undergraduate research assistants on various laboratory skills including database management, experimental design, data analysis, tissue clearing, immunohistochemistry, microscopy, stereotaxic surgery and communication strategies.

- 2015 – 2017 **Make a Difference, Bangalore** 
Education Support Lead
 Make A Difference is a youth driven, non-profit organisation working to ensure equitable outcomes for children in orphanages and street shelters in India. I managed a group of over 50 volunteers and helped them design lesson plans and supported them in mentoring and teaching.
- 2015 – 2017 **Literary and Debating Society, BMSCE**
President
 I managed a group of over 50 students, and also organized, designed and hosted frequent workshops, seminars and competitions to enhance the literary culture of the school.
- 2015 – 2017 **Bullzeye, the BMSCE Magazine** 
Editor-in-Chief
 Bullzeye is the official newsletter and magazine of BMS College. I set publishing guidelines, reviewed content, wrote editorials, and led the editorial team.
- 2013 – 2015 **AIESEC Bangalore**
Team Leader, Marketing and Information Management
 Led a team of 10 people for marketing and public relations, wrote promotional blog articles, and analyzed data for the organization.
- 2019 **Irvine Brain Bee** 
Mentor
 Mentored high school students and led practice sessions to compete in the Irvine Brain Bee, a spelling-bee like competition on neuroscience facts.

Prior Research Experience

- 2016 **Computational Biology Fellow**
Institute of Mathematical Sciences 
 Worked on gene duplication models involving the sub functionalization theory, using the yeast genome as a sample system. Headed the computational analysis of big data.
- 2016 **Researcher**
Hegde Lab, BMS College of Engineering 
 Optimized the synthesis of carbon nanoparticles from groundnut shells to be used for bioimaging and drug delivery purposes.
- 2015 **Researcher**
Sashi Lab, BMS College of Engineering 
 Isolated non-coding RNAs in the NLGN4Y region of the Y chromosome through the intergenic clustering method to explain the striking profusion of autistic traits in human males.