

Hema M Kopalle, MS

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EDUCATION:

Doctorate of Philosophy - Biological Sciences
University of California San Diego Expected June 2025

Masters of Science - Chemistry & Biochemistry
University of California San Diego June 2019
Thesis: Visualization of membrane-less granules in yeast and mammalian cells using modified fluorescence in-situ hybridization

Bachelors of Science - Neuroscience
University of California Santa Cruz March 2016

Bachelors of Science - Cognitive Science
University of California Santa Cruz March 2016

RESEARCH EXPERIENCE:

Pre-Doctoral Candidate, Gene Yeo, Sanford Consortium at UC San Diego 10/21 - Present

- Characterizing the RNA binding protein SNRNP200 for dynamic RNA binding activity in neurons.

Rotation Student, Biological Sciences, UC San Diego 08/20 - 06/21

- Conducted 6-week "internships" with select laboratories across UC San Diego to determine best fit for thesis lab.
- Dr. Shreekanth Chalasani (Salk) - assessed mechanical stimulation of the chemosensitive TRP channel family in dinoflagellates.
- Dr. Gulcin Pekkurnaz (UCSD) - identified activity-dependent nuclear localization of metabolically-tagged constructs in neurons.
- Dr. Matthew Lovett-Barron (UCSD) - characterized an acute stress-response behavior indicative of social homeostatic perturbation in zebrafish.
- Dr. Kay Tye (Salk) - developed a series of genome modification tools to assess the relationship between hunger and aggression in mice.

Research Associate, Brian Zid, UC San Diego 06/19 - 11/19

Graduate Research Associate, Brian Zid, UC San Diego 05/18 - 06/19

- Exploring the effect of translational induction on mRNA localization during oxidative stress in mammalian cells
- Identifying if/how secondary structure of mRNA drives localization to stress granules.

- Created multiple assays and novel techniques to identify conserved cellular behaviors between mammalian and yeast cells.
- Developed a method for stabilizing fragile membrane-less compartments (p-bodies) for visualization with FisH.
- Contrasted multiple methods for live-cell mRNA visualization in yeast
- Lead the BSL2 mammalian cell culture division of lab increasing project completion rate by 33%
- Mentored two undergraduate students, one PhD candidate, and one Post-doc in tissue culture experimental design/techniques.
- Developed, wrote, and defended MS thesis.

Graduate Research Associate, Roberto Malinow, UC San Diego

08/17 - 04/18

- Hypothesized and found evidence of a dual-regulatory circuit between the Lateral Habenula and Lateral Preoptic Area
- Characterized the habenular-circadian circuit as putatively having long-range GABA-ergic and Glutamatergic projections
- Identified galanin expressing projections from the LPO to the LHb
- Evaluated the behavioral effects of sub-anesthetic doses of ketamine on a conditional learned helplessness rodent model
- Identified discrete populations of galanin and ketamine induced neuronal activity using Fluorescence in-situ Hybridization and Immunohistochemistry
- Learned to handle rodent model systems
- Performed major and minor surgical operations on rodents (i.e. cranial injections, paraformaldehyde perfusions)
- Managed multiple research projects, coursework, and teaching simultaneously
- Presented work at Lewis Judd Young Investigators Symposium

Research Associate, Nicolas Davidenko, UC Santa Cruz

10/16 - 7/17

- Collaborated with Dr. Davidenko to continue face perception research from Bridgeman lab for publication
- Designed, implemented, and analyzed experiments using Matlab software
- Determined cognitive conflict between upper-visual-hemisphere bias and left gaze bias in facial perception
- Wrote and revised manuscript for gaze bias *Perception* publication

Laboratory Manager, Bruce Bridgeman, UC Santa Cruz

6/15 - 7/16

Undergraduate Research Assistant, Bruce Bridgeman, UCSC

10/13 - 6/15

- Took initiative to learn design, mechanism, and coding for human eye-tracking studies
- Developed experimental and coding protocol for multiple studies
- Learned coding software for visual analysis
- Instituted formal laboratory procedure for data recording across multiple researchers
- Practiced persuasive writing and presentation skills in meetings and conferences
- Determined spatial memory of angled distances using closed-loop walking
- Identifying left-gaze bias through a facial perception study
- Determined cognitive load using cross-modal attentional bias experiments.
- Presented research at VSS symposium
- Submitted closed-loop research for publication
- Closed lab after the passing of Dr. Bridgeman

Undergraduate Research Assistant, Carrie Partch, UCSC

06/13 - 04/15

- Learned and developed new techniques for biochemical analysis
- Identified CT antigen PASD1 as a circadian repressor
- Developed circadian reporter lines from cancer cells
- Developed novel circadian reporter line in suspension cells
- Created siRNA knock out systems using lentiviral mechanisms
- Trained and instructed graduate rotation students and undergraduate researchers
- Utilized persuasive writing and presentation skills in meetings and conferences
- Developed grant proposal writing skills
- Managed multiple research projects, coursework, and extracurricular activities simultaneously
- Mastered mammalian cell culture protocol and techniques
- Developed independent hypothesis of ALK5 receptor function and multiple aim project outline.
- Presented research at CCB conference, SRBR conference
- Published research in *Molecular Cell* and *Cell Cycle*

TEACHING & INDUSTRY EXPERIENCE:

eTMF Specialist, Global Blood Therapeutics, San Francisco

11/19 - 09/20

- Designed multiple Phase 1 clinical trial studies of GBT's sickle cell therapeutics
- Supported New Drug Approval activities and FDA filing
- Maintained inspection-ready Trial Master Files for six separate studies
- Coordinated and managed three Clinical Research Organization eTMF teams

Academic Advocate, PATHways to STEM, UC San Diego

6/19 - 10/19

- Facilitated program development and growth by designing and implementing longitudinal programming.
- Continued role of Academic Coach for 21 PATHS scholars
- Developed and implemented three-day Math Boost to preemptively identify scholars academic needs, and provide academic tools in an immersive program environment
- Created workshops, lectures, and activities with Graduate Advocates for scholars' psychosocial development
- Proposed and developed Family Day to engage scholars' families.
- Developed long-term academic programming to ensure scholar success
- Developed long-term programming like 5-year plans, Family Day, Math Boost, Lab meeting, Mentor Mixer, weekly scholars/staff check-ins
- Identified areas of program growth and developed programming to ameliorate it.
- Evaluated projected staffing needs and created recruitment model for seamless integration of future mentors.
- Tracked 20+ scholars' academic progress, preemptively identifying students of concern

Academic Coach, PATHways to STEM, UC San Diego

02/19 - 6/19

- Provided supplemental chemistry, biology, and writing instruction for a cohort of 11 PATHS scholars.
- Assessed scholars' learning styles through individual study sessions, and identified scholar needs.
- Developed individual learning plans to meet and exceed each scholar's academic goals while maintaining psychosocial well-being.
- Created/facilitated scholar study groups, promoting scholar agency and mentorship through learning
- Provided scholars with learning strategies and tools to facilitate independent long-term academic growth

Senior Teaching Associate, Chem. & Biochem, UC San Diego

1/19 - 6/19

Teaching Assistant, Chem. & Biochem, UC San Diego

9/17 - 12/18

- Received Outstanding TA Award
- Teaching performance consistently rated as "would recommend" by >95% of students. Evaluations emphasized my communication, preparation, and individual support.
- Developed and administered supplemental lectures for undergraduate chemistry classes
- Provided individual and group academic support for up to 400 students per quarter in STEM.

- Adapted teaching methods and mentorship for socioeconomic and culturally diverse range of undergraduate students.
- Created introductory/general chemistry lectures and discussions, individually managing ~120 students per quarter
- Led students to successfully and safely complete organic chemistry laboratory experiments
- As Senior TA: mentored up to 12 new and continuing teaching assistants through peer observation, workshops, and active learning strategies.
- As Senior TA: furthered personal teaching education by attending workshops and programs held by UC San Diego's Teaching and Learning Commons.

Tiny Science Club

8/08 - Present

- Worked individually with students on material covered in undergraduate STEM and high school courses
- Assisted students with additional coursework and study methods, creating supplementary materials and lectures as needed.
- Provided mentorship and career planning for students interested in higher education or healthcare.

PUBLISHED INTELLECTUAL CONTRIBUTIONS:

ORCID: <https://orcid.org/0000-0002-1872-7318>

Davidenko N, **Kopalle HM**, Bridgeman B. The upper eye bias: tilted face draw fixations to the upper eye. *Perception*. (2019) Feb;48(2):162-174. doi: 10.1177/0301006618819628. Epub 2018 Dec 27.

Davidenko N, **Kopalle HM**, Bridgeman B. A strong bias to fixate the upper eye in tilted faces. *Journal of Vision* 2018(10);164 DOI: 10.1167/18.10.164

Klein, M., **Kopalle, H.**, Chandra, J., Malinow, R. Exploring the synaptic basis of rapid antidepressant treatments in a congenital learned helplessness model. *Biological Psychiatry* (2018); (83) S129-S455, T175 <https://doi.org/10.1016/j.biopsych.2018.02.512>

Bridgeman B, **Kopalle H.** Open-loop locomotion on slopes. *Perception*; *under review March 2016*

Michael AK, Harvey SL, Sammons PJ, Anderson AP, **Kopalle HM**, Banham AH, Partch CL. Cancer/testis antigen PASD1 silences the circadian clock. *Molecular Cell* (2015); 58 <http://dx.doi.org/10.1016/j.molcel.2015.03.031>

Kopalle HM, Partch CL. An imPERfect link to cancer?. *Cell Cycle* (2014); 13:507 - 507; <http://dx.doi.org/10.4161/cc.27862>; PMID: 24496331

PRESENTATIONS:

Kopalle, H; Chandra, J; Klein, M; Malinow, R "Probing the effects of ketamine on the habenular-circadian circuit." Lewis Judd Young Investigators Symposium, La Jolla CA, April 2018

Bridgeman, B; **Kopalle, H**; Clark, L; Davidenko, N. "The mechanism of the lateral gaze bias." Vision Sciences Society, St. Petersburg FL, May 2016

Michael, A.K.; Harvey, S.L.; Sammons, P.J.; **Kopalle, H.M.**; Banham, A.H.; Partch, C.L. "Silencing the molecular timekeeper in human cancer." Society for Research on Biological Rhythms, Big Sky MT, June 2014

Michael, A.K.; **Kopalle, H.M.**; Harvey, S.L.; Sammons, P.J.; Banham, A.H.; Partch, C.L. "Silencing the molecular timekeeper in human cancer." Center for Chronobiology Symposium, San Diego CA, February 2014

GRANTS AND SPONSORED RESEARCH:

Submitted:

Kopalle, H.K., UCSC PBSci Undergraduate Research in the Sciences Award — "Silencing the Molecular Clock with a Cancer-Testis Antigen" (2014)

Kopalle, H.K.; Harvey, S.L.; Partch C.L.; Santa Cruz Cancer Benefit — "Defining a new mechanism for the escape of cancer from daily growth controls" (2013)

PROFESSIONAL ACTIVITY:

Elected & Appointed offices:

VP Equity, Diversity, Inclusivity, GPSA UCSD*, 2021
Health & Wellbeing Liaison, GPSA UCSD*, 2021
Liaison, Physical Sciences Ethics Committee at UCSD, 2018
President, UCSC Cognitive Science Student Association, 2014, 2015
Secretary, UCSC Cognitive Science Student Association, 2012, 2013
Executive Committee Chair, UCSC Indian Student Association, 2013, 2014

*Graduate and Professional Student Association University of California San Diego

Membership:

San Diego RNA Society 2018-Present
Society for Women in Graduate Studies in STEM at UCSD 2017-Present

Association for Psychological Science, Predoctoral member 2017-Present
Vision Sciences Society, Predoctoral Member 2015-2017
Women in Science and Engineering, Junior Member 2013-2016
Society for Research on Biological Rhythms 2013-2015

Cognitive Science Student Association at UCSC 2011-2016
Community Aid and Resources, Santa Cruz division 2011-2013
Indian Student Association at UCSC 2012-2016

Awards, Honors, Achievements:

Teaching Assistant Excellence Award 2018, UCSD Chemistry Department
 Center for Chronobiology Symposium 2014 - Outstanding Poster Award
 Dean's Honors, UC Santa Cruz, March 2016

Licenses/Certifications:

Red Cross Infant/Adult CPR, First Aid, AED (2010 - Present)
 California OSHA Biohazard Level 2 (2013 - 2019)
 University of California Bloodborne Pathogen Training (renewed 2020)
 UC EH&S Biosafety: Recombinant & Synthetic Nucleic Acids Certification (renewed 2020)
 UC EH&S: Controlled Substances Certification (issued 2017)

Conferences and Meetings:

Neuromatch 3.0, Virtual hosted by SfN, 2020
 DASL Diversity And Science Symposium, Virtual hosted by UCSD, 2020
 Lewis Judd Young Investigators Symposium, La Jolla CA, April 2018
 Society for Abdominal Radiology Conference, Hollywood FL, 2017
 Vision Sciences Society Conference, St. Petersburg FL, 2016
 California Cognitive Science Conference, Berkeley CA, 2013, 2014, 2015
 Center for Chronobiology Symposium, San Diego CA, 2014
 Society for Research on Biological Rhythms, Big Sky MT, 2014

Public Service and Volunteering:

BUMMP	2020 - Present
Bitchin' & Brews	2018 - Present
*Created informal space to support mental health among graduate researchers studying RNA	
*Retained 3 additional graduate students as a result of sharing resources	
Fleet Science Center, Two Scientists Outreach	2018 - 2020
Society for Women in Graduate Studies	2017 - 2019
Volunteer Resources at Stanford Hospital	2014 - 2016
Community Aid and Resources (CARE)	2013 - 2014
Santa Cruz County Animal Shelter	2011 - 2013

ADDITIONAL SKILLS & INTERESTS:

- **Languages:** English (native), French (conversational), Hindi (basic), Matlab (intermediate), Python (basic), R (intermediate)
- **Licenses:** UC EH&S: Controlled Substances Certification (issued 2017)
- **Interests:** Coldwater SCUBA diver, perfumista, amateur interior designer
- **Craftsmanship:** woodshop (intermediate), soldering/electrical (intermediate), hot-glue & duct tape (advanced)