Aarya Venkat | Curriculum Vitae

aarya@uga.edu • 678-404-1666

120 East Green St., Davison Life Sciences A318, Athens, GA 30602

Education and training

University of Georgia — **2023**
Biochemistry and Molecular Biology (PhD) — Athens, GA
GPA: 3.9

University of California, San Diego — **2017**
Chemistry and Biochemistry (MS) — La Jolla, CA
GPA: 3.8

Graduate research assistant | PhD student — **2018–Present**
Biochemistry and Molecular Biology (Kannan lab) — University of Georgia

Graduate research assistant | MS student — **2015–17**
Chemistry and Biochemistry (Gilson lab) — University of California, San Diego

Internship — **2016**
Cytoscape - National Resource for Network Biology — San Francisco, CA
I worked with Dr. Scooter Morris to develop a Cytoscape application [PathInsight].

Awards and Honors

Eriksson Scholarship — **2022**
Department of Biochemistry, UGA — Athens, GA
Award: $500.

Poster Award — **2021**
Society for Glycobiology Conference — San Diego, CA

Travel Award — **2021**
Society for Glycobiology Conference — San Diego, CA
Award: $500.

Travel Award — **2021**
University of Georgia — Athens, GA
Award: $450.

ARCS Foundation Scholar — **2021-23**
University of Georgia — Athens, GA
ARCS Foundation advances science and technology in the United States by providing awards to academically outstanding US citizens studying to complete degrees in STEM. **Award: $25,000**.

Three Minute Thesis — **2021**
People's Choice Award — Athens, GA
Award: $500.

Future Faculty Fellowship — **2019-20**
Future Faculty Fellows Program — Athens, GA
This is a graduate school sponsored professional development program that recruits top performing teaching assistants from across campus to talk about, reflect upon, and improve their teaching.

Outstanding Graduate Teaching Award — **2019**
Center for Teaching and Learning — Athens, GA

Outstanding Graduate Teaching Award — **2018**
Center for Teaching and Learning — Athens, GA
Given in recognition of teaching performance that ranks in top 10% of all graduate teaching assistants in the University.

Scholarly and Research Activities

Publications

Patents

1. Venkat, A., Castro, Y., and Manning, T. Using Computational QSAR Methods to Propose a New Group of Antibiotics for Dental Applications, U.S. Provisional Patent Appl. 62/359,638, July 22, 2016.

Papers (citations: 72)

1. Venkat, A., Taujale, R., and Kannan, N. (2022). Evolution of Pseudoglycosyltransferases. In Prep.

2. Aceil, J., Venkat, A., Pan, E., Kannan, N., and Avci, F. (2022). Prevalence and Homology of the Pneumococcal Serine-Rich Repeat Protein at the Global Scale. Submitted.

3. Bunn, C., Watterson, G., Parikh, P., Yeung, W. Venkat, A., Kleber, N., and Kannan, N. (2022). Identifying cis-regulatory interactions in kinases using AlphaFold2: a case study of autoinhibition in DCLK2. In Prep.

4. Amos, R., Atmodjo, M., Huang, C., Gao, Z., Venkat, A., Taujale, R., Kannan, N., Moremen, K. and Mohnen, D., (2022). Polymerization of the backbone of the pectic polysaccharide rhamnogalacturonan I. Nature Plants. Under Review.

5. Yeung, W., Zhou, Z., Mathew, L.G., Gravel, N., Taujale, R., Venkat, A., Lanzilotta, W., Li, S. and Kannan, N., (2022). An explainable unsupervised framework for alignment-free protein classification using sequence embeddings. bioRxiv.

6. Venkat, A., Tehrani, D., Taujale, R., Yeung, W., Gravel, N., Moremen, K.W., and Kannan, N., (2022). Modularity of the hydrophobic core and evolution of functional diversity in fold A glycosyltransferases. Journal of Biological Chemistry. Accepted.

7. Yeung, W., Kwon, A., Taujale, R., Bunn, C., Venkat, A. and Kannan, N., (2021). Evolution of functional diversity in the holozoan tyrosine kinome. Molecular Biology and Evolution, 38(12), pp.5625-5639.

8. Taujale, R., Soleymani, S., Priyadarshi, A., Venkat, A., Yeung, W., Kochut, K.J. and Kannan, N., (2021). GTXplorer: A portal to navigate and visualize the evolutionary information encoded in fold a glycosyltransferases. Glycobiology.

9. Huang, L.C., Taujale, R., Gravel, N., Venkat, A., Yeung, W., Byrne, D.P., Eyers, P.A. and Kannan, N., (2021). KinOrtho: a method for mapping human kinase orthologs across the tree of life and illuminating understudied kinases. BMC bioinformatics, 22(1), pp.1-25.

10. Gosztyla, M.L., Kwong, L., Murray, N.A., Williams, C.E., Behnke, N., Curry, P., ... Venkat, A., and Yamoah, M. A., (2021). Responses to 10 common criticisms of anti-racism action in STEMM. PLoS computational biology, 17(7), p.e1009141.

11. Zhang, A., Venkat, A., Taujale, R., Mull, J.L., Ito, A., Kannan, N. and Haltiwanger, R.S., (2021). Peters plus syndrome mutations affect the function and stability of human β1, 3-glucosyltransferase. Journal of biological chemistry, 297(1), p.100843.

12. Huang, L.C., Yeung, W., Wang, Y., Cheng, H., Venkat, A., Li, S., Ma, P., Rasheed, K. and Kannan, N., (2020). Quantitative Structure–Mutation–Activity Relationship Tests (QSMART) model for protein kinase inhibitor response prediction. BMC bioinformatics, 21(1), pp.1-22.

13. Taujale, R., Venkat, A., Huang, L.C., Zhou, Z., Yeung, W., Rasheed, K.M., Li, S., Edison, A.S., Moremen, K.W. and Kannan, N., (2020). Deep evolutionary analysis reveals the design principles of fold A glycosyltransferases. Elife, 9, p.e54532.

14. Venkat, A., (2017). PathInsight: A Novel Tool for Modeling Biomolecular Pathways. University of California, San Diego.

15. Venkat, A., Amerson, A.L. and Bielmyer-Fraser, G.K., (2016). Influence of water hardness on accumulation and effects of silver in the green alga, Raphidocelis subcapitata. Georgia Journal of Science, 74(2), p.5.

16. Kang, J., Park, S., Venkat, A. and Gopinath, A., (2015). Quantitative analysis of the trends exhibited by the three interdisciplinary biological sciences: biophysics, bioinformatics, and systems biology. Journal of microbiology & biology education, 16(2), pp.198-202.

Invited talks and guest lectures

1. A surprising modularity in the evolution of functional diversity of fold A glycosyltransferases. Eriksson Lecture. Complex Carbohydrate Research Center, **Invited Speaker** (2022)[1]
2. Glycosyltransferases: Small variations contribute to large functions over evolutionary time. Complex Carbohydrate Research Center, **Invited Speaker** (2022)
3. AlphaFold2: protein structure-prediction in the modern era. BCMB3600. University of Georgia, **Guest Lecture** (2022)[2]
4. Modularity of the hydrophobic core and evolution of functional diversity in fold A glycosyltransferases. Southeast Enzyme Conference, **Invited Speaker** (2022)
5. Chemical equilibria. Chemistry 6B, UCSD, **Guest Lecture** (2017)[3]

Conferences and Presentations

1. Modularity of the hydrophobic core and evolution of functional diversity in fold A glycosyltransferases. Glycoscience Training Program. Athens, GA (2022)
2. Modularity of the hydrophobic core and evolution of functional diversity in fold A glycosyltransferases. Society for Glycobiology. San Diego, CA (2021)
3. Mapping sequence-structure-function relationships in glycosyltransferases using deep learning models and data visualization tools. Society for Glycobiology. San Diego, CA (2021)
4. Origami: evolution's secret to the complexity of life. Three Minute Thesis. University of Georgia. Athens, GA. (2021)
5. Playground Learning: Team Learning and Gamification. USG Teaching & Learning Conference (cancelled due to covid-19). University of Georgia. Athens, GA. (2020)
6. Deep Evolutionary Analysis Reveals the Design Principles of Fold A Glycosyltransferases. Society for Glycobiology. Phoenix, AZ (2019)
7. Teaching and Laboratory Assistant Orientation. Delivered Lecture on Efficient Grading Practices. University of Georgia. Athens, GA (2018)
8. Teaching and Laboratory Assistant Orientation. "Teaching Tips" Q&A Panelist. University of Georgia. Athens, GA (2018)
9. Does Competition Enhance Learning Over a Relaxed Guided Lesson? Teaching Methods Poster Presentation. University of California, San Diego (2017)
10. Influence of Water Hardness on Accumulation and Effects of Silver in the Green Alga, Raphidocelis subcapitata. Valdosta State University. Valdosta, GA (2015)
11. Using Computational QSAR Methods to Propose a New Group of Antibiotics for Dental Applications. Valdosta State University. Valdosta, GA (2015)
12. Project Based Learning: Connecting Learners through Guided Class Projects in the Sciences. Valdosta State University. Valdosta, GA (2015)
13. Project Based Learning: Implanted Glucose Sensor and Release Mechanism. Valdosta State University. Valdosta, GA (2015)

Selected Press Coverage

1. **ARCS Foundation Award (2021):** https://www.bmb.uga.edu/news/stories/2021/aarya-venkat-receives-2021-22-arcs-foundation-award
2. **Winning the 3 Minute Thesis (2021):** https://news.uga.edu/10th-annual-three-minute-thesis-competition/
3. **3 Minute Thesis (2021):** https://www.bmb.uga.edu/news/stories/2021/congratulations-aarya-and-brittany
4. **Anti-Racism in STEM (2020):** https://werepstem.com/2020/09/04/they-wrote-the-guide-on-how-to-respond-to-criticisms-of-anti-racism-action-in-stem-heres-why-they-did-it/
5. **Future Faculty Fellows (2019):** https://www.bmb.uga.edu/news/stories/2019/congratulations-aarya-venkat

[1] The Eriksson lecture is an invited talk given by top performing graduate students in the Department of Biochemistry, after publication of a first author paper. Speakers are also given a scholarship from the Karl-Erik L. Eriksson Memorial Endowment.

[2] I gave a lecture on state-of-the-art protein structure-prediction methods, including AlphaFold2. I developed a case study assignment on the usage of AlphaFold2, in combination with other bioinformatics tools (BLAST, Swissprot, and Uniprot), for students to analyze predicted structures and generate hypotheses about their function, supported by existing literature.

[3] I gave a lecture on chemical equilibria to 400 undergraduate students. This included addressing concerns on equilibrium, such as the application of Raoult's law. I developed laymen explanations for how changes in the mole fraction of a solution affects vapour pressure resulting in boiling point elevation/freezing point depression and walked students through solving common equilibrium questions on the ACS general chemistry exam.

Teaching

Guest Lectures

1. AlphaFold2: protein structure-prediction in the modern era. BCMB3600. University of Georgia, **Guest Lecture** (2022).
2. Chemical Equilibria. Chemistry 6B, UCSD, **Guest Lecture** (2017)

Classes taught

Instructor Rating: 4.6 for undergraduates (Weighted Average, 5=best)

Class	Assignment	University	Level	Year
BCMB3600	Instructor of Record	University of Georgia	undergraduate	2022
BCMB3600	Grader	University of Georgia	undergraduate	2019-21
BCMB3100	Grader	University of Georgia	undergraduate	2019-20
BIOL1103	Instructor of Record	University of Georgia	undergraduate	2019
CHEM1212	Teaching Assistant	University of Georgia	undergraduate	2018
CHEM1211	Teaching Assistant	University of Georgia	undergraduate	2018
CHEM6B	Teaching Assistant	University of California, San Diego	undergraduate	2017

Mentorship

Name	Time mentored	Current location	Level	Grad. date
Mariah Salcedo	1 year	University of Georgia	lab PhD student	Present
Nathan Kleber	1 year	University of Georgia	lab undergrad	Present
Daniel Tehrani	1.5 year	University of Georgia	PhD student	Present
Brady O'Boyle	1.5 year	University of Georgia	lab PhD student	Present
Nolan Kemppinen	2.5 years	University of Georgia	lab PhD student	Present
Grace Watterson	1 year	University of Georgia	lab undergrad	Present
Priyanka Parikh	<1 year	University of Georgia	lab undergrad	Present
Swati Bala	1 year	University of Georgia	undergraduate	Present
Nathan Gravel	2 years	University of Georgia	lab PhD student	Present
Ehsan Suez	6 weeks	University of Georgia	ILS rotation student	Present
Donovan Cantrell	3 years	University of Georgia	PhD student	Present
Claire Bunn	3.5 years	Cambridge University	lab undergrad	2022
Niral Thaker	3 years	Medical College of Georgia	lab undergrad	2021
Max Kuhr	1 year	University of Georgia	lab undergrad	2021
Ganesh Prabakaran	1 year	University of Georgia	lab undergrad	2021
Jamini Patel	6 months	University of Georgia	undergraduate	2021
Raga Dasana	2 years	UNC Chapel Hill	High school student	2020
Victor Valbuena	3 months	Georgia Tech	High school student	2019

Service

Service to Profession

2022 Protein Engineering Symposium - Organizer. University of Georgia

2021– Scholar, ARCS Foundation

2021– Member, Society for Glycobiology

2020 Unfolded Protein Response Symposium - Chair. University of Georgia

2020 Writing a Diversity Statement - GradTeach Workshop - Workshop leader

2020 Spring Teaching Symposium - Workshop leader

2020 Spring Teaching Symposium - Organizer. University of Georgia

2020– Member, American Association for the Advancement of Science

2019 Cancer Immunotherapies Symposium - Organizer. University of Georgia

Service to University

2022–23 Mentoring Committee, Graduate Retention and Inclusion grant

2018–23 Science Outreach and Social Media Coordinator, Kannan Lab

2020–22 Biochemistry Graduate Students Association (BGSA)

2018–22 Chair, UGA Biochemistry Symposium Committee

2019–20 Fellow, Future Faculty Fellow, University of Georgia

Service to Community

2020–22 National History Day - Judged Performances and Documentaries for middle and high school students.

2021–22 Sweet Olive Farm - Managed young volunteers at a local animal rescue.

2019–20 Teaching Leadership - Developed a curriculum on the roles of ethics and empathy in good leadership.

2017–20 Science Olympiad Lab Manager - Set up chemistry labs and ensured lab safety protocols were followed.

2017–20 Computer Literacy - Established weekend computer literacy courses at the Athens-Clarke county library.

2015–16 Outreach Advancement Towards Hope (OATH) - UCSD organization helping the underserved in downtown San Diego through medical outreach, performing medical screenings with a certified physician.