

Aarya Venkat

Computational Biologist

Education

Biochemistry (PhD)

University of Georgia

Present | GPA: 3.8

Chemistry (MS)

UC, San Diego

June 2017 | GPA: 3.8

Recent Awards

Society for Glycobiology Conference
Poster Award & Travel Award, 2021

UGA Travel Award, 2021

ARCS Foundation Scholar, 2021

3 Minute Thesis Winner,
People's Choice Award, 2021

Future Faculty Fellowship, 2019

Outstanding Graduate Teaching
Assistant Awards, 2018 & 2019

Contact

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Recent Employment History

Graduate research assistant | PhD student

08/2018 - Present

Biochemistry and Molecular Biology (Kannan Lab)
University of Georgia

I study sequence variation and dynamics of the Glycosyltransferase hydrophobic core to gain insights into the structure-function and evolution of these diverse enzyme families.

Instructor of Record | Teaching Assistant

08/2017 - 05/2021

Department of Chemistry
Department of Biology
Department of Biochemistry and Molecular Biology
University of Georgia

Teaching Assignments: Chem 1211, Chem 1212, Bio 1103.
Grader Assignments: BCMB 3100, BCMB 3600.

Graduate research assistant | Masters student

08/2015 - 06/2017

Chemistry and Biochemistry (Gilson Lab)
UC, San Diego

Developed PathInsight, a program to model the downstream effects of small binding compounds in a biological pathway.

Graduate Teaching Assistant

01/2016 - 06/2017

Department of Chemistry
UC, San Diego

Taught three general chemistry lecture classes every week to 90 students.

Internship

04/2016 - 12/2016

National Resource for Network Biology (San Francisco)

I worked with this organization, specifically Dr. Scooter Morris from Cytoscape, to develop an application [PathInsight] and integrate it into the Cytoscape store.

Publications

Patents

Venkat, A., et al. 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: 54)

Kadirvalraj, R., et al. (2022). Substrate Selection of Glycosyltransferases. In Prep.

Amos, R., et al. (2022). Polymerization of the backbone of the pectic polysaccharide rhamno-galacturonan I. In prep.

Yeung, W., et al. (2022). An explainable unsupervised framework for alignment-free protein classification using sequence embeddings. Submitted.

Venkat, A., et al. (2022). Modularity of the hydrophobic core and evolution of functional diversity in fold A glycosyltransferases. Under Review.

Yeung, W., ... Venkat, A., & Kannan, N. (2021). Evolution of Functional Diversity in the Holozoan Tyrosine Kinome. Molecular Biology and Evolution.

Taujale, Rahil, et al. (2021). "The GTXplorer portal to access, navigate and mine evolutionary relationships of fold A glycosyltransferases." Glycobiology.

Skills

L^AT_EX	4+ years
Bash	4+ years
Molecular Modeling	4+ years
Computational Chemistry	4+ years
Python	4+ years
Software Development	3+ years
Multivariate Statistical Analysis	3+ years
Molecular Docking	3+ years
Data science	3+ years
Quantum Mechanics	2+ years
Java	2+ years
Synthetic Biology	1+ years

Mentorship

Olivia Bauer - UGA grad student
 Daniel Tehrani - UGA grad student
 Brady O'Boyle - UGA grad student
 Nolan Kemppinen - UGA grad student
 Grace Watterson - UGA undergrad
 Priyanka Parikh - UGA undergrad
 Swati Bala - UGA undergrad
 Nathan Gravel - UGA PREP scholar
 Ehsan Suez - UGA ILS rotation student
 Donovan Cantrell - UGA grad student
 Max Kuhr - UGA undergrad
 Claire Bunn - UGA undergrad
 Ganesh Prabakaran - UGA undergrad
 Jamini Patel - UGA undergrad
 Raga Dasana - High school student
 Victor Valbuena - High school student

Huang, L. C., Taujale, R., Gravel, N., Venkat, A., ... & Kannan, N. (2021). KinOrtho: a method for mapping human kinase orthologs across the tree of life and illuminating understudied kinases. BMC Bioinformatics.

Gosztyla, Maya L., et al. (2021). "Responses to 10 common criticisms of anti-racism action in STEMM." PLOS Computational Biology.

Zhang, A., Venkat, A., et al. (2021). Peters plus syndrome mutations affect the function and stability of human 1, 3-glucosyltransferase. Journal of Biological Chemistry.

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.

Taujale, R., Venkat, A., et al. (2020) Deep evolutionary analysis reveals the design principles of fold A glycosyltransferases. Elife.

Venkat, A. (2017). PathInsight: A Novel Tool for Modeling Biomolecular Pathways. UC San Diego: Chemistry.

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.

Park, S., Venkat, A., Gopinath, A., and Kang, J. (2015). Quantitative Analysis of the Trends Exhibited by the Three Interdisciplinary Biological Sciences: Biophysics, Bioinformatics, and Systems Biology. Journal of Microbiology & Biology Education.

Conferences and Presentations

2016 - 2022

Modularity of the hydrophobic core and evolution of functional diversity in fold A glycosyltransferases. Southeast Enzyme Conference (2022)

Modularity of the hydrophobic core and evolution of functional diversity in fold A glycosyltransferases. Society for Glycobiology (2021)

Mapping sequence-structure-function relationships in glycosyltransferases using deep learning models and data visualization tools. Society for Glycobiology (2021)

Origami: evolution's secret to the complexity of life. Three Minute Thesis (2021)

Playground Learning: Team Learning and Gamification. USG Teaching & Learning Conference (cancelled due to covid-19) (2020)

Deep Evolutionary Analysis Reveals the Design Principles of Fold A Glycosyltransferases. Society for Glycobiology (2019)

Teaching and Laboratory Assistant Orientation. Delivered Lecture on Efficient Grading Practices. University of Georgia (2018)

Teaching and Laboratory Assistant Orientation. "Teaching Tips" Q&A Panelist. University of Georgia (2018)

Does Competition Enhance Learning Over a Relaxed Guided Lesson? Teaching Methods Poster Presentation. University of California, San Diego (2017)

Influence of Water Hardness on Accumulation and Effects of Silver in the Green Alga, *Raphidocelis subcapitata*. Valdosta State University (2016)

Using Computational QSAR Methods to Propose a New Group of Antibiotics for Dental Applications. Valdosta State University (2016)

Volunteering

2020-2022

National History Day

Judged Performances and Documentaries for middle school and high school students.

2021-2022

Sweet Olive Farm

Volunteered at a local animal rescue, coordinated other volunteers, and taught children how to interact with and feed the animals. Additionally helped build new pens and other infrastructure for the animals.

2017-2020

Science Olympiad Lab Manager

Aid in setting up Chemistry and Forensic labs for high school Science Olympiad. Ensure lab safety protocols are followed.

2017-2020

Computer Literacy

Established and taught weekend computer literacy courses at the Athens-Clarke county library.

2018

Teaching Leadership

Developed a curriculum focused on understanding ethics, morals, and empathy and their roles in good leadership.

2015-2016

Outreach Advance-
ment Towards Hope
(OATH)

UCSD organization helping the underserved in downtown San Diego through medical outreach, performing medical screenings with a certified physician.

2015

Aiding Villages after
the 2015 Nepal Earth-
quake

Helped organize and hand deliver supplies, including food and oil, to villagers in the Himalayan mountains affected by the earthquake and recurrent landslides.

Workshops and Symposiums

2017 - 2022

Protein Engineering Symposium - Organizer. University of Georgia (2022)

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)

Cancer Immunotherapies Symposium - Organizer. University of Georgia (2019)

Guest Lecture on Chemical Equilibrium. Chemistry 6B, UCSD (2017)