LAAVANYA SANKARANARAYANAN

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EDUCATION

Duke University, Durham, NC, USA
Doctorate of Philosophy, Genetics and Genomics
Certificate in College Teaching
2017-present
Advisor : Dr. Timothy Reddy
GPA : 3.8/4

University of Pennsylvania, Philadelphia, PA, USA
Master's in Biotechnology, Concentration :Molecular Biology, *May 2015*
GPA : 3.6/4

Anna University, Chennai, TN, India
Bachelor of Technology, Major : Biotechnology, *May 2013*
GPA : 3.96/4.0; Departmental Highest Honours : First Class with Distinction; University Rank : 19

CURRENT RESEARCH

My scientific interests include understanding genetic regulation and variation, particularly in the context of human health. My graduate research focuses on understanding the genetics of polycystic ovarian syndrome. Specifically, I am investigating the functional role of genetic variants leading to gene regulation and identifying the genes involved in the PCOS phenotypes. I am also investigating the role of regulatory variants that are involved in causing PCOS phenotypes, using population samples.

PREVIOUS RESEARCH

Dr. Gerd Blobel, Children's Hospital of Philadelphia, *2015-2017*

I worked on projects related to induction of fetal hemoglobin and chromatin accessibility related to mitosis and erythropoiesis. I was involved in a study looking at the variation in transcription factor (TF) binding using natural genetic variants in related cell lines. We identified that mutations to a TF motif has consistent effects on this TF binding regardless of cell lines. Additionally, with another project we found a novel regulator of fetal hemoglobin, as a potential therapeutic target for blood disorders like sickle cell disease.

Dr. Matthew Deardorff, Children's Hospital of Philadelphia, *2014-2015*

As part of my Master's research project, I worked on a project in Dr. Deardorff's lab assisting in identifying *de novo* mutations in people with a rare disease, Cornelia de Lange Syndrome (CdLS). I designed a sequencing based assay based on the use of molecular inversion probes to identify *de novo* mutations using trio whole genome samples.

Dr. Krishna Kumar, Sankara Nethralaya, *Nov 2012-April 2013*

As part of my undergraduate degree requirements, I investigated corneal stem cell differentiation using biofilms for my thesis. Specifically, I tested whether culturing corneal stem cells on different chitosan-based biofilms supported their differentiation to corneal epithelial cells by testing for expression of marker genes, and identified one composition of biofilm that supported better attachment and differentiation of the stem cells.

PRESENTATIONS

Sankaranarayanan L., Johnson G.D., Kim Y.-S., Dunaif A., Reddy T.E. *Fine-mapping of Polycystic Ovary Syndrome susceptibility loci identifies regulatory variants in FSHB,* **American Society for Human Genetics,** October 2020

PUBLICATIONS

Grevet JD, Lan X, Hamagami N, Edwards CR, Sankaranarayanan L, Ji X, Bhardwaj SK, Face CJ, Posocco DF, Abdulmalik O, Keller CA, Giardine B, Sidoli S, Garcia BA, Chou ST, Liebhaber SA, Hardison RC, Shi J, Blobel GA. Domain-focused CRISPR screen identifies HRI as a fetal hemoglobin regulator in human erythroid cells. Science. 2018 Jul 20;361(6399):285-290. doi: 10.1126/science.aao0932. PMID: 30026227

Behera V, Evans P, Face CJ, Hamagami N, Sankaranarayanan L, Keller CA, Giardine B, Tan K, Hardison RC, Shi J, Blobel GA. Exploiting genetic variation to uncover rules of transcription factor binding and chromatin accessibility. Nat Commun. 2018 Feb 22;9(1):782. doi: 10.1038/s41467-018-03082-6. PMID: 29472540

Hsiung CC, Bartman CR, Huang P, Ginart P, Stonestrom AJ, Keller CA, Face C, Jahn KS, Evans P, Sankaranarayanan L, Giardine B, Hardison RC, Raj A, Blobel GA. A hyperactive transcriptional state marks genome reactivation at the mitosis-G1 transition. Genes Dev. 2016 Jun 15;30(12):1423-39. doi: 10.1101/gad.280859.116. PMID: 27340175

HONOURS AND AWARDS

- Bass Instructional Teaching Fellowship, Duke University, 2020
- Gridley McKim-Smith Women's Health Fellowship Award, Foundation for Women's Wellness (2020)
- Marcy Speer Fellowship, Duke University, 2018
- First Class with Distinction, Rank : 19/500, Anna University, 2013
- Merit Awards : 5/8 semesters, Anna University, 2009-2013.

TEACHING AND MENTORSHIP

- Teaching Assistant, BIO201, Duke University, Spring 2021
    - Led weekly lab sessions as the instructor for the course including lectures and basic biology lab techniques
    - Guided students through semester long research project
- Reader, Senior's Biology Writing Project, Spring 2021
    - Mentored an undergraduate on their senior writing project, including scientific accuracy and writing style.
- Graduate Mentor, Duke Summer Scholars in Genome Sciences & Medicine, Duke University, May 2019-July 2019
    - Research and academic mentorship for research scholars underrepresented in STEM.
    - Led weekly sessions teaching introductory biology, scientific speaking and presentation skills
- Instructor, Miniterm, North Carolina School of Science and Math, Spring 2019
    - Part of a team that led high school students through archeal growth and analysis experiments and data presentation.

- Small Group TA, Responsible Conduct of Research Incoming Student Workshop, August 2019
    - Lead group discussions about ethical questions in scientific research
- Instructor – Genomics, Center for Talented Youth, Johns Hopkins University, Baltimore, MD June 2015 – July 2015
    - Designed and lead experiments to isolate environmental DNA and its isolation+species identification and looked at ChIP-seq data from publicly available databases
    - Lecture-based discussion for high school students in Genomics. Also served as a TA for Genetics
- MAS teaching fellow, Moelis Access Science, University of Pennsylvania, Philadelphia, PA Feb 2015 – May 2015
    - Served as a teaching assistant for introductory biology for West Philadelphia High School

SERVICE AND OUTREACH

- Duke University Program in Genetics and Genomics, Student co-chair, 2020-2022
- Duke University Program in Genetics and Genomics, Recruitment committee co-chair, 2019-2020
- Duke University International House Peer, 2020-present
- MicroMoles: Learning STEMs from Curiosity, designing illustrated children's stories based on recent graduate student publications 2018-present
- Duke Outreach in Genetics and Genomics, Duke University, outreach volunteer, Jan 2018 – present
- Duke Women in Science and Engineering (WiSE) outreach volunteer, Jan 2019-present
- Durham Animal Protection Society, animal and educational events volunteer, Jan 2018 – March 2019