GAURAV DIWAN, PhD

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RESEARCH EXPERIENCE

2019- present	Postdoctoral Fellow, Prof. Rob Russell's group, *BioQuant, University of Heidelberg, Germany* Impact of mutations on protein structure and networks
2014- 2018	PhD student, Dr. Deepa Agashe's group, *NCBS Bengaluru, India* Computational analyses of the evolution of bacterial translation
2012- 2014	Graduate Trainee, Dr. Deepa Agashe's group, *NCBS Bengaluru, India* Fitness effects of tRNA gene knockouts in *Escherichia coli*
2011- 2012	Project Trainee, Dr. Richa Rikhy's group, *IISER Pune, India* Dynamics of actin remodeling in the syncytial *Drosophila* embryo

EDUCATION

2019	PhD Evolutionary Genomics, *National Centre for Biological Sciences, India / SASTRA University, India*
2011	MSc Microbiology, *The Maharaja Sayajirao University of Baroda, India*
2009	BSc Microbiology, *University of Pune, India*

PUBLICATIONS

Sane M, **Diwan GD**, Bhat BA, Wahl LM and Agashe D (2020). Shifts in mutation spectra enhance access to beneficial mutations. *bioRxiv*, 10.1101/2020.09.05.284158.

Staufner, C, Peters, B, Wagner, M, … **Diwan GD**, Russell RB, … Lenz, D (2020). Defining clinical subgroups and genotype–phenotype correlations in NBAS-associated disease across 110 patients. *Genetics in Medicine*, 22(3), 610–621

Diwan GD and Agashe D (2018). Wobbling forth and drifting back: The evolutionary history and impact of bacterial tRNA modifications. *Molecular Biology and Evolution* 35(8):2046-2059

Diwan GD and Agashe D (2016). The frequency of internal Shine-Dalgarno – like motifs in prokaryotes. *Genome Biology and Evolution* 8(6):1722-1733

Agashe D, Sane M*, Phalnikar K*, **Diwan GD***, Habibullah A, Martinez-Gomez NC**,** Sahasrabuddhe V**,** Polachek W, Wang J, Chubiz L and Marx CJ (2016). Large-effect beneficial synonymous mutations mediate rapid and parallel adaptation in a bacterium. *Molecular Biology and Evolution* 33: 1542-1553. (* Equal contribution)

TECHNICAL SKILLS

Programming (in order of proficiency): **R** – extensive biological data handling, analyses and visualizations using *tidyverse*, *phytools*, *seqinr*, *ggplot2*; **UNIX/Bash**; **Python** – parsing and data handling; **Web application development** – Dash (Python) and Shiny (R); High Performance Cluster usage

Comparative Phylogenetics: Ancestral reconstruction; phylogenetic regression; tree manipulations; hypothesis testing

Bioinformatics: Comparative genomics; HMMER suite; Vienna RNA Package; MEGA; Geneious; T-COFFEE; NCBI-BLAST; HHPred; PyMol

Proteomics: Domain annotations; Orthology detection; Structural predictions; Customized data analysis (alternatives to Perseus)

Statistical Methods: Hypothesis testing; Non-parametric tests; Generalized Linear Models; Multiple testing

Experimental techniques: Molecular Biology - Site directed mutagenesis; Gene cloning and expression; Gene knockouts in bacteria; Western Blotting; Microbiology - Experimental Evolution; Growth rate analyses; Culturing methods; Transformation; Transduction; Microscopy - Fluorescent tagging; Live confocal microscopy and Total Internal Reflection Fluorescence (TIRF) microscopy

FELLOWSHIPS AND AWARDS

2017	Travel Grant, Department of Science and Technology (DST-SERB), Government of India
2016 – 2018	Senior Research Fellow, University Grants Commission (UGC), New Delhi, India
2016	Travel Grant, Department of Biotechnology, Government of India
2014 – 2016	Junior Research Fellow, University Grants Commission (UGC), India

TEACHING EXPERIENCE

June 2020	Tutor: Bioinformatics Course, University of Heidelberg, Summer Semester
January 2020	Helper: EMBL Data Carpentry Workshop, EMBL Heidelberg, Germany
2019 - present	Certified Software Carpentry instructor (https://carpentries.org/)
March/October 2019	Tutor: Computational Biochemistry course, University of Heidelberg
November 2017	Tutor: Introduction to R programming at NCBS Programming Workshop 2017, NCBS, Bengaluru, India
August 2017	Teaching Assistant at the School of Molecular and Theoretical Biology organized at CRG, Barcelona, Spain

ACADEMIC SERVICE

Manuscript Review	Molecular Biology and Evolution; Genome Biology and Evolution; G3: Genes, Genomes, Genetics
Mentoring	Mentored two PhD students, three Masters' thesis students, one Bachelors' thesis student and two summer interns
Programming solutions	Developed customized R scripts for proteomics data analysis (two research groups); Helped establish an automated growth curve analysing system: wrote programs and scripts in R for data handling and analyses; Wrote scripts for data mining and image analyses in R for colleagues