

Akanksha Yadav

☎ (+1) 5714439583 | ✉ akankshayadav58@gmail.com

Education

- 2019-2021 Master of Science in Molecular Biology**
International Max Planck Research School (IMPRS) Molecular Biology,
Max Planck Institute for Biophysical Chemistry (MPI-BPC), Göttingen
- 2015-2019 Bachelor of Science in Chemistry**
Minor in Biosciences and Bioengineering
Indian Institute of Technology (IIT) Bombay, Mumbai

Research Experience

- Sept 2021 - Present **Development of genetically encoded bioluminescent calcium indicator**
Supervisor: Dr. Eric Schreiter, HHMI Janelia Research Campus
Screened domain insertion and linker mutagenesis libraries in medium throughput and characterized calcium affinity of hits
- May-Aug 2021 **Improvement of probes based on photoconvertible FPs for super-resolution microscopy**
Guides: Prof. Stefan Hell, Prof. Stefan Jakobs, Dept. of Nanobiophotonics, MPI-BPC
Performed rational mutagenesis of moxMaple3 and screened variants for improved brightness, switching kinetics and minimal photobleaching
- Oct-Apr 2021 **Master's thesis - Developing method for finding trans-eQTLs using transcriptomic data**
Guide: Dr. Johannes Söding, Quantitative and Computational Biology group, MPI-BPC
Developed a statistical method for identifying trans-eQTLs using reverse logistic regression on simulated data and benchmarked performance
- May-June 2020 **Rotation III - Investigating Ubiquitin dynamics using NMR-based relaxation dispersion**
Guide: Prof. Christian Griesinger, NMR-based Structural Biology group, MPI-BPC
Analyzed 1H - ^{15}N TROSY and CPMG relaxation dispersion data of ^{15}N -labeled ubiquitin in water/ d_8 -glycerol, 900MHz and wrote scripts to fit two/three-state fast-exchange model
- Mar-Apr 2020 **Rotation II - Analyzing MD simulations of ArfB in solution and in ribosome complex**
Guide: Prof. Helmut Grubmüller, Theoretical and Computational Biophysics group, MPI-BPC
Performed molecular dynamics simulation of free protein ArfB in explicit solvent and analysed structural differences relating peptidyl-tRNA hydrolysis in its ribosome complex
- Jan-Feb 2020 **Rotation I - Prediction of gene expression using cis and trans-eQTLs**
Guide: Dr. Johannes Söding, Quantitative and Computational Biology group, MPI-BPC
Modified an open-source pipeline to build gene expression prediction models using cis- and novel trans-eQTLs from large scale transcriptomic data and compared models' performance
- 2016-2019 **Molecular Dynamics Studies of Small Molecule Ligands with G-Quadruplex DNA**
Guide: Prof. Pradeepkumar P.I., Nucleic Acids Chemical Biology lab, IIT Bombay
Modelled potential G-quadruplex binding ligands and analyzed molecular dynamics simulations of ligand-DNA complex using AMBER 16
- Summer 2018 **GUI development for a data-based chemical modelling software suite, CANDIY**
Guide: Prof. Gaurav Chopra, Dept. of Chemistry, Purdue University
Integrated 3D molecule renderer from Avogadro into Qt-based GUI of the docking module, along with the functions to run the program from the GUI

Publications

- Kumari, B.; **Yadav, A.**; Pany, S.P.; Pradeepkumar P.I; Kanvah, S.; Cationic red emitting fluorophore: A light up NIR fluorescent probe for G4-DNA. *J. Photochem. Photobiol., B*, 2019, 190, 128-136

Scholastic Achievements

- 2021 Granted Stefan Hell predoctoral fellowship at MPI-BPC
- 2019-2021 Recipient of stipend by the International Max Planck Research School
- 2019 Ranked 2nd in the 2015 batch, Department of Chemistry, IIT Bombay
- 2015-2019 Granted INSPIRE Scholar Award by the Dept. of Science and Technology, Govt. of India
- 2018 Recipient of summer stipend under Purdue Undergraduate Research Experience program
- 2016,2017 Awarded the Institute Academic Prize for two consecutive years
- 2011-2015 Qualified the National Talent Search Examination and received a scholarship
- 2013 Selected for the Indian National Mathematical Olympiad from Mumbai zone
- 2009 Among top 50 scholarship holders in state-level two-tier Mathematics Prodigy Competition

Skill set

Languages C/C++, R, Python, Bash

Software PyMol, Chimera, Coot, GROMACS, CCP4i, CcpNmr, Autodock, Gaussian, AMBER, SnapGene

Extracurricular Activities

- Misc. - Successfully completed the workshop Statistics for Life Scientists conducted by the SIB, Basel
- Qualified for finals of Bioinformatics Contest 2018 organized by Stepik and Rosalind
- Completed courses on Coursera: Introduction to genomic technologies - JHU, Bioinformatics-I UC San Diego, Machine Learning - Stanford
- Cleared level A1.1 of German language course
- Volunteered to organize 8th Asia-Pacific Conference of Theoretical and Computational Chemistry
- Sports - Secured gold medal in the 200m event at the annual athletic championship conducted by Bombay City District Amateur Athletic Association (BCDAAA)
- Bagged bronze medal in 4x100m relay at Bombay YMCA annual athletic meet
- Part of the IIT Bombay Athletics team selected to participate in Inter IIT competition