

Anshu Deewan
[anshudeewan.github.io](https://github.com/anshudeewan)

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Chemical engineer with 5+ years of research experience in Computational Genomics using Next Generation Sequencing & bioinformatics. 4 years of work experience as a Product Manager with Unilever Research. Hands-on experience in interdisciplinary research & project management in academic and industry settings.

EDUCATION

University of Illinois, Urbana-Champaign (UIUC), IL USA **2016-22**
Ph.D., Chemical Engineering, GPA 3.6/4
Concentration, Computational Science and Engineering, GPA 3.7/4

Indian Institute of Technology (IIT), Delhi, India **2008-12**
B. Tech., Chemical Engineering, GPA 8.8/10

SKILLS AND CERTIFICATIONS

Computational Biology: NGS data analysis: Whole-genome sequencing, RNA sequencing analysis, Single-cell RNA sequencing analysis, Cancer genomics, Variant calling, Homology identification, Multiple sequence alignment, and phylogeny, Regulatory genomics

Molecular Biology: Cell culture, RNA extraction, Protein engineering, HPLC, FPLC, Cell-free systems, Cloning, and transformation.

Programming tools: Python, R, Unix, Command line scripting (Bash), Matlab, and SQL.

Management: Executive General Management Program, IIM Bangalore, India (2013)

RESEARCH AND WORK EXPERIENCE

University of Illinois, Urbana-Champaign, IL USA **2016-22**
Graduate Thesis Student (Advisor: Prof. Christopher V. Rao)

- Performed experiments and analyzed multiple RNA sequencing datasets to identify genes and metabolic pathways of interest in various model and non-model organisms.
- Collaborated on 10+ projects for bioinformatics analysis, developing pipelines to analyze multi-omics data, such as genome assembly, variant calling, and copy number identification.
- Identified new sugar transporters from non-model organisms using bioinformatics analysis
- Integration of RNA sequencing data with other bioinformatics datasets of various yeast and bacteria for characterizing differences in cellular behavior
- Studying the mechanism and regulation of storage metabolism in yeasts using computational models. Built a model for storage metabolism in python, with validation using growth experiments
- Understanding protein-protein interactions: expressed and purified multiple proteins from yeasts.

Unilever, Research and Development, Mumbai, India **2012-16**
Global Product Development Manager **2014-16**

- Led the Surfactant flexibility team for global fabric cleaning portfolio, launched multi-surfactant formulations across 4 manufacturing sites, delivering \$8M cost savings.
- Led the quality improvement workstream in collaboration with industrial partners to improve the delivered quality of a critical surfactant
- Championed sustainability efforts to reduce the formulation footprint by understanding the value chain of raw materials and identifying opportunities for footprint reduction

Unilever Future Leadership Program - Trainee **2012-13**

- Intensive 18-month training experience in project management, with cross-functional stints in marketing, research, packaging, and factory operations.

Indian Institute of Technology, Delhi, India

2011-12

Undergraduate Research Student (Prof. Vivek V. Buwa, Chemical Engineering)

- Development of high-performance structured packing: Computational fluid dynamics modeling of methane-air combustion through catalyst impregnated monolith reactors

TEACHING & MENTORING

- STEM outreach volunteer for campus & community events targeting audience of various ages (2018-22)
- Mentored a team of 6 undergraduate students to design an improved plastic degrading enzyme (2021)
- Mentored four lab members on multiple research projects in computational biology (2019-21)
- Graduate Teaching Assistant for Process Control, conducted discussion sessions and lectures (2018-19)
- Mentor, Unilever, trained new research associates and conducted training on product design (2014)
- Undergraduate Teaching Assistant for Fluid Dynamics; conducted weekly discussion sessions (2011)
- High School Chemistry Tutor, delivered over 100 lectures on Organic Chemistry (2008-2011)

FELLOWSHIPS & AWARDS

JME Graduate Student Award, 2020; ‘List of Teachers Ranked as Excellent by their Students’, 2019; Parr Fellowship, 2016-17; IIT Delhi Semester Merit Award, 2010-11

PUBLICATIONS & PATENTS (7/9)

* - Co-first authors

ORCID: 0000-0002-0288-8926, Google Scholar: scholar.google.com/citations?user=xWlcH0YAAAAJ

1. **A Deewan**, S Mishra, H Zhao, and CV Rao. Dynamics of lipid production in the oleaginous yeast *Rhodospiridium toruloides*. In Preparation.
2. B Mejia-Sosa, W Woodruff, **A Deewan**, CV Rao, and H Zhao. Our Current Understanding of Lipid Biosynthesis in Oleaginous Yeast Through a Multi-omics Framework. In Preparation.
3. **A Deewan***, JJ Liu*, SS Jagtap, H Walukiewicz, EJ Yun, YS Jin, and CV Rao. Systems analysis of *Lipomyces starkeyi* uncovered new gene targets for metabolic engineering. (2022). *Applied Microbiology and Biotechnology*. Under review.
4. SS Jagtap*, **A Deewan***, JJ Liu, H Walukiewicz, EJ Yun, YS Jin, and CV Rao. Integrating transcriptomic and metabolomic analysis of the oleaginous yeast *Rhodospiridium toruloides* IFO0880 during growth under different carbon sources. (2021). *Applied Microbiology and Biotechnology* 105(19):7411-7425 [PMID: 34491401]
5. N Kuanyshev, **A Deewan**, SS Jagtap, JJ Liu, B Selvam, LQ Chen, D. Shukla, CV Rao, and YS Jin. Identification and analysis of sugar transporters capable of co-transporting glucose and xylose simultaneously. (2021). *Biotechnology Journal*. e2100238 [PMID: 34418308]
6. JJ Liu*, W Woodruff*, **A Deewan***, SS Jagtap, EJ Yun, HE Walukiewicz, YS Jin, and CV Rao. Investigating the role of the transcriptional regulator Ure2 on the metabolism of *Saccharomyces cerevisiae*: a multi-omics approach. (2021). *Applied Microbiology and Biotechnology*. 105(12):5103-5112 [PMID: 34152451]
7. **Patent Application**: “Plant SWEET and Yeast MSF Transporter Capable of Transporting Different Sugars (Glucose, Xylose, Galactose, Fructose, Sucrose, Xylodextrin, Cellobiose, Arabinose, Lactose) Simultaneously.” Inventors: YS Jin, N Kuanyshev, **A Deewan**, and CV Rao. University of Illinois Urbana-Champaign. Invention Report Date: Sept. 6, 2019

CONFERENCE PRESENTATIONS (2/10)

- **A Deewan**, SS Jagtap, CV Rao. Integrating transcriptomics and metabolomics in the oleaginous yeast *Rhodospiridium toruloides*. 14th Yeast Lipid Conference, Ljubljana, Slovenia, 2019.
- **A Deewan**, JC Schultz, SS Jagtap, H Zhao, and CV Rao. Exploring Oleaginous Yeast *Rhodospiridium toruloides* as a Platform Organism for Production of Chemicals and Fuels. Genomic Sciences Program Annual Principal Investigator (PI) Meeting, Washington DC, USA, 2020.