Riddhiman Dhar, PhD
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Indian Institute of Technology Kharagpur
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Experience

Feb, 2017 - current	Assistant Professor, Department of Biotechnology, IIT Kharagpur
Apr, 2013 - Jan, 2017	Postdoctoral researcher, EMBL-CRG Systems Biology Program, Centre for Genomic Regulation (CRG), Barcelona, Spain Adviser: Prof. Ben Lehner

Education

2008-2013	PhD, University of Zurich, Switzerland Thesis – "The Genetic Basis of Microbial Adaptations to New Environments in Laboratory Evolution" Thesis adviser: Prof. Andreas Wagner
2003-2008	B. Tech and M. Tech (Dual degree) in Biotechnology and Biochemical Engg., Department of Biotechnology, IIT Kharagpur, India (CGPA 9.3/10)
2003	Higher Secondary School Examination, Kolkata, India
2001	Secondary School Examination, Kolkata, India

Academic awards and fellowships

- Swiss National Science Foundation Early Postdoc mobility fellowship (2013)
- Institute Silver Medal, IIT Kharagpur (2008)

Publications

- Parab L*, Pal S*, **Dhar R,** 2022. Transcription factor binding process is the primary driver of noise in gene expression. **PLoS Genetics,** 18:e1010535 (* equal contribution)

- Joshi P, **Dhar R**, 2022. EpICC: A Bayesian Neural Network with uncertainty correction for accurate classification of cancer, **Scientific Reports**, 12:14628

- Mitra S, **Dhar R**[#], Sen R[#], 2022. Designer bacterial cell factories for improved production of commercially valuable non-ribosomal peptides. **Biotechnol Adv.** 60:108023. ([#] Corresponding authors)

- Singh A, **Dhar R**. A large-scale computational screen identifies strong potential inhibitors for disrupting SARS-CoV-2 S-protein and human ACE2 interaction. **J Biomol Struct Dyn**. 2021, May 17: 1-14.

- Routh S*, Acharyya A*, **Dhar R**. A two-step PCR assembly for construction of gene variants across large mutational distances. **Biology Methods and Protocols** 2021, 6:bpab007 (* equal contribution)

- **Dhar R**, 2020. Role of Mitochondria in Generation of Phenotypic Heterogeneity in Yeast. **J Indian Inst Sci.** 100: 497-514. https://doi.org/10.1007/s41745-020-00176-3

- Agarwal T, Biswas P, Pal S, Maiti TK, Chakraborty S, Ghosh SK, **Dhar R**, 2020. Inexpensive and Versatile Paper-Based Platform for 3D Culture of Liver Cells and Related Bioassays. **ACS Applied Bio Materials** 3: 2522-2533

- Li X, Lalic J, Baeza-Centurion P, **Dhar R**, Lehner B, 2019. Changes in gene expression predictably shift and switch genetic interactions. **Nature Communications** 10: 3886

- **Dhar R**, Missarova AM, Lehner B*, Carey LB*, 2019. Single cell functional genomics reveals the importance of mitochondria in cell-to-cell phenotypic variation. **eLife** 8: e38904 (* equal contribution)

- Bolognesi B, Gotor NL, **Dhar R**, Cirillo D, Baldrighi M, Tartaglia GG, Lehner B, 2016. Liquid Phase Separation as a Mechanism of Overexpression-induced Dosage Sensitivity. **Cell Reports** 16: 222–231

- van Dijk D, **Dhar R**, Missarova AM, Espinar L, Blevins W, Lehner B, Carey LB, 2015. Slow growing cells within isogenic populations have increased RNA polymerase error rates and DNA damage. **Nature Communications** 6: 7972 doi:10.1038/ncomms8972

- **Dhar R**, Bergmiller T, Wagner A, 2014. Increased gene dosage plays a predominant role in the initial stages of evolution of duplicate TEM-1 beta lactamase genes. **Evolution** 68:1775-1791.

- **Dhar R**, Sägesser R, Weikert C, Wagner A, 2013. Yeast adapts to a changing stressful environment by evolving cross-protection and anticipatory gene regulation. **Molecular Biology and Evolution** 30:573-588.

- **Dhar R**, Sägesser R, Weikert C, Yuan J, Wagner A, 2011. Adaptation of *Saccharomyces cerevisiae* to saline stress through laboratory evolution. **Journal of Evolutionary Biology** 24, 1135-1153.

- Mukherjee S*, **Dhar R***, Das AK, 2009. Analyzing the catalytic mechanism of protein tyrosine phosphatase PtpB from *Staphylococcus aureus* through site-directed mutagenesis. **International Journal of Biological Macromolecules** 45, 463-469. (* equal contribution)

- Mitra P, **Dhar R**, Pal D, 2009. Interface of apoptotic protein complexes has distinct properties. **In Silico Biology** 9, 365-378.

Talks/Posters

- Annual Meeting of Society of Biological Chemists, India, 2021 (Talk)
- Workshop on HPC and AI for Computational Biology, IIT Kharagpur, 2021 (Talk)
- ISEB2: Indo-Swiss meeting on Evolutionary Biology, Bengaluru, India, 2019 (Poster)
- Biological Engineering Society Conference (BESCON), IIT Madras, India, 2019 (Talk)
- 10th Conference on Yeast Biology, JNU and Amity University, Delhi, India, 2018. (Talk)
- International Conference on Systems Biology (ICSB), Barcelona, Spain, 2016. (Talk)
- Evolutionary Systems Biology: From Model Organisms to Human Disease, Wellcome Genome Campus, Hinxton, Cambridge, UK, 2016. (Poster)
- Society for Molecular Biology and Evolution conference (SMBE) at Dublin, Ireland, June, 2012. (Poster)

- Fifth International Conference on Bioinformatics (InCoB 2006) at New Delhi, India. December, 2006. (Poster)

Workshops/Symposiums

- 24th Symposium of Young Asian Biological Engineers' Community, Taipei, Taiwan, 2018.
- 1st International IBSE Symposium, IIT Madras, India, 2018.
- Next Generation Sequencing Workshop at Rome, Italy. November, 2009.

Research funding

- Causes and Consequences of Phenotypic Plasticity in Microbial Populations – SRIC, IIT Kharagpur **(PI)** (2017-2022) [INR 2.8 million]

- Emergence of Resistance to New Antibiotics through Mutations and Higher Order Epistatic Interactions **–** Science and Engineering Research Board (SERB), India **(PI)** (2018-2022) [INR 5.4 million]

- Understanding Structure Function and Evolution of Regulatory Networks with a Special Emphasis on Human Diseases, DBT, India (**Co-PI**) (2022-2027) [INR 14 million]

- Microbial Cell Factories for Isobutanol Production using Metabolic Engineering – SPARC, MHRD **(Co-PI)** (2019-2022)

Supervision of researchers

Postdoctoral researcher – 1 (ongoing) - Dr. Sudhakar Pagal
PhD students – 6 (sole supervision, ongoing) – Ms. Sampriti Pal, Ms. Shreya Routh, Mr. Rakesh Mandal, Mr. Subhasis Dutta, Ms. Anamika Acharyya, Ms. Upasana Ray

2 (joint supervision, ongoing) – Mr. Sayak Mitra, Mr. Arkaprava Datta

Master's students – completed: 4, ongoing: 3
Undergraduate students – completed: 10, ongoing: 4

Relevant Teaching experience

Theory courses: Introduction to Systems Biology [2 credit hours, Spring semesters 2018-2022]
Genetics [1 credit hour, Autumn semesters 2017-2021]
Epigenetics & Epigenomics [1 credit hour, Autumn semesters 2019-2021]
Bioinformatics [1 credit hour, Spring semesters 2019-2022]

Laboratory course: Bioinformatics [2 credit hours, Spring semesters 2019-2022]

Services

- Manuscript review: Nature Ecology and Evolution, Nucleic Acids Research, NAR Cancer, Evolutionary Applications, Current Science, Biotechnology and Bioprocess Engineering

- Member, Local Organizing Committee, International Conference on Contemporary Antimicrobial Research (ICCAR), 2018 at IIT Kharagpur

- Faculty-in-charge: BioEnGene, a student activity group on innovation in Biotechnology at IIT Kharagpur
- Co-organizer: Evolutionary Biology PhD program research symposium 2011 at Ascona, Switzerland