

## **Anubhav Tamrakar**

Curriculum Vitae

**Anubhav Tamrakar**

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### **PERSONAL STATEMENT**

A 5+ years' experience in host-pathogen interaction and molecular immunology, protein biology, methods in molecular biology, and cellular biology. Technical skills include gene cloning (bacterial and mammalian vectors), protein expression and purification, biophysical characterization of proteins, primary cells culture, in vitro mammalian cell culture, nucleic acid transfection, bacterial killing assay, ELISA, Flow cytometry, qRT-PCR, ChIP, western blotting, fluorescence, and confocal microscopy. A strong communicator and demonstrator of collaborative efforts and an experienced team worker and leader of independent projects with effective team management skills and proficiency in multi-tasking and scientific literature review.

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### **EDUCATION**

**Indian Institute of Technology Indore  
MP**

**Ph.D.** in Biosciences and Biomedical  
Engineering (2016-2022)

**Dr. H.S. Gour University Sagar MP**

**M.Sc.** Applied Microbiology &  
Biotechnology, 80.08%, (2009-2011)

**B.Sc.** Biotechnology, 66.8%, (2006-2009)

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### **THESIS WORK**

**Ph.D. Thesis**

Title: - "Structural and Functional Studies of HomA and HomB, outer membrane proteins of *H. pylori*".

**M.Sc. Thesis**

Title: - "Biochemical Estimation & Nitrate reductase activity in important species of higher plant".

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### **AWARDS**

1. **CSIR-UGC NET JRF life sciences, AIR 80** (2015).
2. **GATE life science, AIR 614** (2016).

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### **RESEARCH EXPERIENCE**

**May 2016- August 2022**

**PhD fellow, IIT Indore, India**

Guide: Prof. Prashant Kodgire

**Thesis title: Structural and Functional Studies of HomA and HomB, outer membrane proteins of *H. pylori***

- Biophysical characterized unique topology containing small  $\beta$ -barrel with surface exposed globular domain of recombinant HomA and HomB, outer membrane proteins of *Helicobacter pylori*.
- Demonstrated role of HomA and HomB in interference in process of antibody production and diversification in B-cells.

## SKILLS

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### **Molecular biology and biochemical methods:**

- Cloning, vector designing and modifications
- Mammalian cell culture – cell lines and primary cells
- siRNA, and plasmid transfections
- Recombinant protein expression and purification
- Chromatography techniques, affinity, size exclusion and ion exchange (AKTA pure and AKTA start system)
- Biophysical techniques, Circular dichroism, Raman spectrometry (FTIR), fluorescence spectrometry
- PCR, qRT-PCR, western blotting, co-immunoprecipitation
- Chromatin immunoprecipitation (ChIP),

### **Cell biology and Immunology methods:**

- Confocal and fluorescence microscopy
- Multi-color flow cytometry - FACS
- ELISA

### **Bioinformatics and computational methods:**

- Protein structure and characteristics prediction
- B-cell and T-cell epitopes prediction
- Immunological characteristics prediction of antigenic proteins

## POSTER PRESENTATIONS & MEETINGS

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- Volunteered as organizing team in **international conference on emerging area in biosciences and biomedical technologies 2020**.
- Poster presentation titled 'HomA and HomB, outer membrane proteins of *Helicobacter pylori*, form  $\beta$ -barrel dimer and downregulate activation-induced cytidine deaminase (AID) in human B-cells' in **international conference on emerging area in biosciences and biomedical technologies 2020**.
- Workshop and poster presentation titled 'Structural and Functional insights of Outer Membrane Proteins (OMPs) from *Helicobacter pylori*' in **the hands-on training workshop on protein crystallization in lipid bilayer 2018**.
- Workshop on '**practical protein crystallography using PX beamline at induc-2 synchrotron**' at **Raja Ramanna centre for advanced technology**.
- Participated in **Global initiative for academic networks course** titled '**chemical biology: the integration of chemistry, biology and medicine**'. Organized at **IIT Indore in collaboration with Purdue university USA, sponsored by MHRD India**.

## EXTRA CURRICULAR ACTIVITIES

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- Participated in several cricket and badminton tournaments.
- Have won second prizes for book cover design in international conference on emerging area in biosciences and biomedical technologies 2020.
- Teaching experience of more than 3 years to masters and bachelor's student in life science subjects like biotechnology, immunology, cell biology, molecular techniques etc.

## REFERENCES

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- Dr. Prashant Kodgire  
Professor IIT Indore, [pkodgire@iiti.ac.in](mailto:pkodgire@iiti.ac.in)  
POD 605, Indian Institute of Technology Indore.  
Khandwa Road, Simrol, Indore - 453552. Madhya Pradesh, India  
INDIA. Phone: 91 731 2438 782
- Dr. Debasis Nayak  
Associate Professor IISER Bhopal, [debasis@iiserb.ac.in](mailto:debasis@iiserb.ac.in)  
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IISER Bhopal Madhya Pradesh, India

## PUBLICATIONS

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1. **Tamrakar A**, Singh AK, Chaudhary M, and Kodgire P\*. Fighting with Gram-negative Enemy: Can Outer Membrane Proteins Aid in the Rescue? *Chem. Biol. Lett.*, 2017, 4(1): 9-19.
2. **Tamrakar, A.**, Singh, R., Kumar, A., Makde, R. D., & Kodgire, P. (2021). Biophysical characterization of the homodimers of HomA and HomB, outer membrane proteins of *Helicobacter pylori*. *Scientific reports*, 11(1), 1-19.
3. **Tamrakar, A.**, & Kodgire, P. (2022). HomA and HomB, outer membrane proteins of *Helicobacter pylori* down-regulate activation-induced cytidine deaminase (AID) and Ig switch germline transcription and thereby affect class switch recombination (CSR) of Ig genes in human B-cells. , *Mol. Immunol*, 142, 37-49.
4. **Tamrakar A**, Kodgire P\*. Immunoinformatic characterization of globular domains of HomA and HomB, for potential sub-unit vaccine candidate against *Helicobacter pylori*. (Manuscript submitted)
5. Jaiswal A, Singh AK, **Tamrakar A**, and Kodgire P\*, Unfolding the role of splicing factors and RNA debranching in AID mediated antibody diversification, *Int. Rev. Immunol.*, 2020, 14:1-18.
6. Singh AK, **Tamrakar A**, Jaiswal A, Kanayama N and Kodgire P\*, SRSF1-3, a splicing and somatic hypermutation regulator, controls transcription of IgV genes via chromatin regulators SATB2, UBN1 and histone variant H3.3, *Mol. Immunol.*, 2020, 119:69-82.
7. Singh AK, **Tamrakar A**, Jaiswal A, Kanayama N, Agarwal A, Tripathi P and Kodgire P\*, Splicing regulator SRSF1-3 that controls somatic hypermutation of IgV genes interacts with Topoisomerase 1 and AID, *Mol. Immunol.*, 2019, 116:63-72.
8. Choudhary M, **Tamrakar A**, Singh AK, Jain M, Jaiswal A and Kodgire P\*, AID Biology: A Pathological and Clinical Perspective, *Int. Rev. Immunol.*, 2018, 37(1):37-56.

## Declaration and signature

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I hereby declare that all the above information given is true to best of my knowledge and believe.

(Anubhav Tamrakar)