

## Curriculum Vitae



### **HEMAL BHALLA**

Prime Minister Research Fellow

Ph.D. Scholar

Biological Engineering

Indian Institute of Technology Gandhinagar

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### Profile

A life science enthusiast and researcher with a curious mind and striking ideas to work and understand biological systems' complex yet logical workings. Currently working on plant systems to understand the complex pollination mechanism at the molecular level with enthusiasm to pour in some knowledge in the existing pool to help eradicate and fight global hunger.

### Education

**Ph.D.** | Indian Institute of Technology, Gandhinagar, Gujarat, India | 2022 – Present

(Advisor: Prof. Subramanian Sankaranarayanan)

Currently working to understand the proteasomal regulation during the self-incompatibility response in Brassicaceae. The goal is to improve crop yield by better understanding self-incompatibility.

**M.Sc. BOTANY** | Kirori Mal College, University of Delhi, Delhi, India | 2019-2021

FIRST DIVISION AND GOLD MEDALIST (UNIVERSITY TOPPER), CGPA 8.94

**B.Sc. (HONS.) BOTANY** | Swami Shraddhanand College, University of Delhi, Delhi, India | 2016-2019, FIRST DIVISION, CGPA 8.608

**HSC** | Bal Bharati Public School, Rohini, Delhi, India | 2016

CENTRAL BOARD OF SECONDARY EDUCATION, 84.8%

**SSC** | Bal Bharati Public School, Rohini, Delhi, India | 2014

CENTRAL BOARD OF SECONDARY EDUCATION, CGPA 8.8

### Awards and Achievements

1. **Prime Minister Research Fellowship** | Aug 23 – present
2. **GATE EY** (Ecology and evolution) | 2023 | GATE score: 433, AIR: 195
3. **DST-INSPIRE fellowship** | Feb 23 – July 23
4. **MHRD Institute Fellowship** | Aug 22 - Jan 23  
For pursuing a Ph.D. from IIT Gandhinagar
5. **GATE BT** (biotechnology) | 2022 | GATE score: 398, AIR: 1522
6. **GATE XL** (life sciences) | 2022 | GATE score: 505, AIR: 1400
7. **Panchanan Maheshwari Memorial Prize** | University of Delhi | 2021  
For securing the highest percentage of marks in M.Sc. Botany and 1st division among 99 students.
8. **Academic Excellence Award** | Kirori Mal College, University of Delhi | 2021  
For securing the highest percentage of marks in M.Sc. Botany (across college).
9. **Prof. G.S. Paliwal Award** | Department of Botany, University of Delhi | 2021  
For securing the maximum marks in the Developmental Botany paper during M. Sc. (Previous) course.
10. **Prof. K.G. Mukerji Award** | Department of Botany, University of Delhi | 2021  
For securing the highest marks in the aggregate of core and optional papers on Plant-

Pathogen interactions during M. Sc. (Previous) course.

11. **Prof. Umakant Sinha Medal** | Department of Botany, University of Delhi | 2021  
For securing the highest marks in the Genetics core course during M. Sc. (Previous) course.
12. **Prof. S.S. Bhojwani Medal** | Department of Botany, University of Delhi | 2021  
For securing cumulative highest marks in M. Sc. (Previous) course.
13. **JOINT CSIR-UGC NET LS** | 2020 | lecturership/assistant professor, AIR: 38

#### **Skills and tools**

Hands-on experience and adequate knowledge of plant tissue culture techniques, protein isolation, purification and characterization, vector and primer designing, and RDT tools such as cloning and recombination, as well as hands-on experience in bioinformatic analysis of protein structure prediction, modeling, and docking.

#### **Expertise in equipment:**

- MALDI-TOF (TA from August 2023)
- Confocal microscopy (completed training for 2 months and user from August 2023)

#### **Extra training and certification**

- Certification in scientific writing; Nov 2023 (secured 2<sup>nd</sup> rank and distinction)  
Indian Institute of Technology, Gandhinagar

#### **Soft skills**

- Curious and proactive with drive and commitment towards the project.
- Ability to work independently as well as part of a team.
- Good communication skills.
- Hard working capacity, dedicated, and productive mindset.
- Motivated and solution-oriented thinking.

#### **Teaching and mentoring experience**

- Assisted Prof. Sangram K. Lenka (Associate professor, Gujarat Biotechnology University) in delivering lectures and practical hands-on in the course PPMB002-Plant Molecular Biotechnology (2024)
- Assisted Prof. Sharad Gupta in delivering MALDI-TOF practical hands-on in the course BE691-I Analysis and Characterization of Biologicals (2024)
- Trained interns: Devika Miglani (IISER Mohali) | Jun-Jul 2023
- Assisted Prof. Subramanian in delivering lectures in the course BE405 Introduction to Plant Biotechnology (2023)
- Assisted Prof. Subramanian in delivering lectures in the course ES243 Biology for Engineers (2023)

#### **Gene sequences submitted in NCBI, USA (World Gene Bank)**

- OR513091 **Bhalla. H.** and Sankaranarayanan. S. 2024, *Brassica rapa* var Yellow Sarson BTB-POZ Domain containing protein adaptor for Cullin-based E3 ligase, mRNA, complete cds.
- OR858821 **Bhalla. H.** and Sankaranarayanan. S. 2024, *Brassica rapa* var Toria BTB-POZ Domain containing protein adaptor for Cullin-based E3 ligase, mRNA, complete cds.
- OR887605 **Bhalla. H.** and Sankaranarayanan. S. 2024, *Brassica rapa* var Toria SRK gene for S-locus receptor kinase, mRNA, complete cds.

#### **Workshops/seminars attended.**

- Workshop on mass spectrometry held on February 6-8, 2024, by DBT-Sahej facility, Rajiv Gandhi Centre for Biotechnology, Thiruvananthapuram, Kerala

- CBT course series/workshop held on December 11-13, 2023, by Centre of Excellence and Biopharmaceutical Technology, Indian Institute of Technology, Delhi.
- National seminar on “Biological evolution: History and Processes” held on March 02, 2021, by the Department of Botany, Govt. Swami Vivekanand Degree College, Berasia, Bhopal (M.P.)
- International webinar on “Genome editing to enhance multiple disease resistance in crop plants” held on December 20, 2020, by Dr. Ajjamada Kushalappa, Professor of McGill University, Canada
- National webinar on “Machine learning and Data science for biologists” held on 4<sup>th</sup> September 2020 by the Department of Botany, Kirori Mal College, the University of Delhi, under the aegis of the DBT star college scheme
- Bilateral Indo-US Webinar on Covid Biology dated August 16-19, 2020, organized by Indian Institute of Science Education and Research, Kolkata, India, in collaboration with IISc Bangalore, University of Pennsylvania, and University of Colorado, USA
- National science series: Igniting Young Minds held on August 4-6, 2020, organized by Bhaskaracharya College of Applied Sciences, University of Delhi, under the aegis of the Star College scheme, Department of Biotechnology, Government of India and IQAC
- Symposium on “Intellectual property rights” held on 11 October 2018, organized by Swami Shraddhanand College, University of Delhi
- National conference on “Emerging Environmental Challenges and Sustainable Development” held on March 21-23, 2018, organized by Swami Shraddhanand College, University of Delhi and Society for Environment and Development, India

#### **Publications and research experience**

1. Completed research work embodied as a **Dissertation thesis entitled “Meta-Analysis of SARS-CoV-2 variants in Indian subcontinent vis a vis spike protein evolution and vaccination drive”** | 2021 | (Advisor: Prof. Shailendra Goel)
2. Rajpal, V. R., Sharma, S., Sehgal, D., Singh, A., Kumar, A., Vaishnavi, S., Tiwari, M., **Bhalla, H.**, Goel, S & Raina, S. N. (2022). A comprehensive account of SARS-CoV-2 genome structure, incurred mutations, lineages, and COVID-19 vaccination program. ***Future Virology***, 17(9), 687-706.