

## **Appendix V**

### **Curriculum Vitae**

**Riya Chaudhary**

Ph.D. Student

Laboratory of Immunology and Infectious Diseases

Indian Institute of Science Education and Research (IISER) Bhopal

Bhopal, Madhya Pradesh, India – 462066

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#### **Education**

2020–Present: Ph.D. in field of Immunology and Infectious Diseases,

Department of Biological Sciences

Indian Institute of Science Education and Research (IISER) Bhopal, India

Thesis title: Immunometabolic role of metabolic enzyme PANK4 in regulation of TLR7/9-mediated innate immunity during influenza virus infection

2015–2017: M.Sc. in Biochemistry

Banaras Hindu University (BHU), Varanasi, India

2011–2014: B.Sc. in Chemistry and Biotechnology

C.S.J.M. University, Kanpur, India

#### **Research Interests**

My doctoral research focuses on innate immune regulation during viral infections, with particular emphasis on the integration of cellular metabolism and antiviral defense mechanisms. I am interested in the immunometabolic control of pattern recognition receptor-mediated signaling pathways, including endosomal TLR7/9 and cytosolic RNA-sensing pathways, and their roles in shaping antiviral cytokine responses. My work also explores the non-canonical functions of metabolic enzymes in modulating immune

signaling and host-pathogen interactions. In addition, I study the molecular mechanisms underlying viral replication, immune evasion, and metabolic reprogramming of host cells during RNA virus infections. A major focus of my research is the identification and functional characterization of novel metabolic host factors that regulate innate immune signaling pathways. Specifically, my Ph.D. work investigates the immunometabolic role of the metabolic enzyme pantothenate kinase 4 (PANK4) in regulating TLR7- and TLR9-mediated innate immune responses during influenza virus infection. This research seeks to elucidate how metabolic enzymes exert non-canonical functions in immune regulation and how metabolic rewiring modulates antiviral signaling and host defense mechanisms.

### **Research Experience**

**2021 – 2022:** Volunteer – COVID-19 Testing Facility (IISER Bhopal)

**2016-2017:** Masters thesis dissertation on Combination of Ivermectin and Albendazole induces oxidative and ER stress in filarial parasites, under guidance of prof. Sushma Rathore Department of biochemistry, BHU

### **Teaching Experience**

**2024 – 2025:** Teaching Assistant, *Host–Pathogen Interaction* (NPTEL course)

**2023 – 2025:** Trained Master's students for dissertation research

**2021 :** Teaching Assistantship for BIO-102: Cell Biology

### **Technical Expertise**

#### Cell Culture

- Maintenance of adherent and suspension mammalian cell lines
- Isolation and culture of primary immune cells, including peripheral blood mononuclear cells (PBMCs)
- Delivery of DNA and RNA into mammalian cells using transfection, electroporation, and viral transduction techniques

#### Animal Experimentation

- Animal handling and maintenance; in vivo infection models; drug administration (i.p., i.v., intranasal, oral); tissue collection and processing; anesthesia and euthanasia; IAEC compliance.

#### Computational & Bioinformatics Skills

- Working knowledge of R programming (basic level) for biological data analysis and visualization. Basic statistical analysis of experimental datasets using R
- Utilization of public databases such as GEO, NCBI, and UniProt for gene expression analysis and functional annotation

#### Molecular Biology

- Polymerase chain reaction (PCR) and quantitative real-time PCR (Qrt-PCR)
- TaqMan-based gene expression assays
- Isolation and purification of total RNA, DNA, and microRNA
- Molecular cloning of gene constructs in mammalian expression vectors
- Site-directed mutagenesis for generation of single-site and functional mutants

#### **Immunology & Virology Techniques**

- Enzyme-linked immunosorbent assay (ELISA) for cytokine and protein quantification
- Western blotting for protein expression, signaling pathway analysis, and post-translational modifications
- Flow cytometry for immune cell phenotyping and signaling studies
- Confocal and live-cell microscopy for subcellular localization and protein interaction analysis
- Generation of recombinant influenza viruses using reverse genetics systems
- Handling of pseudotyped viruses and lentiviral systems under appropriate biosafety conditions
- Propagation of influenza virus in embryonated chicken eggs
- Quantification of viral titers using hemagglutination (HA), TCID50, and plaque assays

#### **Publications**

- Singh A, Mishra A, Chaudhary R, Kumar V. Role of herbal plants in prevention and treatment of parasitic diseases. *Journal of Scientific Research.* 2020; 64(1): 50–58.
- Chaudhary R, Meher A, Krishnamoorthy P, Kumar H. Interplay of host and viral factors in inflammatory pathway mediated cytokine storm during RNA virus infection. *Current Research in Immunology.* 2023; 4: 100062.
- Meher A, Das N, Chaudhary R, Kumar H. Role of miRNA in Ebola diagnosis and therapeutics. In: *MicroRNA in Human Infectious Diseases.* 2024; pp. 135–163.
- Chaudhary R, Meher A, Katekar P, Vats D, Nayak D, Kumar H. Immunometabolic role of metabolic enzyme PANK4 in regulation of TLR7/9 mediated innate immunity. *bioRxiv.* 2025; doi: 10.1101/2025.10.22.676442.
- Meher A, Chaudhary R, Kumar H. A novel role of circCPSF6 regulating antiviral innate immunity via miR-665 and PCBP2–IPS-1 axis. *bioRxiv.* 2025; doi: 10.1101/2025.11.03.686289.

#### **Achievements**

- CSIR–UGC JRF (AIR-69), June 2019
- Qualified ARS-NET, December 2019
- Qualified GATE, 2019
- Qualified GATE, 2018

#### **Conferences & Workshops**

- *Where and How to Publish?* Symposium on Research Ethics and Scientific Publishing, Ayurveda Network, BHU, Varanasi (March 2019)
- High Content Analysis Workshop, Thermo Fisher Scientific, Interdisciplinary School of Life Sciences, BHU, Varanasi (August 2019)
- **VIROCON-2024:** International Conference on “*Emerging Viruses: Pandemic & Biosecurity Perspectives*”, Defence Research & Development Establishment (DRDE), Gwalior, India (November 2024)

### **Major Courses Undertaken**

#### Ph.D. Coursework

- Immunology
- Molecular Therapy
- Bioinformatics
- Recombinant DNA Technology
- Intellectual Property Rights

#### M.Sc. Coursework

- Biochemistry and Metabolism, Human Physiology
- Cell and Molecular Biology
- Immunology
- Molecular Biology and Genetic Engineering
- Biophysics and Structural Biology
- Cell and Tissue Culture

### Personal Information

**Father's Name:** Mr. Shashikant Chaudhary

**Date of Birth:** 09 September 1994

**Gender:** Female

**Nationality:** Indian

**Address:** Ward No. 6, Behind Cold Store, Mehgaon, Bhind, Madhya Pradesh, India