Dr. Nowsheen Hamid Bhat, Ph. D (Biotechnology).

Assistant Professor
Higher Education J and K, Department of Biotechnology

Former Principal Investigator
Department of Science and Technology, New Delhi
Department of Biotechnology, University of Kashmir

Former Post-doctoral research associate
Department of Biochemistry and Molecular biology
University of Massachusetts, USA

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BACKGROUND AND TRAINING

PhD in Biotechnology
Department of Biotechnology, Jamia Hamdard University, New Delhi, India

Master of Science in Biotechnology
Department of Biotechnology, University of Jammu, J and K, India

B. Sc (Hons) in Biochemistry
Department of Biochemistry, Aligarh Muslim University, India

PROFESSIONAL EXPERIENCE

May 2022 - Present **Assistant Professor**
Higher Education, J and K
Department of Biotechnology
Government Degree college Sopore

June 2017- February 2022 **Assistant Professor**
Department of Biotechnology,
Central University of Kashmir

Sept 2014-August 2017 **Principal Investigator**
DST, New Delhi
Title of Project: Significance of regulatory proteolysis in cell cycle progression and its therapeutic applications in applications in bacterial infections and cancer cell growth

2010- 2012 **Postdoctoral Research Associate**,
Deptt of Biochemistry and Molecular biology,
University of Massachusetts, USA.
Prof. Peter Chien at Institute for Applied Life Sciences,
Models to medicine

AWARDS AND SPECIAL ACHIEVEMENTS

Qualified CSIR- UGC combined Junior Research Fellowship-National eligibility Test in 2004

Recipient of DBT India fellowship for Master`s program (2000-2002).

Recipient of Hamdard National Fellowship, during PhD program (2003-2004)

Recipient of National Institute of Health, USA, fund for project during post-doctoral research

Recipient of Department of Science and Technology funded project (WOS-A)

PUBLICATIONS:

1. **Hamid, N**., and S. K. Jain. 2007. Immunological, Cellular and Molecular Events in Typhoid Fever. *Indian Journal of Biochemistry and Biophysics* 44: 320-330.

2. Jain, S. K., A. Madani. **N. Hamid.** 2007. Pathogenesis of *Salmonella typhi* and Typhoid Fever: Multiple Drug Resistance, Vaccines and Therapeutics, p. 459-487. Microbes for Human Life. (**Krishan Makhijani,** I. K. International Publishing House, New Delhi)

3. **Hamid, N**., and S. K. Jain. 2008. Characterization of an Outer Membrane Protein of *Salmonella enterica* Serovar Typhimurium that confers protection against typhoid. *Clinical and Vaccine Immunology*. p. 1461-1471, Vol. 15, No. 9

4. **Hamid, N**. and S. K. Jain. 2010. Immunogenic evaluation of recombinant 49-kilodalton outer membrane protein of *Salmonella typhi* as a candidate for a subunit vaccine against typhoid. *Journal of infectious diseases and immunity.* **p. 30-40, Vol. 2(2)**.

5. **Hamid, N** and P. Chien. 2013. Identification of ClpP substrates in Caulobacter crescentus reveals a role for regulated proteolysis in bacterial development. *Molecular microbiology*. 88(6) p. 1083-1092

6. Williams, B., **Hamid, N.,** Chien, P and Shapiro, L. 2014. ClpXP and ClpAP proteolytic activity on divisome substrates is differentially regulated following the Caulobacter asymmetric cell division. *Molecular microbiology*. 93 (5) p. 853-866.
7. Jan, T; Rahil, R and **Hamid, N.** 2021. Molecular Pathogenesis and Therapeutics in Covid-19: A perspective in Molecular medicine. ISBN: 978-93-90847-06-08.

Book Chapter Covid-19 Pandemic . Kripa Drishti Publications, Maharashtra, india

8. Fatima, N; Fazili, K. M and Hamid, N. 2022. Proteolysis dependent cell cycle regulation in Caulobacter crescentus.Cell Division, 01 Apr 2022, 17(1):3 DOI: 10.1186/s13008-022-00078

9. Fatima, N; Fazili, K. M and Hamid, FtsZ regulatory proteolysis" as a novel target for molecular medicine in bacterial infections and cancer therapeutics. international Conference Kashmir University

INTERNATIONAL AND NATIONAL PRESENTATIONS

1. **Hamid, N**. Discovery of novel substrates of ClpXP in *Caulobacter crescentus*. **Boston Bacterial Meeting**, **Harvard Science Centre**, **USA** 2010 (Presentation).

2. **Hamid, N**. Novel substrates of ClpXP in *Caulobacter crescentus*. **Boston Bacterial Meeting**, **Harvard Science Centre**, **USA,** 2011 (Presentation).

3. **Hamid, N**, Regulated proteolysis by ClpXP in *Caulobacter crescentus*. **Boston Bacterial Meeting**, **Harvard Science Centre**, **USA,** 2012 (Presentation).

4. **Hamid, N**, Regulated proteolysis by ClpXP has a role in bacterial development in *Caulobacter crescentus*., 2012 **University of Massachusetts, USA**, (Presentation).

5. **Hamid, N**. Development of a conjugate subunit vaccine against typhoid. **Indo-Australian conference on Medical Biotechnology.** National institute of Immunology. New Delhi. 2008 (Presentation)

6. **Hamid, N.,** and S. K. Jain. A recombinant approach for the development of a conjugate subunit vaccine against typhoid. **2nd international conference on Trends in Cellular and Molecular biology, School of Life Sciences, Jawaharlal Nehru University, New Delhi. 2008.** (Presentation).

7. **Hamid, N.,** and S. K. Jain. Development of a conjugate subunit vaccine against typhoid. **National Seminar on Biotechnology and Human welfare, Jamia Hamdard, New Delhi. 2007.** (Presentation).

8. **Interdisciplinary Science Conference on Recent Trends in Research in Biological Sciences.** Organized by Centre for Interdisciplinary Research in Basic Sciences. **Jamia Millia Islamia, New Delhi.** 2007.

9. **Science Communication Workshop.** Organized by The Wellcome Trust/DBT India Alliance. 2015

10. **FLOW CYTO 2016** workshop. Organized by Sheri-kashmir institute of Medical Sciences in Collabration with Beckman Coulter

11. **2nd J & K Medical Science Congress 2017.** Organized by SKIIMS in collaboration with JK Universities, Medical Colleges, Dental Colleges and Directories of Health services. (Presentation)

12. **International Congress on Cell Biology.** Organized by CCMB Hyderabad (Presentation)

13. **Molecular and Cell biology techniques** Workshop organized by SKAUST, Fisheries.

14. International Webinar on Changing the mindset: driving innovations and technology. Speaker: Professor Khalid. Principal faculty, Harvard Stem Cell Institute. Organized by CUK, Department of Biotechnology (Organizing committee, Dr Abid Hamid, Dr Nowsheen Hamid, Dr Nisar Wani)

15. CSIR skill development programme and hands on training and workshop on `Real time PCR for women researchers` March 2021 organized by CSIR, IIM , Srinagar
16. UGC , HRDC Faculty Induction Programme Jan18 - Feb22, 2023. A+ Grade

17. Three day workshop organized by centre of Research and Development, Department of Microbiology, University of Kashmir. March15 to 17 2023

RESEARCH INTERESTS:

Molecular medicine and immunodiagnostics.

Proteolysis is a universal phenomenon in all biological systems. Regulation of this cellular process is crucial for proper signaling, cell cycle progression and development in all cells. A disturbance in the regulatory proteolysis can lead to diseased state in cell like cancer and several neurological disorders such as Alzeihmer`s and Huntington`s diseases. A detailed evaluation of the impact of protein degradation on various regulatory networks of the cell has uncovered various significant cellular roles of regulatory proteolysis. *Caulobacter crescentus* a Gram-negative alpha-proteobacterium, has emerged as a powerful model organism for unraveling the molecular networks that control the bacterial cell cycle. Recent progress in elucidation of the multifaceted complex regulatory strategies by a molecular machine ClpXP has lead to a deeper understanding of the effect of regulatory proteolysis with an emphasis on cell cycle progression. Understanding how different identified players of proteolysis work at molecular level is aimed using spatiotemporal tracking of protein degradation, dynamic localization and chromosome segregation of strains containing wild versus mutant non-degradable protein constructs. Our previous findings have revealed an insight in implicating the predictive therapeutic significance of the panel of protein molecules controlled by regulatory proteolysis. The research holds immense implications in

molecular medicine and health. This could potentially lead to development of new molecular diagnostic markers representing a promising area for clinical advances in disease detection, antibiotic resistance and cancer prognosis.