Curriculum vitae

Dr. Mirza Sarwar Baig

Assistant Professor
Centre for Virology, School of Interdisciplinary Science and Technology (SIST)
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About me

Passionate and dedicated educator with nine+ years of teaching and research experience in Virology, Molecular biology, RDT, Genomic Techniques, and Bioinformatics courses. As an Assistant Professor at the Centre for Virology, I have been teaching postgraduates and doing collaborative research. Capable of solving research problems engagingly and fostering students' critical thinking and scientific curiosity. Successfully secured and led an ICMR-funded postdoctoral research grant as Co-PI/Coordinator, highlighting my strong research acumen and grant-writing skills. I have published research findings in Q1/Q2 standard peer-reviewed journals and presented them at national and international conferences. Skilled in diverse molecular techniques, including tissue culture, gene cloning, Northern and Southern assays, quantitative and semiquantitative PCRs, molecular biology experiment designing, bioinformatics, and data analysis. Enthusiastic about contributing to collaborative research projects with interdisciplinary teams to address pressing scientific challenges. Strong commitment to promoting scientific literacy and public engagement through science outreach activities and workshops. Good communication and people skills with an ability to effectively collaborate with colleagues and research partners. Committed to continuous professional development and staying abreast of the latest advancements in virology, bioinformatics, data analytics, statistics, R, PERL, Python, AI, ML, NGS, and related fields.

Education

- **Doctor of Philosophy-Virology (2019)** thesis entitled "Engineering CLCuD-Resistant Manipulating Silencing Suppressor Gene," Department of Biosciences, Jamia Millia Islamia (A Central University), New Delhi, India
- **Pre-Ph.D**. (2014) (Biosciences, First Class with 73.75% marks), Department of Biosciences, Jamia Millia Islamia, New Delhi, India
- **Master of Technology (2010)** (Bioinformatics, First Class with 77% marks), Hamdard University, New Delhi, India
- **Master of Science (2008)** (Biotechnology, First Class with 71% marks), Barkatullah University, Bhopal, India
- **Post Graduate Diploma in Computer Applications (2006)** (First Class with 63% marks) Makhanlal Chaturvedi National University of Journalism & Communication (MCRPV), Bhopal
- **Bachelor of Science (Botany Hons) (2004)** (First Class with 61% marks), Magadh University, Patna

Professional Experience

Assistant Professor – Centre for Virology, SIST, Jamia Hamdard **March 2023 to date.**

- Teaching theoretical and experimental classes of M.Sc. Medical Virology course
- Supervised postgraduate students' dissertation work in Molecular Biology, Bioinformatics, General Virology, RDT and virus-cell interaction.
- Arranged departmental Seminar in Viral Diagnostics, Genomic Techniques, and Vector Biology
- Assessment of students' subject knowledge through tests and assignments.
- Preparation of sessional and end-semester examination question papers.
- Maintaining student attendance through the UMS system.
- Invigilating and examining sessional and semester examination answer sheets.

Senior Research Associate (ICMR) – Jamia Hamdard **July 2019- July 2022**

• Actively participated in research conception, design, and execution to address defined problems.
• Maintaining detailed records of research findings and statistical analysis of data results.
• Conducted independent research to reach short- and long-term goals.
• Teaching graduate and postgraduate students Bioinformatics, virology, and life-science courses.
• Writing and communicating research, reviewing articles concerning key findings, and highlighting translational applications.

Guest Teacher – Jamia Hamdard **July 2019 to Dec 2021**

- Teaching theoretical and experimental classes on Bioinformatics in the Department of Botany (B.Sc. and M.Sc.

courses)

- On-hand training on Molecular Modelling and Docking through AutoDock.
- Assessment of students' subject knowledge through tests and assignments.
- Examining sessional and semester examination answer sheets.

Guest Teacher - Jamia Millia Islamia **Oct 2010 – Nov 2013**

- Taught theoretical and practical sessions on the fundamentals of Bioinformatics and programming languages (C and Perl).
- Documentation of student attendance, grades, and other pertinent information.
- Evaluation of examination sheets for assessment of their performance
- Supervision of postgraduate students' dissertation works in Molecular Biology, Bioinformatics, and Genetic Transformation.
- Assisted students in their Project or Proposal writing, seminars, and discussions.

Peer Review Publications

1. Noor Fatima, **Mirza Sarwar Baig**, Aman Haider Rizvi, Alisha Arzoo, Manu Sharma, Md Shahadab, Ayan K. Das, Vineeta Vijay Batra, Keshar Kunja Mohanty, Md Anzar Alam, Ejaj Ahmad, A. Selvapandiyan and Mairaj Ahmed Ansari **(2025) "Profiling HIV1-host protein-protein interaction networks in patient-derived exosome proteins: Impact on pathophysiology and Innate Immune Pathways"** ***Virology Journal*** **(Impact Factor- 4.0)**
2. Kumar M, **Baig MS***, Bhardwaj K **(2025)**. Advancements in developing antivirals against SARS-Coronavirus. ***Front Cell Infect Microbiol.*** 15:1520811. **doi: 10.3389/fcimb.2025.1520811.** (**Impact Factor- 4.6)**
3. Awadelkareem AM, Elkhalifa AEO, Adnan M, Kuddus M, Khan MI, Sachidanandan MK, Ashfaq F, **Baig MS,** Ashraf SA **(2025).** Deciphering the Intricacies of Breast Cancer Signaling Network and the Potential of Soy-derived Isoflavones on Cancer Therapeutics. Pharmacognosy Magazine (**Impact Factor- 0.9)**
4. K Noor, NR Sharma, MS Baig (2025) Phylogenomics and genetic recombination detection among Matrix protein of Chandipura Virus genome: A computational approach. ***International Journal of Advance Research and Innovation,*** 13(01): 2347-3258. **https://doi.org/10.51976/zbve5y64**
5. Roshanara; Tandon R; **Baig MS;** Das S; Srivastava R; Puri N; Nakhasi HL; Selvapandiyan A**.** Identifying Rab2 Protein as a Key Interactor of Centrin1 Essential for *Leishmania donovani* Growth ***ACS Infectious Diseases,*** (**Impact Factor- 4.1)**
6. N Veena Rani, **Baig MS,** Bharti Pathak, Neera Kapoor and Anuja Krishnan **(2024).** Mutation of conserved histidine residues of Dengue virus envelope protein impairs viral-like particle maturation and secretion. ***Biochimica et Biophysica Acta (BBA) - Molecular Cell Research,*** **https://doi.org/10.1016/j.bbamcr.2024.119682** (**Impact Factor- 5.1**)
7. Elkhalifa AEO, Al-Shammari E, Kuddus M, Adnan M, Sachidanandan M, Awadelkareem AM, Qattan MY, Khan MI, Abduljabbar SI, **Baig MS**, Ashraf SA **(2023)**. Structure-Based Multi-Targeted Molecular Docking and Dynamic Simulation of Soybean-Derived Isoflavone Genistin as a Potential Breast Cancer Signaling Proteins Inhibitor. ***Life (Basel)***. Aug 13;13(8):1739. **https://doi.org/10.3390/life13081739. (Impact Factor- 3.2)**
8. **Baig MS*,** Deepanshu, Prakash P, Alam P and Krishnan A **(2023).** *In silico* analysis reveals Hypoxia-induced miR-210-3p specifically targets SARS-CoV-2 RNA. ***Journal of Biomolecular Structure & Dynamics,*** **https://doi.org/10.1080/07391102.2023.2175255 (Impact Factor- 4.4)**
9. Noorani MS, **Baig MS,** Khan JA, Alam P **(2023)** Whole genome characterization and diagnostics of prunus necrotic ringspot virus (PNRSV). ***Nature-Scientific Reports*** 16;13(1):4393. **doi: 10.1038/s41598-023-31172-z**. **(Impact Factor- 4.9)**
10. Kavita Vats, Rati Tandon, Roshanara, Mirza.A. Beg, Rosa M. Corrales, Akila Yagoubat, Enam Reyaz, Tasaduq.H. Wani, **Baig MS,** Ashok Chaudhury, Anuja Krishnan, Niti Puri, Poonam Salotra, Yvon Sterkers, Angamuthu Selvapandiyan **(2023)** Interaction of novel proteins, centrin4 and protein of centriole in Leishmania parasite and their effects on the parasite growth, ***Biochimica et Biophysica Acta (BBA) - Molecular Cell Research,*** 1870 (3), 119416, **https://doi.org/10.1016/j.bbamcr.2022.119416** (**Impact Factor- 5.1**)
11. Altamish M, Khan M, **Baig MS,** Pathak B, Rani V, Akhtar J, Khan A., Ahmad S, and Krishnan A, **(2022).** Therapeutic potential of medicinal plants against dengue infection: A Mechanistic viewpoint. ***ACS Omega***, **https://doi.org/10.1021/acsomega.2c00625 (Impact Factor- 4.132)**
12. Yadav V, Krishnan A, **Baig MS,** Majeed M, Nayak M and Vohora D **(2022).** Decrypting the interaction pattern of Piperlongumine with calf thymus DNA and dodecamer d(CGCGAATTCGCG)2 B-DNA: Biophysical and molecular docking analysis. ***Biophysical Chemistry***, 285, 106808, **https://doi.org/10.1016/j.bpc.2022.106808** (**Impact Factor- 2.352**)
13. Syed Amir Ashraf, Abd Elmoneim O. Elkhalifa, Khalid Mehmood, Mohd Adnan, Mushtaq Ahmad Khan, Nagat Elzein Eltoum, Anuja Krishnan, and **Baig MS* (2021).** Multi-targeted molecular docking, pharmacokinetics and

drug-likeness evaluation of okra-derived natural ligand abscisic acid targeting signaling proteins involved in the development of diabetes**.** ***Molecules*** 26(19), 5957, **https://doi.org/10.3390/molecules26195957** (**Impact factor- 4.411**)

14. **Baig MS,** and Krishnan A **(2021).** A bioinformatics approach to investigate serum and hematopoietic cell-specific therapeutic microRNAs targeting the 3' UTRs of all four Dengue virus serotypes. ***Pathogens and Disease***. **DOI: 10.1093/femspd/ftab050** (**Impact factor- 3.166**)
15. **Baig MS**, Reyaz E, Selvapandiyan A, and Krishnan A **(2021).** Differential binding of SARS-CoV-2 Spike protein variants to its cognate receptor hACE2 using molecular modeling-based binding analysis. ***Bioinformation.*** 17(2): 337-347. **DOI: 10.6026/97320630017337 (Impact factor- N/A**)
16. **Baig MS**, Akhtar S, Khan JA **(2021).** Engineering tolerance to CLCuD in transgenic *Gossypium hirsutum* cv. HS6 expressing *Cotton leaf curl Multan virus - C*4 intron hairpin. ***Scientific Reports*** 11:14172. **https://doi.org/10.1038/s41598-021-93502-3 (Impact factor- 4.379)**
17. Akmal M, **Baig MS,** Khan JA **(2017).** Suppression of cotton leaf curl disease symptoms in *Gossypium hirsutum* through overexpression of host-encoded miRNAs. ***Journal of Biotechnology*** 263: 21-29 **DOI: 10.1016/j.jbiotec.2017.10.003 (Impact factor- 3.307)**
18. Alam P, Abdin MZ, Ahmad N, **Baig MS**, Sharaf-Eldin MA, Elkholy SF **(2017).** Functional characterization of cytochrome P450 variant (CYP71) isolated from *Artemisia annua* L. Plants- *International Journal of Pharmaceutical Research and Allied Sciences.* 5(4):36-50 (**Impact factor- N/A**)
19. **Baig MS,** Khan JA **(2013).** Identification of *Gossypium hirsutum* miRNA targets in the genome of *Cotton leaf curl Multan virus* and beta satellite. *Indian J. Biotechnol.* 12:336-342 **(Impact factor- 0.414)**

Publications In International Conferences/Digital Article

1. **Baig MS,** Shweta, Khan JA **(2011).** Computational analysis of cotton miRNAs targeting genome of *cotton leaf curl Multan virus* and associated satellite DNA. *J Nat Sc Biol Med.* 2(3): 33 (**Impact score 0.67)**
2. Ahmad J, **Baig MS,** Qureshi I, Taj G **(2011).** *In silico* structural analysis of *Brassica Juncea* Sequence containing kinase-specific domain. *J Nat Sc Biol Med.* 2(3): 47 (**Impact score 0.67)**
3. **Published digital article, "HMPV is a silent threat to respiratory health", published by https://360info.org/ and https://www.newslaundry.com/2025/01/23/hmpv-is-a-silent-threat-to-respiratory-health on** 23 Jan, 2025

Published Chapters

1. Kashif M, Danishuddin, **Baig MS**, Subbarao N **(2025).** Current Scenario and Future Prospective of Drug Discovery & Development against Bacterial Enzymes. Eds. Munishwar Nath Gupta, Punit Kaur and Priyanka Sharma Academic Press. 21-40. eBook ISBN: 978-0-443-22222-1
2. **Baig MS** and Khan JA. **(2021).** Small RNA-mediated begomoviral resistance in plants: Micro in size but mega in function in Plant Virus-Host Interaction (Second Edition), Eds. Gaur RK, Sharma P, Paul Khurana SM, and Hohn T. Academic Press. 383-417. **eBook ISBN: 9780128244838**
3. **Baig MS**, Keservani RK, Ahmad MF, and Baig ME **(2017).** Smart Delivery of Nanobiomaterials in Drug Delivery, Nanobiomaterials Applications in Drug Delivery, Eds. Sharma AK, Keservani RK, and Kesharwani RK. Apple Academic Press, New York. **ISBN: 9781774636442**
4. **Baig MS**, Keservani RK, and Sharma AK. **(2016).** RNA Sequencing and Gene Expression Regulation, Computational Biology and Bioinformatics: Gene Regulation, Ed. Ka-Chun Wong, CRC Press, USA, 71-105. **ISBN: 9780367782979**
5. **Baig MS** and Keservani RK. **(2016).** Effect of Green Coffee Bean Extracts on Nrf2/ARE Pathway, Green Coffee Bean Extract in Human Health, Eds. Bagchi D, Moriyama H and Swaroop A. CRC Press, USA, 191-215. **eBook ISBN: 9781315371153**

Editor

International Journal of Virus Studies (E-ISSN: 3049-1924**)**
https://journals.stmjournals.com/editorial-board/ijvs/

Peer Review

RSC Medicinal Chemistry (2024)
PLOS One (2024)
ACS Omega (2024)
Complementary Therapies in Medicine (2022-2023)
Journal of Natural Fibers (2022-2023)
Journal of Food Biochemistry (2023-2024)

Canadian Journal of Infectious Diseases and Medical Microbiology (2023-2024)
Ageing (2023-2024)

Invited lectures and Webinars

1. Invited lecture and Resource person on **"Computer Science and Biology: impact of bioinformatics and molecular biology on Drug Discovery"** in AICTE Training and Learning (ATAL) academy online elementary FDP from 04/10/2021 to 08/10/2021 at College of Engineering & Technology, IILM academy of higher learning.
2. Invited lecture on **"Expectations of Evaluators of the funded research project and what to target"** at one-week ISTE-approved Short-Term Training Program (STTP) on "Insights & Methodologies towards Research & Research Outcomes" organized by the Department of Computer Engineering, St. Francis Institute of Technology (SFIT), Mumbai, held on June 26 2021.

Oral & Abstract Presentation

1. Fatima N, Sharma M, Rizvi AH, **Baig MS**, Selvapandiyan A, Ansari MA (2023) Bioinformatics approaches uncovering HIV1-human interactions via proteomic data inter and intra-PPI networks. Abstract published and Poster Presented in International Seminar on Recent Advancements In Chemical And Life Sciences Organized by Department of Chemistry, Jamia Hamdard New Delhi-110062, October 26, 2023. (**Got first best poster award.)**
2. Khan A, Arzoo A, **Baig MS**, and Ansari MA (2023) Analyzing HIV-1 patient serum-derived exosome and their effects on signal pathways. Abstract published in International Seminar on Recent Advancements In Chemical And Life Sciences Organized by Department of Chemistry, Jamia Hamdard New Delhi-110062, October 26, 2023
3. **Baig MS,** Krishnan A **(2019)** Identification of potential human miRNAs targeting 3' and 5' UTRs of Dengue viruses. Abstract published in National Workshop on Big Data and Artificial Intelligence in Biotechnology and Health Care, Amity University and EMBL-EBI, September 23-26, 2019.
4. **Baig MS**, Sadia Akhtar, Jawaid A. Khan **(2018)** Silencing suppressor gene-based hpRNAi construct causes non-appearance of phenotypic symptoms of Cotton leaf curl disease in *Gossypium hirsutum*. Abstract published in National Conference on Bio-intensive Approaches in Plant Protection and their Socio-economic Impacts, Department of Plant Protection, Aligarh Muslim University, October 29-30, 2018.
5. **Baig MS,** Sadia Akhtar, M. Akmal, Jawaid A. Khan **(2017)** Silencing of symptom suppressor gene of CLCuV infecting *Gossypium hirsutum.* Abstract published in National Seminar on Recent Advances in Environmental Toxicology. Jamia Millia Islamia, Feb 13-14, 2017
6. **Baig MS,** Zainul A. Khan and Jawaid A. Khan **(2014)** Investigating miRNA targets against cotton leaf curl virus. Poster presented in National Conference on Science of Omics for Agricultural Productivity: Future Perspectives G. B. Pant University of Agriculture & Technology Pantnagar. March 4-6, 2014
7. **Baig MS,** Zainul A. Khan and Jawaid A. Khan **(2013)** Identification of miRNAs targeting the Intergenic region of the Cotton leaf curl virus. Poster presented in Asia-Pacific Congress of Virology. Virocon- Amity University Noida December 17-20, 2013
8. Naveed Ahmad, **Baig MS**, M. Z. Abdin, and Pravej Alam **(2012)** Computational identification and characterization of miRNAs from Medicinal Plants Abstract published in 4th Bioinformatics Conference-cum-workshop on Application of Bioinformatics in Drug Discovery and Development, organized by Hamdard University, New Delhi, October 19-20, 2012
9. **Baig MS (2011)** Computational analysis of cotton miRNAs targeting genome of *cotton leaf curl Multan virus* and associated satellite DNA. Oral presentation in International Interdisciplinary Science Conference on Bioinformatics, organized by Center for Interdisciplinary Research in Basic Sciences, Jamia Millia Islamia, Nov 15 - 17, 2011
10. Shweta, **Baig MS** and Jawaid A. Khan **(2011)** *In silico* analysis of cotton (*Gossypium hirsutum*) microRNAs against *cotton leaf curl Burewala virus*. Abstract published in National Conference on Advancement in Convergence of Technology (ISBN: 978-81-8424-705-3) organized by Amity School of Engineering & Technology and Amity Institute of Biotechnology, Haryana, Sep 8-9, 2011.

Awards and Recognitions

1. **PI of the Indian Council of Medical Research (ICMR)** funded Project (July 2019- July 2022)
2. University Grant Commission (UGC) Non-NET fellowship by Govt. of India, for PhD (2013-2017)
3. Shortlisted for Ph.D. Entrance interview of JNU, New Delhi, for Lifesciences in 2013
4. Qualified Ph.D. Entrance Examination of IIT Delhi, Centre for Biomedical Engineering in 2013.
5. Qualified Ph.D. Entrance Test of Bioinformatics conducted by Pondicherry University in 2013.
6. Qualified Ph.D. Entrance Examination of Jamia Millia Islamia (JMI) in 2013.
7. **Best Poster award (third prize)** for the poster in a National Seminar/Workshop on current trends In Applied Animal Biotechnology organized by the Department of Life Sciences, Career College, Bhopal, India (Jan 2008)

8. **Winner of Essay competition** conducted by Ministry of Information & Broadcasting, Directorate of Field Publicity, Government of India (Jul 1995)

Skill sets

Computer Skills

- Web Development/Script tools — HTML tags, PERL (Scripts for Bioinfo purposes)
- Programming tools — Basic C, Basic R, Java (JDK Toolkit)
- Database — Basics of SQL, FoxPro, Visual Basic
- Operating Systems — Linux (Ubuntu), Windows XP/2007/2010

Experimental skills

- Reverse-transcriptase PCR, Real-Time PCR, Southern Hybridization, Dot blot, Northern Blotting, hpRNAi cloning and expression, RNA interference, miRNA and siRNA prediction, Genetic transformation, and cell/tissue culture

Bioinformatics tools and databases

- Well-versed in sequence analysis with any alignment search tool and software (BLAST, BioEdit, Clustal-X, DNAman, CLC-DNA and RNA suits)
- Primer designing for amplification of the desired gene through PCR and Real-time PCR (e-Primer, Primer-BLAST), RNA secondary structure prediction (MFold, UFOLD)
- Phylogenetic and genetic recombination analysis (MEGAX, RDP, raxmlGUI, FigTree1.4.4)
- Plasmid drawing and designing tools (BVTech Plasmid, Plasm)
- miRNA/siRNA target identification using different algorithms and database searching- miRanda (Ubuntu), DIANA-microT, PicTar, PITA, RNAhybrid, Targetscan, miRDB, miRBase, miRTarbase, PhenomiR, Tools4miRs, and HMDD
- Protein's motif and Domain identification (HMMER, MEME, Pfam, PROSITE, EXPASY)
- Protein secondary structure prediction and its structural validation (Modeller, Swiss-Model Workspace DALI, Swiss-PdbViewer, ITESSER, ModWeb)
- miRNA-mRNA target duplex structure prediction and visualization
- Molecular modelling and visualization tools (ChemSketch, ChemDraw, HyperChem, PyMol, RasMol, ViewerLite, Chimera, SAMSON, DISCOVERY STUDIO)
- Molecular docking suits (VL Life™, AutoDock Vina, PyRX, Schrödinger, GLIDE)
- Gene-gene and Protein-Protein interaction networking (STRING, Cytoscape)
- Molecular Dynamic Simulation (GROMACS)

Capacity building program/FDPs attended/organized

1. 7-day on-hand training on Genomics, Proteomics, Drug Design and high-performance computing – Workshop organized by Supercomputing Facility for Bioinformatics & Computational Biology (SCFBio), Indian Institute of Technology, New Delhi, September 30 - October 6, 2009
2. 3-day National Conference cum Workshop on High-Performance Computing and Applications (HPCA-2009) - organized by Department of Computer Science & Engineering, Banaras Hindu University (BHU), Varanasi, Feb 9 - 11, 2009
3. 5-day National Workshop on Computation for Biomedicine and Healthcare at the Indraprastha Institute of Information Technology (IIIT) Delhi, 10-14 December 2018
4. 3-day Training program on "Data Analytics using R and Hadoop" at the TERI School of Advanced Studies (TERI SAS), Department of Natural Resources and Department of Policy Studies, New Delhi, from October 8, 2018.
5. 4-day National Workshop on Big Data and Artificial Intelligence in Biotechnology and Health Care, Amity Institute of Biotechnology in association with Ensembl EMBL-EBI, UK, Amity University, September 23-26, 2019.
6. Certificate of Completion of 3 Days IEDB Virtual User Workshop, Presented via Zoom by the La Jolla Institute for Immunology, San Diego, California, USA, November 1-3, 2023
7. Attended one month of the international workshop on Data Science and Machine Learning for Bioinformatics with "R" from February 19 to March 18 2022
8. Organized a Seminar on "Vascular microtissues and disease modelling using 3D bioprinting technology" held on March 3 2023, at the Centre for Virology
9. Organized a Seminar on "Bench to Bedside: Auto 2D gel electrophoresis and INTELLIFLEX" held on March 16, 2023, at the Centre for Virology

Personal Information

Father's Name: Mr. Mirza Hussain Baig
Marital Status: Married
Gender: Male

Nationality: Indian
Languages: Urdu, Hindi, and English
Year of Birth: 1982

References

1. Prof (Dr.) Angamuthu Selvapandiyan, Dean, Department of Molecular Medicine, Jamia Hamdard, New Delhi-110062, E-mail ID- selvapandiyan@jamiahamdard.ac.in
2. Prof (Dr.) Jawaid Ahmad Khan, Ex-Head, Department of Biosciences, Ramanujan Block, Mujeeb Bagh, Jamia Millia Islamia, New Delhi-110025, E-mail ID- jkhan1@jmi.ac.in
3. Dr. Anuja Krishnan, Assistant Professor, Department of Molecular Medicine, Jamia Hamdard, New Delhi-110062, E-mail ID- anuja.krishnan@jamiahamdard.ac.in

Declaration

I declare that the information above is complete and correct to the best of my knowledge.

Dr. Mirza Sarwar Baig