SADAF FATIMA
Assistant Professor

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EDUCATIONAL QUALIFICATIONS:

Degree	University	Field	Year
Bachelor of Science (B.Sc. Hons. - Gold medalist)	Aligarh Muslim University (AMU), Aligarh, India.	Biochemistry	2002
Master of Science (M.Sc. - Gold medalist)	AMU	Biotechnology	2004
Ph.D. (NET, CSIR-JRF/SRF)	AMU	Biotechnology	2009

AWARDS:

- Qualified joint CSIR-UGC Junior Research Fellowship and eligibility for lecturership- National Eligibility Test (NET) in 2004 and was placed among top 20% awardees in Life Sciences all over India.
- Qualified UGC fellowship in 2005.
- University medal for standing first in M.Sc. Biotechnology examination, 2004.
- University medal for standing first in B.Sc. (Hons.) examination in Biochemistry, 2002.
- M. Manaluddian Award for topping among girls in Life Science Faculty (Session 2002-2003).
- J.D. Dheer Science Award for highest marks in aggregate in session 2001-02.

WORK EXPERIENCE:

- Working as Assistant Professor in Jamia Millia Islamia (JMI), New Delhi from Sept 2011 till date.
- Worked as Research Scientist in International Traceability Systems Limited (ITSL), New Delhi- Jan 2010-June 2010. ITSL is a organic-farming based private company.
- Worked as Project Associate at National Institute of Immunology (NII), New Delhi – Dec 2008-Nov 2009.

RESEARCH OVERVIEW:

My work is focused on Protein Science with 15 years of research experience and 13 years of teaching experience. Protein aggregation is the conversion of monomers into aggregates which prevent the normal functioning of the protein. Certain conditions like ageing, gene alteration and environmental stress lead to changes in protein conformation and subsequent deposition of misfolded protein. Research is focused on addressing problem of protein aggregation that is responsible for a number of diseases like Alzheimer's disease, Parkinson's disease etc. Aggregation of proteins therapeutics during their industrial

production, storage or transportation may lead to huge economic losses. Nanotechnology based approach is used to deal with aggregation problem. Research for new bioactive compounds, from traditional medicines is also in progress, which can target aggregation related diseases.

RESEARCH PROJECTS BY GOVERNMENT OF INDIA:

1. Department of Science and Technology, Science and Engineering Research Board (DST-SERB), Ministry of Science and Technology: Grant No. SR/FT/LS-194/2009, Title: PURIFICATION, CHARACTERIZATION AND CRYSTALLIZATION OF PROTEIN PROTEASE INHIBITOR FROM LEGUMINOSAE FAMILY. Duration: 2012-2015, Amount: ~22 lakhs
2. University Grants Commission, Basic Scientific Research (UGC-BSR) UGC-BSR Research Start-Up-Grant for newly recruited faculty at Assistant Professor level. Grant No. F.20-1(24)/2012(BSR), Duration: 2012-2014, Amount: 6 lakhs
3. Department of Biotechnology, Ministry of Science and Technology, (DBT): Grant No. BT/PR18844/NNT/28/1047/2016, Title: NANOCLAY BASED STUDY ON PROTEIN STABILITY ·AND AGGREGATION AND ITS IMPLICATION IN HUMAN HEALTH. Duration: 2017-2020, Amount: 60 lakhs
4. Ministry of Ayush (AYUSH): Grant No Z.28015/06/2017-HPC(EMR)-AYUSH-C, Title: EFFECT OF CELASTRUS PANICULATUS (MALKANGANI) ON CELL MODEL OF ALZHEIMER'S DISEASE. Ongoing Project, Amount: ~50 lakhs.

PUBLICATIONS:
Google Scholar link: https://scholar.google.com/citations?user=WOyPCckAAAAJ&hl=en

- Biophysical insights into sodium lauroyl sarcosine induced amyloid fibrillation of human serum albumin. Malik A, Khan JM, Rehman MT, Alamri A, Amir M, Sharma P, FAlAjmi M, **Fatima S**. Spectrochim Acta A Mol Biomol Spectrosc. 2025; 335: 125976. doi: 10.1016/j.saa.2025.125976. Epub 2025 Feb 28.
- Clay-Polymer Nanocomposites Mediated Inhibition of Protein Aggregation: Possible Role in the Prevention of Proteinopathies. Parveen R, Ali S, **Fatima S**. Protein Peptide letters. 2023. DOI: 10.2174/0109298665274059231002071951
- Anionic surfactant causes dual conformational changes in insulin. Khan JM, Malik A, Sharma P, **Fatima S**. Int J Biol Macromol. 2023; 247: 125790. https://doi.org/10.1016/j.ijbiomac.2023.125790
- A Novel Strategy to Arrest Bacterial Pathogen Infestation Using Poly(o-Phenylenediamine)/ Montmorillonite Nanocomposites. Verma A, Parveen R, Shamsi TN, Khan AA, **Fatima S**, Aazam ES, Riaz U. Chemistry Select 2022; 7: e202200797. https://doi.org/10.1002/slct.202200797
- Nanoclay based study on protein stability and aggregation and its implication in human health. Parveen R, Tarannum Z, Ali S, **Fatima S.** Int J Biol Macromol. 2020; 166: 385-400. https://doi.org/10.1016/j.ijbiomac.2020.10.197
- Alpha-cyclodextrin turns SDS-induced amyloid fibril into native-like structure. Khan JM, Malik A, Rehman T, AlAjmi MF, Alamery SF, Alghamdi OHA, Khan RH, Odeibat HAM, **Fatima S**. Journal of Molecular Liquids 2019; 289: 111090. https://doi.org/10.1016/j.molliq.2019.111090
- Effect of cetyltrimethylammonium bromide (CTAB) on the conformation of a hen egg white lysozyme: A spectroscopic and molecular docking study. Khan JM, Malik A, Ahmed A, Rehman MT, AlAjmi MF, Khan RH, **Fatima S**, Alamery SF, Abdullah EM. Spectrochim Acta A Mol Biomol Spectrosc 2019; 219: 313-318. https://doi.org/10.1016/j.saa.2019.04.062

- Millimolar concentration of sodium dodecyl sulfate inhibit thermal aggregation in hen egg white lysozyme via increased α-helicity. Khan JM, Ahmed A, Alamery SF, Farah MA, Hussain T, Khan MI, Khan RH, Malik A, **Fatima S**, Sen P. Colloids and Surfaces A: Physicochemical and Engineering Aspects 2019; 572: 167-173. https://doi.org/10.1016/j.colsurfa.2019.03.085
- Phytochemical analysis and In-vitro Biochemical Characterization of aqueous and methanolic extract of Triphala, a conventional herbal remedy. Parveen R, Shamsi TN, Singh G, Athar T, **Fatima S**. Biotechnol Rep (Amst). 2018; 17: 126-136. https://doi.org/10.1016/j.btre.2018.02.003
- Trypsin Inhibitors from Cajanus cajan and Phaseolus limensis Possess Antioxidant, Anti-Inflammatory, and Antibacterial Activity. Shamsi TN, Parveen R, Afreen S, Azam M, Sen P, Sharma Y, Haque QMR, Fatma T, Manzoor N, **Fatima S**. J Diet Suppl. 2018; 15: 939-950. https://doi.org/10.1080/19390211.2017.1407383
- Panchakola Reduces Oxidative Stress in MCF-7 Breast Cancer and HEK293 Cells. Shamsi TN, Parveen R, Fatima S. J Diet Suppl. 2018; 15: 704-714. https://doi.org/10.1080/19390211.2017.1386255
- Structural and Biophysical Characterization of *Cajanus cajan* Protease Inhibitor. Shamsi TN, Parveen R, Ahamad S, **Fatima S**. J Nat Sci Biol Med. 2017; 8: 186-192. doi: 10.4103/0976-9668.210018
- A review on protein misfolding, aggregation and strategies to prevent related ailments. Shamsi TN, Athar T, Parveen R, **Fatima S**. Int J Biol Macromol. 2017; 105: 993-1000. https://doi.org/10.1016/j.ijbiomac.2017.07.116
- Trypsin inhibiors demonstrate antioxidant activities, inhibit A549 cell proliferation, and increase activities of reactive oxygen species scavenging enzymes. Shamsi TN, Parveen R, **Fatima S**. Indian J Pharmacol. 2017; 49: 155-160. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5497437
- Biophysical insight into structure-function relation of Allium sativum Protease Inhibitor by thermal, chemical and pH-induced modulation using comprehensive spectroscopic analysis. Shamsi TN, Parveen R, Naz H, Haque MA, **Fatima S**. Int J Biol Macromol. 2017; 103: 415-423. https://doi.org/10.1016/j.ijbiomac.2017.05.075
- A novel multicopper oxidase (laccase) from cyanobacteria: Purification, characterization with potential in the decolorization of anthraquinonic dye. Afreen S, Shamsi TN, Baig MA Ahmad N, **Fatima S**, Qureshi MI, Hassan MI, Fatma T. PLoS One. 2017; 12: e0175144. https://doi.org/10.1371/journal.pone.0175144
- Purification and characterization of a novel trypsin-like protease from green-seeded chickpea (Cicer arientum). Shamsi TN, Parveen R, Sen P, **Fatima S**. Prep Biochem Biotechnol. 2017; 47: 513-519. https://doi.org/10.1080/10826068.2017.1292291
- Allium sativum Protease Inhibitor: A Novel Kunitz Trypsin Inhibitor from Garlic Is a New Comrade of the Serpin Family. Shamsi TN, Parveen R, Amir M, Baig MA, Qureshi MI, Ali S, **Fatima S**. PLoS One. 2016; 11: e0165572. https://doi.org/10.1371/journal.pone.0165572
- Nanoparticles-protein interaction: Role in protein aggregation and clinical implications. Parveen R, Shamsi TN, **Fatima S**. Int J Biol Macromol. 2017; 94: 386-395. https://doi.org/10.1016/j.ijbiomac.2016.10.024
- pH induced single step shift of hydrophobic patches followed by formation of an MG state and an amyloidogenic intermediate in Lima Bean Trypsin Inhibitor (LBTI). Khan JM, Alsenaidy MA, Khan MS, Sen P, Khan RH, **Fatima S**. Int J Biol Macromol. 2017; 103: 111-119. https://doi.org/10.1016/j.ijbiomac.2017.05.040.
- Crossroad Intermediates as 'Folding Pathway' Control Mechanism of Gene Expression. Fatima S. Austin Journal of Biotechnology & Bioengineering. 2017; 4: 1075. https://bit.ly/3c3Onav

- Characterization, biomedical and agricultural applications of protease inhibitors: A review. Shamsi TN, Parveen R, **Fatima S**. Int J Biol Macromol. 2016; 91: 1120-1133. https://doi.org/10.1016/j.ijbiomac.2016.02.069
- Harmful effect of detergents on lipase. **Fatima S**, Ajmal R, Badr G, Khan RH. Cell Biochem Biophys. 2014; 70: 759-763. https://doi.org/10.1007/s12013-014-9978-4
- pH-Induced molten globule state of Rhizopus niveus lipase is more resistant against thermal and chemical denaturation than its native state. Rabbani G, Ahmad E, Zaidi N, **Fatima S**, Khan RH. Cell Biochem Biophys. 2012; 62: 487-499. https://doi.org/10.1007/s12013-011-9335-9
- Methyl cyanide induces alpha to beta transition and aggregation at high concentrations in E-state of human serum albumin. Sen P, Iqbal MA, **Fatima S**, Khan RH. Biochemistry (Mosc). 2010; 75: 367-374. https://doi.org/10.1134/S0006297910030132
- More stable structure of wheat germ lipase at low pH than its native state. Ahmad E, **Fatima S**, Khan MM, Khan RH. Biochimie. 2010; 92: 885-893. https://doi.org/10.1016/j.biochi.2010.03.023
- Interactions of thioflavin T with serum albumins: spectroscopic analyses. Sen P, **Fatima S**, Ahmad B, Khan RH. Spectrochim Acta A Mol Biomol Spectrosc. 2009; 74: 94-99. https://doi.org/10.1016/j.saa.2009.05.010
- Stability check of succinylated concanavalin A: presence of functionally active conformational state. **Fatima S**, Khan RH. Protein Pept Lett. 2009; 16: 423-429. https://doi.org/10.2174/092986609787848117
- How methyl cyanide induces aggregation in all-alpha proteins: a case study in four albumins. Sen P, **Fatima S**, Khan JM, Khan RH. Int J Biol Macromol. 2009; 44: 163-169. https://doi.org/10.1016/j.ijbiomac.2008.11.008
- Characterization of fluoroalcohols-induced intermediates of Mucor miehei lipase at low pH. **Fatima S**, Mishra A, Sen P, Khan RH. Protein Pept Lett. 2008; 15: 346-352. https://doi.org/10.2174/092986608784246425
- Effect of polyethylene glycols on the function and structure of thiol proteases. **Fatima S**, Khan RH. J Biochem. 2007; 142: 65-72. https://doi.org/10.1093/jb/mvm108

CITATION INDEX (as on April 2025):

Citations- 1510
h-index- 21
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STUDENT GUIDANCE EXPERIENCE:

- Ph.D. Thesis
  - Saba Pasha- Presently pursuing PhD. Date of admission: 14/02/2025.
  - Chandani Praveen- Presently pursuing PhD. Date of admission: 07/09/2021.
  - Sageer Abass- PhD awarded: 14/02/2024.Topic: “High throughput screening for identification of antimicrobial compounds from medicinal plants of lndia.”
  - Romana Parveen- PhD awarded: 16/08/2021. Topic: “Role of nanoparticles in protein aggregation related disease”
  - Tooba N. Shamsi- PhD awarded: 16/08/2017. Topic: “Purification, characterization and crystallization of protein protease inhihitor from plant source”
  - Mohsin Munshi- PhD awarded: 01/02/2016. Topic: “Investigation of redox signalling during HIV infection”

- Shweta Agrawal- PhD awarded: 07/09/2015. Topic: "To evaluate the anti-oxidant activities induced by biopolymeric nanoparticles"

- M.Sc. Projects- 20

- Subjects Taught:
  - At Phd level- Industrial Biotechnology
  - At post-graduate level- Biochemistry and biophysics, Nanobiotechnology, Medical Biotechnology, Animal biotechnology
  - At graduate level- Biochemistry and Metabolism, Enzymology, Proteomics, Recombinant DNA Technology, Animal Biotechnology, Cell Biology.

ADMINISTRATIVE EXPERIENCE

- Worked as Warden in Girls' Hostel for 4 years (2015-19) and Jan-May 2024 to look after well-being of residents.
- Worked with team of Proctor (2015-16) for maintenance of discipline in university.
- Member of Institution's Innovation Council (IIC 5.0) in 2022-23.

DEPARTMENT ACTIVITIES

- Member of Board of Studies.
- Member of Admission Committee.
- Member of Departmental Research Committee.

FACULTY DEVELOPMENT PROGRAMMES:

- Participated in Refresher Course in Basic Sciences organized by UGC-Human Resource Development Centre at Jamia Millia Islamia, New Delhi during 05-21 October 2021 and obtained 'A' grade.
- Attended Refresher Course in Human Rights and Social Inclusion organized by UGC-Human Resource Development Centre at Jamia Millia Islamia, New Delhi during 30 July – 20 August 2015 and obtained 'A' grade.
- Participated in Orientation Programme organized by UGC Academic Staff College at Aligarh Muslim University during 19 March- 15 April 2014 and secured 'A' grade.

CONFERENCES

- Oral presentation in International Conference on Global perspectives of medicinal plants: Traditional system of medicine to Nanomedicine (ICGPMP-2025) during 20-21 March 2025.
- Invited as Resource Person in International Conference on Unani Medicine held at Vigyan Bhawan, New Delhi during 11-12 February 2020.
- Invited as Session Chair for session on Computational Biology and Biophysics in JTA Multidisciplinary International Conference (JTACON-2020) held at Jamia Millia Islamia, New Delhi during 16-18 February 2020.
- Participated as delegate in National Workshop on Nanomedicine (Nanomed-2018) arranged by Indian Institute of Technology, Delhi on 16 April 2018.
- Participated in conference-cum-workshop on Molecular imaging and Drug delivery (MIDD-2018) held at Jamia Hamdard during 26-27 March 2018.
- Participated as discussant in 3rd Annual Conference of Indian Society of Nanomedicine (Nanobioteck-2018) held at AIIMS, New Delhi during 24-27 October 2018.
- Participated as discussant in 2nd Annual Conference of Indian Society of Nanomedicine (Nanobioteck-2017) held at Trivandrum during 6-8 December 2017.

- Participated as discussant in 1st Annual Conference of Indian Society of Nanomedicine (Nanobioteck-2016) organized at AIIMS, New Delhi during 24-26 November 2016.
- Poster presentation in National Symposium on Biophysics and Golden Jubilee Meeting of Indian Biophysical Society held at Jamia Millia Islamia, New Delhi during 14-17 February, 2015.
- Participated in National Workshop on Advances in Computational Biology and Bioinformatics (ACBB-2015) held at Jamia Millia Islamia, New Delhi during 27-28 February, 2015.
- Oral presentation at 5th World Congress on Biotechnology held at Valencia, Spain during 25-27 June, 2014.
- Participated in poster session in Third Global Sustainable Biotech Congress at North Maharashtra University, Jalgaon during 1-5 December 2014.
- Participated in International Interdisciplinary Science Conference on Bioinformatics at Jamia Millia Islamia, New Delhi during 15-17 November 2011.
- Presented Poster in International Symposium on Predictive, Preventive and mechanistic mutagenesis at AMU, Aligarh during 01-03 January 2008.
- Participated in Interdisciplinary Science Conference on Mathematics in Biology at JMI, New Delhi in 2008.
- Presented Poster in National Symposium on Biophysics at Panjab University, Chandigarh during 15-17 November 2007.
- Poster presentation in National Symposium on Biophysics held at Indian Natioanl Science Academy during 13-15 February 2007.

MEMBERSHIPS:

- Life member of Proteomics Society, India (PSI).
- Founder Life member of Indian Society of Nanomedicine (ISNM).
- Life member of Indian Biophysical Society (IBS).

OUTREACH ACTIVITIES:

- Member of International Parkinson and Movement Disorder Society (MDS).
- Member of Family Federation for World Peace and Unification (FFWPU), India.

REFEREES:

- Dr Rizwan Hasan Khan
  Professor, Interdisciplinary Biotechnology Unit,
  Aligarh Muslim University, Aligarh.
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