



## Md. Sarfaraz Alam

Protein Scientist, Protein  
Biochemist

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• Gaya, IN

Personal Details:  
15/01/1983 ■ Patna, IN ■ Indian  
Male ■ Married

Meticulous professional with extensive experience performing protein purification, in vitro and in vitro biochemistry, as well as structural, molecular, and cell biology across diverse projects applicable to protein analytics, drug discovery, biocatalysts, and ADCs. Demonstrated capacity to collaborate effectively with cross-functional professionals to enable streamlined achievement of targets. Proven history of strategic project planning, process standardisation, and skilful team supervision. Track record of successfully executed projects in support of novel drug discovery. Possess significant experience executing diverse projects in partnership with key industry players.

## Technical Proficiencies

|                                                |                                                                                                                                                                                                                                                                                          |
|------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Protein Purification</b>                    | Protein expression & purification from E. coli, Insect and mammalian cells * Batch Purification * HPLC & FPLC based Chromatography (ÄKTA, NGC and SMART) * IMAC, SEC, Ion exchange chromatography * HPLC purification columns                                                            |
| <b>Cell Culture</b>                            | Insect Cells (SF9, High Five Cells) * Mammalian Cells (HT 1080, CHO, HEK 293 and MSDi Cell lines) * E. Coli (BI21, DH5α, origami Cells), Pichia pastoris                                                                                                                                 |
| <b>Transfection</b>                            | Transient and stable transfection (Lipofectamine and Nanofectamine based Transfection of mammalian cells), Cotransfection of DNA in insect cells and mammalian Cells                                                                                                                     |
| <b>Protein Biochemistry:</b>                   | Enzyme characterization * Enzyme kinetics * In Vitro enzymatic assays * Protein-Protein interactions * Protein-ligand binding studies by co-immunoprecipitation * SDS PAGE * Subcellular fractionation of mammalian cells * Western blotting                                             |
| <b>Cell Biology:</b>                           | Cell viability assay * Insect cell culture * In Vivo pulse chase protein stability assays * Mammalian cells * Preparation of recombinant baculovirus * Recombinant protein expression in insect cells * Stable transfection * Transient DNA & siRNA transfection                         |
| <b>Biophysical Techniques:</b>                 | Disulfide bridge detection by MALDI-TOF * Fluorescence & Circular Dichroism protein studies * HPLC & FPLC * Isothermal Titration Calorimetry * NanoLC- MALDI & ESI-Mass Spectrometry * Protein Mass Spectrometry assay design * Sample preparation & data analysis * Thermal Shift Assay |
| <b>Molecular Biology &amp; Bioinformatics:</b> | Gene Cloning & Site Directed Mutagenesis * Primer design * Protein structural studies using PyMOL * Sequence alignment using ClustalW, MASCOT & MaxQuant                                                                                                                                 |

## Career Experience

### Mirza Ghalib College, Gaya, IN

Present

Assistant Professor | Head of the Department, Botany

#### Assistant Professor

- Teach UG/PG courses in Botany, Biochemistry, and Molecular Biology
- Conduct practicals, mentor students, and supervise projects
- Engage in interdisciplinary research and publish in peer-reviewed journals
- Perform examination duties and contribute to NAAC/academic activities

### Head of the Department, Botany

- Provide academic and administrative leadership for the Department of Botany
- Plan teaching schedules, workload distribution, and departmental activities
- Coordinate with the college administration and university authorities
- Lead NAAC, AISHE, and institutional accreditation processes
- Maintain departmental records, stock registers, and academic documentation
- Promote student enrollment, academic development, and research initiatives
- Organise seminars, workshops, and academic events
- Facilitate interdisciplinary collaboration with allied departments
- Ensure compliance with UGC norms and university regulations

### Guest faculty, Biotechnology

- Deliver lectures in Botany, Biochemistry, Molecular Biology, and Environmental Biotechnology
- Conduct practical sessions and laboratory demonstrations
- Support interdisciplinary teaching between Botany and Biotechnology
- Guide student projects and assist in academic evaluation
- Participate in academic activities, seminars, and skill development programs

### MilaK, Discovery Park, Kent, UK

May, 2025- December 2025

#### Protein Scientist | Strategic R&D

Contributed to the development of precision-fermented, animal-free dairy proteins by designing experimental strategies and aligning scientific objectives with product development goals. Played a key role in integrating protein science with industrial R&D, including experimental planning, process design, and collaboration with leadership for strategic decision-making and infrastructure development.

### Silesian University of Technology, Gliwice, PL

2022 –2025

#### Senior Researcher (Adjunct Professor)

Conducted interdisciplinary research in enzymology, protein engineering, and structural biology, integrating experimental and computational approaches. Collaborated with international academic partners, including **BioTechMed-Graz** (BioTechMed-Graz Research Network, Austria), **Graz University of Technology (Austria)**, and **Norwegian University of Science and Technology**, contributing to joint research efforts in protein design and molecular analysis. Led laboratory activities, supervised students, and contributed to peer-reviewed publications.

### Bielefeld University, Bielefeld, DE

2015 – 2022

#### Postdoctoral Research Fellow

Focused on protein engineering and drug discovery, developing scalable protein production systems and validating small-molecule therapeutics for rare genetic disorders. Maintained close industrial collaborations with **F. Hoffmann-La Roche (Switzerland)**, **Catalent (USA)**, and **Shire Human Genetic Therapies (USA)**.

These collaborations involved projects on **enzyme stability and protein misfolding in rare genetic disorders (e.g., Multiple Sulfatase Deficiency)**, including the identification and validation of small-molecule stabilisers, optimisation of protein expression systems, and development of strategies for enzyme replacement and bioconjugation-based therapeutic approaches. Contributed to multidisciplinary translational research bridging fundamental enzymology with industrial drug development, while also supervising students and supporting multicellular collaborations..

### University of Göttingen, Göttingen, DE

2009 – 2015

#### Postdoctoral Research Fellow (October 2013 – February 2015)

Conducted advanced research on enzyme function and molecular mechanisms underlying rare metabolic disorders, with a focus on formylglycine-generating enzyme (FGE) and sulfatases. Worked on an industry-linked project supported by Shire Human Genetic Therapies, investigating protein interactions, enzyme stability, and optimisation of production systems for therapeutic applications. Developed innovative methodologies for protein expression, purification, and biophysical characterisation, contributing to mechanistic insights and improved biotechnological applications. Also supervised students and contributed to teaching practical biochemistry courses.

Engaged in early-stage drug discovery research targeting malarial and bacterial enzymes, including screening of potential inhibitors and optimisation of enzymatic assays. Identified key enzymatic targets in pathogen metabolism and contributed to protein purification and antibody development. Supported laboratory operations and gained foundational expertise in biochemical techniques and experimental design within a leading research environment.

## Education

**Doctor of Philosophy in Biochemistry** | University of Göttingen, Göttingen, DE

**Master of Science in Marine Biotechnology** | Goa University, Goa, IN

**Bachelor of Science in Biotechnology** | Vinoba Bhawe University, Hazaribagh, IN

## Research Projects

**2021 – OPUS – National Centre of Polish Science (NCN)** – UMO-2020/39/B/ST4/03220 – Design of high selective and safe juvenile hormone epoxide hydrolases inhibitors targeting selected pests based on the combination of analysis of intramolecular voids dynamics and enzymes evolution study – research grant for years 2021 – 2025

**2021 – POL-TUR – POLTUR4/MarrBaccines/4/2021** – National Centre for Research and Development (NCBiR) – Antimicrobials of the Sea: Identification of Marine-derived Bacteriocins and Their Antimicrobial Activity – bilateral grant with TUBITAK Marmara Research Center for years 2021 – 2024

**2021 – EIC- Pathfinder – Europa Horizon – No. 101046815** – Teaching Lytic Polysaccharide Monooxygenases to do Cytochrome P450 Catalysis – research grant for years 2022 – 2025 – in cooperation with Norwegian University of Life Science (coordinator), Technical University Graz, Institute of Catalysis and Surface Chemistry Polish Academy of Sciences

## Professional Training

3-month training in protein expression and purification in *Pichia pastoris*, Graz, Austria, 2024

Max Planck Summer School 2012

Orbitrap Tribrid Biotech Operations Training Course

TQS Biotech Operations Training Course

EU Summer School 2012

## Selected Publications

Syed Parween Ali, Farheen Mansoor Shaymaa, Fadhel Abbas Albaayit Farman Ali Ayed A. Dera Muhammad Shahbaz Jawad Ullah Hailah M. Almohaimeed Reem M. Gahtani Ahmed M. Abdulfattah Fahad M. Alshabrmi Md Sarfaraz Alam Saeed Ullah Exploring dihydropyrimidone derivatives as modulators of carbohydrate catabolic enzyme to mitigate diabetes, *Scientific Reports*, 2024, vol. 14, no. 1, Article number:31761.

Yan-kun Chen, Reem M. Gahtani, Mesfer Al Shahrani, Umme Hani, Fahad M. Alshabrmi, **Md Sarfaraz Alam** Hailah M. Almohaimeed Ammar A. Basabrain Muhammad Shahab Meng-zhou Xie Identification of potential inhibitors targeting Ebola virus VP35 protein: a computational strategy *Journal of Biomolecular Structure & Dynamics*, 2025, vol. 43, no. 6, pp.2877-2889.

Mohammed Baqur S Al-Shuhaib; **Sarfaraz Alam**; Salman Ali Khan; Jafar Al-Shuhaib; Yan-kun Chen; Fahad M. Alshabrmi (2025) Hemagglutinin 3 and 8 can be the most efficient influenza subtypes for human host invasion; a comparative *in silico* approach, *Journal of Biomolecular Structure & Dynamics*, 2025, vol. 43, no. 1, pp.108-126.

Al-Shuhaib Mohammed Baqur S., **Alam Md Sarfaraz**, Khan Salman Ali [et al.], "Masoprocol: a promising candidate for targeting insulin resistance by inhibiting resistin with optimal drug-likeness Potentials: an in silico approach" *Journal of Biomolecular Structure & Dynamics*, 2024, vol. 42, no. 19, pp.10044-10056

L. Karsten\*, N. Janson\*, V. L e Joncour, **S. Alam**, B. Müller, Jayendrakishore, T. Ramanathan, G.F. von Mollard, P. laakkonen, N. Sewald, K. M. Müller (2022) "Development of EGFR-targeted NMAE-conjugates: Correlation of In Vitro & In Vivo Studies" *International Journal of Molecular Sciences* 23 (5): 2468

**S. Alam**, K. Radhakrishnan, M. Wachs, A. Dickmanns, T. Dierks, B.Schmidt (In Preparation) "Calcium & Redox Dependent Conformational Changes are Necessary for Catalytic Activity of Formyl-Glycine-Generating Enzyme (FGE): Insights into the Catalytic Cycle of Formylglycine Generation".

N. Janson, T. Heinks, T. Beuel, **S. Alam**, U.T. Bornscheuer, G.F.von Mollard and N.Sewald (2021) "Efficient Site-Selective Immobilisation of Aldehyde-Tagged Peptides & Proteins by Knoevenagel Ligation" *ChemcatChem* 24 (2).

M. Boschanski, T. Kruger, L. Karsten, G. Falck, **S. Alam**, M. Gerlach, B. Müller, K. Müller, N. Sewald and T. Dierks. (2021) "Site-Specific Conjugation Strategy for Dual Antibody-Drug Conjugates Using Aerobic Formylglycine-Generating Enzymes" *Bioconjugate Chemistry* 32, 1167-1174.

T. kruger, S. Weiland, G. Falck, M. Gerlach, M. Boschanski, **S. Alam**, K. Müller, T. Dierks and N. Sewald (2018) "Two- fold Bioorthogonal Derivatization by Different formylglycine Generating Enzymes" *Angewandte Chemie Inte. Ed.* 57(24): 7245-7249.

T. kruger, S. Weiland, G. Falck, M. Gerlach, M. Boschanski, **S. Alam**, K. Müller, T. Dierks and N. Sewald (2018). "Zweifach-bioorthogonale Derivatisierung durch verschiedene Formylglycin-generierende Enzyme" *Angewandte Chemie* 130(24): 7365-7369.

Peng J\*, **Alam S\***, Radhakrishnan K, Mariappan M, Rudolph MG, May C, Dierks T, von Figura K, Schmidt B (2015) "Eukaryotic Formylglycine-generating Enzyme Catalyses a Monooxygenase Type of Reaction" *FEBS Journal* 282(17): 3262-3274. (\*shared first author).

## Patents

Alam Sarfaraz, 2025 Peptides With Antimicrobial Activity Against Gram + And Gram – Pathogen EP25170232.0

Alam, Sarfaraz. 2015. Production & Purification of Active Eukaryotic Formylglycine Generating Enzyme (FGE) Variants. US14/490331 and UD 40504/SAM. Period: 09'14.

## Posters

Exploring antimicrobial peptides from the marine environment: a sustainable alternative to antibiotics Alam Md Sarfaraz, Ali Salman, Szwara Marzena [et al.], In: European Summit of Industrial Biotechnology (ESIB), November 12-14,2024, 2024, European Summit of Industrial Biotechnology, pp.16-16

Identification of antimicrobial peptides using integrated computational and in vitro approaches Ali Salman, Alam Md Sarfaraz, Jandoo Jaspreet Kaur [et al.], In: XXVIII Gliwice Scientific Meetings, Gliwice, November 21-22, 2024, 2024, Gliwice, pp.153-153, Article number:IV-9

Targeting pests: A quest for safe and selective inhibitors for Juvenile Hormone's epoxide hydrolase Szawara Marzena, Bagrowska Weronika, Gulec Aleksandra, Md Sarfaraz Alam [et al.], In: European Summit of Industrial Biotechnology (ESIB), November 12-14,2024, 2024, European Summit of Industrial Biotechnology, pp.19-19

Calcium & Redox-Dependent Conformational Change is Necessary for the Catalytic Activity of Formylglycine-Generating Enzyme (FGE): Insights into the Mechanism of Formylglycine Generation at *26th Annual Symposium of The Protein Society* (2012) San Diego, CA (Poster Presentation)

Formylglycine-Generarting Enzyme (FGE): Calcium Dependent Changes in Conformation at *9th Horizon in Molecular Biology* (2012) coordinated by Max Planck Institute for Biophysical Chemistry, Göttingen, DE (Poster Presentation)

‘Mass Spectrometric Determination of Disulphide Linkages in Human Formylglycine Generating Enzyme at *5th EU Summer School in Proteomics Basics* (2011) Brixen, IT (Poster presentation & training course)

“Influence of Calcium Ion on Formylglycine Generating Enzyme Conformation & Activity” at *GGNB Science Day* (2011) coordinated by Göttingen Graduate School for Neurosciences, Biophysics & Molecular Biology of the University of Göttingen, Göttingen, DE (Poster Presentation)

## Awards

- Pro quality Grant awarded for publication from Silesian University of Technology, 2025
- ProQuality Grant awarded for Publication in Top 10 journal from Silesian University of Technology 2025
- Pro quality Grant awarded for publication from Silesian University of Technology, 2024
- Outstanding Young Scientist Award for EIC Pathfinder Project 2022
- Scholarship, MSD Action Foundation, 2021
- Post Doctoral Scholarship, Bielefeld University, 2015 – 2017
- Industrial grant, Shire Human Genetic Therapies Inc., 2014
- Bridging Fund Scholarship, Göttingen Graduate School for Neuroscience & Molecular Biosciences, 2013
- Junior Research Fellowship, Council of Scientific & Industrial Research, 2008
- Fellowship, Department of Biotechnology – Government of India, 2007 – 2009
- National Fellowship, Department of Biotechnology – Government of India, 2005 – 2007