SAMHITHA URS, RAMARAJE URS, M.Sc.

A dedicated and budding structural biologist with 5+ years of experience in protein research. Armed with cryo-EM, AFM and advanced protein & structural biology techniques, I am eager to learn, expand my knowledge and grow professionally. Beyond the lab, I am committed to pushing the boundaries of science and transform complex biological challenges to drive impactful, actionable and real-world solutions.

Nationailty:
Indian

Mail-IDs:
samhithaurs82@gmail.com

Languages:

English (Professional)
Hindi (Professional)
German (Intermediate)
French (Basic)
Kannada (Native)

Education:

June 2013- June 2018
M.Sc in Molecular Biology Integrated Bachelors-Masters in Molecular Biology (5 years) – **Grade – 1.58**
University Of Mysore, Mysore, India.

Social media profiles:

LinkedIn - linkedin.com/in/samhithaurs
Twitter - @samhitha_urs

Research media profiles:

ORCiD - 0000-0003-0318-7483
ResearchGate - researchgate.net/profile/Samhitha-Urs

Research areas:

Hemaotology, Cancer and molecular Biology
Structural bioinformatics and protein biology,

Key skills:

Protein Purification and Protein Biology – SEC, IEX, HPLC
Structural Bioinformatics and modeling studies
cryoEM – Plunge freezing and data analysis
AFM – Imaging and data analysis

Interdisciplinary skills:

- Project and lab management
- Problem solving, resourceful and mentorship
- Team worker and collaborative researcher
- Critical and creative thinking
- Communication - Written, Oral, Interpersonal and Negotiation.
- Excellent Penmanship

RESEARCH EXPERIENCE

- ***Doktorandin/Wissenschaftliche Beschäftigte*** - *01/2021- Present (Contract ending on 31/2025)*
  Faculty of Pharmacy, University of Bonn /Institut für Exp. Hämatologie und Transfusionsmedizin (IHT), Universitätsklinikum Bonn, Bonn, Germany
  Project : "Structural and functional characterisation of B domain and full length of coaglation factor VIII"
  Research area : Hematology and Structural Biology
  - Routine usage of SEC/HPLC/IEX to purify intrinsically disordered proteins (coagulation factor VIII)
  - Optimized and performed cryo-EM, AFM and XL-MS based structure analysis.
  - Acquired expertise in Hematology/blood transfusion medicine and worked towards understanding and developing better therapeutic strategies for Hemophilia A.
  - Supervised and assisted master students and fellow lab members in lab projects.

- ***Visiting Researcher*** - *06/2023 – 12/2023*
  Institut de Biologie Structurale (IBS) and Commissariat a l'Energie Atomique et aux Energies Alternative (CEA), Univ. Grenoble Alpes, CNRS, Grenoble, France
  Collaborative project : " Analyzing the different conformational states of full-length coagulation Factor VIII by a combination of computational modeling, atomic force microscopy (AFM) and AFM assembly pipeline"
  Research area : Hematology and Structural Biology
  - Standardized, performed AFM imaging, and analysis (Nanosurf DriveAFM, and Bruker's AFM)
  - Attained Linux-based computing, including command-line operations, Vi editor

- ***Research Assistant*** - *08/2018 – 10/2020*
  Institute of Bioinformatics and Applied Biotechnology (IBAB) Bangalore, India
  Project : "Structural characterisation of Polymerase theta" and "CRISPR-Cas9 knockdown studies of DNA Polymerase theta (Polθ) in HR-deficient cancers"
  Research area : Structural Biology - DNA repair and Cancer
  - Established a robust foundation for the structural analysis and characterisation Polymerase theta – X-ray crsytallography and diffraction.
  - Designed CRISPR plasmids, gRNAs, and validated gene editing efficiency
  - Proficiency in cell culture, including specialized insect cell systems.

- ***Project Trainee*** - *01/2018-06/2018*
  Department of Biochemistry, Indian Institute of Science (IISc) Bangalore, India
  Project : "Construction of an shRNA for the depletion of Bloom helicase (BLM)"
  Research area : Molecular Biology - DNA repair and cancer
  - Developed expertise in fundamental molecular biology and microbiology techniques.

SKILLS

- **Protein and Structural Biology -** Protein purification - HPLC, Affinity, Ion-Exchange and size-exclusion chromatography (ÄKTA), XL-MS, structure analysis and visualization software (YASARA, Gromacs, PyMol, VMD, ChimeraX, Phenix, COOT, AlphaFold)
- **cryoEM -** Plunge freezing, Grid preparation, Particle picking, Image processing and reconstruction, knowledge of cryo-EM software packages (CryoSPARC)
- **Atomic Force Microscopy -** Imaging and measurements in contact and dynamic mode (on/off-resonance) and image processing (Gwyddion)
- **Basics of XRC -** Crystallization setup - Vapor diffusion, Hanging drop and screening.
- **Molecular Biology -** Molecular Cloning, PCR, Electrophoresis (agarose, polyacrylamide gels SDS and Native gels), bacterial transformation, basics of designing and constructing CRISPR-Cas9 plasmids, gRNAs.
- **Cell culture -** Mammalian (HEK 293, HeLA, U2OS), Insect (SF9 and SF21) and cell free expression systems. Confocal, Bright-field microscopy
- **Technical Proficiencies -** Operating Systems: Windows, macOS, Linux (Basic Command Line)
- **MS Proficiencies -** MS-Word, MS- Excel, PowerPoint, Outlook, MS-Teams
- **Advanced bioinformatics analysis -** Vi editor, fundamental knowledge in Awk scripting, BLAST, FASTA, CLUSTAL-W, Biological databases- AlphaFold, RCSB-PDB, UniProt, NCBI

PUBLICATIONS

RESEARCH ARTICLES & REVIEW PAPERS

2024 Samhitha Urs Ramaraje Urs [1], Jean-Luc Pellequer[2], Jean-Marie Teulon[2], Sneha Singh[1], Jens Müller[1], Simone Gasper[1], Anna Pepanian[3], Diana Imhoff[3], Johannes Oldenburg[1], Arijit Biswas[1]
"Deciphering the structure and functional significance of the Factor VIII B domain within the native full-length coagulation Factor VIII" – Manuscript under preparation.

2024 S. Singh[1], D. Uruglar[3], G. Hagelueken[2], S.U. Ramaraje Urs[1], A. Sharma[4], M. Mahapatra[4], D. Imhof[5], M. Geyer[2], J. Oldenburg[1], A. Biswas[1]
"Identifying the differences in structural etiology underlying coagulation factor XIII mutations based on a 2.4Å cryo-EM structure of the coagulation factor XIII complex" ***Blood*** – Manuscript under review. **PDBIDs: 8MCT, 8CMU (HPUB) IF: 21.0 (2024)**

2024 Behnaz Pezeshkpoor PhD[1], Nadja Sereda M.Sc[1], Janine Becker-Gotot PhD[2], Ann-Cristin Berkemeier[1], Isabell Matuschek, M.Sc[1], Jens Müller PhD[1], Samhitha Urs Ramaraje Urs M.Sc.[1], Sneha Singh PhD[1], Natascha, Marquardt MD[1,3], J. Oldenburg MD[1,3]
"Comprehensive analysis of Neutralizing Anti-Emicizumab Antibodies on Drug Efficacy in Acquired Hemophilia A" ***Journal of Thrombosis and Haemostasis (JTH)*** **–** Manuscript accepted. **IF: 5.5 (2024)**

2022 Haroon Javed, Sneha Singh, Samhitha Urs Ramaraje Urs, Johannes Oldenburg, Arijit Biswas
"Genetic landscape in coagulation factor XIII associated defects – Advances in coagulation and beyond" Blood Reviews - November 2022 . **DOI: 10.1016/j.blre.2022.101032 IF: 6.9 (2024)**

SELECTED CONFERENCE PAPER

2023 SU Urs Ramaraje , D Ugurlar , B Ma , J-L Pellequer , J-M Teulon , D Fenel , H Javed , M M Islam , S Singh , J Oldenburg , A Biswas
"Low resolution cryo-EM maps and AFM analysis combined with alpha fold model of full-length coagulation Factor VIII sheds light on the conformational positioning of the Factor VIII B domain"- GTH Congress 2023 – 67th Annual Meeting of the Society of Thrombosis and Haemostasis Research – The patient as a benchmark. ***Hamostaseologie*** 2023; 43(S 01) **DOI: 10.1055/s-0042-1760512**

2022 Ramaraje Urs, Sneha Singh , Haroon Javed , Guy Schoehn , Jean-Luc Pellequer , Jean-Marie Teulon , Daphne Fennel , Johannes Oldenburg , Arijit Biswas **"Structural Characterization of Factor VIII B Domain to Generate an all atom Full-Length Structure of the Coagulation Factor VIII Protein"** - 52nd Hamburg Hemophilia Symposium. ***Hamostaseologie*** 2022; 42(S 01) **DOI: 10.1055/s-0042-1758498**

INVITED TALKS

Main Speaker for an invited internal scientific webinar on **"Structure of full-length FVIII with focus on the B-domain" – on 19.06.2023 in and by *Takeda Pharmaceutical Company Limited* (across U.S., Germany, and Austria)- Peter L. Turecek, Hon.Prof.(FH) Univ.-Doz**

HONORS & ACHIEVEMENTS

2023 **Early Career Travel Award** - International Society on Thrombosis and Haemostasis (ISTH) 2023
Oral presentation: " Structural characterization of coagulation factor VIII"

2023 **Rudolf Marx Stipendium** – Visiting research scholar – Institut de Biologie Structurale – 67th annual meeting of the GTH 2023
"Analyzing the different conformational states of full-length coagulation Factor VIII by a combination of computational modeling, atomic force microscopy (AFM) and AFM assembly pipeline"

2022 **Best poster award** - 53rd Hamburg Hemophilia Symposium- 2022- Hamburg
Poster presentation: "Low-resolution cryo-EM combined with alpha fold model of Full length coagulation Factor FVIII sheds light on the spatial orientation of B domain"

2022 **Reisestipendium** - Deutschen Gesellschaft für Transfusionsmedizin und Immunhämatologie (DGTI) 2022- Mannheim
Oral presentation: "Structural investigations into coagulation factor VIII full-length and B domain"

REFERENCES

Dr. Arijit Biswas. Ph.D., PD
AG, FXIII group, Room No. 2.308,
Institut für Exp. Hämatologie und Transfusionsmedizin (IHT) Universitätsklinikum Bonn, Venusberg Campus 1, Gebäude 43, Bonn-Venusberg 53127
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Dr. Jean-Luc Pellequer
Electron Microscopy and Methods Group
Institut de Biologie Structurale, 71, avenue des Martyrs, CS 10090, 38044 Grenoble Cedex 9
Tel : +33 (0)457 42 875
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