SHIRSHA SAHA | Biological Sciences and Bioengineering

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EDUCATIONAL QUALIFICATIONS:

YEAR	DEGREE/CERTIFICATE	INSTITUTION	CPI/%
2019-Present	Doctor of Philosophy	Indian Institute of Technology, Kanpur	10/10
2014-2019	Integrated MSc in Biotechnology	St. Xavier's College (Autonomous), Kolkata	9.2/10
2014	ISC-XII	M.P. Birla Foundation H.S. School	96.25%
2012	ICSE-X	M.P. Birla Foundation H.S. School	96.4%

SCHOLASTIC ACHIEVEMENTS:

- Received Prof. Saroj Chandrasekhar Memorial Award, 2023
- Awarded **Prime Minister's Research Fellowship** (PMRF) *(May'20 – July'24)*
- Qualified GATE (Biotechnology), 2019, **AIR 167**
- Qualified CSIR-NET, June 2018, Life Sciences, **AIR 48**
- Qualified CSIR-NET, December 2017, Life Sciences, **AIR 69**
- Awarded Fr. Henri Depelchin S.J. Memorial **Gold Medal** for obtaining highest marks in Integrated MSc in Biotechnology, St. Xavier's College (Autonomous), Kolkata *(2014-2019)*

RESEARCH EXPERIENCE

Senior Research Fellow (SRF) *(July'21 – Present)*

- **Mentor:** Dr. Arun Kumar Shukla, Indian Institute of Technology, Kanpur
- **Skills acquired:** Insect cell culture | Baculovirus preparation | Mammalian cell culture assays | Reconstitution of GPCR complexes | Chimera | ChimeraX

Junior Research Fellow (JRF) *(July'19 – July'21)*

- **Mentor:** Dr. Arun Kumar Shukla, Indian Institute of Technology, Kanpur
- **Skills acquired:** Bacterial culture | Mammalian culture | Cloning | Site-directed mutagenesis | Membrane protein purification | Chromatography | HDX | Co-Immunoprecipitation | Phage Display | SDS-PAGE | Western Blot | ELISA | Pymol | GraphPad | Microsoft Excel | Microsoft PowerPoint

Purification and characterization of beta-arrestin *(Integrated MSc Dissertation project)* *(January'19 – April'19)*

- **Mentor:** Dr. Arun Kumar Shukla, Indian Institute of Technology, Kanpur
- **Skills acquired:** Bacterial culture | Mammalian culture | Protein purification | Co-Immunoprecipitation | SDS-PAGE | Western Blot | ELISA | GraphPad

Purification of RMF (Ribosome Modulating Factor) and HPF (Hibernation Promoting Factor) from *E coli* *(Summer Internship)* *(June'17)*

- **Mentor:** Dr. Chandana Barat, Department of Biotechnology, St. Xavier's College (Autonomous), Kolkata
- **Skills acquired:** Bacterial culture | Protein purification | SDS-PAGE | Dot Blot

LABORATORY SKILLS

Techniques	Insect cell culture | Baculovirus preparation | Mammalian cell culture and associated assays | NanoBiT assay | Membrane protein purification | Reconstitution of GPCR complexes | Bacterial culture | Cloning | Site-directed mutagenesis | Protein purification | Chromatography | Co-Immunoprecipitation | Phage Display | ELISA | SDS-PAGE | Western Blot | PCR
Softwares	Pymol | GraphPad | Microsoft Excel | Microsoft PowerPoint | Chimera | ChimeraX

TRANSFERABLE SKILLS

Communication	Adept at articulating ideas fortified by regular oral presentations at conferences and departmental seminars.
Independence	Understanding the trajectory of the research, making crucial strategic choices, and contributing significantly to the overall objectives of the projects.
Teamwork	Excel in collaborative environments, leveraging strong communication and cooperation skills. Effectively contributed to team objectives and fostered a positive, high-performing work environment.
Leadership	Demonstrated effective leadership in laboratory environments, guiding teams through complex experiments. Fostered a culture of collaboration and ensured adherence to safety protocols and project timelines.

POSITION OF RESPONSIBILITY

- **Spear-headed multiple projects** in the laboratory resulting in publications in international journals
- **Mentored** several **research fellows** and MTech students
- **Chaired a session** at Emerging Frontiers in Modern Biology, IIT Kanpur *(December'23)*
- **Visiting faculty** at Kendriya Vidyalaya, IIT Kanpur *(August'20 - Present)*
- **Organizing team member**, 5K run, Adventure Sports Club, IIT Kanpur *(September'23)*
- **Organizing team member**, 5K run, Gender Cell, IIT Kanpur *(March'23)*

PUBLICATIONS

- Molecular insights into ligand promiscuity and atypical dimerization of the C-X-C chemokine receptor, CXCR2

  S Saha, FK Sano, S Sharma, M Ganguly, S Saha, H Akasaka, T Kobayashi, N Zaidi, S Mishra, A Dalal, S Mohapatra, M Yadav, Y Itoh, A Chevigne, R Banerjee, W Shihoya, O Nureki, AK Shukla ***(Under revision) (Joint first author)***

- Molecular insights into dual-agonism and biased-signaling at the C-X-C type chemokine receptors CXCR3 and CXCR7
  S Saha, FK Sano, S Sharma, P Sarma, M Ganguly, H Akasaka, T Kobayashi, N Zaidi, S Mishra, A Dalal, Y Itoh, R Leurs, GD Jhingan, R Banerjee, W Shihoya, O Nureki, AK Shukla ***(Under revision) (Joint first author)***

- Molecular mechanism of distinct chemokine engagement and functional divergence of the human Duffy antigen receptor
  S Saha, B Khanppnavar, J Maharana, H Kim, CMC Carino, C Daly, S Houston, P Kumari, PN Yadav, B Plouffe, A Inoue, KY Chung, R Banerjee, VM Korkhov, AK Shukla ***(Joint first author)***
  Cell 187, 1-19

- Molecular basis of anaphylatoxin binding, activation, and signaling bias at complement receptors
  MK Yadav, J Maharana, R Yadav, **S Saha**, P Sarma, C Soni, V Singh, S Saha, M Ganguly, XX Li, S Mohapatra, S Mishra, H Khant, M Chami, T Woodruff, R Banerjee, AK Shukla, C Gati ***(Joint first author)***
  Cell 186 (22), 4956-4973. e21

- Structural snapshots uncover a lock-and-key type conserved activation mechanism of β-arrestins by GPCRs
  J Maharana, P Sarma, MK Yadav, S Saha, V Singh, **S Saha**, M Chami, R Banerjee, AK Shukla
  Molecular cell 83 (12), 2091-2107. e7

- Making the switch: The role of Gq in driving GRK selectivity at GPCRs.
  P Sarma, **S Saha**, AK Shukla
  Science Signaling 15 (726), eabo4949

- In-cellulo chemical cross-linking to visualize protein-protein interaction
  S Saha, A Ranjan, M Godara, AK Shukla
  Methods in Cell Biology 169, 295-307

- Transmitting the Signal: Structure of the β1-Adrenergic Receptor-Gs Protein Complex
  S Pandey, **S Saha**, AK Shukla
  Molecular Cell 80 (1), 3-5, 2020

- The Inside Story: Crystal Structure of the Chemokine Receptor CCR7 with an Intracellular Allosteric Antagonist
  S Saha, AK Shukla
  Biochemistry 59 (1), 12-14, 2019

EXTRA CURRICULAR

Courses	**Python for Everybody Specialization**: Programming for Everybody **|** Python Data Structures **|** Using Python to Access Web Data **|** Using Databases with Python **|** Capstone: Retrieving, Processing, and Visualizing Data with Python *(University of Michigan)*
YouTube	Created video lectures on the basic concepts of various laboratory techniques.