RESUME

PARISHMITA SARMA

Ph.D. student,
Department of Biological Sciences and Bioengineering
Indian Institute of Technology, Kanpur

A highly motivated, passionate, hard-working researcher currently working as a senior research fellow in Ph.D. programme in GPCR Biology lab, IIT Kanpur. My Ph.D. project is primarily focused on understanding the intricacies of GPCR signaling, with a detailed emphasis on deciphering the molecular basis of bias signaling. I have made significant contributions in various high impact projects in the field of GPCR biology. In the upcoming years, my goal is to broaden my research area in understanding the molecular basis of cell signaling in a disease-related context with the ultimate goal of contributing towards the development of better therapeutics.

Education:

Doctor of Philosophy, Cell Signaling and Structural Biology — **July 2019-Present**
Indian Institute of Technology, Kanpur — CPI: 7.5/10
Uttar Pradesh

Master of Science (M.Sc.), Botany — **Completed, August 2018**
Gauhati University, Guwahati — CPI: 8.69/10
Kamrup(M), Assam

Bachelor of Science, Botany — **Completed, July 2016**
B. Barooah College, Gauhati University — CPI: 8.8/10
Kamrup(M), Assam

Higher Secondary, Physics, Chemistry, Biology — **Completed, May 2013**
Jigyas Academy, — Percentage: 79.2%
Kamrup, Assam

High School Leaving Certificate — **Completed, June 2011**
JNV Rangia, Kamrup, Assam — CPI: 8.4/10

Work Experience:

Graduate student
July 2019-Current
Indian Institute of Technology, Kanpur
Uttar Pradesh

Thesis advisor: Prof. Arun K. Shukla

M.Sc. Dissertation
January 2018-June 2018
Gauhati University, Guwahati
Kamrup(M), Assam

Dissertation advisor: Prof. Bhaben Tanti

Dissertation Title: "Effect of aluminium toxicity and phosphorus deficiency on proximate composition and antioxidant activity in some traditional rice landraces of Assam, India

Awards and Achievements

- All India Rank 515 [Examination: GATE (Graduate Aptitude Test in Engineering), Year:2019, Subject: Life Sciences].
- DBT-JRF in Biotechnology (Under Category I) [Examination: Biotechnology Eligibility Test by Biotech Consortium India Limited), Year: 2019,Subject: Biotechnology].
- All India Rank 38 [Examination: CSIR-LS NET (CSIR-UGC Junior Research Fellowship & Eligibility for Lectureship (NET)), Year: 2020, Subject: Life Sciences].
- State Level Eligibility Test [Examination: SLET (SLET Commission), Year: 2019,Subject: Life Sciences]

Conference Proceedings

11^{th} – 16^{th} June 2023, Poster Presentation entitled "Why so different: The story of two chemokine receptors activated by a common ligand" at Molecular Pharmacology Gordon Research Conference,2023 held at Les Diablerets Conference Center in Les Diablerets, Vaud (fr), Switzerland.

Research Projects

- **PhD Projects**
  - Comprehensive characterization of GPCR-ACR pair.
  - To understand the mechanistic basis of βarr activation.
  - To emphasize the characterization of the pharmacological profiling of C3aR, C5aR1.

Skills

Mammalian cell culture: Maintenance of adherent HEK-293 cell lines, development of receptor-expressing stable cell lines, Chemical based transfection in adherent HEK293 cell lines.

Protein expression: *E.coli* based BL21, shuffle strains.

Protein purification: His-tag, GST-tag based affinity purification.

Chromatography: Affinity chromatography on manually packed resins.

Molecular Biology: Construct design, Cloning, Site directed mutagenesis.

Protein Chemistry: Protein cross-linking using chemical crosslinkers, Biotinylation.

Biochemical Assays: ELISA, Co-immunoprecipitation, Enzyme complementation-based reporter assays, Luciferease-based GloSensor assay, Luciferase-based Tango assay.

Cell Imaging: Confocal microscopy

General: UV-Vis spectroscopy, agarose gel electrophoresis, SDS-PAGE, Western Blotting.

Computational Skills: MS Office, Bio render, Pymol, Chimera, GraphPad Prism, Image Lab, Image J.

Publications

1. **Sarma P**, Carino CMC, Seetharama D, Pandey S, Dwivedi-Agnihotri H, Rui X, Cao Y, Kawakami K, Kumari P, Chen YC, Luker KE, Yadav PN, Luker GD, Laporte SA, Chen X, Inoue A, Shukla AK. Molecular insights into intrinsic transducer-coupling bias in the CXCR4-CXCR7 system. **Nature Communications**. 2023 Aug 9;14(1):4808.

2. Maharana J*, **Sarma P***, Yadav MK, Saha S, Singh V, Saha S, Chami M, Banerjee R, Shukla AK. Structural snapshots uncover a key phosphorylation motif in GPCRs driving β-arrestin activation. **Molecular Cell**. 2023 Jun 15;83(12):2091-2107.e7. **(Joint 1st author)**.
   This article was featured on the cover page of the journal.

3. Yadav MK*, Maharana J*, Yadav R*, Saha S*, **Sarma P***, Soni C, Singh V, Saha S, Ganguly M, Li XX, Mahapatra S, Mishra S, Khant HA, Chami M, Woodruff TM, Banerjee R, Shukla AK and Gati C. Molecular basis of anaphylatoxin recognition, activation, and signaling-bias at complement receptors. **Cell** (in press). 2023. **(Joint 1st author)**.

4. Yadav MK*, **Sarma P***, Ganguly M, Mishra S, Maharana J, Zaidi N, Dalal A, Singh V, Saha S, Mahajan G, Sharma S, Chami M, Banerjee R, Shukla AK. Structure-guided engineering of biased-agonism in the human niacin receptor via single amino acid substitution. 2023. **(Manuscript under review)**. **(Joint 1st author)**.

5. Maharana J*, Sano FK*, **Sarma P***, Yadav MK, Duan L, Stepniewski TM, Chaturvedi M, Ranjan A, Singh V, Saha S, Mahajan G, Chami M, Shihoya W, Selent J, Chung KY, Banerjee R, Nureki O, Shukla AK. Molecular insights into atypical modes of beta-arrestin interaction with seven transmembrane receptors. 2023. **(Manuscript under review)**. **(Joint 1st author)**.

6. Isaikina P, Petrovic I, Jakob RP, **Sarma P**, Ranjan A, Baruah M, Panwalkar V, Maier T, Shukla AK, Grzesiek S. A key GPCR phosphorylation motif discovered in arrestin2·CCR5 phosphopeptide complexes. **Molecular Cell**. 2023 Jun 15;83(12):2108-2121.e7.

7. **Sarma P**, Shukla AK. Resonating with the signaling bias of CXCR7. **Molecular Cell**. 2022 Sep 15;82(18):3318-3320.

8. **Sarma P**, Banerjee R, Shukla AK. Structural snapshot of a β-arrestin-biased receptor. **Trends in Pharmacological Sciences**. 2023 Jan;44(1):1-3.

9. Baidya M, Chaturvedi M, Dwivedi-Agnihotri H, Ranjan A, Devost D, Namkung Y, Stepniewski TM, Pandey S, Baruah M, Panigrahi B, **Sarma P**, Yadav MK, Maharana J, Banerjee R, Kawakami K, Inoue A, Selent J, Laporte SA, Hébert TE, Shukla AK. Allosteric modulation of GPCR-induced β-arrestin trafficking and signaling by a synthetic intrabody. **Nature Communications.** 2022 Aug 8;13(1):4634.

10. Maharana J, Banerjee R, Yadav MK, **Sarma P**, Shukla AK. Emerging structural insights into GPCR-β-arrestin interaction and functional outcomes. **Current Opinion in Structural Biology**. 2022 Aug;75:102406.

11. **Sarma P**, Saha S, Shukla AK. Making the switch: The role of Gq in driving GRK selectivity at GPCRs. **Science Signaling**. 2022 Mar 22;15(726):eabo4949.

12. Maharana J, **Sarma P**, Shukla AK. Scratching the itch with cryo-EM. **Nature Chemical Biology**. 2022 Mar;18(3):242-243.

Personal Details

Gender: Female
Date of Birth: 4th October 1994
Mobile: +918011892684
Email: parishmitasarma94@gmail.com, paris@iitk.ac.in

Address Details

Residence:
02, Saptarshi Path,
Japarigog Krishnanagar, Guwahati,
Assam-781005

Office:
Lab3, BSBE Department,
Indian Institute of Technology, Kanpur
Uttar Pradesh-208016

I, Parishmita Sarma, hereby declare that the information contained herein is true and correct to the best of my knowledge and belief.

Parishmita Sarma