

Saptarshi Maji, PhD

Post-doctoral fellow

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Education

- 2018 – 2024 Ph. D. scholar in Department of Biological Sciences (DBS), **IISER Kolkata**.
- 2013 – 2018 BS-MS dual degree in Biological Sciences, **DBS, IISER Kolkata**, CGPA **8.09/10**.
- 2013 Higher Secondary Examination, XIIth standard, **WBCHSE Board**, Scored **89%** in science.
- 2011 Secondary Examination, Xth standard, **WBBSE Board**, Scored **95%** in science.

Research Experiences

Post-doctoral experience

- 2024 – Curr Understanding the role of metals in skin barrier formation, under supervision of **Dr. Amanda Patel** and **Prof. Bruno Antonny**, IPMC-CNRS, France.

Doctoral thesis

- 2018 – 2024 Functional and Temporal characterisation of Wilson Disease Protein ATP7B at the Lysosomes, under supervision of **Dr. Arnab Gupta**, DBS, IISER Kolkata.

Master's thesis

- 2017 – 2018 Regulatory mechanism of copper transporters hCTR1 and ATP7B for maintaining copper homeostasis, under supervision of **Dr. Arnab Gupta**, DBS, IISER Kolkata.

Summer Internships

- Summer 2016 Over Expression and Purification of Recombinant PCBP2 Protein to Generate Antibody and Study Its Interaction with Coxsackie virus B3 RNA, under supervision of **Prof. Saumitra Das**, Molecular and Cellular Biology, Indian Institute of Science (IISc) Bangalore.
- Summer 2015 Survey of Endosymbiont Infection among Indian Arthropods, under supervision of **Dr. Rhitoban RayChoudhury**, Department of Biological Sciences, IISER Mohali.
- Summer 2014 Preventing Racemization of Chiral Schiff-base Ligands and Cu(II) Complexes in Solution to synthesize new architecture for chiral recognition, under supervision of **Prof. Manabendra Ray**, Department of Chemistry, Indian Institute of Technology (IIT) Guwahati.

Semester Projects

- Spring 2016 Effect of sleep pattern on Mental Health and Cognitive abilities among college students of IISER Kolkata, a statistical survey.
- Autumn 2015 Preparing a statistical database of Micro-organisms present in different types soil and theoretical measurement of force exerted by flagella while rotating.
- Spring 2015 Evolutionary benefits of maintaining a constant flower-leaf ration among different species of plants.

Skills

Experienced with animal cell culture (2D, 3D, and co-culture), genetic engineering and CRISPR technology, general biochemistry and molecular biology techniques, super-resolution microscopy, multi-omics analysis, and lipid biochemistry.

Proficient in **ImageJ**, **R**, **PYTHON**, **MaxQuant**, **HTML**, **L^AT_EX**

Publications

- 1 Sharon Mary Jose*, **Saptarshi Maji***, Mrityika Paul, Aayatti Mallick Gupta, Arnab Gupta; **Comparative analysis of key Copper-ATPase domains sheds light on evolutionary divergence in human homologues ATP7A and ATP7B**, *Under revision*
- 2 **Saptarshi Maji**, Marinella Pirozzi, Ruturaj, Raviranjana Pandey, Tamal Ghosh, Santanu Das, Arnab Gupta; **Copper-independent lysosomal localization of the Wilson disease protein ATP7B**, *Traffic* (2023)
- 3 Basudeb Mondal*, Abinash Padhy*, **Saptarshi Maji***, Arnab Gupta, Sayam Sen Gupta; **Dual stimulative cross-linked nanoassemblies from an amphiphilic mannose-6-phosphate based tri-block copolymer for lysosomal membrane permeabilization**, *Biomater. Sci.* (2023)
- 4 Sumanta Kar*, Samarpita Sen*, **Saptarshi Maji**, Deepashri Saraf, Ruturaj, Rupam Paul, Sohini Dutt, Basudeb Mondal, Enrique Rodriguez-Boulan, Ryan Schreiner, Durba Sengupta, Arnab Gupta; **Copper(II) import and reduction are dependent on His-Met clusters in the extracellular amino terminus of human copper transporter-1**, *J. Biol. Chem.* (2022)
- 5 Santanu Das, **Saptarshi Maji***, Ruturaj*, Indira Bhattacharya, Tanusree Saha, Nabanita Naskar, Arnab Gupta; **Retromer retrieves the Wilson disease protein ATP7B from endolysosomes in a copper-dependent manner**, *J. Cell Sci.* (2020)
- 6 Taniya Mandal*, Sumanta Kar*, **Saptarshi Maji***, Samarpita Sen*, Arnab Gupta; **Structural and Functional Diversity Among the Members of CTR, the Membrane Copper Transporter Family**, *J. Membr. Biol.* (2020)
- 7 Subhendu Kumar Chatterjee*, Sumanta Kar*, Siddhanta Nikte*, Tisha Dash*, **Saptarshi Maji**, Tanmoy Ghosh, Durba Sengupta, Bidisha Sinha, Arnab Gupta; **Non-canonical regulation of the plasma membrane copper transporter CTR1 through modulation of membrane mechanical properties**, (*pre-print*)
- 8 Rupam Paul, Adrija Chakrabarty, Suman Samanta, Swastika Dey, Raviranjana Pandey, **Saptarshi Maji**, Aidan T. Pezacki, Christopher J. Chang, Rupak Datta, Arnab Gupta; **Leishmania major-induced alteration of host cellular and systemic copper homeostasis drives the fate of infection**, *Commun. Biol.* (2024)
- 9 Ruturaj, Monalisa Mishra, Soumyendu Saha, **Saptarshi Maji**, Enrique Rodriguez-Boulan, Ryan Schreiner, Arnab Gupta; **Regulation of apico-basolateral trafficking polarity of homologous Copper-ATPases ATP7A and ATP7B**, *J. Cell Sci.* (2023)
- 10 Kaustav Chakraborty, Santanu Das, Anusree Pal, **Saptarshi Maji**, Bhawana Rai, Arnab Gupta, Ashima Bhattacharjee; **Wilson disease-causing mutations in the carboxyl terminus of ATP7B regulates its localization and Golgi exit selectively in the unpolarized cells**, *Metallomics* (2023)
- 11 Santanu Das, Ameena Mohammed, Taniya Mandal, **Saptarshi Maji**, Jay Verma, Ruturaj, Arnab Gupta; **Polarized trafficking and copper transport activity of ATP7B: A mutational approach to establish genotype–phenotype correlation in Wilson disease**, *Hum. Mutat.* (2022)
- 12 Rupam Paul, Sourav Banerjee, Samarpita Sen, Pratiksha Dubey, **Saptarshi Maji**, Anand K Bachhawat, Rupak Datta, Arnab Gupta; **A novel leishmanial copper P-type ATPase plays a vital role in parasite infection and intracellular survival**, *J. Biol. Chem.* (2021)
- 13 Moumita Maji, Sourav Acharya, **Saptarshi Maji**, Kallol Purkait, Arnab Gupta, Arindam Mukherjee; **Differences in Stability, Cytotoxicity, and Mechanism of Action of Ru(II) and Pt(II) Complexes of a Bidentate N₂O Donor Ligand**, *Inorg. Chem.* (2020)

*equal contribution

Professional activity

Reviewer at Cell Biology and Toxicology, Springer Nature

Member of American Society for Cell Biology (ASCB)

Professional Collaborators

Dr. Arnab Gupta, Associate Professor, DBS, IISER Kolkata, India

Dr. Soumik Siddhanta, Associate Professor, DCS, IIT Delhi, India

Dr. Aayatti Mallick Gupta, NPDF Fellow, DBS, IISER Kolkata, India

Teaching Experiences

2018-2024 Mentored several summer intern, undergraduate and fresh graduate students during PhD tenure

2023 Student mentor of **iGEM 2023 IISER Kolkata Undergrad Team**

June, '22 Module Instructor of **Microscopy and Image analysis** for **Karyashala (Workshop)** on advanced bio-analytical methods and applications (**BAW-2022**)

Autumn, '22 Teaching Assistant for 3rd year BSMS Students for the **Cell Biology and Imaging Laboratory**

Autumn, '19 Teaching Assistant for 4th year BSMS Students for the **Advanced Physiology** course

Autumn, '17 Teaching Assistant for 1st year BSMS Students for the **Basic Life Sciences** course

Fellowships and Awards

2023 International Travel Scholarship by **SCIENCE & ENGINEERING RESEARCH BOARD (SERB)**
International Travel Scholarship by Research and Development, IISER Kolkata

Camillo Golgi best poster award in the **Organelle Biogenesis & Membrane Trafficking conference (OBMT) 2023, NBRC**

Gold Medal for IISER Kolkata Team in the **iGEM Grand Jamboree 2023, Paris expo, France**

2020-2023 Joint **CSIR-UGC NET SRF scholarship** by Govt. of India

2018-2020 Joint **CSIR-UGC NET JRF scholarship** by Govt. of India

2013-2018 **INSPIRE Fellowship** by Department of Science and Technology, Govt. of India

Conferences

2024 Invited as **guest speaker** in **Amity Institute of Biotechnology, Amity University, Kolkata, India**

2023 Selected for **poster presentation** in **Cell Bio 23** organised by **ASCB|EMBO, Boston, USA**

Selected for **poster presentation** in **OBMT 2023 conferenc, NBRC, India**

Selected for **oral presentation** in **Organellar Channels and Transporters Gordon Research Conference 2023, Barcelona, Spain**

Selected for **poster presentation** in **Frontiers in Modern Biology (FiMB), IISER Kolkata**

2022 Selected for **poster presentation** in **91st annual meeting of Society of Biological Chemists**

Selected for **oral presentation** in **Society of Biological Chemists (I) Kolkata chapter**

2021 Attended **Molecular Membrane Biology meeting, Online**

2020 Selected for **International Symposium on Cell Surface Macromolecules, IISER Pune**

2019 Selected for **Multiscale Simulation & Mathematical Modelling of Complex Biological Systems** conference and pre-conference workshop, **JNU**

2018 Selected for **poster presentation** in **Frontiers in Modern Biology (FiMB), IISER Kolkata**

2017 Attended **Advances in Biological Sciences, IISER Kolkata**

2015 Attended **Frontiers in Modern Biology (FiMB), IISER Kolkata**

2013 Attended **SPIE winter school on bio-photonics, IISER Kolkata**

2011 Selected in **DST-INSPIRE science camp internship** during high school grade

Extracurricular Activities

Member of **International Relation and Outreach (IRO)**, IISER Kolkata

Guest Editor and **content writer** of '**Cogito137**', science communication magazine of IISER Kolkata

Founder member of '**Art for a Cause**', an NGO that provided aid to Covid affected people

Organiser and **Volunteer** of several conferences in **IISER Kolkata**

Write poems and short stories in Bengali. Acted as **editor** in several literary magazines
