

# 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, XII<sup>th</sup> standard, **WBCHSE Board**, Scored **89%** in science.
- 2011 Secondary Examination, X<sup>th</sup> 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<sup>A</sup>T<sub>E</sub>X**

## 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**, *pre-print*
- 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 Raviranjana Pandey, Arpan Narayan Roy, Sandip Sarkar, Rakiba Rohman, Kaustav Chakraborty, Rupa Bargakshatriya, Sanjana Pandey, Pruthwiraj, Debosmita Bhattacharya, Saurav Kumar, **Saptarshi Maji**, Aidan T Pezacki, Sumit K Pramanik, Christopher J Chang, Ashima Bhattacharjee, Neelanjana Sengupta, Amitava Das, Arnab Gupta; **Repurposing Melatonin in dual-mode for Wilson disease therapy as a Copper Chelator and an antioxidant agent**, *pre-print*
- 8 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*
- 9 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)
- 10 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)
- 11 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)
- 12 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)
- 13 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)
- 14 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 N<sub>2</sub>O 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 3<sup>rd</sup> year BSMS Students for the **Cell Biology and Imaging Laboratory**

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

**Autumn, '17** **Teaching Assistant** for 1<sup>st</sup> 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 **91<sup>st</sup> 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

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## 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

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