

## **Abhijit Chakrabarti**

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**Education** : Ph.D in Biochemistry, 1990 (Indian Institute of Science, Bengaluru).

### **Positions / Memberships :**

Senior Professor, Crystallography & Molecular Biology Division, Saha Institute of Nuclear Physics (SINP), till April 2022.

Senior Professor & Head, Crystallography & Molecular Biology Division, SINP, till March 2020.

Visiting Professor, School of Biological Science, RKMVERI, from July 2020 – April 2022.

Prof. – in – Charge, Promotion of Faculty members in the Scientific category, SINP, April 2019 – 2022.

Professor, Chemical Science & Life Science in Homi Bhabha National Institute (HBNI).

Life Member, Indian Biophysical Society.

Life Member, Indian Crystallographic Association.

Life Member, Indian Society for Mass Spectrometry.

Member, The National Academy of Sciences, India.

External Expert Member, Board of Studies, Department of Integrated Science Education and Research, Shiksha Bhavana (Institute of Science), Visva-Bharati, April 2014 – 2018.

Dean-Academic (Biological & Chemical Sciences), HBNI, November 2015 – 2018.

Member, Board of Research in Nuclear Sciences (BRNS), BRNS-Committees on DAE Programs (CDP-8 for Basic Research & Science Education), October 2018 – July 2020.

Member, Board of Studies (Life Science), HBNI, July 2015 – 2022. Co-convener from August 2020.

Editor, Journal of Proteins and Proteomics (A PSI Journal from 2016), from 2009.

Member, Executive Council of Kalyani University, April 2016 – 2020.

Member, Governing Body of the West Bengal State Council of Biotechnology & Kolkata Biotech Park Committee, from October 2011.

Member, Research Fellowship Award & Research Grant Award Committee, Department of Science & Technology, Govt. of West Bengal, from October 2016.

External Expert, Board of Research Study in the Faculty of Science, Vidyasagar University, September 2016 – 2024.

Member, The Proteomics Society – India, January 2016 – December 2021.

Nominee of West Bengal Government & Council of Higher Education, Maharaja Srischandra College, August 2011 – March 2022.

Member, Board of Studies of the School of Biological Sciences of Ramakrishna Mission Vivekananda Educational & Research Institute (RKMVERI) Deemed University. Belur, Howrah, West Bengal from February 2020.

Member, Advisory Board on Medical Laboratory Technology under the School of Biological Sciences of RKMVERI, August 2021.

Member, Governing Council, Institute of Developmental Studies, from April 2022.

**Teaching :**

Common course on Biophysical Principles & Analytical Techniques (CBT 102, 3 credit, 50 lecture hours) to the M.Sc. 1<sup>st</sup> Semester students of both Medical & Agricultural Biotechnology in RKMVERI, from September 2020.

Part course on Omics: Proteomics (CBT 202, 3 credit, 12 lecture hours) to the M.Sc. 2<sup>nd</sup> Semester students of both Medical & Agricultural Biotechnology in RKMVERI, from April 2021.

Part course on Clinical Biochemistry & Disease Metabolim (MBT 302, 3 credit, 12 lecture hours) to the M.Sc. 3<sup>rd</sup> Semester students of Medical Biotechnology in RKMVERI, from November 2021.

Co-ordinator, Emerging Trends in Biophysics, (ETB2021, 6 credit, 65 lecture hours), Saha Institute of Nuclear Physics & Homi Bhabha National Institute, August – November, 2021.

### **Area of Interest :**

**Membrane Biophysics** (Organization, transbilayer asymmetry and distribution of cell surface membrane proteins and lipids)

**Protein aggregation & artificial chaperone** (chaperone-activity, effects of metal ions, hemoglobin variants, globin chains, implications in hemoglobinopathy, flavonoids and anthocyanins from medical plants, ayurvedic substances)

### **Publications of Thesis**

1. Membrane and spectrin interactions of heme and hemoproteins, Debashree Das, awarded with Ph.D from Calcutta University, March 2017.
2. Chaperone activity of spectrin : Molecular origin of specificity, Dipayan Bose, awarded with Ph.D from Homi Bhabha National Institute, January 2020.

### **List of published papers :**

1. Dipayan Bose, Santanu Aggarwal, Debashree Das, Chandravar Narayana & *Abhijit Chakrabarti*. (2022). Erythroid spectrin binding modulates peroxidase and catalase activity of heme proteins. *IUBMB Life* **74**, 474 – 487.
2. Sreetama Pal, Dipayan Bose, *Abhijit Chakrabarti* & Amitabha Chattopadhyay (2022) Comparative analysis of tryptophan dynamics in spectrin and its constituent domains : Insights from fluorescence. *J Phys Chem B*. **126**, 1045 – 1053.
3. Akriti Mishra, Kamini Mishra, Dipayan Bose, *Abhijit Chakrabarti* & Puspendu K. Das. (2021) Thermodynamics of adsorption of alcohol dehydrogenase on gold nanoparticle surface: a model based analysis versus direct measurement. *Phys Chem Chem Phys*. **23**, 24365.
4. *Abhijit Chakrabarti* (2021) Phospholipid asymmetry in biological membranes : is the role of phosphatidylethanolamine underappreciated ? *The J Membrane Biol*. **254**, 127 – 132.
5. Sushanta Debnath & *Abhijit Chakrabarti* (2021) Effects of free soluble Iron on thermal aggregation of hemoglobin. *Biophys Chem* **269**, 106527.
6. Dipayan Bose, Sk Ramiz Islam, Sutapa Saha & *Abhijit Chakrabarti*. (2020) Spectrin interactome under normal and HbE disease conditions. *J Protein Proteomics*. **11**, 233 – 240.
7. Dipayan Bose & *Abhijit Chakrabarti* (2020) Multiple functions of spectrin: convergent effects. *The J Membrane Biol*. **253**, 499-508.

8. Dipayan Bose & *Abhijit Chakrabarti* (2019) Chaperone potential of erythroid spectrin : effects of hemoglobin interaction, macromolecular crowders, phosphorylation and glycation. *BBA Proteins & Proteomics* **1867**(11) 140267.
9. Dipayan Bose & *Abhijit Chakrabarti* (2019) Localizing the chaperone activity of erythroid spectrin. (2019) *Cytoskeleton* **76**, 383 – 397.
10. Dipayan Bose & *Abhijit Chakrabarti* (2019) Probing the chaperone activity of erythroid spectrin. *Biophys J.* **116**, 191a.
11. Sauvik Sarkar, Dipayan Bose, Rajendra Giri, Mrinmay Mukhopadhyay & *Abhijit Chakrabarti* (2019) Effects of GM1 on brain spectrin aminophospholipid interactions. *Biochim Biophys Acta* **1861**, 298 – 305.
12. Sauvik Sarkar, Dipayan Bose, Rajendra Giri, Mrinmay Mukhopadhyay, *Abhijit Chakrabarti* (2018) Status of membrane asymmetry in erythrocytes : role of spectrin. *Adv. Exp. Ed. Biol.* **1112**, 3 – 11.
13. RP Giri, Mrinmay K Mukhopadhyay, Uttam K Basak, *Abhijit Chakrabarti*, Milan K Sanyal, B Runge and BM Murphy (2018) Continuous uptake or saturation - Investigation of concentration and surface-packing-specific hemin interaction with lipid membranes. *J Phys Chem B.* **122**, 7547 – 7554.
14. Debashree Das, Pradip Tarafdar & *Abhijit Chakrabarti* (2018) Structure-activity relationship of heme and its analogues in membrane damage and inhibition of fusion. *FEBS Lett.* **592**, 2458 – 2465.
15. Sushanta Debnath, Bikram Nath & *Abhijit Chakrabarti* (2017) Flow cytometric analysis of protein aggregates. *Protein & Peptide Letters* **24**(10), 969 – 973.
16. Kamini Mishra, *Abhijit Chakrabarti* and Puspendu K. Das (2017) Protein-protein Interaction probed by label-free second harmonic light scattering: hemoglobin adsorption on spectrin surface as a case study. *J Phys Chem B* **121**, 7797 - 7802.
17. Dipayan Bose & *Abhijit Chakrabarti* (2017) Substrate specificity in the context of molecular chaperones. *IUBMB Life* **69**, 647 – 659.
18. RP Giri, MK Mukhopadhyay, M Mitra, *A Chakrabarti*, MK Sanyal, SK Ghosh, Y Ma, SK Sinha, S Bera & LB Lurio (2017) Differential adsorption of a membrane skeletal protein, spectrin in phospholipid membranes. *Europhysics Letters* **118**, 58002.
19. Shilpita Karmakar, Debasis Banerjee & *Abhijit Chakrabarti* (2017) Platelet proteomics in chronic myelogenous leukemia. *Int J Blood Disorders Dis.* **1**, 1-6.

20. Rajendra Giri, *Abhijit Chakrabarti* & Mrinmay Mukhopadhyay (2017) Cholesterol Induced Structural Changes in Saturated Phospholipid Model Membranes Revealed Through X-Ray Scattering Technique. *J Phys Chem B.* **121**, 4081 – 4090.
21. Dipayan Bose, Malay Patra & *Abhijit Chakrabarti* (2017) Effect of pH on conformational stability, oligomerization and dynamics of erythroid and nonerythroid spectrin. *BBA Proteins & Proteomics* **1865**, 694 – 702.
22. Anindita Das, *Abhijit Chakrabarti* and Puspendu K. Das (2017) Enzyme adsorption on nanoparticle surface probed by highly sensitive second harmonic light scattering. *Methods Enzymol.* **590**, 33 – 58.
23. Malay Patra, Manoj Mandal, *Abhijit Chakrabarti* and Chaitali Mukhopadhyay (2017) Localization and dynamics of the anticarcinogenic Curcumin with GM<sub>1</sub> and other micellar assemblies. *Glycoconjugate J.* **34**, 171 – 179.
24. Debashis Das, Dibyendu Samanta, Arpita Bhattacharya, Arunima Basu, Anindita Das, Jaydip Ghosh, *Abhijit Chakrabarti* & Chanchal Das Gupta (2017) A possible role of the full length nascent protein in post translational ribosome recycling. *PLoS One* **12**, e0170333.

**Visit to other Institutes:**

ISIS Facility, Rutherford Appleton Laboratory, Harwell Science & Innovation campus, Didcot OX11 0QX, UK, during March 20 – 28, 2019, performing polarized neutron reflectivity experiment to study lipid protein interactions using recombinant spectrin.

*Average Impact Factor is 3.0 for 122 papers (IF 2020). h-index is 26 as on June 2022. Total citation ~2100.*

*Attended and presented papers in 115 National / International conferences and delivered 96 invited lectures.*