

**SANDIP BASAK, PhD**

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### Employments

**April 2022-present** Nanyang Assistant Professor, Nanyang Technological University, Singapore

**Mar 2022-present** NRF Fellow, Nanyang Technological University, Singapore

**Mar 2021-Mar 2022** Assistant Professor, Nanyang Technological University, Singapore

Project: Structural and functional characterization of Ligand Gated Ion Channels.

**Dec 2014-Feb 2021** Postdoctoral Scholar (Advisor: Prof. Sudha Chakrapani) at Case Western Reserve University, Cleveland, Ohio, USA

Project: Characterization of Ligand Gated Ion Channels using multi-disciplinary techniques including very sophisticated instrument Cryo-electron microscope.

**June 2014-Dec 2014** Research Fellow (Advisor: Dr. Antonina Roll-Mecak) at National Institutes of Health, NINDS, Bethesda, USA

Project: Structure and function of TTLL3, a microtubule severing protein.

**Aug 2013-May 2014** Research Associate (Advisor: Prof. Gerhard Grüber) at School of Biological Sciences, Nanyang Technological University, Singapore

Project: Structural characterization of DF-heterodimer of the yeast V-ATPase.

### Education

**2009-2014** Ph.D. in Biochemistry, Biophysics and Structural Biology (Advisor: Prof. Gerhard Grüber), School of Biological Sciences, Nanyang Technological University, Singapore.

**2007-2009** M.Pharm in Pharmaceutics (Advisor: Prof. Biswajit Mukherjee), Jadavpur University, Kolkata, India

**2003-2007** B.Pharm in Pharmacy, Jadavpur University, Kolkata, India

### Affiliations

**2024-present** Society of General Physiologists

**2017-present** Member of Electron Microscope Society of India (EMSI)

**2015-present** Member of Biophysical Society (2015-present).

**2015-2018** Member of American Heart Association

### Honors & Awards

**2022** Prestigious Singapore NRF fellowship

**2021-present** Topical advisory panel member of Membranes (Open Access Journal from MDPI)

**2018** 1<sup>st</sup> position in poster presentation during 17<sup>th</sup> Annual DPB retreat, Case Western Reserve University, Cleveland, USA.

**2017-2019** Postdoctoral fellowship, American Heart Association.

**2017-present** Reviewer, Journal of General Physiology, Drug Development Research, International Journal of Pharmaceutics, and Critical Reviews in Analytical Chemistry, British Journal of Pharmacology etc.

**2017** 2<sup>nd</sup> position in poster presentation during 16<sup>th</sup> Annual DPB retreat, Case Western Reserve University, Cleveland, USA.

**2016** 1<sup>st</sup> position in poster presentation during 15<sup>th</sup> Annual DPB retreat, Case Western Reserve University, Cleveland, USA.

**2015** Selected for the **author profile** in JBC journal.

([http://www.jbc.org/content/290/6/3183/suppl/DCAuthor\\_profile\\_SB](http://www.jbc.org/content/290/6/3183/suppl/DCAuthor_profile_SB)).

**2014** Received travel grant awarded by the 17th European Bioenergetics Conference organizing committee.

**2009-2013** Awarded Nanyang Technological University Research (Ph.D.) Scholarship

**2007** Secure >98 percentile in Graduate Aptitude test in Engineering (GATE), India.

**2007-2009** Awarded scholarship for M.Pharm. by University Grants Commission (UGC), India.

### Invited talks

**2024** Invited speaker, Cryo-EM structures of GLIC provide insights into gating in a lipid environment. February 2024. Invited talk at Case Western Reserve University, Cleveland, Ohio, USA.

**2024** Platform speaker, Biophysical Society 68<sup>th</sup> Annual Meeting, Philadelphia, USA, Cryo-EM structures of nanodisc reconstituted prokaryotic ligand-gated ion channel GLIC in various conformations reveal state-dependent protein-lipid interactions and gating mechanism.

**2020** Invited speaker, Gating mechanism of 5-HT<sub>3A</sub> receptor revealed by cryo-EM. NTU, Singapore

**2020** Biophysical Society 64<sup>th</sup> Annual Meeting, San Diego, USA. Elucidate the binding mechanism of various setrons to 5-HT<sub>3A</sub> receptor revealed by Cryo-EM

**2019** Invited speaker, Gating mechanism of 5-HT<sub>3A</sub> receptor revealed by cryo-EM. University of Pennsylvania, Department of Physiology, USA

**2019** Biophysical Society 63<sup>rd</sup> Annual Meeting, Baltimore, USA. Gating mechanism of 5-HT<sub>3A</sub> receptor revealed by Cryo-EM.

**2016** 15<sup>th</sup> Annual DPB retreat, Cleveland, USA. Crystal Structure of a Lipid-induced Desensitized State of a Pentameric Ligand-gated Channel.

### Conferences and workshops

**2024** Biophysical Society 68th Annual Meeting, Philadelphia, USA.

**2020** Biophysical Society 64th Annual Meeting, San Diego, USA.

**2019** Biophysical Society 63rd Annual Meeting, Baltimore, USA.

**2018** 17th Annual DPB retreat, Cleveland, USA.

**2018** CryoEM workshop, Arizona State University, Tempe, USA.

**2017** 16th Annual DPB retreat, Cleveland, USA.

**2017** The Third Coast Workshop on Biological Cryo-EM, Chicago, USA.

**2017** Biophysical Society 61st Annual Meeting, New Orleans, USA.

**2016** 15th Annual DPB retreat, Cleveland, USA.

**2015** NCMI Workshop on Single Particle Reconstruction (Cryo-EM), Structural Variability and Modelling, Houston, Texas, USA.

**2015** 14th Annual DPB retreat, Cleveland, USA.

**2012** The 17th European Bioenergetics Conference, Freiburg, Germany.

**2010** The 6th International Conference on Structural Biology and Functional Genomics, Singapore.

**2010** "Satellite meeting of the 15th International photosynthesis congress", Singapore.

**2008** 1st Pharm. Tech. IAPST International Conference on Drug Delivery and Drug Targeting Research, India.

### Selected publications

- Bharambe, N.,\* Li, Z.,\* Seiferth, D., Balakrishna, A. M. Biggin, P. and **Basak, S.** (2024) Cryo-EM structures of prokaryotic ligand-gated ion channel GLIC provide insights into gating in a lipid environment. [Nature communications](#), 15, 2967. \* Equal contribution
- Li, Z., Bharambe, N. and **Basak, S.** (2024) “*Structural insights into the 5-HT<sub>3A</sub> receptor revealed by cryo electron microscopy (cryo-EM)*”. Cryo-Electron Microscopy in Structural Biology. Taylor & Francis Publishing Group of CRC Press. (Accepted)
- **Basak, S.**, Kumar, A., Ramsey, S., Gibbs, E., Kapoor, A., Filizola, M. and Chakrapani, S. (2020) *High-resolution Structures of multiple 5-HT<sub>3A</sub>R-setron complexes reveal a novel mechanism of competitive inhibition*. [eLife](#). 9, e57870.
- **Basak, S.**, Gicheru, Y., Kapoor, Abhijeet., Mayer, M. L., Filizola, M. and Chakrapani, S. (2019) *Molecular mechanism of setron-mediated inhibition of full-length 5-HT<sub>3A</sub> receptor*. [Nature commun.](#) 10 (1), 3225.
- **Basak, S.**, Gicheru, Y., Rao, S., Sansom, M. and Chakrapani, S. (2018) *Cryo-EM reveals two distinct states along serotonin-mediated activation pathway of the full-length 5-HT<sub>3A</sub> receptor*. [Nature](#). 563, 270.
- **Basak, S.**, Gicheru, Y., Samanta, A., Molugu, S., Huang, W., Fuente, M. D. L., Hughes, T., Taylor, D., Nieman, M., Moiseenkova-Bell, V.Y. and Chakrapani, S. (2018) *Cryo-EM structure of 5-HT<sub>3A</sub> receptor in its resting conformation*. [Nature commun.](#) 9, 514.
- **Basak, S.**, Schmandt, N., Gicheru, Y. and Chakrapani, S. (2017) *Crystal structure and dynamics of a lipid-induced potential desensitized-state of a pentameric ligand-gated channel*. [eLife](#). 6:e23886.
- Balakrishna, A. M.<sup>1</sup>, **Basak, S.**<sup>1</sup>, Manimekalai, M. S. S. and Grüber, G. (2015) *Crystal structure of subunits D and F in complex give insight into energy transmission of the eukaryotic V-ATPase from Saccharomyces cerevisiae*\*. [J. Biol. Chem.](#) 290, 3183-3196. <sup>1</sup> Equal contributions.
- **Basak, S.**, Lim, J., Manimekalai, M. S. S., Balakrishna, A. M. and Grüber, G. (2013) *Crystal- and NMR structures give insights into the role and dynamics of subunit F of the eukaryotic V-ATPase from Saccharomyces cerevisiae*. [J. Biol. Chem.](#) 288, 11930-11939.
- **Basak, S.**, Gayen, S., Thaker, Y. R., Manimekalai, M. S. S., Roessle, M., Hunke, C. and Grüber, G. (2011) *Solution structure of subunit F (Vma7p) of the eukaryotic V<sub>1</sub>V<sub>0</sub> ATPase from*

*Saccharomyces cerevisiae* derived from SAXS and NMR spectroscopy. [Biochim. Biophys. Acta-Biomembranes](#) 1808, 360-368.

**Full publication list**

<https://www.ncbi.nlm.nih.gov/myncbi/1F57OV2BetYQi/bibliography/public/>