



# SOUMIK RAY

Postdoc,  
DTU Bioengineering

- February 8, 1993
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- Indian

## Languages

- Bengali (Native) ● ● ● ● ●
- English ● ● ● ● ●
- Hindi ● ● ● ● ●

## Expertise

- Fluorescence confocal microscopy
- Liquid-liquid phase separation
- Transmission Electron Microscopy
- FIDA
- Time resolved fluorescence
- Fluorescence anisotropy
- FRET
- FRAP
- In vitro protein chemistry
- Protein purification
- cloning

## Competencies

- Scientific writing
- Scientific collaboration
- Interpersonal skills
- Teaching skills
- Leadership

## Education

- April 2021 - Present **Post-Doctorate - Neuro-degenerative protein chemistry**  
Denmark Technical University, Denmark
- July 2015 - March 2021 **Doctorate - Neuro-degenerative protein chemistry**  
Indian Institute of Technology-Bombay, India
- Jul 2013 - May 2015 **Master degree M.Sc.Biochemistry** GPA: 8.8/10 (first div. w/t distinction)  
University of Hyderabad, India
- Jun 2010 - May 2013 **Bachelor degree- B.Sc.Microbiology** GPA: 7.88/10 (first division)  
St. Xavier's University, Calcutta, India

**Coursework:** Biophysical chemistry (adv), Molecular biology (adv), Fluorescence spectroscopy (adv), Cell biology (adv), Recombinant DNA technology, Immunology, Advanced microscopy, Bio-statistics (basic), Microbiology (adv).

## Experience

- April 2021 - Present **Post-Doctorate - Neuro-degenerative protein chemistry**  
Denmark Technical University, Denmark
- July 2015 - March 2021 PhD scholar at IIT-Bombay Mumbai
- Explored the thermodynamics of alpha-Synuclein liquid liquid phase separation at high throughput.
- Unravalled liquid-liquid phase separation and aberrant phase transition of alpha-synuclein and its implications in Parkinson's disease.
- Discovered the role of auto-inhibitory conformation of alpha-synuclein and its familial mutants upon binding to lipid membrane: a site specific study (manuscript under process)
- Elucidated the site-specific molecular mechanisms of aggregation at single condensate resolution for alpha-synuclein (manuscript under process)
- Extensive collaborations with NCBS-Bangalore, TIFR-Mumbai, IISER-Pune
- Supervised courses as teaching assistant for under graduate and post graduate students at IIT-Bombay.
- May 2014 - Apr 2015 **Master dissertation** Hyderabad, India  
University of Hyderabad

• Examined the role of a specific histidine point mutation in the co-chaperone activity of the mitochondrial protein-Mge-1, a GRPE homolog.

- Mar 2012 - Apr 2013 **Bachelor project** Kolkata, India  
St. Xavier's University-Calcutta
- Examined the aspects of mucor synergies in Xanthomonas sp.

## Awards

- 2020-21 **TNQ best life science paper from India finalist and Best research article award from IITB** (Certificate link)
- 2015 - 2020 GATE fellowship for Ministry of Human Resource and Development, India
- 2015 National Eligibility Test PhD. Council of Scientific and Industrial Research, India
- 2010 - 2015 INSPIRE fellowship award fellow Department of Science and Technology-India

## Conferences

- 2018 Participated and presented poster in the national conference on fluorescence correlation spectroscopy at IIT-Guwahati, India
- 2017 Participated and presented poster in the international conference on intrinsically disordered proteins: Functions and diseases at IISER-Mohali, India

## Sophisticated instrument experience

2021-Present Transmission Electron Microscopy-instrument operator  
2018-2020 Time-correlated single photon counting (TCSPC) spectroscopy-instrument operator

## Publications

- 2021 Sawner, A.‡, Ray, S.‡, et al. Modulating  $\alpha$ -synuclein liquid-liquid phase separation, *Biochemistry*, ‡ contributed equally (in press)
- 2021 Ray, S., Singh, N., Patel, K., Krishnamoorthy, G., and Maji, S.K., Characterizing  $\alpha$ -synuclein liquid-liquid phase separation, *Methods in molecular biology* (in press)
- 2021 Mahato, J.‡, Ray, S.‡, Maji, S.K., and Chowdhury, A. Spectrally-resolved FRET microscopy of  $\alpha$ -synuclein phase-separated liquid droplets, *Methods in molecular biology*. ‡Contributed equally (in press)
- 2020 Ray, S., Maji, S.K. Predictable phase-separated proteins. *Nature Chemistry* **12**, 787–789
- 2020 Ray, S., Singh, N., Kumar, R. et al.  $\alpha$ -Synuclein aggregation nucleates through liquid–liquid phase separation. *Nature Chemistry* **12**, 705–716
- 2020 K Sharma, S Mehra, A Singh Sawner, PS Markam, R Panigrahi, A Navalkar, D Chatterjee, R Kumar, P Kadu, K Patel, S Ray, A Kumar and SK Maji (2020), Effect of disease-associated P123H and V70M mutations on  $\beta$ -synuclein fibrillation. *ACS Chem Neuroscience* (in press)
- 2018 S Mehra, D Ghosh, R Kumar, M Mondal, LG Gadhe, S Das, A Anoop, NN Jha, RS Jacob, D Chatterjee, S Ray, N Singh, A Kumar, and SK Maji, Glycosaminoglycans have variable effects on  $\alpha$ -synuclein aggregation and differentially affect the activities of the resulting amyloid fibrils. *Journal of Biological Chemistry* **293**(34)
- 2018 GM Mohite, R Kumar, R Panigrahi, A Navalkar, N Singh, D Datta, S Mehra, S Ray, LG Gadhe, S Das, N Singh, D Chatterjee, A Kumar and SK Maji, Comparison of kinetics, toxicity, oligomers formation and membrane binding capacity of  $\alpha$ -synuclein familial mutations at A53 site including newly discovered A53V mutation. *Biochemistry*, **57**(35):5183-5187
- 2018 R Kumar, S Das, GM Mohite, SK Rout, S Halder, NN Jha, S Ray, S Mehra, V Agarwal and SK Maji, Cytotoxic oligomers and fibrils trapped in a gel-like state of  $\alpha$ -synuclein assemblies. *Angewandte Chemie International Edition*, **7**(19), 5262-5266

## References

(List of Referees-click to follow)