Stanford

Ahanjit Bhattacharya

Postdoctoral Scholar, Chemistry

Bio

BIO

Ahanjit Bhattacharya is a postdoctoral researcher in the lab of Steven Boxer at the Department of Chemistry. His core philosophy of research is "learning through building". Ahanjit carried out his doctoral research at the University of California San Diego. He worked on designing artificial cellular systems from fundamental building blocks. He also has a deep interest in understanding the origins and evolution of life. Ahanjit's major accomplishments are development of lipid compartments as programmable synthetic cells and organelles, and development of minimal biochemical strategies for synthesis of membrane-forming lipids. His experience with lipid materials inspired him to gain expertise in the area of membrane biophysics. Currently, Ahanjit is working on physical mechanisms of fusion of enveloped viruses with lipid membranes. He is also trying to understand structure-function relationships in complex archaeal lipids. He uses a host of biophysical tools which includes X-ray scattering, single particle microscopy, and electron microscopy. Ahanjit is passionate about communicating science and making it a transformational force for betterment of society and humanity.

HONORS AND AWARDS

- Biophysical Journal Postdoctoral Reviewer, Biophysical Society (2023)
- nano@stanford Mini Grant for Education and Outreach, Stanford University (2022)
- Stanford Postdoc Teaching Certificate, Stanford University (2022)
- Reaxys PhD Prize 2020 Finalist, Elsevier (2020)
- Luna Fung Scholarship, University of California San Diego (2019)
- Teddy Traylor Award 2018, University of California San Diego (2018)
- Prime Minister of India Gold Medal, Indian Institute of Technology Kharagpur (2014)

PROFESSIONAL EDUCATION

- Bachelor of Science, Indian Institute of Technology, Kharagpur (2014)
- Master of Science, Indian Institute of Technology, Kharagpur (2014)
- Doctor of Philosophy, University of California San Diego (2020)
- Doctor of Philosophy, University of California San Diego , Chemistry (2020)
- Integrated Master of Science, Indian Institute of Technology Kharagpur , Chemistry (2014)

STANFORD ADVISORS

- Steven Boxer, Postdoctoral Faculty Sponsor

Research & Scholarship

LAB AFFILIATIONS

- Steven Boxer, The Boxer Lab (9/1/2020)

Publications

PUBLICATIONS

- **Leveraging technology in public-private partnerships: a model to address public health inequities.** *Frontiers in health services*
  Arnaout, A., Oseguera-Arasmou, M., Mishra, N., Liu, B. M., Bhattacharya, A., Rhew, D. C.
  2023; 3: 1187306

- **Examining compositional variability of giant unilamellar vesicles via secondary ion mass spectrometry.** *Biophysical journal*
  Grusky, D. S., Bhattacharya, A., Boxer, S. G.
  2023; 122 (3S1): 81a

- **A fluorogenic method to directly observe transfer and distribution of influenza viral contents to target vesicles.** *Biophysical journal*
  Bhattacharya, A., Boxer, S. G.
  2023; 122 (3S1): 277a

- **Self-assembly and biophysical properties of archaeal lipids.** *Emerging topics in life sciences*
  Bhattacharya, A.
  2022

- **Functionalizing lipid sponge droplets with DNA** *ChemSystemsChem*
  Cho, C. J., Niderholtmeyer, H., Seo, H., Bhattacharya, A., Devaraj, N. K.
  2022

- **Expression of Fatty Acyl-CoA Ligase Drives One-Pot De Novo Synthesis of Membrane-Bound Vesicles in a Cell-Free Transcription-Translation System** *JOURNAL OF THE AMERICAN CHEMICAL SOCIETY*
  Bhattacharya, A., Cho, C. J., Brea, R. J., Devaraj, N. K.
  2021; 143 (29): 11235-11242

- **Enantioselective Total Synthesis of the Archaeal Lipid Parallel GDGT-0 (Isocaldarchaeol).** *Angewandte Chemie (International ed. in English)*
  Falk, I. D., Gál, B. n., Bhattacharya, A. n., Wei, J. H., Welander, P. V., Boxer, S. G., Burns, N. Z.
  2021

- **Enzyme-free synthesis of natural phospholipids in water** *NATURE CHEMISTRY*
  Liu, L., Zou, Y., Bhattacharya, A., Zhang, D., Lang, S. Q., Houk, K. N., Devaraj, N. K.
  2020; 12 (11): 1029-+

- **Lipid sponge droplets as programmable synthetic organelles** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
  Bhattacharya, A., Niederholtmeyer, H., Podolsky, K. A., Bhattacharya, R., Song, J., Brea, R. J., Tsai, C., Sinha, S. K., Devaraj, N. K.
  2020; 117 (31): 18206–15

- **Temperature-Dependent Reversible Morphological Transformations in N-Oleoyl beta-D-Galactopyranosylamine** *JOURNAL OF PHYSICAL CHEMISTRY B*
  Johnson, M., Bhattacharya, A., Brea, R. J., Podolsky, K. A., Devaraj, N. K.
  2020; 124 (26): 5426–33

- **Tailoring the Shape and Size of Artificial Cells** *ACS NANO*
  Bhattacharya, A., Devaraj, N. K.
  2019; 13 (7): 7396–7401

- **Single-Chain beta-D-Glycopyranosylamides of Unsaturated Fatty Acids: Self-Assembly Properties and Applications to Artificial Cell Development** *JOURNAL OF PHYSICAL CHEMISTRY B*
  Bhattacharya, A., Brea, R. J., Song, J., Bhattacharya, R., Sinha, S. K., Devaraj, N. K.
  2019; 123 (17): 3711–20

- **A minimal biochemical route towards de novo formation of synthetic phospholipid membranes** *NATURE COMMUNICATIONS*
  Bhattacharya, A., Brea, R. J., Niederholtmeyer, H., Devaraj, N. K.
  2019; 10: 300

- **Highly Stable Artificial Cells from Galactopyranose-Derived Single-Chain Amphiphiles** *JOURNAL OF THE AMERICAN CHEMICAL SOCIETY*
  Brea, R. J., Bhattacharya, A., Bhattacharya, R., Song, J., Sinha, S. K., Devaraj, N. K.
  2018; 140 (50): 17356–60

- **In Situ Lipid Membrane Formation Triggered by Intramolecular Photoinduced Electron Transfer** *LANGMUIR*
  Enomoto, T., Brea, R. J., Bhattacharya, A., Devaraj, N. K.
  2018; 34 (3): 750–55

- **De novo vesicle formation and growth: an integrative approach to artificial cells** *CHEMICAL SCIENCE*
  Bhattacharya, A., Brea, R. J., Devaraj, N. K.
  2017; 8 (12): 7912–22

- **Synthesis of functionalised azepanes and piperidines from bicyclic halogenated aminocyclopropane derivatives** *ORGANIC & BIOMOLECULAR CHEMISTRY*
  Chen, C., Kattanguru, P., Tomashenko, O. A., Karpowicz, R., Siemiaszko, G., Bhattacharya, A., Calasans, V., Six, Y.
  2017; 15 (25): 5364–72

- **Spontaneous Phospholipid Membrane Formation by Histidine Ligation** *SYNLETT*
  Brea, R. J., Bhattacharya, A., Devaraj, N. K.
  2017; 28 (1): 108–12

- **Polyaromatic label-assisted laser desorption ionization mass spectrometry (LA-LDI MS): a new analytical technique for selective detection of zinc ion** *RSC ADVANCES*
  Addy, P., Roy, S., Mandal, S., Basak, A.
  2014; 4 (44): 23314–18