

Faculty Details

Name: Prof N. Prakash Prabhu

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Area Of Research:Protein dynamics, folding and fibrillation: Spectroscopy and molecular dynamics simulation

Faculty Details

We are interested on the effect of osmolytes on protein structure, stability, and fibrillation propensity. We are also studying the effect of molecular crowding and confinement on the fibrillation of proteins. We are investigating these phenomena using spectroscopic and microscopic techniques. We also employ computational modeling and dynamic (MD) simulation to understand the molecular mechanisms behind these effects.

Our recent interests are cold-induced denaturation of proteins and liquid-liquid phase separation. We specially focus on the role of hydrophobic interactions on these phenomena.

ORCID

Google Scholar

Notice Board

No Records Available

Students And Project Trainees

Students/Projects Trainees

Name	Joined As	Mail	Contact
Pratibha Kushwaha	IoE PDF	---	---
Sanjay Kumar	PhD student	---	---
Subhasree Ghosh	PhD (submitted thesis)	---	---
Muzafar Ahmad Naikoo	PhD student	---	---
Priyanka G	PhD student	---	---
Jawahar Raj Eluri	PhD student	---	---
Venkanna Lakavath	PhD student	---	---

Former Students/Projects Trainees

Name	Joined As	Working
E. Kiran Kumar	PhD (awarded)	
Neshatul Haque	PhD (awarded)	
Bramhini Anumalla	PhD (awarded)	
K Tejaswi Naidu	PhD (awarded)	
Archi Saurabh	PhD (awarded)	
Pratibha Kushwaha	PhD (awarded)	

Publications

- 48 Kushwaha, Pratibha., Prabhu, N Prakash., (2024) , Aromatic vs alicyclic: Hydrophobicity of the ionic liquid on protein stability and fibril formation , *Journal of Molecular Liquids*, Elsevier,395,,123920.
- 47 Ghosh, Subhasree., Prabhu, N Prakash., (2024) , Heterogeneous Macromolecular crowding effect on nucleation-independent fibril formation of Lysozyme: Spectroscopic analysis of Structure, Stability, and fibrillation rate , *Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy*, Elsevier,,,124276.
- 46 Kar, Sonika., Sreevidya, TS., Hebalkar, Rucha Y., Kushwaha, Pratibha., Senthilkumaran, Balasubramanian., Prabhu, N Prakash., (2023) , Analysis of Testosterone Binding with Cytochrome P450 11 β -Hydroxylase and Its Variants Through Computational Approach , *Re: GEN Open*, Mary Ann Liebert, Inc., publishers 140 Huguenot Street, 3rd Floor New ...,,3,1,21-33.
- 45 Kumari, Beeta., Yadav, Manisha., Kumar, Manoj., Kushwaha, Pratibha., Prabhu, N Prakash., Kumar, Rajesh., (2023) , Determinants for macromolecular crowding-induced thermodynamic stabilization of acid-denatured cytochrome c to molten globules , *Journal of Molecular Liquids*, Elsevier,387,,122608.
- 44 Ghosh, Subhasree., Prakash N, Prabhu., (2023) , Synergistic Effect of Charged Amino Acids on the Stability and Fibril Formation of Lysozyme , *ChemistrySelect*, <https://doi.org/10.1002/slct.202302409>,8,,e202302409.
- 43 Tejaswi Naidu, K., Prakash Prabhu, N., (2022) , An able-cryoprotectant and a moderate denaturant: distinctive character of ethylene glycol on protein stability , *Journal of Biomolecular Structure and Dynamics*, Taylor & Francis,40,2,820-832.
- 42 Naidu, K Tejaswi., Prabhu, N Prakash., (2022) , Polyols, increasing global stability of cytochrome c, destabilize the thermal unfolding intermediate , *Journal of Biomolecular Structure and Dynamics*, Taylor & Francis,40,21,11216-11228.
- 41 Ghosh, Subhasree., Saurabh, Archi., Prabhu, N Prakash., (2022) , Spectroscopic studies on the stability and nucleation-independent fibrillation of partially-unfolded proteins in crowded environment , *Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy*, Elsevier,264,,120307.
- 40 Singh, Dipti., Patri, Smita., Narahari, Veeda., Segireddy, Rameswara R., Dey, Sandeep., Saurabh, Archi., Vijay, Macha., Prabhu, N Prakash., Srivastava, Anand., Kolli, Surendra Kumar., (2022) , A conserved Plasmodium structural integrity maintenance protein (SIMP) is associated with sporozoite membrane and is essential for maintaining shape and infectivity , *Molecular Microbiology*, ,117,6,1324-1339.
- 39 Kushwaha, Pratibha., Prabhu, N Prakash., (2022) , Imidazolium-based ionic liquids with increasing alkyl chain length of cations decrease the stability and fibrillation propensity of lysozyme , *New Journal of Chemistry*, Royal Society of Chemistry,46,23,11082-11094.
- 38 Saurabh, Archi., Prabhu, N Prakash., (2022) , Concerted enhanced-sampling simulations to elucidate the helix-fibril transition pathway of intrinsically disordered α -Synuclein , *International Journal of Biological Macromolecules*, Elsevier,223,,1024-1041.
- 37 Choudhury, Mitali., Koduru, Tejaswi Naidu., Kumar, Naveen., Salimi, Sasan., Desai,

Kavya., Prabhu, Nagu Prakash., Sritharan, Manjula., (2021) , Iron uptake and transport by the carboxymycobactin-mycobactin siderophore machinery of *Mycobacterium tuberculosis* is dependent on the iron-regulated protein HupB , *Biometals*, Springer Netherlands,34,,511-528.

36 Saurabh, Archi., Prabhu, N Prakash., (2021) , Conformational states guiding the monomer-fibril transition of α -Synuclein , *PROTEIN SCIENCE*, WILEY 111 RIVER ST, HOBOKEN 07030-5774, NJ USA,30,,65-65.

35 Anumalla, Bramhini., Prabhu, N Prakash., (2020) , Surface hydration and preferential interaction directs the charged amino acids-induced changes in protein stability , *Journal of Molecular Graphics and Modelling*, Elsevier,98,,107602.

34 Sharath, AK., Haque, Neshatul., Prabhu, N Prakash., (2020) , Spontaneous lid closure and substrate-induced lid opening dynamics of human pancreatic lipase-related protein 2: A computational study , *Journal of Molecular Structure*, Elsevier,1217,,128365.

33 Naidu, K Tejaswi., Rao, D Krishna., Prabhu, N Prakash., (2020) , Cryo vs Thermo: Duality of Ethylene Glycol on the Stability of Proteins , *The Journal of Physical Chemistry B*, American Chemical Society,124,45,10077-10088.

32 Anumalla, Bramhini., Prabhu, N Prakash., (2019) , Counteracting effect of charged amino acids against the destabilization of proteins by arginine , *Applied biochemistry and biotechnology*, Springer US,189,,541-555.

31 Potshangbam, Angamba Meetei., Polavarapu, Raja., Rathore, Ravindranath Singh., Naresh, Damuka., Prabhu, Nagu Prakash., Potshangbam, Nongdam., Kumar, Pravind., Vindal, Vaibhav., (2019) , Med PS erver: A database for identification of therapeutic targets and novel leads pertaining to natural products , *Chemical biology & drug design*, Wiley Online Library,93,4,438-446.

30 Anumalla, Bramhini., Prabhu, N Prakash., (2019) , Chain Compaction and Synergistic Destabilization of Globular Proteins by Mixture of Denaturants , *ChemistrySelect*, Wiley Online Library,4,47,13797-13801.

29 Singh DK, Lingaswamy B, Koduru TN, Nagu PP, Jogadhenu PSS., (2019) , A putative merR family transcription factor Slr0701 regulates mercury inducible expression of MerA in the cyanobacterium *Synechocystis* sp. PCC6803 , *MicrobiologyOpen*, John Wiley & Sons Ltd,8,,e838.

28 Bharadwaja Vadloori, A. K. Sharath, N. Prakash Prabhu, Radheshyam Maurya* (2018) , Homology modelling, molecular docking, and molecular dynamics simulations reveal the inhibition of *Leishmania donovani* dihydrofolate reductase-thymidylate synthase enzyme by Withaferin-A , *BMC Research Notes*, BMC Group,11,246,1-7 IF - 1.6.

27 Anumalla, Bramhini., Prabhu, N Prakash., (2018) , Glutamate induced thermal equilibrium intermediate and counteracting effect on chemical denaturation of proteins , *The Journal of Physical Chemistry B*, ACS Publications,122,3,1132-1144.

26 Vadloori, Bharadwaja., Sharath, AK., Prabhu, N Prakash., Maurya, Radheshyam., (2018) , Homology modelling, molecular docking, and molecular dynamics simulations reveal the inhibition of *Leishmania donovani* dihydrofolate reductase-thymidylate synthase enzyme by Withaferin-A , *BMC research notes*, BioMed Central,11,1,246.

25 Haque, Neshatul., Prabhu, N Prakash., (2018) , Binding orientation and interaction of bile salt in its ternary complex with pancreatic lipase-colipase system , *Biochemical and biophysical research communications*, Elsevier,499,4,907-912.

- 24 Kumar, E Kiran., Prasad, Deepak Kumar., Prabhu, N Prakash., (2017) , Concentration dependent switch in the kinetic pathway of lysozyme fibrillation: spectroscopic and microscopic analysis , *Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy*, Elsevier,183,,187-194.
- 23 Haque, Neshatul., Baratam, Krishnakanth., Prabhu, N Prakash., (2017) , Analysing the microenvironment of 2-p-toluidinylnaphthalene-6-sulfonate (TNS) in solvents and in different conformational states of proteins in relation to its fluorescence properties: a computational study , *Physical Chemistry Chemical Physics*, Royal Society of Chemistry,19,36,24656-24666.
- 22 Kumar, E Kiran., Haque, Neshatul., Prabhu, N Prakash., (2017) , Kinetics of protein fibril formation: Methods and mechanisms , *International journal of biological macromolecules*, Elsevier,100,,3-10.
- 21 Meetei, Potshangbam Angamba., Rathore, RS., Prabhu, N Prakash., Vindal, Vaibhav., (2016) , Modeling of babesipain-1 and identification of natural and synthetic leads for bovine babesiosis drug development , *Journal of molecular modeling*, Springer Berlin Heidelberg,22,,1-14.
- 20 Haque, Neshatul., Prabhu, N Prakash., (2016) , Lid dynamics of porcine pancreatic lipase in non-aqueous solvents , *Biochimica et Biophysica Acta (BBA)-General Subjects*, Elsevier,1860,10,2326-2334.
- 19 Meetei, Potshangbam Angamba., Rathore, R S., Prabhu, N Prakash., Vindal, Vaibhav., (2016) , In silico screening for identification of novel β -1, 3-glucan synthase inhibitors using pharmacophore and 3D-QSAR methodologies , *Springerplus*, Springer International Publishing,5,,1-21.
- 18 Mulukala, Sandeep Kumar Narasimha., Nishad, Rajkishor., Kolligundla, Lakshmi Prasanna., Saleem, Moin A., Prabhu, Nagu Prakash., Pasupulati, Anil Kumar., (2016) , In silico Structural characterization of podocin and assessment of nephrotic syndrome-associated podocin mutants , *IUBMB life*, Wiley Online Library,68,7,578-588.
- 17 Haque, Neshatul., Prabhu, N Prakash., (2016) , Lid closure dynamics of porcine pancreatic lipase in aqueous solution , *Biochimica et Biophysica Acta (BBA)-General Subjects*, Elsevier,1860,10,2313-2325.
- 16 Kumar, E Kiran., Kumar, Shamsul., Prabhu, N Prakash., (2015) , Sodium dodecyl sulphate (SDS) induced changes in propensity and kinetics of α -lactalbumin fibrillation , *International journal of biological macromolecules*, Elsevier,81,,754-758.
- 15 Kumar, E Kiran., Prabhu, N Prakash., (2014) , Differential effects of ionic and non-ionic surfactants on lysozyme fibrillation , *Physical Chemistry Chemical Physics*, Royal Society of Chemistry,16,43,24076-24088.
- 14 Chaitanya, P Krishna., Prabhu, N Prakash., (2014) , Stability and activity of porcine lipase against temperature and chemical denaturants , *Applied biochemistry and biotechnology*, Springer US,174,,2711-2724.
- 13 Haque, Neshatul., Prabhu, NP., (2014) , Insights into protein–TNS (2-p-toluidinylnaphthalene-6-sulfonate) interaction using molecular dynamics simulation , *Journal of Molecular Structure*, Elsevier,1068,,261-269.
- 12 Meetei, Potshangbam Angamba., Hauser, Alexander S., Raju, Prathigadapa S., Rathore, RS., Prabhu, N Prakash., Vindal, Vaibhav., (2014) , Investigations and design of pyridine-2-carboxylic acid thiazol-2-ylamide analogs as methionine aminopeptidase inhibitors

using 3D-QSAR and molecular docking , Medicinal Chemistry Research, Springer US,23,,3861-3875.

11 Meetei, Potshangbam Angamba., Singh, Pankaj., Nongdam, Potshangbam., Prabhu, N Prakash., Rathore, RS., Vindal, Vaibhav., (2012) , NeMedPlant: a database of therapeutic applications and chemical constituents of medicinal plants from north-east region of India , Bioinformation, Biomedical Informatics Publishing Group,8,4,209.

10 Arun, PV Parvati Sai., Bakku, Ranjith Kumar., Subhashini, Mranu., Singh, Pankaj., Prabhu, N Prakash., Suzuki, Iwane., Prakash, Jogadhenu SS., (2012) , CyanoPhyChe: a database for physico-chemical properties, structure and biochemical pathway information of cyanobacterial proteins , PloS one, Public Library of Science,7,11,e49425.

9 Tejaswi Naidu, K., Prakash Prabhu, N., (2011) , Protein–Surfactant Interaction: Sodium Dodecyl Sulfate-Induced Unfolding of Ribonuclease A , The Journal of Physical Chemistry B, ACS Publications,115,49,14760-14767.

8 Rao, D Krishna., Prabhu, N Prakash., Bhuyan, Abani K., (2006) , Extensive misfolding in the refolding reaction of alkaline ferrocycytochrome c , Biochemistry, ACS Publications,45,27,8393-8401.

7 Prabhu, N Prakash., Bhuyan, Abani K., (2006) , Prediction of folding rates of small proteins: empirical relations based on length, secondary structure content, residue type, and stability , Biochemistry, ACS Publications,45,11,3805-3812.

6 Kumar, Rajesh., Prabhu, N Prakash., Rao, D Krishna., Bhuyan, Abani K., (2006) , The alkali molten globule state of horse ferricytochrome c: observation of cold denaturation , Journal of molecular biology, Elsevier,364,3,483-495.

5 Bhuyan, Abani K., Rao, D Krishna., Prabhu, N Prakash., (2005) , Protein folding in classical perspective: folding of horse cytochrome c , Biochemistry, ACS Publications,44,8,3034-3040.

4 Kumar, Rajesh., Prabhu, N Prakash., Bhuyan, Abani K., (2005) , Ultrafast events in the folding of ferrocycytochrome c , Biochemistry, ACS Publications,44,26,9359-9367.

3 Prabhu, N Prakash., Kumar, Rajesh., Bhuyan, Abani K., (2004) , Folding barrier in horse cytochrome c: support for a classical folding pathway , Journal of molecular biology, Elsevier,337,1,195-208.

2 Kumar, Rajesh., Prabhu, N Prakash., Yadaiah, M., Bhuyan, Abani K., (2004) , Protein stiffening and entropic stabilization in the subdenaturing limit of guanidine hydrochloride , Biophysical journal, Elsevier,87,4,2656-2662.

1 Rao, Doddapuneni Krishna., Prabhu, N Prakash., Bhuyan, Abani K., (1977) , OFF-PATHWAY INTERMEDIATE (S) , NUCLEAR MAGNETIC RESONANCE (NMR), ,,43.

Projects

Title	Year	Duration	Amount(In Lakhs)	PI/I
Host-virus interactions-DBT	2017	3	520000000000	Dr. M. Venkataramana/ Co
PI- Dr. N. Prakash Prabhu, Department of Biotechnology and Bioinformatics				