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EDUCATION

Year	Degree	Institution
1990-1994	Ph.D.	Rensselaer Polytechnic Institute, USA
1988-1989	Post M.Sc.	Saha Institute of Nuclear Physics, Calcutta
1985-1987	M.Sc.	Indian Institute of Technology Kanpur
1981-1984	B.Sc.(Hons)	Presidency College, Calcutta

RESEARCH HIGHLIGHTS

Broad Area: Biophysical Chemistry

Specific Area: Protein-protein and Protein-small molecule interactions

Publications: Journals: **150+** (*h index 30 ; i-10 index 63*)

Citations: **2900+** (Source : Google Scholar)

Supervision: *Completed:* Ph.D.26, M. Sc. 40+ ; *Ongoing:* Ph.D.11, M. Sc.2

Research Grants: DST, CSIR, MHRD & others since 1998 (Total amount ~ Rs. 3 crore)

ACHIEVEMENTS:

- Fellow, Indian Academy of Sciences, Bangalore 2018
- Dr. Basudev Banerjee Memorial Award of Indian Chemical Society in 2017
- CRSI Bronze medal awarded by Chemical Research Society of India (CRSI) for 2016
- Fellow, West Bengal Academy of Science and Technology, India 2014
- Elected Member, National Academy of Sciences, Allahabad, India 2013.
- Darshan Ranganathan Memorial Lecture Award of Chemical Research Society of India, at CRSI Symposium, BHU, India Feb, 1-3, 2013.
- Profile featured in Chemical News Published by Indian Chemical Council, April 2011
- Nature India highlights: doi:10.1038/nindia.2009.293 & doi:10.1038/nindia.2014.102
- Visiting Professor, University of the Balearic Islands, Spain. May-July 2008.
- Proficiency Prize for the Best Project Work in Chemistry for Master's Project at IIT Kanpur in 1987. Adjudged the *best outgoing student in the Master's degree* for the year 1987.
- Kunja Behari Basak Medal in B.Sc. (Hons.) Part I - Presidency College, Calcutta.

RESEARCH ACTIVITIES

Protein aggregation studies: Aggregation studies currently underway are involving human serum albumin, lysozyme and the amyloid peptide fragment A β ₂₅₋₃₅. Effects of a static electric field on the disruption of fibrils have been reported. Work with polyphenols and surfactants on the fibrillation of proteins have been initiated in order to study the amyloid fibrils, the hallmark of neurodegenerative diseases.

Studies with the eye lens proteins: Modified γ -crystallin (HGC^c) from the discarded cataractous emulsion of patients was isolated and characterized. Studies showed that the major polyphenol present in green tea, EGCG was able to prevent tryptophan oxidation of cataractous ocular lens human γ -crystallin in presence of H₂O₂. The discarded mass is being used to prepare protein nanoparticles and films for applications in drug delivery, wound healing etc.

Protein ligand binding: Studies with ribonucleases such as angiogenin, indicated that the process of angiogenesis, the capacity to form blood vessels, was inhibited by polyphenols present in green tea. The polyphenols behave as noncompetitive inhibitors of Ribonuclease A. Other inhibitors of the proteins are being developed in addition to an investigation into the effects of oxidative stress on the protein.

PROFESSIONAL:

Member: Core committee - Organic Chemistry committee PAC, Science and Engineering Research Board(SERB), Government of India (2018-)

Former member:

- Women Scientist Committee (WOS-A) in Chemical Sciences, Department of Science and Technology, Government of India (2008- 2012).
- Board of Governors, IIT Kharagpur (2013-2015)
- Core committee (Early career research award and National PDF) Chemical Sciences, Science and Engineering Research Board, Government of India (2015- 2018)

Associate Editor ACS *Omega* <https://pubs.acs.org/page/acsofd/editorial-board.html>

Editorial Board Member: *Protein and Peptide Letters* (www.bentham.org/ppl)

Life Member: Chemical Research Society of India; Indian Council of Chemists; Society of Biological Chemists

TEACHING

At the undergraduate level: First year Chemistry, Biochemistry, Numerical Methods and Computational Chemistry, other Physical Chemistry theory and laboratory courses

At the postgraduate level: Bioinformatics, Biophysical Chemistry

Biochemistry course available as a Video course from: NATIONAL PROGRAMME ON TECHNOLOGY ENHANCED LEARNING (NPTEL), Ministry of Human Resource Development, Government of India (Also available on <http://www.youtube.com>)
Number of hits 680,000+ for Lecture 1 as of June 2020

PUBLICATIONS FROM RESEARCH LABORATORY

1. Roy, P.; Panda, A; Hati, S; and Dasgupta, S. (2019) pH-Dependent Nitrotyrosine Formation in Ribonuclease A is Enhanced in the Presence of Polyethylene Glycol (PEG), *Chem. Asian. J.* **14**, 4780-4792.
2. Parveen, S., Chaudhury, P., Dasmahapatra, U., Dasgupta, S. (2019). Biodegradable protein films from gallic acid and the cataractous eye protein isolate. *Int. J. Biol. Macromol.*, **139**, 12-20.
3. Parveen, S., Chaudhury, S., Dasgupta, S. (2019). Tuning the mechanical and physicochemical properties of cross-linked protein films. *Biopolymers*, **110**, e23321
2. DOI:10.1002/bip.23321
4. Parveen, S., Ghosh, P., Mitra, A., Gupta, S., Dasgupta, S. (2019). Preparation, characterization and in vitro release study of curcumin loaded cataractous eye protein isolate films. *Emergent Materials*, **2**, 475-486.
5. Roy, P., Parveen, S., Ghosh, P., Ghatak, K., Dasgupta, S. (2019) Flavonoid loaded nanoparticles as an effective measure to combat oxidative stress in Ribonuclease A. *Biochimie* **162**, 185-197.
6. Konar, M., Mathew, A., Dasgupta, S. (2019) Effect of Silica Nanoparticles on the Amyloid Fibrillation of Lysozyme. *ACS Omega* **4**, 1015-1026.

7. Roy, P., Bag, S., Chakraborty, D., Dasgupta, S. (2018) Exploring the Inhibitory and Antioxidant Effects of Fullerene and Fullerenol on Ribonuclease A. *ACS Omega*, **3**, 12270-12283.
8. Konar, M., Ghosh, D., Roy, P., Dasgupta, S. (2018) Probing the role of ortho-dihydroxy groups on lysozyme fibrillation. *Int. J. Biol. Macromol.* **109**, 619-628.
9. Chaudhury S., Dutta A., Bag S., Biswas P., Das A. K., Dasgupta S. (2018) Probing the inhibitory potency of epigallocatechin gallate against human γ B-crystallin aggregation: Spectroscopic, microscopic and simulation studies, *Spectrochim. Acta A*, **192**, 318-327.
10. Roy, P., Dinda, A. K., Chaudhury, S., Dasgupta, S. (2018) β -cyclodextrin encapsulated polyphenols as effective antioxidants *Biopolymers* **109**, 1-15. DOI: 10.1002/bip.23084
11. Bag, S., Mitra, R., DasGupta, S., Dasgupta, S. (2017) Inhibition of Human Serum Albumin Fibrillation by Two Dimensional Nanoparticles. *J. Phys. Chem. B*, **121**, 5474-5482. DOI: 10.1021/acs.jpcc.7b01289
12. Konar, M., Bag, S., Roy, P., Dasgupta, S. (2017) Gallic acid induced dose dependent inhibition of lysozyme fibrillation. *Int. J. Biol. Macromol.* **103**, 1224-1231.
13. Ghosh, P.; Patwari, J.; Dasgupta, S. (2017) Complexation with Human Serum Albumin facilitates sustained release of morin from polylactic-co-glycolic acid nanoparticles. *J. Phys. Chem. B* **121**, 1758-1770.
14. Chaudhury, S., Roy, P., and Dasgupta, S. (2017) Green tea flavanols protect human γ B-crystallin from oxidative photodamage. *Biochimie* **137**, 46–55.
15. Chaudhury, S., Ghosh, P., Sultana, P., Dasgupta, S. (2017) Glycation of human γ B-crystallin: A biophysical investigation. *Int. J. Biol. Macromol.* **96**, 392-402.
16. Ghosh, P., Roy, A.S., Chaudhury, S., Jana, S.K., Chaudhury, K., Dasgupta, S. (2016) Solubility enhancement of morin and epicatechin through encapsulation in an albumin based nanoparticulate system and their anticancer activity against the MDA-MB-468 breast cancer cell line. *RSC Adv.*, **6**, 101415-101429
17. Bag, S., Sett, A., DasGupta, S., Dasgupta, S. (2016) Hydrophobicity: the controlling factor behind the inhibition of A β fibrillation by graphene oxide. *RSC Adv.*, **6**, 103242-103252. DOI: 10.1039/C6RA23570K
18. Chaudhury, S., Bag, S., Bose, M., Das, A. K., Ghosh, A. K., Dasgupta S. (2016) Protection of human γ B-crystallin from UV induced damage by Epigallocatechin gallate: Spectroscopic and docking studies. *Mol. BioSyst.* **12**, 2901-2909. DOI:10.1039/C6MB00256K.
19. Dinda, A. K., Chattaraj, S., Ghosh, S., Tripathy, D. R., Dasgupta, S (2016) DNA melting properties of the dityrosine cross-linked dimer of Ribonuclease A *J. Photochem. Photobiol., B: Biology* **162**, 535-543.
20. Singha Roy, A., Samanta, S., Ghosh, P., Tripathy, D. R., Ghosh, S. K., Dasgupta, S. (2016) Cell cytotoxicity and serum albumin binding capacity of the morin-Cu(II) complex and its effect on deoxyribonucleic acid, *Mol. BioSyst.* **12**, 2818-2833. DOI:10.1039/C6MB00344C.
21. Bag, S., Chaudhury, S., Pramanik, D., DasGupta, S., Dasgupta, S. (2016) Hydrophobic tail length plays a pivotal role in amyloid beta (25-35) fibril-surfactant interactions *Proteins* **84**, 1213-1223.
22. Singha Roy, A., Tripathy, D. R., Samanta, S., Ghosh, S. K., Dasgupta, S. (2016) DNA damaging, cell cytotoxicity and serum albumin binding efficacy of the rutin-Cu(II) complex, *Mol. BioSyst.*, **12**, 1687-1701. DOI: 10.1039/C6MB00161K.
23. Singha Roy A., Ghosh P. Dasgupta, S. (2016) Glycation of human serum albumin affects its binding affinity towards (-)-epigallocatechin gallate, *J. Incl. Phenom. Macrocycl. Chem.* **85**, 193-202. DOI: 10.1007/s10847-016-0619-y
24. Ghosh, P., Roy, A.S., Chaudhury, S., Jana, S.K., Chaudhury, K., Dasgupta, S. (2016) Preparation of albumin based nanoparticles for delivery of fisetin and evaluation of its cytotoxic activity, *Int. J. Biol. Macromol.* **86**, 408-417.
25. Singha Roy A., Ghosh P. Dasgupta, S. (2015) Glycation of human serum albumin alters its binding efficacy towards the dietary polyphenols: A comparative approach. *J. Biomol. Struct. Dyn.* DOI: 10.1080/07391102.2015.1094749
26. Dinda, A. K., Tripathy, D. R., Dasgupta, S (2015) Glycation of Ribonuclease A affects its enzymatic activity and DNA binding ability. *Biochimie* , **118**, 162-172.

27. Chaudhury, S., Ghosh, I., Saha, G., Dasgupta, S.(2015) EGCG prevents tryptophan oxidation of cataractous ocular lens human γ -crystallin in presence of H_2O_2 *Int. J. Biol. Macromol.* **77**, 287-292.
28. Ghosh, S., Pandey, N. K., Bhattacharya, S., Roy, A., Nagy, N. V., Dasgupta, S. (2015) Evidence of two oxidation states of copper during aggregation of hen egg white lysozyme (HEWL). *Int. J. Biol. Macromol.* **76**, 1-9.
29. Tripathy, D. R., Pandey, N. K., Dinda, A. K., Ghosh, S., Singha Roy, A., Dasgupta, S. (2015) An insight into the ribonucleolytic and antiangiogenic activity of buffalo lactoferrin. *J. Biomol. Struct. Dyn.***33**, 184-195.
30. Pandey, N. K., Ghosh, S., Tripathy, D. R., Dasgupta, S. (2015) Effect of temperature and solvent on fibrillation of human serum albumin. *Prot. Pept. Letters* **22**, 112-118
31. Bhattacharya, S., Pandey, N. K., Roy, A., Dasgupta, S.(2014) Effect of (-)-epigallocatechin gallate on the fibrillation of human serum albumin. *Int. J. Biol. Macromol.***70**, 312-319.
32. Ghosh, S., Pandey, N. K., Banerjee, P., Chaudhury, K. Nagy, N. V., Dasgupta, S. (2014) Copper(II) directs formation of toxic amorphous aggregates resulting in inhibition of hen egg white lysozyme fibrillation under alkaline salt mediated conditions. *J. Biomol. Struct. Dyn.* 1-17. DOI:10.1080/07391102.2014.921864]
33. Ghosh, S., Pandey, N. K., Dasgupta, S. (2014) Crowded milieu prevents fibrillation of hen egg white lysozyme with retention of enzymatic activity *J. Photochem. Photobiol., B: Biology* **138**, 8-16.
34. Pandey, N.K., Ghosh, S., Nagy, N.V., Dasgupta, S. (2014) Fibrillation of human serum albumin shows nonspecific coordination on stoichiometric increment of Copper(II). *J. Biomol. Struct. Dyn.***32**, 1366-1378.
35. Dinda, A. K., Tripathy, D. R., Das, A., Dasgupta, S. (2014) Comparison of the ribonucleolytic activity of the dityrosine cross-linked Ribonuclease A dimer with its monomer in the presence of inhibitors. *Int. J. Biol. Macromol.***63**, 107–113.
36. Singha Roy, A.,Dinda, A. K., Chaudhury, S., Dasgupta, S.(2014) Binding of antioxidant flavonol morin to the native state of bovine serum albumin: Effects of urea and metal ions on the binding. *J. Lumin.* **145**, 741-751.
37. Pandey, N. K., Ghosh, S., Dasgupta, S. (2013) Fructose restrains fibrillogenesis in human serum albumin. *Int. J. Biol. Macromol.***61**, 424–432.
38. Ghosh, S., Pandey, N. K., Singha Roy, A., Tripathy, D. R., Dinda, A. K., Dasgupta, S. (2013), Prolonged glycation of hen egg white lysozyme generates non amyloid structures. *PLoS One* **8**, e74336
39. Ghosh, S., Pandey, N. K., Sen, S., Tripathy, D. R., Dasgupta, S. (2013) Binding of hen egg white lysozyme fibrils with nucleic acids. *J. Photochem. Photobiol., B: Biology***127**, 52-60
40. Pandey, N. K., Ghosh, S., Dasgupta, S. (2013) Effect of surfactants on preformed fibrils of human serum albumin. *Intl. J. Biol. Macromol.***59**, 39-45.
41. Bhattacharya, S., Ghosh, S., Roy, A., Dasgupta, S. (2013) Structural differences between native Hen egg white lysozyme and its fibrils under different environmental conditions. *Spectrochim Acta A*, **114**, 368–376.
42. Tripathy, D. R., Dinda, A. K., Dasgupta, S. (2013) A simple assay for the ribonuclease activity of ribonucleases in the presence of ethidium bromide. *Anal. Biochem.***437**, 126-129.
43. Ghosh, S., Pandey, N. K., Dasgupta, S. (2013) (-)-Epicatechin gallate prevents alkali-salt mediated fibrillogenesis of hen egg white lysozyme. *Int. J. Biol. Macromol.* **54**, 90-98.
44. Singha Roy, A., Tripathy, D. R., Chatterjee, A., Dasgupta, S. (2013) Influence of Common Metal Ions on the Interactions of the Isoflavone Genistein with Bovine Serum Albumin. *Spectrochim Acta A*, **102**, 393–402.
45. Singha Roy, A., Pandey, N. K., Dasgupta, S. (2013) Preferential binding of fisetin to the native state of bovine serum albumin: Spectroscopic and docking studies.*Mol. Biol. Rep.***40**, 3239–3253
46. Singha Roy, A., Ghosh, K. S., Dasgupta, S. (2012) An investigation into the altered binding mode of green tea polyphenols with human serum albumin on complexation with Copper. *J. Biomol. Struct. Dyn.* **iFirst** 1-16.
47. Singha Roy, A., Tripathy, D. R., Ghosh, A.K., Dasgupta, S. (2012) An alternate mode of binding of the polyphenol quercetin with serum albumins when complexed with Cu(II). *J. Lumin.*,**132**, 2943–2951.

48. Ghosh, S., Pandey, N.K., Bhattacharya, S., Roy, A., Dasgupta, S. (2012) Fibrillation of Hen Egg White Lysozyme triggers reduction of Copper(II) *Intl. J. Biol. Macromol.* **51**, 1-6.
49. Singha Roy, A., Dinda, A.K., Dasgupta, S. (2012) Study of the interaction between fisetin and human serum albumin: A biophysical approach. *Prot. Pept. Letters* **19**, 604-615.
50. Chandra, G., Tripathy, D. R., Roy, A., Dasgupta, S. (2012) Interaction of (-)-epigallocatechin gallate and silver colloid with bovine serum albumin *Appl. Spectroscopy* **66**, 75-81.
51. Tripathy, D. R., Singha Roy, A., Dasgupta, S. (2011) Complex formation of rutin and quercetin with copper alters the mode of inhibition of Ribonuclease A. *FEBS Lett.* **585**, 3270-3276.
52. Singha Roy, A., Tripathy, D. R., Chatterjee, A., and Dasgupta, S. (2010) A spectroscopic study of the interaction of the antioxidant naringin with bovine serum albumin. *J. Biophys. Chem.* **1**, 141-152.
53. Pandey, N.K., Ghosh, S., Dasgupta, S. (2010) Fibrillation in Human Serum Albumin is enhanced in the presence of Copper(II). *J. Phys. Chem. B* **114**, 10228-10233.
54. Sahoo, B.K., Ghosh, K.S. and Dasgupta S. (2009) An investigation of the molecular interactions of diacetylcurcumin with Ribonuclease A. *Prot. Pept. Letters* **12**, 1485-1495.
55. Ghosh, K.S., Sen, S., Sahoo, B.K. and Dasgupta, S. (2009) A spectroscopic investigation into the interactions of 3'-O-carboxy esters of thymidine with Bovine Serum Albumin. *Biopolymers* **91**, 737-744.
56. Sahoo, B.K., Ghosh, K.S. Bera, R. and Dasgupta S. (2009) Molecular Interactions of Isoxazolcurcumin with Human serum albumin: Spectroscopic and Molecular Modeling Studies. *Biopolymers* **91**, 108-119.
57. Ghosh K.S., Debnath J., Pathak, T. and Dasgupta S. (2008) Using Proton Nuclear Magnetic Resonance to study the mode of Ribonuclease A inhibition by competitive and noncompetitive inhibitors. *Bioorg. Med. Chem. Lett.* **18**, 5503-5506.
58. Ghosh K.S., Sahoo B.K. Jana, D. and Dasgupta S. (2008) Studies on the interaction of copper complexes of (-)-epicatechin gallate and (-)-epigallocatechin gallate with calf thymus DNA. *J. Inorg. Biochem.*, **102**, 1711-1718.
59. Sahoo, B.K., Ghosh, K.S. Bera, R. and Dasgupta S. (2008) Studies on the interaction of diacetylcurcumin with calf thymus-DNA. *Chem. Phys.* **351**, 163-169.
60. Ghosh K.S., Debnath J., Dutta P., Sahoo B.K. and Dasgupta S. (2008) Exploring the potential of 3'-O-carboxy esters of thymidine as inhibitors of ribonuclease A and angiogenin. *Bioorg Med Chem.* **16**, 2819-2828.
61. Ghosh, K.S., Sahoo, B.K., and Dasgupta S. (2008) Spectrophotometric studies on the interaction between (-)-Epigallocatechin gallate and Lysozyme. *Chem. Phys. Lett.* **452**, 193-197.
62. Maiti, T.K., Ghosh, K.S., Samanta A. and Dasgupta S. (2008) The interaction of Silibinin with Human serum albumin: A spectroscopic investigation. *J. Photochem. Photobiol. A: Chemistry* **194**, 297-307.
63. Sahoo, B.K., Ghosh, K.S. and Dasgupta S. (2008) Investigating the binding of curcumin derivatives to bovine serum albumin *Biophysical Chemistry* **132**, 81-88.
64. Bera, R., Sahoo, B.K., Ghosh, K.S. and Dasgupta S. (2008) Studies on the interaction of isoxazolcurcumin with calf thymus DNA. *Intl. J. Biol. Macromol.* **42**, 14-21. *In list of Most Cited International Journal of Biological Macromolecules Articles*
65. Ghosh, K.S., Maiti, T.K., Debnath, J. and Dasgupta S. (2007) Inhibition of Ribonuclease A by polyphenols present in green tea. *Proteins* **69**, 566-580.
66. Ghosh, K.S., Maiti, T.K., Mandal A. and Dasgupta S. (2006) Copper complexes of (-)-Epicatechin gallate and (-)-Epigallocatechin gallate act as inhibitors of Ribonuclease A. *FEBS Lett.* **580**, 4703-4708.
67. Maiti, T.K., Ghosh, K.S. and Dasgupta S. (2006) Interaction of (-)-Epigallocatechin-3-Gallate With Human Serum Albumin: Fluorescence, Fourier Transform Infrared, Circular Dichroism, and Docking Studies *Proteins* **64**, 355-362.
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75. Pal, M. and Dasgupta, S. (2003) The Nature of the Turn in Omega Loops of Proteins. *Proteins* **51**, 591-606.
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PUBLICATIONS FROM COLLABORATIVE RESEARCH

77. Das, A., Dasgupta, S., Pathak, T. (2020) Design of Configuration-Restricted Triazolylated β -D-Ribofuranosides: A Unique Family of Crescent-Shaped RNase A Inhibitors. *Org. Biomol. Chem.*, (Accepted)
78. Singh, A.K., Bhattacharya, S., Halder, K., Dasgupta, S., Roy, A. (2020) Restriction of microwave-induced amyloid fibrillar growth by gold nanoparticles. *Intl. J. Biol. Macromol.* **151**, 212-219. <https://doi.org/10.1016/j.ijbiomac.2020.02.128>
79. Apoorva, A., Rameshbabu, A.P., Dasgupta, S., Dhara, S., Padmavati, M. (2020) Novel pH-sensitive alginate hydrogel delivery system reinforced with gum tragacanth for intestinal targeting of nutraceuticals. *Intl. J. Biol. Macromol.* **147**, 675-687.
80. Datta, D., Dasgupta, S., Pathak, T. (2019) Sulfonic nucleic acids (SNAs): a new class of substrate mimics for ribonuclease A inhibition. *Org. Biomol. Chem.*, **17**, 7215-7221
81. Das, M., Roy Chaudhuri, S., Basak, D., Dasgupta, S., Ray, D. (2019) Inhibition of ligand arm hydrolysis and carboxylate coordination directed formation of μ_4 -oxido-bridged [Cu₄] complexes: Synthesis, X-ray structure and functional activity. *Inorg. Chim. Acta* **485**, 140-154.
82. Sett, A., Ayushman, M., Dasgupta, S., DasGupta, S. (2018) Analysis of the Distinct Pattern Formation of Globular Proteins in the Presence of Micro- and Nanoparticles. *J. Phys. Chem. B*, **2018**, **122**, 8972–8984.
83. Singh, A. K., Burada, P. S., Bhattacharya, S., Bag, S., Bhattacharya, A., Dasgupta, S., Roy, A. (2018) Microwave-radiation-induced molecular structural rearrangement of hen egg-white lysozyme *Phys. Rev. E* **97**, 052416
84. Dutta, M., Singh, B., Joshi, M., Das, D., Subramani, E., Maan, M., Jana, S. K., Sharma, U., Das, S., Dasgupta, S., Datta Ray, C., Chakravarty, B., Chaudhury, K.. (2018) Metabolomics reveals perturbations in endometrium and serum of minimal and mild endometriosis. *Scientific Reports* **8**, 6466 | DOI:10.1038/s41598-018-23954-7
85. Mukherjee, M., Saha Sardar, P., Roy, P., Dasgupta, S., Basu Roy, M., Ghosh, S. (2018) Antenna effect and phosphorescence spectra to find the location of drug tetracycline in bovine β -lactoglobulin A. *J. Biol. Inorg. Chem.* **23**, 917-927.
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87. Kumar, B. R., Anupam, A., Manchikanti, P., Rameshbabu, A. P., Dasgupta, S., Dhara, S. (2018) Identification and characterization of bioactive phenolic constituents, anti-proliferative, and anti-angiogenic activity of stem extracts of *Basella alba* and *rubra*. *J Food Sci Technol.* **55**, 1675–1684.
88. Sett, A., Dasgupta, S., DasGupta, S. (2018) Rapid Estimation of the β -Sheet Content of Human Serum Albumin from the Drying Patterns of HSA-Nanoparticle Droplets. *Colloids and Surfaces A: Physicochemical and Engineering Aspects* **540**, 177-185.

89. Kayet, A., Datta, D., Das, A., Dasgupta, S., Pathak, T. (2018) 1,5-Disubstituted 1,2,3-Triazole Linked Disaccharides: Metal-Free Syntheses and Screening of a New Class of Ribonuclease A Inhibitors. *Bioorg. Med. Chem.* **26**, 455-462. DOI: 10.1016/j.bmc.2017.12.004.
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91. Sett, A., Bano, U., DasGupta, S., Sarkar, D., Mitra, A., Das, S., Dasgupta, S. (2017) Capillary driven flow in wettability altered microchannel. *AIChE Journal* DOI: 10.1002/aic.15787
92. Sen, S., Chakraborty, M., Goley S., Dasgupta S. and DasGupta S. (2017) Fibrillar Disruption by AC Electric Field Induced Oscillation: A Case Study with Human Serum Albumin. *Biophys. Chem.* **226**, 23–33.
93. Datta, D., Mondal, P., Dasgupta, S., Pathak, T. (2017) Acidic-Amino-Acid-Conjugated Dinucleosides as Ribonuclease A Inhibitors: Rational Design and Effect of Backbone Chirality on Enzyme Inhibition. *ChemistrySelect* **2**, 2106 – 2113
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96. Sen, S., Konar, S., Das, B., Pathak, A., Dhara, S., Dasgupta, S., DasGupta, S. (2016) Inhibition of Fibrillation of Human Serum Albumin through Interaction with Chitosan-Based Biocompatible Silver Nanoparticles *RSC Advances* **6**, 43104-43115.
97. Datta, D., Dasgupta, S., Pathak, T. (2016) Carboxymethylsulfonylated Ribopyrimidines: Rational Design of Ribonuclease A Inhibitors Employing Chemical Logic. *ChemMedChem* **11**, 620-628.
98. Singha Mahapatra, T., Chaudhury, S., Dasgupta, S., Bertolasi, V., Ray, D. (2016) Dinuclear Nickel Complexes of Divergent Ni···Ni Separation Showing Ancillary Ligand Addition and Biomacromolecular Interaction. *New J. Chem.*, **40**, 2268-2279.
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143. Ojha, A.K., Singha, A., Dasgupta, S., Singh and Roy, A. (2006) pH dependent surface enhanced Raman study of Phe + Ag Complex and DFT calculations for spectral analysis. *Chem. Phys. Lett.* **431**, 121-126.
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146. Singha, A., Dasgupta, S., Roy, A. (2006) Comparison of metal–amino acid interaction in Phe–Ag and Tyr–Ag complexes by spectroscopic measurements. *Biophysical Chemistry* **120**, 215 – 224.
147. Goswami, S., Ghosh, K., Dasgupta S. (2000) Troger's Base Molecular Scaffolds in Dicarboxylic Acid Recognition. *J. Org. Chem.* **65**, 1907-1914.

148. Goswami, S., Ghosh, K., Dasgupta, S. (1996) Molecular recognition: Connection and disconnection of hydrogen bonds, a case study with dimeric and highly associated monocarboxylic acids with simple receptors. *Tetrahedron*,**52**, 12223-12232.

EARLIER PUBLICATIONS

149. Iyer, G.H., Dasgupta, S. and Bell, J.A. (2000) Ionic Strength and Intermolecular Contacts in Protein Crystals. *J. Cryst. Growth***217**, 429-440.
150. Dasgupta, S., Iyer, G. H., Bryant, S. H., Lawrence, C. E., Bell, J. A. (1997) Extent and Nature of Contacts between Protein Molecules in Crystal Lattices and between Subunits in Protein Oligomers. *Proteins*,**28**, 494-514.
151. Dasgupta, S. and Bell, J.A. (1993) Design of helix ends: Amino acid preferences, hydrogen bonding and electrostatic interactions, *Int. J. Peptide Protein Res.***41**, 499-511.

PATENT (filed)

Indian patent application filed on the 1st January 2016; Application No. 201631000088;
Title: PREPARATION OF NANOPARTICLES DERIVED FROM CATARACTOUS EYE PROTEIN ISOLATE

PATENT OF ADDITION (Main Patent Application No. 201631000088)

Indian Patent Application No.: 201733014122 dated April 20, 2017

in the name of INDIAN INSTITUTE OF TECHNOLOGY, KHARAGPUR

Title: PROTEIN FILMS MADE FROM CATARACTOUS EYE PROTEIN

Inventors: Prof. Swagata Dasgupta, Mr. Susmitnarayan Chaudhury, Ms. Sultana Parveen

Selected Abstracts presented by students

1. Atashi Panda, Swagata Dasgupta (2019) **Inhibitory effect of green tea catechins on recombinant human angiogenin**. Abstracts of Papers, 257th ACS National Meeting & Exposition, Orlando, FL, United States, Mar. 31-Apr. 4, 2019 **BIOL-0068**.
2. Pampa Mondal, Swagata Dasgupta, Tanmaya Pathak (2019) **Inhibition of ribonucleolytic activity of RNase A by triazolylated thymidines**. Abstracts of Papers, 257th ACS National Meeting & Exposition, Orlando, FL, United States, Mar. 31-Apr. 4, 2019, **ORGN-0364**.
3. Mouli Konar, Swagata Dasgupta (2018) **A New Insight into the Molecular Mechanism of the Inhibition of Lysozyme Fibrillation by Gallic Acid**. Abstracts of Papers, 62nd Annual Meeting, Biophysical Society, San Francisco, CA, United States, February 17-21, 2018, **1158-Pos**.
4. Sultana Parveen, Swagata Dasgupta (2018) **Applications of Cross-Linked Cataractous Eye Protein Isolate Films as Drug Delivery Vehicles**. Abstracts of Papers, 62nd Annual Meeting, Biophysical Society, San Francisco, CA, United States, February 17-21, 2018, **1781-Pos**.
5. Pritam Roy, Swagata Dasgupta (2018) **Can β -Cyclodextrin Encapsulated Polyphenols Combat Oxidative Stress? A Case Study with Ribonuclease a Protein**. Abstracts of Papers, 62nd Annual Meeting, Biophysical Society, San Francisco, CA, United States, February 17-21, 2018, **1987-Pos**.
6. Pooja Ghosh, Swagata Dasgupta (2017) **Albumin based nanoparticles as a delivery vehicle for flavonoids and their anticancer activity** Abstracts of Papers, 253rd ACS National Meeting & Exposition, San Francisco, CA, United States, April 2-6, 2017, **PHYS-483**.
7. Sudipta Bag, Sunando DasGupta, Swagata Dasgupta (2017) **Prevention of fibrillation of the amyloid- β (25-35) peptide by graphene oxide**. Abstracts of Papers, 253rd ACS National Meeting & Exposition, San Francisco, CA, United States, April 2-6, 2017, **PHYS-431**.

Selected Lectures and Presentations

1. Invited lecture "The Role of Antioxidants on the Oxidative Damage of Proteins" Frontier Symposium in Chemistry 2020, January 17-18, 2020 IISER Thiruvanthapuram, India.
2. Invited lecture "Looking out for Green tea polyphenols" IIT Bombay Diamond Jubilee Chemistry Symposium. February 25-28, 2019. IIT Bombay, India.
3. Invited lecture "From your eyes only", Indian Academy of Sciences for the ACADEMY-ACS Publications Forum, Expanding Frontiers in Chemical Sciences, Nov 1, 2018, Banaras Hindu University, Varanasi, India.
4. Invited lecture as Fellow, Indian Academy of Sciences: "The evolving story of polyphenol protein interactions" Mid-year meeting Indian Academy of Sciences 29-30, May 2018. Infosys Development Centre, Mysore.
5. Invited lecture: "Protection of cataractous human γ -crystallin and human γ B-crystallin from UV induced damage" National Conference on "Biomolecular Dynamics: Experimental and Theoretical Perspectives (BDETP-2017)" (22nd Biennial Indian Photobiology Society Conference) during 18-20th December 2017. NIT Rourkela
6. Invited lecture: "Effects of external factors on protein fibrillation", Facets of Chemical Biology (FOCB 2016), February 21-22, 2016. at St. Xavier's College, Kolkata.
7. Bronze medal lecture: "Ribonuclease A: Effects of Dimerization & Glycation" at the 18th National Symposium in Chemistry of CRSI, February 4-7, 2016 in Chandigarh, India.
8. Invited lecture: "Dimerization of Ribonuclease A: Effect on Enzymatic Activity, Ribonuclease Inhibitor and DNA Binding" at 26th International Symposium on Pharmaceutical and Biomedical Analysis, July 5-8, 2015 in Tbilisi, Georgia.
9. Invited lecture: "Amyloid formation of human serum albumin and lysozyme: effect of Cu(II) and green tea polyphenols" Indian Biophysical Society, MADALS 2014, Feb 7-10, 2014.
10. Darshan Ranganathan Memorial Lecture Award of Chemical Research Society of India, at CRSI Symposium, BHU, India Feb, 1-3, 2013.
11. Invited talk: "Protein Fibrillation: Effect Of Copper (II) On The Fibrillation Of Human Serum Albumin" July 22-24, 2011, CRSI-IYC-2011 Zonal Meet (East) University of North Bengal, Darjeeling 734 013, India.
12. Oral presentation: "Interactions of Biomacromolecules with Naturally Occurring Polyphenols: Prospects for Inhibitor Design" at Gordon Research Conference on Biomolecular Interactions & Methods, Jan 17-22, 2010 Galveston, TX, USA.
13. CRSI Workshop lecture "Green tea polyphenolic inhibitors of Ribonuclease A affect Angiogenesis induced by Angiogenin". IIT Kharagpur Local Chapter, August 2007
14. Invited lecture "Developing inhibitors for the ribonuclease superfamily". Indian Photophysical Society, Kolkata, January 2007.
15. Invited lecture on "Protein Structure Analysis to understand Protein Interactions", Workshop on Bioinformatics. IIT Kharagpur, 22-23 September 2006
16. Oral presentation: "Enhancement Of Fibrillation In Human Serum Albumin In Presence Of Copper (II)" at the XXIII. International Conference on Coordination and Bioinorganic Chemistry (ICCBIC), 5-10 June 2011, Smolenice Castle, Slovak Republic.
17. Invited Talk: Technobia '09: A National Conference On Stemcell Research, Computational Biology And Chemistry. Chennai August 8-9, 2009.
18. "Design and development of inhibitors for the ribonuclease family." Department of Chemistry, Universitat de les Illes Balears. Cra. de Valldemossa, km 7.5. Palma (Illes Balears), Spain. May 21, 2008.
19. Invited Speaker, International Symposium on Recent Advances in Drug Design & Drug Delivery Systems. BITS, Pilani 26th & 27th February 2005.
20. Invited Lecture "Insights into Protein Structure Analysis". One Day Symposium, Presidency College April 2004.
21. Invited Speaker, An analysis of Ω loops in proteins, International Symposium on NMR, Drug Design & Bioinformatics, NMRS 2004, February 17-20, 2004, Kolkata, India

LIST OF PROJECTS

ONGOING

1. Poly lactic-co-glycolic acid (PLGA) based nanoparticles for delivery of polyphenols and effect of human serum albumin (HSA) on their release property and antioxidant property. May 2018; Rs 14.74L CSIR (PI) [01(2959)/18/EMR-II]

COMPLETED

1. A study to the centre of ribonucleases: designing of nucleoside - based inhibitors. Oct 2014; Rs 46.18L DBT [BT/PR6189/BRB/10/1150/2012]
2. Isolation of proteins for further use from discarded cataractous eye emulsion and identification of structural changes in human gamma crystallin due to oxidative stress. Apr 2014; Rs 46.90L MHRD [F. NO. 4-23/2014-TS.I]
3. Development of novel biodegradable metallo - curcumin nanoparticles - a new hope for endometriosis therapy. May 2014; Rs 54.15L SERB [SR/SO/HS-0058/2011]
4. Molecular structural evolution of nanoparticles mediated amyloid fibrils. Oct 2014; Rs 18.70L SERB [SR/NM/NS-25/2012(G)]
5. Investigation of the self association of proteins under varying conditions. June 2013; Rs 31.70L DST (PI)
6. Droplet based screening of amyloid beta peptide aggregation. Oct 2010;Rs49.50L DBT (PI) [BT/PR13931/MED/32/141/2010]
7. Identification of potential biomarkers for the diagnosis of endometriosis: a proteomics approach. June 2010; Rs 25.20L DST (Co-PI) [SR/SO/HS-22/2008]
8. Studies on Protein-Metal Colloid Interactions by Raman Spectroscopy. April 2009; Rs 20.96L DST (Co-PI) [(SR/NM/NS-80 /2008)]
9. Interaction of dietary polyphenols and their copper complexes with human serum albumin. May 2008; Rs 29.00L DST (PI) [(SR/SO/BB -54 /2007)]
10. Design of 'anion recognition' short peptide motifs: an approach towards designing 'model scaffolds' for binding. Apr 2008; Rs 3.20L DBT (Co-PI) [(BT/PR10277/GBD/27/90/2007)]
11. Studies on copper complexes of green tea polyphenols and their effects on the activities of ribonuclease A and angiogenin. Oct 2007; Rs 9.00L CSIR (PI) [(01(2115)/07/EMR-II)]
12. Upgrading Raman spectrometer to micro-Raman spectrometer for studies on bio-materials. Nov 2006; Rs 49.79L DRDO (Co-PI)
13. Isolation and characterization of angiogenin from goat plasma: a study on the effect of green tea components on angiogenin induced angiogenesis. July 2004;Rs8.96L CSIR (PI) [(37(1188)/04/EMR-II)]
14. Design of inhibitors of angiogenin, a blood vessel inducing protein. Apr 2004; Rs 11.00L MHRD (PI)
15. Studies on the interaction of dinucleotides on an angiogenic protein from goat plasma. Oct 2003; Rs9.09 L DST (PI) [(SR/FTP/LS-A-06/2001)]
16. Inhibition of the ribonucleolytic activity of angiogenin with backbone modified dinucleotides: a new approach to cancer chemotherapy. May 2003;Rs 24.68L DST (Co-PI) [SR/S5/OC-13/2002]
17. Isolation of gamma crystallin: Understanding factors leading to opacity of the eye lens. 1999-2001; Rs 1.00L ISIRD IIT Kgp (PI)
18. Binding studies on angiogenin. 1998-2000. Rs 2.96L DST (PI) (HR/OY/C-16/96)

Ph.D. STUDENTS

		<i>Current Position</i>
1.	Tushar Kanti Maiti July 2005	Associate Professor, Regional Centre for Biotechnology, NCR Biotech Science Cluster, Faridabad, 121001, India.
2.	Chandi Charan Mandal* October 2006	Professor & Head, Department of Biochemistry School of Life Sciences, Central University of Rajasthan. India
3.	Annapurna Kumari* July 2008	Head, Chemistry Department, Jamshedpur Women's College, Jamshedpur India
4.	Kalyan Sundar Ghosh January 2009	Assistant Professor(Gr-I), Department of Chemistry, National Institute of Technology, Hamirpur, HP India
5.	Bijaya Ketan Sahoo June 2009	Assistant Professor, Department of Chemistry, School of Technology, GITAM Deemed to be University, Hyderabad Campus, 502329
6.	Joy Debnath* March 2010	Senior Assistant Professor at SASTRA Deemed University, Tamil Nadu.
7.	Anirban Samanta*	NIPER, Ahmedabad
8.	Sansa Dutta* July 2011	Visiting Scientist, Crystallography and Molecular Biology Division, SahaInstitute of Nuclear Physics, Kolkata India
9.	Rashmi Mukherjee*	Project Assistant
10.	Atanu Singha Roy June 2013	Assistant Professor & HOD, Department of Chemistry, NIT Meghalaya, Shillong 793003. India
11.	Nitin Kumar Pandey January 2014	Research Associate at Keck School of Medicine, University of Southern California, Los Angeles USA.
12.	Sudeshna Ghosh February 2014	DST-Inspire Faculty, Department of Chemistry, IIT Kanpur. India
13.	Debi Ranjan Tripathy June 2014	Ex-Post-Doc fellow, The University of Texas Health Science Center at Houston, USA
14.	Dhrubajyoti Datta* December 2014	Senior Scientist, Innovassynth Technologies Industries Ltd., Khopoli, Raigad, Maharashtra. India
15.	Kaustav Chakrabarty* July 2015	Research Scientist (Team Leader, Polymer Synthesis) Solvay Research & Innovation Center, Vadodara, Gujarat India
16.	Susmita Bhattacharya* July 2015	Postdoctoral fellow, Department of Physics, IISc Bangalore India.
17.	Amit Kumar Dinda February 2016	Post-doctoral student at Indian Institute of Science (IISc), Bangalore, India.
18.	Mainak Datta* September 2016	Assistant Professor, Dept. Of Biotechnology, BITS Pilani- Dubai campus, Dubai, UAE
19.	Susmitnarayan Chaudhury February 2017	Postdoctoral Fellow, to join SUNY Albany, USA
20.	Moumita Gangopadhyaya*	Assistant Professor, Ghatal Rabindra Satabarsiki Mahavidyalaya, West Bengal, India
21.	Sudipta Bag* May 2018	Assistant Professor, Department of Chemistry, Sister Nivedita University, New Town, Kolkata, India.
22.	Pooja Ghosh May 2018	Research Associate, Polymer Research Center, Department of Chemical Sciences, IISER Kolkata India.
23.	Ayantika Sett* 2019	Assistant Professor, ICT Mumbai, Bhubaneswar campus.
24.	Mouli Konar 2019	Research Associate, JNCSAR Bangalore
25.	Anupam Apoorva* 2020	Currently searching

Ph.D. Ongoing		
1.	Pritam Roy	Thesis evaluation complete – defense pending
2.	Sultana Parveen	Thesis evaluation complete – defense pending
3.	Anang Kumar Singh*	Registration completed
4.	Hemant Kumar Srivastava*	Registration completed
5.	Pampa Mandal*	Registration completed
6.	Ashrukana Das*	Registration completed
7.	Atashi Panda*	Registration completed
8.	Prasun Chowdhury	Comprehensive examination cleared
9.	Krishna Halder	Comprehensive examination cleared
10.	Sreshtha Chaki	Courses ongoing
11.	Megh Mondal*	Courses ongoing

*under joint supervision