Curriculum Vitae December 2016

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Education:

1992	Ph.D. (Chemistry), Cornell University, USA
1988	M.S. (Chemistry), Cornell University, USA
1986	M.Sc. (Chemistry), IIT Kanpur, India
1984	B.Sc. (Chemistry Hons.), Presidency College, Kolkata

Professional Experience:

1993-1995	Postdoctoral Fellow, Kyoto University
1995-1998	Lecturer, Dept. of Biophysics, Bose Institute
1998-2003	Senior Lecturer, Dept. of Biophysics, Bose Institute
2003-2008	Reader, Dept. of Biophysics, Bose Institute
2008-2013	Professor, Dept. of Biophysics, Bose Institute
2013-present	Senior Professor, Dept. of Biophysics, Bose Institute

Visiting positions:

1998 (Oct-Dec)	Visiting Scientist, Memorial Sloan Kettering Cancer Center, USA
2000 (May-Aug)	Visiting Scientist, Temple University, USA
2002 – 2004	Visiting Associate Professor, NAIST, Japan
2007 (May-June)	Visiting Scientist, Montana State University, USA
2006-2007	Visiting Associate Professor, IISER, Kolkata
2007-present	Visiting Professor, NIPER, Kolkata
2014 (June 16 – Aug 16)	Visiting Professor, Indiana University, USA

Awards and Recognitions:

1979 National Science Talent (NCERT)
1993 Human Frontier Science Program Organization Fellow (Postdoctoral Fellow)
1995 Japanese Society for Promotion of Science Fellow (Postdoctoral Fellow)

Courses Taught (last three years)

Bose Institute (*MSc-PhD)*: Tools in Structural Biology; Biophysical Chemistry; Protein Structure and Modeling; Nuclear Magnetic Resonance; **NIPER, Kolkata (*M.Pharm.*):** Basic Thermodynamics; Protein Structure and Modeling; Design of virtual drug libraries; **CSIR-IICB, Kolkata (*PhD*):** Introduction to Chemical Principles.

Invited lectures (last three years)

- *Electrostatic steering of protein-protein association captured in a single geometric parameter* **IICB-CSIR, Kolkata, March 31, 2013.**
- *Modulation of cis/trans equilibrium of peptidyl-prolyl conformation by CH$\cdots\pi$ interactions: A combined study by NMR and MD simulations* **at *International Conference on Biomolecular Simulations & Dynamics: Recent Advances & Future Perspectives*, IIT Madras, 28th-30th Nov, 2013.**
- *The role of electrostatic discrimination in protein-protein interactions* **at *BioWorld 2013: Computational Biology in Disease and Disorder*, IIT Delhi, 9-11, Dec 2013**
- *Watching Molecules Dance to Newton's Second Law* **at Presidency University, Kolkata, Dec 15, 2013**
- *Electrostatic steering of protein-protein association captured in a single geometric parameter* **at *Annual Meeting of Indian Biophysical Society*, SINP, Kolkata, Feb 7-10, 2014**
- *Electrostatically biased molecular interactions in biology: Adenine-guanine binding and protein-protein interactions* **University of Kansas, Lawrence (July 24, 2014)**
- *Electrostatically biased molecular interactions in biology: Adenine-guanine binding and protein-protein interactions* **Indiana University, Bloomington (Aug 06, 2014)**
- *Electrostatically biased molecular interactions in biology: Adenine-guanine binding sites in proteins and protein-protein interactions* **University of Delaware, Delaware (Aug 18, 2014)**
- *New Sequence Motifs that stabilize the cisPro conformation in peptides and proteins* **Rutgers University, New Jersey (Aug 19, 2014)**
- *New sequence motifs that stabilize the cisPro conformation in peptides and proteins* **New York University, New York (Aug 20, 2014)**.
- *New sequence motifs that stabilize the cis-conformation of peptidyl-prolyl bonds* **in 2nd international symposium on *Protein Folding* and Dynamics. NCBS, Bangalore, November 5-7, *2014.***
- *Art in Science* ***CIMA Art Gallery, Kolkata, April 10, 2015.***
- *Occurrence, Stability and Function of new sequence motifs containing cisPro* ***at the Seventh Peptide Engineering Meeting, IISER, Pune, Dec 5-7, 2015.***
- *Direct observation of concerted backbone-side chain dynamics in short Linear Peptides* ***at the Third International Symposium on Protein Folding and Dynamics, NCBS, Bangalore, Nov 8-11 , 2016.***

Outreach Program

NESST-BASE Program at Bose Institute: Served as Coordinator and Teacher in North-East Students' Summer Training Programme on Basic Sciences (NESST-BASE) since 2008.
DST-Inspire Camp for School Children: Acted as Resource Person in DST-Inspire camps at NIT, Ravangla, Sikkim (held on Dec 10-14, 2014) and Institute of Engineering Management, Kolkata (held on 27-31 Jan,2015 and 12-16 May, 2015).

Publications

1. Dasgupta, R., Ganguly, H. K., Modugula, E. K., Basu, G. **(2016)** Type VIa beta-turn-fused helix N-termini: A novel helix N-cap motif containing cis proline. ***Biopolymers (Peptide Science)*** **(DOI: 10.1002/bip.22919)**
2. Mahata, T., Kanungo, A., Ganguly, S., Modugula, E. K., Choudhury, S., Pal, S. K., Basu, G., Dutta, S. **(2016)** The Benzyl Moiety in a Quinoxaline-Based Scaffold Acts as a DNA Intercalation Switch. ***Angew. Chem. Int. Ed. Engl.*** **55:7733−7736.**
3. Chattopadhyay, S., Haresh, A., Basu, G. **(2016)** Effect of introducing Aib in a designed helical inhibitor of HDM2-p53 interaction: A molecular dynamics study. ***Biopolymers (Peptide Science)*** **106:51-61.**
4. Jordan, P. C., Patterson, D. P., Saboda, K. N., Edwards, E. J., Mietten-Granger, H., Basu, G., Thielges, M. C., Douglas, T. **(2016)** Self-Assembling Biomolecular Catalysts for Hydrogen Production. ***Nature Chemistry*** **8:179-185.**
5. Schwarz, B., Madden, P., Avera, J., Gordon, B., Larson, K., Mietten, H., Uchida, M., LaFrance, B., Basu, G., Rynda-Apple, A., Douglas, T. **(2015)** Symmetry Controlled, Genetic Presentation of Bio-Active Proteins on the P22 Virus-like Particle using Bacteriophage L Decoration Protein. ***ACS Nano*** **9:9134-9147.**
6. Das, M., Basu, G. **(2015)** Protein-protein association rates captured in a single geometric parameter. ***Proteins: Structure, Function and Bioinformatics*** **83:1557-1562.**
7. Chongdar, N., Dasgupta, S., Dutta, A. B., Basu, G. **(2015)** Dispensability of zinc and the putative zinc-binding domain in bacterial glutamyl-tRNA synthetase. ***Biosci. Rep.*** **35:e00184.**
8. Chongdar, N., Dasgupta, S., Dutta, A. B., Basu, G. **(2014)** Preliminary X-ray crystallographic analysis of an engineered glutamyl-tRNA synthetase from Escherichia coli ***Acta Crystallogr. F Struct. Biol. Commun.*** **70:922-927.**
9. Dasgupta, S., Basu, G. **(2014)** Evolutionary insights about bacterial GlxRS from whole genome analyses: Is GluRS2 a chimera? ***BMC Evol. Biol.*** **14:26.**
10. Kumar, A., Manna, A., Ray, U., Mullick, R., Basu, G., Das, S., Roy, S. **(2014)** Specific Sequence of a Beta-turn in Human La Protein May Contribute to Species Specificity of Hepatitis C Virus ***J. Virol.*** **88:4319-4327.**
11. Goswami, N., Baksi, A., Giri, A., Xavier, P.L., Basu, G., Pradeep, T., Pal, S.K. **(2014)** Luminescent iron clusters in solution. ***Nanoscale*** **6:1848-1854.**
12. Chakraborti, S., Dhar, G., Dwivedi, V., Das, A., Poddar, A., Chakrabarti, G., Basu, G., Chakrabarti, P., Surolia, A., Bhattacharyya, B. **(2013)** Stable and potent analogs derived from the modification of the dicarbonyl moiety of curcumin. ***Biochemistry*** **52:7449-7460.**
13. Ganguly, H. K., Kaur, H., Basu, G. **(2013)** Local control of cis-peptidyl-prolyl bonds mediated by CH-π interactions: The Xaa-Pro-Tyr motif. ***Biochemistry*** **52:6348-6357.**
14. Das, S., Banerjee, B., Hossain, M., Thangamuniyandi, M., Dasgupta, S., Chongdar, N., Suresh Kumar, G., Basu, G. **(2013)** Characterization of DNA binding property of the tumor suppressor protein Integrase Interactor 1 (INI1/hSNF5). ***Plos One*** **8:e66581.**
15. Manna, A. K., Kumar A., Ray, U., Das, S., Basu, G., Roy, S. **(2013)** A cyclic peptide mimic of an RNA recognition motif of human La protein is a potent inhibitor of hepatitis C virus. ***Antiviral Res.*** **97:223-226.**
16. O'Neil, A., Prevelige, P. E., Basu, G., Douglas, T. **(2012)** Co-Confinement of Fluorescent Proteins: Spatially Enforced Communication of GFP and mCherry Encapsulated Within the P22 Capsid. ***Biomacromolecules*** **13:3902-3907.**
17. Das, M., Basu, G. **(2012)** Glycine Rescue of β-Sheets from cis-Proline. ***J. Am. Chem. Soc.*** **134:13536-13539.**
18. Das, L., Bhattacharya, B., Basu, G. **(2012)** Rationalization of paclitaxel insensitivity of yeast β-tubulin and human βIII-tubulin isotype using principal component analysis. ***BMC Research Notes*** **5:395.**
19. Saha, R., Dasgupta, S., Banerjee, R., Mitra-Bhattacharyya, A., Soll, D., Basu, G., Roy, S. **(2012)** A functional loop spanning distant domains of glutaminyl-tRNA synthetase also stabilizes a molten globule state. ***Biochemistry*** **51:4429-4437.**
20. Dasgupta, S., Manna, D., Basu, G. **(2012)** Structural and functional consequences of mutating a proteobacteria-specific surface residue in the catalytic domain of E. coli GluRS. ***FEBS Lett.*** **586:1724-1730.**
21. Ganguly, H. K., Majumder, B., Chattopadhyay, S., Chakrabarti, P., Basu, G. **(2012)** Direct Evidence for CH-π Interaction Mediated Stabilization of Pro-cisPro Bond in Peptides with Pro-Pro-Aromatic motifs. ***J. Am. Chem. Soc.*** **134:4661-4669.**

22. Banerjee, S., Bhowmik, D., Verma, P. K., Mitra, R. K., Sidhhanta, A., Basu, G., Pal, S. **(2011)** Ultrafast Spectroscopic Study on Caffeine Mediated Dissociation of Mutagenic Ethidium from Synthetic DNA and Various Cell Nuclei. ***J. Phys. Chem. B*** **115:14776-83.**
23. Banerjee, S., Verma, P. K., Mitra, R. K., Basu, G., Pal, S. K. **(2011)** Probing the Interior of Self-Assembled Caffeine Dimer at Various Temperatures. ***J. Fluoresc.*** **22:753-69.**
24. Chakraborti, S., Das, L., Kapoor, N., Das, A., Dwivedi, V., Poddar, A., Chakrabarti, G., Janik, M. E., Basu, G., Panda, D., Chakrabarti, P., Surolia, A., Bhattacharyya, B. **(2011)** Curcumin recognizes a unique binding site of tubulin. ***J. Med. Chem.*** **54:6183-6196.**
25. Cheema, J. and Basu G. **(2011)** MAPS: An interactive web server for membrane annotation of transmembrane proteins. ***Ind. J. Biochem. Biophys.*** **48:106-110.** **MAPS Webserver**
26. Pradhan, S. K., Dasgupta, D., Basu G. **(2011)** Human telomere d[(TTAGGG)$_4$] undergoes a conformational transition to the Na+-form upon binding with sanguinarine in presence of K+. ***Biochem. Biophys. Res. Comm.*** **404:139-142.**
27. Neogy, R. K., Nath, R., Basu, G., Raychaudhuri, A. K. **(2010)** Single step precursor free synthesis and characterisation of stable Au nanochains by laser ablation. arXiv:1010.1999v1 [cond-mat.mtrl-sci] .
28. Dasgupta, S., Saha, R., Dey, C., Banerjee, R., Roy S, Basu G. **(2009)** The role of the catalytic domain of E. coli GluRS in tRNAGln discrimination. ***FEBS Lett.*** **583:2114-2120.**
29. Banerjee R, Chattopadhyay S, Basu G. **(2009)** Conformational preferences of a short Aib/Ala-based water-soluble peptide as a function of temperature, ***Proteins*** **76:184-200.**
30. Das M, Basu G. **(2009)** Coulomb energies of protein-protein complexes with monopole-free charge distributions. ***J. Mol. Graph. Model.*** **27:846-51.**
31. Saha R, Dasgupta S, Basu G, Roy S. **(2009)** A chimaeric glutamyl:glutaminyl-tRNA synthetase: implications for evolution. ***Biochem. J.*** **417:449-55.**
32. Dasgupta, B, Chakrabarti, P, Basu, G. **(2007)** Enhanced stability of cis Pro-Pro peptide bond in Pro-Pro-Phe sequence motif. ***FEBS Lett.*** **581:4529-32.**
33. Banerjee M, Bhattacharyya, B., Basu, G. **(2007)** Differential colchicine-binding across eukaryotic families: the role of highly conserved Pro268β and Ala248β residues in animal tubulin. ***FEBS Lett.*** **581:5019-23.**
34. Saha. R. P., Basu, G., Chakrabarti P. **(2006)** Cloning, expression, purification, and characterization of Vibrio cholerae transcriptional activator. HlyU. ***Protein Expr. Purif.*** **48:118-25.**
35. Allen M, Bulte JW, Liepold L, Basu G, Zywicke HA, Frank JA, Young M, Douglas T. **(2005)** Paramagnetic viral nanoparticles as potential high-relaxivity magnetic resonance contrast agents. ***Magn. Reson. Med.*** **54:807-812.**
36. Gupta S, Banerjee M, Poddar A, Banerjee A, Basu G, Roy D, Bhattacharyya B. **(2005)** Biphasic kinetics of the colchicine-tubulin interaction: role of amino acids surrounding the a ring of bound colchicine molecule. ***Biochemistry*** **44:10181-10188.**
37. Basu, G., Sivanesan, D., Kawabata, T., Go, N. **(2004)** Electrostatic Potential of Nucleotide-free Protein is Sufficient for Discrimination Between Adenine and Guanine-specific Binding Sites. ***J. Mol. Biol.*** **342:1053-1066.**
38. Dasgupta, B., Pal, L., Basu, G. & Chakrabarti, P. **(2004)** Expanded turn conformations: Characterization and sequence-structure correspondence in α-turns with implications in helix folding. ***Proteins*** **55:305-315.**
39. Basu, G., Allen, M., Willits, D., Young, M. & Douglas, T. **(2003)** Metal Binding to Cowpea Mottle Virus Using Tb(III) Fluorescence. ***J. Biol. Inorg. Chem.*** **8:721-725.**
40. Pal, L., Chakrabarti, Basu, G. **(2003)** Sequence and Structural Patterns in Proteins from an Analysis of the Shortest Helices: Implications for helix nucleation. ***J. Mol. Biol.*** **326:273-291.**
41. Tanimoto, S., Basu, G., Kawabata, T., Go, N. **(2003)** On the Accuracy of Transmembrane Segment Prediction of Helical Integral Membrane Proteins. ***Genome Informatics*** **14: 557-558.**
42. Banerjee, R., Basu, G. **(2002)** A Short Aib/Ala-based Peptide-helix is as Stable as an Ala-based Peptide-Helix Double its Length. ***ChemBioChem*** **3:1263-1266.**
43. Banerjee, R., Basu, G. **(2002)** Direct evidence for alteration of unfolding profile of a helical peptide by far-ultraviolet circular dichroism aromaticside-chain contribution. ***FEBS Lett.*** **523:152-156..**
44. Banerjee, R., Basu, G., Chene, P., Roy, S. **(2002)** Aib-based Peptide Backbone as Scaffolds for Helical Peptide Mimics. ***J. Pep. Res.*** **60:88-94.**
45. Pal, L., Basu, G., Chakrabarti, P. **(2002)** Variants of 3_{10}-helices in Proteins. ***Proteins*** **48, 571:579.**
46. Kar, S., Sakaguchi, K., Shimohigashi, Y., Samaddar, S., Banerjee, R., Basu, G., Swaminathan, V., Kundu, T. K., Roy, S. **(2002)** Effect of Phosphorylation on the Structure and Fold of Transactivation domain of p53. ***J. Biol. Chem.*** **277:15579-15585.**

47. Sivanesan, D., Basu, G., Go, N. **(2002)** The Role of Electrostatics in Discrimination of Adenine and Guanine by Proteins. ***Genome Informatics* 13: 316-317.**
48. Ghose, M., Mandal, S., Roy, D., R. K. Mandal, Basu, G. **(2001)** Dielectric Relaxation in a Single Tryptophan Protein. ***FEBS Lett.* 509:337-340.**
49. Pal, D., Mahapatra, P., Manna, T., Chakrabarti, P., Bhattacharyya, B., Banerjee, A., Basu, G., Roy, S. **(2001)** Conformational properties of α-tubulin tail peptide: Implications for tail-body interaction. ***Biochemistry* 40:1512-15519.**
50. Sengupta, J., Ray, P. K. & Basu, G. **(2001)** Solution structure of an immunoactive peptide from Staphylococcal Protein A. ***J. Biomol. Struct. Dyn.* 18:773-881.**
51. Pal, L. & Basu, G. **(2001)** Neural Network Prediction of 3_{10}-helices in proteins. ***Ind. J. Biochem. Biophys.* 38:107-114.**
52. Kettani, A., Basu, G., Gorin, A., Majumdar, A., Skripkin, E. & Patel, D. J. **(2000)** A two-stranded template-based approach to G.(C-A) triad formation: designing novel structural elements into an existing DNA framework. ***J. Mol. Biol.* 301:129-146.**
53. Pal, L. & Basu, G. **(1999)** Novel protein structural motifs containing two-turn and longer 3_{10}-helices. ***Protein Eng.* 12:811-814.**
54. Basu, G., Kitao, A., Kuki, A., & Go, N. **(1998)** Protein Electron Transfer Reorganization Energy Spectrum from Normal Mode Analysis. II. Application to Ru-modified Cytochrome c. ***J. Phys. Chem. B* 102:2085-2094.**
55. Basu, G., Kitao, A., Kuki, A., & Go, N. **(1998)** Protein Electron Transfer Reorganization Energy Spectrum from Normal Mode Analysis. I. Theory. ***J. Phys. Chem. B* 102:2076-2084.**
56. Kuki, A., Anglos, A., Augspurger, J. D., Basu, G., Bindra, V. A., Kubasik, M., Pettijohn, A. **(1997)** Molecular Optical Rails Based on Aib, *in* ***Modular Chemistry , J. Michl (ed.)*** **pp 503 - 516 Kluwer, Academic Publishers.**
57. Chong, S., Miura, S., Basu, G., & Hirata, F. **(1995)** A Molecular Theory for the Non-Equilibrium Free Energy Surface in Electron Transfer Reaction. ***J. Phys. Chem.* 99:10526-10529.**
58. Basu, G., Kitao, A., Hirata, F., Go, N. **(1994)** A Collective Motion Description of the 3_{10}-/α-Helix Transition: Implications For a Natural Reaction Coordinate. ***J. Am. Chem. Soc.* 116:6307-6315.**
59. Basu, G., Kubasik, M., Anglos, D. & Kuki, A. **(1993)** Spin-Forbidden Excitation Transfer and Heavy Atom Induced Intersystem Crossing in Linear and Cyclic Peptides. ***J. Phys. Chem.* 97:3956-3967.**
60. Basu, G., Anglos, D., Kuki, A. **(1993)** Fluorescence Quenching in a Strongly Helical Peptide Series: The Role of Non-Covalent Pathways in Modulating Electronic Interaction. ***Biochemistry* 32:3067-3076.**
61. Basu, G., Kuki, A. **(1993)** Evidence for a 3_{10}- helical Conformation of an Eight-Residue Peptide from 1H-1H Rotating Frame Overhauser Studies. ***Biopolymers* 33:995-1000.**
62. Basu, G., Kuki, A. **(1992)** Conformational Preferences of Oligopeptides Rich in α-Aminoisobutyric Acid. II. A Model For The 3_{10}- / α-Helical Transition with Composition and Sequence Sensitivity. ***Biopolymers* 32:61-71.**
63. Basu, G., Bagchi, K., Kuki, A. **(1991)** Conformational Preferences of Oligopeptides Rich in α-aminoisobutyric Acid. I. Observation of a 3_{10}- / α-Helical Transition upon Sequence Permutation. ***Biopolymers* 31:1763-1774.**
64. Basu, G., Kubasik, M., Anglos, D., Secor, B. & Kuki, A. **(1990)** Long-Range Electronic Interactions in Peptides: The Remote Heavy Atom Effect. ***J. Am. Chem. Soc.* 112:9410-9411.**