

Department of Chemistry & Biochemistry
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EDUCATION

2003 Doctor of Philosophy

Computational Studies on Protein Stability in Prof Raghavan Varadarajan's Laboratory,
Molecular Biophysics Unit, Indian Institute of Science, Bangalore, India.

1998 Master of Science

Division of Biological Sciences, Indian Institute of Science, Bangalore, India.

1995 Bachelor of Science

Agricultural Sciences, Bidhan Chandra Krishi Vishwavidyalaya, West Bengal, India.

PROFESSIONAL POSITION

2013-PRES Assistant Professor

Department of Chemistry & Biochemistry, South Dakota State University, Brookings, SD.

2009-2013 Research Assistant Professor

Department of Chemistry & Biochemistry, South Dakota State University, Brookings, SD.

2006-2009 Post-doctoral Fellow

Structural and Functional Studies of Protein involved in Epigenetic Regulation of Human genome in the Laboratory of Prof Ming-Ming Zhou, Department of Structural and Chemical Biology, Mount Sinai School of Medicine, New York, NY, USA.

2002-2006 Post-doctoral Fellow

Molecular Modeling Studies in the Laboratory of Dr Roberto Sanchez, Department of Physiology & Biophysics, Mount Sinai School of Medicine, New York, NY, USA.

PUBLICATIONS (IN CHRONOLOGICAL ORDER)

Yi Liu, **Chakravarty S**, Moul Dey (2013). Phenethylisothiocyanate alters site- and promoter-specific histone tail modifications in cancer cells. *PLoS One* 8: e64535.

Chakravarty S*, Sheng Z, Iverson B, Moore B (2012). η^6 -type anion- π in Biomolecular Recognition. *FEBS Lett.* 586: 4180-6.

Yu K, Sheng ZZ, Huang B, Ma X, Li Y, Yuan X, Qin Z, Wang D, **Chakravarty S**, Li F, Song M & Sun H (2013). Structural, antigenic, and evolutionary characterizations of the envelope protein of newly emerging duck tembusu virus, *PLoS one*. **8**, e71319.

Sheng Z, Ran Z, Wang D, Hoppe AD, Simonson R, **Chakravarty S***, Hause BM & Li F (2013) Genomic and evolutionary characterization of a novel influenza-C-like virus from swine, *Archives of virology*.

Hause BM, Ducatez M, Collin EA, Ran Z, Liu R, Sheng ZZ, Armien A, Kaplan B, **Chakravarty S**, Hoppe AD, Webby RJ, Simonson RR & Li F (2013). Isolation of a novel swine influenza virus from Oklahoma in 2011 which is distantly related to human influenza C viruses, *PLoS pathogens*. **9**, e1003176.

Hause BM, Stine DL, Sheng ZZ, Wang Z, **Chakravarty S**, Simonson RR & Li F (2012). Migration of the swine influenza virus delta-cluster hemagglutinin N-linked glycosylation site from N142 to N144 results in loss of antibody cross-reactivity, *Clinical and vaccine immunology : CVI*. **19**, 1457-64.

Deng Q, Wang D, Xiang X, Gao X, Hardwidge PR, Kaushik R, Wolff T, **Chakravarty S** & Li F (2011). Development of a Split Luciferase Complementation Assay for the Detection of Viral Protein-Protein Interactions. *Journal of Virological Methods* 176, 108-111.

Lu W, Salzwedel K, Freed EO, **Chakravarty S**, Wild CT & Li F (2011). A Single Polymorphism in HIV-1 Subtype C SP-1 is Sufficient to Confer Natural Resistance to the Maturation Inhibitor, Bevirimat. *Antimicrob Agent Chemother* 55, 3324-3329.

Chakravarty S*, Ghersi D & Sanchez R (2011). Systematic Assessment of Accuracy of Comparative Models of Proteins Belonging to Different Structural Fold Classes. *Journal of Molecular Modeling* 17, 2831-2837.

Deng Q, Wang D, Xiang X, Gao X, Hardwidge PR, Kaushik R, Wolff T, **Chakravarty S** & Li F (2011). Nuclear Localization of Influenza B Polymerase Proteins and Their Binary Complexes. *Virus Research* 156:49-53.

Qiang Zhang, **Chakravarty S**, Dario Ghersi, Roberto Sanchez & Ming-Ming Zhou (2010). Biochemical Profiling of histone selectivity of the yeast bromodomain family. *PLoS One* 5, e8905.

Chakravarty S, Lei Zeng & Ming-Ming Zhou (2009). Structure and Site-Specific Recognition of Histone H3 by the PHD Finger of Human Autoimmune Regulator. *Structure* 17, 670-679.

Chakravarty S, Zhang B, Godbole S, Berger S & Sanchez R (2008). Systematic analysis of the effect of multiple templates on the accuracy of comparative models of protein structure *BMC Structural Biology* 8, 31-40.

Chakravarty S, Wang L & Sanchez R (2005). Accuracy of Structure-derived properties in Simple Comparative models of Protein Structure. *Nucleic Acid Research* 33, 244-259.

Chakravarty S, & Sanchez R (2004). Systematic Analysis of Added-value in Simple Comparative models of Protein Structure. *Structure* 12, 1461-1470.

Chakravarty S & Varadarajan R (2002). Elucidation of factors responsible for enhanced thermal stability of proteins: a structural genomics based study. *Biochemistry* 41, 8152-8161.

Chakravarty S, Bhingre A & Varadarajan R (2002). A procedure for detection and quantitation of cavity volumes in proteins: application to measure the strength of the hydrophobic driving force in protein folding. *J Biol Chem* 277, 31345-53.

Chakravarty S, Mitra N, Queitsch I, Suroolia A, Varadarajan R, Dubel S (2000). Protein stabilization through phage display. *FEBS Lett*. 476, 296-300.

Chakravarty S & Varadarajan R (2000). Elucidation of determinants of protein stability through genome sequence analysis. *FEBS Lett*. 470, 65-69.

Chakravarty S & Varadarajan R (1999). Residue depth: a novel parameter for the analysis of protein structure and stability. *Structure Fold Des*. 7, 723-732.

PROFESSIONAL EXPERIENCE

Structural Biology (NMR Spectroscopy), Computational Biology/Bioinformatics, Functional Genomics, Biochemistry and Biophysical Chemistry in study protein structure and function.

METHODOLOGICAL DEVELOPMENTS

Development of algorithm to compute “**Residue Depth**” routinely used in molecular modeling, protein folding and structure analysis.

INVITED TALKS

- 2011 Homology Modeling, Department of Mathematics and Statistics, SDSU April 2011, Host Dr. Donald Vestal.
- 2010 Structural Epigeomics and Bioinformatics, Pharmaceutical Sciences, SDSU Feb 2010, Host Dr. Omanathu Perumal & Prof Xiangmin Guan.
- 2010 Structural Epigeomics and Bioinformatics, Biology and Microbiology, SDSU March 2010, Host Dr. Feng Li.
- 2001 Novel parameter for the analysis of protein structure and stability. Program in Molecular Biophysics, Johns Hopkins Univeristy in March 2001. Host Prof GD Rose.

CONFERENCE PROCEEDINGS, ORAL & POSTER PRESENTATIONS

Chakravarty S, Ghersi D & Sanchez R (2011). Systematic Assessment of Accuracy of Comparative Models of Proteins Belonging to Different Structural Fold Classes. *Experimental Biology 2011, Walter E Convention Center, Washington DC, April 11.*

Chakravarty S, Zhang Q, Zhou MM (2007). Genome wide profiling of yeast Bromodomains for Histone binding selectivity. *NYSBG Meeting, City College, NY, Jan 24. (Seminar Speaker)*

Chakravarty S & Sanchez R (2006). Effect of multiple templates on the accuracy of comparative modeling *NYSBG Meeting, NYU, NY, Feb 24.*

Chakravarty S & Sanchez R. Added Value of Comparative Modeling. *NYSBG Meeting, Cold Spring Harbor Laboratory, NY, July 24.*

Chakravarty S & Varadarajan R. Estimation of the strength of the hydrophobic driving force in protein folding. *Vth John Hopkins Folding Meeting. Berkeley Springs, West Virginia, USA, 19-21 March 2001.*

Chakravarty S & Varadarajan R. A novel parameter for the analysis of protein structure and stability. *XIII International Biophysics Congress, New Delh, India, 19-24 September.*

PROFESSIONAL SOCIETY MEMBERSHIPS

2012-PRES Protein Society, USA

2010-PRES Biophysical Society, USA

2006-PRES American Association for the Advancement of Science

2004-2009 New York Academy of Science

1997-2000 Society of Biological Chemists, India

1999-2000 Indian Biophysical Society, India

REVIEWER FOR PROFESSIONAL JOURNALS

BMC Bioinformatics

Journal of Molecular Modeling

MENTOR OF STUDENTS & POST-DOCS (MY LABORATORY)

Francisca Egyr, Daniel Boamah (Graduate Student)

Tao Lin, ZiZhang Sheng, (Poc-Doc)

Bradley Iverson, Kyla Rush, Kaci Park, & Yeonji Lee (Undergraduates)

MISCELLANEOUS SCIENTIFIC ACTIVITY

Graduate Thesis committee Advisor, Dept of Chemistry and Biochemistry, South Dakota State University

Formed Bionanomechanics Discussion Group, South Dakota State University.

RESEARCH SUPPORT

USDA & SDSU AES (Agricultural Experimental Station) [PI] 04/01/2011-03/31/2014: “*Technology Platform for Epigenomics*”

South Dakota 2010 Center Grant – Center for the Biological Control and Analysis by Applied Photonics. (BCAAP) [MPI Ron Utecht, Adam Hoppe, Fathi Halawish, Youngae You] [Co-I] 01/06/2009-05/30/2014: “*Photo-epigenomics*”

SDRIC (South Dakota Research Innovation Center): Biochemical Spatiotemporal Network Resource (BioSNTR); Building a Bio-economy in South Dakota. 01/06/2013-04/30/2019.

ESTABLISHED COLLABORATIONS

SOUTH DAKOTA STATE UNIVERSITY

Dr. Adam Hoppe, Department of Chemistry & Biochemistry. [FRET Microscopy].

Dr. Feng Li, Department of Veterinary & Biomedical Sciences. [Antiviral Protein Design & Bioinformatic Analysis of Viral Proteins].

Dr. Moul Dey, Department of Health and Nutritional Sciences. [Nutrition and Epigenetics].

Dr. Senthil Subramaniam, Department of Plant Sciences. [Bioinformatic and Functional analysis of Plant Transcription and Chromatin Proteins].

Dr. Radhe Kaushik, Department of Biology & Microbiology. [Bioinformatics of Pathogen Proteins].

Dr. Brian Moore, Office of Information Technology. [Computational Biology].

NATIONAL INSTITUTES OF HEALTH

Dr. L Aravind Iyer, NCBI, NLM, NIH. [Bioinformatics & Protein Evolution]

UNIVERSITY OF EDINBURGH, UK

Dr. A. Jeyaprakash Arulanandam, Wellcome Trust Centre for Cell Biology. [Protein Crystallography].