

Rajgopal Srinivasan

Chief Scientist and Head – Life Sciences Research Area

TCS Research & Innovation

Education

- M.Sc (Chemistry), IIT-Madras, 1986
- Ph D (Chemistry) University of Illinois at Urbana-Champaign (1994)

Research Interests

- Algorithms and methods for analysis and interpretation of DNA and RNA Sequencing data
- Network models for discovery of novel gene-disease-phenotype associations
- Graph theory based algorithms for pan-genome analysis
- Text mining of biomedical documents for generation of networks of biological entities

Publications:

1. Kavya VNS, Tayal K, Srinivasan R, Sivadasan N. Sequence Alignment on Directed
2. Graphs. J Comput Biol. 2019 Jan;26(1):53-67. doi: 10.1089/cmb.2017.0264. Epub 2018 Sep 8. PubMed PMID: 30204489.
3. Rao A, Vg S, Joseph T, Kotte S, Sivadasan N, Srinivasan R. Phenotype-driven gene prioritization for rare diseases using graph convolution on heterogeneous networks. BMC Med Genomics. 2018 Jul 6;11(1):57. doi: 10.1186/s12920-018-0372-8. PubMed PMID: 29980210; PubMed Central PMCID: PMC6035401.
4. Punwani D, Zhang Y, Yu J, Cowan MJ, Rana S, Kwan A, Adhikari AN, Lizama CO, Mendelsohn BA, Fahl SP, Chellappan A, Srinivasan R, Brenner SE, Wiest DL, Puck JM. Multisystem Anomalies in Severe Combined Immunodeficiency with Mutant BCL11B. N Engl J Med. 2016 Dec 1;375(22):2165-2176. PubMed PMID: 27959755; PMCID: PMC5215776.
5. Chan AY, Punwani D, Kadlecsek TA, Cowan MJ, Olson JL, Mathes EF, Sunderam U, Fu SM, Srinivasan R, Kuriyan J, Brenner SE, Weiss A, Puck JM. A novel human autoimmune syndrome caused by combined hypomorphic and activating mutations in ZAP-70. J Exp Med. 2016 Feb 8;213(2):155-65. doi: 10.1084/jem.20150888. Epub 2016 Jan 18. PubMed PMID: 26783323; PubMed Central PMCID: PMC4749924.

6. Patel JP, Puck JM, Srinivasan R, Brown C, Sunderam U, Kundu K, Brenner SE, Gatti RA, Church JA. Nijmegen breakage syndrome detected by newborn screening for T cell receptor excision circles (TRECs). *J Clin Immunol*. 2015 Feb;35(2):227-33. doi: 10.1007/s10875-015-0136-6. Epub 2015 Feb 13. PubMed PMID: 25677497; PubMed Central PMCID: PMC4352190.
7. Rao A, P D, Renumadhavi CH, Chandra MG, Srinivasan R. Compressed sensing methods for DNA microarrays, RNA interference, and metagenomics. *J Comput Biol*. 2015 Feb;22(2):145-58. doi: 10.1089/cmb.2014.0244. Epub 2015 Jan 28. PubMed PMID: 25629590.
8. Punwani D, Wang H, Chan AY, Cowan MJ, Mallott J, Sunderam U, Mollenauer M, Srinivasan R, Brenner SE, Mulder A, Claas FH, Weiss A, Puck JM. Combined immunodeficiency due to MALT1 mutations, treated by hematopoietic cell transplantation. *J Clin Immunol*. 2015 Feb;35(2):135-46. doi: 10.1007/s10875-014-0125-1. Epub 2015 Jan 28. PubMed PMID: 25627829; PubMed Central PMCID: PMC4352191.
8. Yeleswarapu S, Rao A, Joseph T, Saipradeep VG, Srinivasan R. A pipeline to extract drug-adverse event pairs from multiple data sources. *BMC Med Inform Decis Mak*. 2014 Feb 24;14:13. doi: 10.1186/1472-6947-14-13. PubMed PMID: 24559132; PubMed Central PMCID: PMC3936866.
10. Mallott J, Kwan A, Church J, Gonzalez-Espinosa D, Lorey F, Tang LF, Sunderam U, Rana S, Srinivasan R, Brenner SE, Puck J. Newborn screening for SCID identifies patients with ataxia telangiectasia. *J Clin Immunol*. 2013 Apr;33(3):540-9. doi: 10.1007/s10875-012-9846-1. Epub 2012 Dec 20. PubMed PMID: 23264026; PubMed Central PMCID: PMC3591536.
11. Joseph T, Saipradeep VG, Raghavan GS, Srinivasan R, Rao A, Kotte S, Sivadasan N. TPX: Biomedical literature search made easy. *Bioinformatics*. 2012;8(12):578-80. doi: 10.6026/97320630008578. Epub 2012 Jun 28. PubMed PMID: 22829734; PubMed Central PMCID: PMC3398782.

Papers/Keynotes in Refereed International Conferences / Journals Protein-Protein Interactions and Disease

12. Aditya Rao, Gopalakrishnan B, Srinivasan R and Thomas Joseph. Protein-Protein Interactions and Disease, Protein Interactions, ISBN 978-953-51-0244-1, 2012.
13. Rao A, Yeleswarapu SJ, Raghavendra G, Srinivasan R, Bulusu G. PlasmolD: A P.falciparum protein information discovery tool. *In Silico Biol*. 2009;9(4):195-202.
14. PubMed PMID: 20109149.

15. Rao A, Yeleswarapu SJ, Srinivasan R, Bulusu G. Localization of heme biosynthesis pathway enzymes in *Plasmodium falciparum*. *Indian J Biochem Biophys*. 2008 Dec;45(6):365-73. Review. PubMed PMID: 19239121.
16. Jayashree B, Hanspal MS, Srinivasan R, Vigneshwaran R, Varshney RK, Spurthi N, Eshwar K, Ramesh N, Chandra S, Hoisington DA. An integrated pipeline of open source software adapted for multi-CPU architectures: use in the large-scale identification of single nucleotide polymorphisms. *Comp Funct Genomics*. 2007:35604. PubMed PMID: 18273384; PubMed Central PMCID: PMC2216057.
17. Fleming PJ, Fitzkee NC, Mezei M, Srinivasan R, Rose GD. A novel method reveals that solvent water favors polyproline II over beta-strand conformation in peptides and unfolded proteins: conditional hydrophobic accessible surface area (CHASA). *Protein Sci*. 2005 Jan;14(1):111-8. Epub 2004 Dec 2. PubMed PMID: 15576559; PubMed Central PMCID: PMC2253334.
18. Mezei M, Fleming PJ, Srinivasan R, Rose GD. Polyproline II helix is the preferred conformation for unfolded polyalanine in water. *Proteins*. 2004 May 15;55(3):502-7. PubMed PMID: 15103614.
19. Srinivasan R, Fleming PJ, Rose GD. Ab initio protein folding using LINUS. *Methods Enzymol*. 2004;383:48-66. Review. PubMed PMID: 15063646.
20. Gong H, Isom DG, Srinivasan R, Rose GD. Local secondary structure content predicts folding rates for simple, two-state proteins. *J Mol Biol*. 2003 Apr 11;327(5):1149-54. PubMed PMID: 12662937.
21. Srinivasan R, Rose GD. Methinks it is like a folding curve. *Biophys Chem*. 2002 Dec 10;101-102:167-71. PubMed PMID: 12487998.
22. Srinivasan R, Rose GD. Ab initio prediction of protein structure using LINUS. *Proteins*. 2002 Jun 1;47(4):489-95. PubMed PMID: 12001227.
23. Przytycka T, Srinivasan R, Rose GD. Recursive domains in proteins. *Protein Sci*. 2002 Feb;11(2):409-17. PubMed PMID: 11790851; PubMed Central PMCID: PMC2373444.
24. Gong H, Isom DG, Srinivasan R, Rose GD. Local secondary structure content predicts folding rates for simple, two-state proteins. *J Mol Biol*. 2003 Apr 11;327(5):1149-54. PubMed PMID: 12662937.
25. Pappu RV, Srinivasan R, Rose GD. The Flory isolated-pair hypothesis is not valid for polypeptide chains: implications for protein folding. *Proc Natl Acad Sci U S A*. 2000 Nov 7;97(23):12565-70. PubMed PMID: 11070081; PubMed Central PMCID: PMC18804.
26. Srinivasan R, Rose GD. A physical basis for protein secondary structure. *Proc Natl Acad Sci U S A*. 1999 Dec 7;96(25):14258-63. PubMed PMID: 10588693; PubMed Central PMCID: PMC24424.

27. Murthy VL, Srinivasan R, Draper DE, Rose GD. A complete conformational map for RNA. *J Mol Biol.* 1999 Aug 13;291(2):313-27. PubMed PMID: 10438623.
28. Creamer TP, Srinivasan R, Rose GD. Modeling unfolded states of proteins and peptides. II. Backbone solvent accessibility. *Biochemistry.* 1997 Mar 11;36(10):2832-5. PubMed PMID: 9062111.
29. Aurora R, Creamer TP, Srinivasan R, Rose GD. Local interactions in protein folding: lessons from the alpha-helix. *J Biol Chem.* 1997 Jan 17;272(3):1413-6. Review. PubMed PMID: 9019474.
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32. Seale JW, Srinivasan R, Rose GD. Sequence determinants of the capping box, a stabilizing motif at the N-termini of alpha-helices. *Protein Sci.* 1994.Oct;3(10):1741-5. PubMed PMID: 7849592; PubMed Central PMCID: PMC2142610.
33. Aurora R, Srinivasan R, Rose GD. Rules for alpha-helix termination byglycine. *Science.* 1994 May 20;264(5162):1126-30. Erratum in: *Science* 1994 Jun24;264(5167):1831. PubMed PMID: 8178170.
34. Gregory M. Anstead, Rajgopal Srinivasan, Chad S. Peterson, Scott R. Wilson, and John A. Katzenellenbogen, 1,2-Diarylindano[a]indane: a molecule with skewed, cofacially disposed aromatic moieties and a long carbon-carbon single bond *Journal of the American Chemical Society* 1991 113 (4), 1378-1385
35. Wei Dai, Rajgopal Srinivasan, and John A. Katzenellenbogen, Azophilic addition of alkylolithium reagents to fluorenimines. The synthesis of secondary amines. *The Journal of Organic Chemistry* 1989 54 (9), 2204-2208
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