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Academic qualifications:

2003-2008: Ph. D. in Biochemistry, University of Houston, TX, USA.
2001-2002: Advanced Diploma in Bioinformatics, University of Pune, India.
1999-2001: M. Sc. Biotechnology, Indian Institute of Technology (I.I.T.), Bombay, India.
1996-1999: B.Sc. Microbiology, Abasaheb Garware College, University of Pune, India.

Employment:

January 2011– Present: Assistant Professor, Bioinformatics Center, S. P. Pune University
May 2010 – November 2010: Consultant, VLife Sciences Technologies Pvt. Ltd., Pune
October 2008 – August 2009: Applications Scientist, VLife Sciences Technologies Pvt. Ltd., Pune

Teaching:

Basic Bioinformatics, Cheminformatics, Molecular Modeling and Simulations, Computational Approaches to Drug Design.

Research Interests:

Understanding the Structure-Function-Inhibition paradigm of proteins

1. Structure-function and inhibitor studies of DNA methyl transferases (in collaboration with Professor Deepti Deobagkar, SPPU) :
A novel site of the human DNMT1 is being pursued for identification of specific inhibitors. This is important since inhibitors of DNMT1 have the potential to be used as treatment for epigenetic disorders. Preliminary studies have yielded two compounds with micromolar activities.
2. eIF2-alpha kinase molecular mechanisms and inhibitor studies (in collaboration with Dr. Abhijeet Kulkarni and Professor J. K. Pal, SPPU) :
Long time scale atomistic molecular dynamics simulations are being performed on the eIF2-alpha kinases to understand the mechanism of the DFG flip.
3. Structure-function studies of nsSNPs in GPCRs: (in collaboration with Dr. Durba Sengupta) :
GPCRs form the largest class of drug targets and nsSNPs in these receptors have the potential to affect patient drug response. Several nsSNPs in the β_2 -adrenergic receptor are being studied using long time scale atomistic simulations to characterise their structure–function relationship.
4. Prediction of function of novel proteins: (with various collaborators)
Several novel proteins are being studied using computational and experimental approaches to unravel their function.

Publications:

1. Agrawal S, Kulabhusan PK, **Joshi M**, Bodas D, Paknikar KM. A high affinity phage-displayed peptide as a recognition probe for the detection of Salmonella Typhimurium. *J Biotechnol.* 2016 May 21. pii: S0168-1656(16)30283-8. doi: 10.1016/j.jbiotec.2016.05.027. [Epub ahead of print]
2. Tandale A, **Joshi M**, Sengupta D. Structural insights and functional implications of inter-individual variability in β 2-adrenergic receptor. *Sci Rep.* 2016 Apr 14;6:24379. doi: 10.1038/srep24379.
3. **Joshi M**, Rajpathak SN, Narwade SC, Deobagkar D. Ensemble based virtual screening and experimental validation of inhibitors targeting a novel site of human DNMT1. *Chem Biol Drug Des.* 2016 Feb 6. doi: 10.1111/cbdd.12741
4. Sengupta D, **Joshi M**, Athale C, Chattopadhyay A. What can simulations tell us about GPCRs: A multi scale approach. *Methods in Cell Biology.* 2016;132:429-52
5. Kumbhar V, Kharche S, Charla S, Baladhye VB, Kulkarni AP and **Joshi M**. Unraveling the function of novel yeast proteins. *Journal of Proteins and Proteomics (Abstract published in journal as Conference Proceedings)* 2014 Dec;5(3):112
6. Shahane G, Parsania P, Sengupta D and **Joshi M**. Molecular insights into the dynamics of pharmacogenetically important N-terminal variants of the human β 2-adrenergic receptor. *PLoS Comput. Biol.* 2014 Dec 11;10(12):e1004006.
7. **Joshi M**, Kulkarni A, Pal JK. Small molecule modulators of eukaryotic initiation factor 2alpha kinases, the key regulators of protein synthesis. *Biochimie.* 2013 Nov;95(11):1980-90.
8. Mallipeddi PL⁺, **Joshi M**⁺, Briggs JM. Pharmacophore-based virtual screening to aid in the identification of unknown protein function. *Chem Biol Drug Des.* 2012 Dec;80(6):828-42. ⁺Equally contributing authors
9. **Joshi M**, Ebalunode J and Briggs JM. Computational insights into the interaction of anthrax lethal factor with the N-terminal region of its substrates. *Proteins Structure Function Bioinformatics.* 2009, May 1, 75(2):323-35.
10. Kulkarni-Kale U, Bhosle, SG, Manjari GS, **Joshi M**, Bansode S, Kolaskar AS. Curation of viral genomes: challenges, applications and the way forward. *BMC Bioinformatics.* 2006 Dec 18;7 Suppl 5:S12.