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PROFESSIONAL APPOINTMENTS

Assistant Professor, Department of Biochemistry and Molecular Genetics 2018-*present*
University of Colorado, Anschutz Medical Campus, Aurora, CO

Research Specialist, Basic Science Division 2017-2018
Fred Hutchinson Cancer Research Center, Seattle, WA

EDUCATION/TRAINING

Fred Hutchinson Cancer Research Center, Seattle, WA 2012-2017
Postdoctoral Research Associate

University of North Carolina at Chapel Hill 2006-2012
Ph.D. in Biochemistry and Biophysics (2011)
American Heart Association predoctoral fellow

National Center for Biological Sciences, Bangalore, India 2005-2006
Research Associate

Anna University, Chennai, India 2002-2006
Bachelor of Technology in Industrial Biotechnology, Anna University, Chennai, India
First Class with Distinction

RESEARCH FOCUS

Chromatin dynamics and cellular memory in normal development and cancer,
Genomic method development

PUBLICATIONS

Google scholar: <https://scholar.google.com/citations?user=AXCYi5AAAAAJ&hl=en>

Pubmed: <https://www.ncbi.nlm.nih.gov/myncbi/browse/collection/40284203/?sort=date&direction=descending>

Notation: * denotes equal contribution

Peer reviewed research articles

1. Chereji RV*, **Ramachandran S***, Bryson TD, Henikoff S. Precise genome-wide mapping of single nucleosomes and linkers *in vivo*. *Genome Biology* 2018 Feb 9; 19(1):19
2. **Ramachandran S**, Ahmad K, Henikoff S. Transcription and remodeling produce asymmetrically unwrapped nucleosomal intermediates. *Molecular Cell* 2017 Dec 21; 68(6):1038-1053
3. Warfield L*, **Ramachandran S***, Baptista T, Devys D, Tora L, Hahn S. Transcription of Nearly All Yeast RNA Polymerase II-Transcribed Genes Is Dependent on Transcription Factor TFIID. *Molecular Cell* 2017 Oct 5; 68:1-12

4. Dronamraju R*, **Ramachandran S***, Jha DK*, Adams AT, DiFiore JV, Parra MA, Dokholyan NV, Strahl BD. Redundant Functions for Nap1 and Chz1 in H2A.Z Deposition. *Scientific Reports* 2017 Sep 7;7(1):10791
5. Thompson PM, **Ramachandran S**, Case LB, Tolbert CE, Tandon A, Pershad M, Dokholyan NV, Waterman CM, Campbell SL. A Structural Model for Vinculin Insertion into PIP2-Containing Membranes and the Effect of Insertion on Vinculin Activation and Localization. *Structure* 2016 Feb 7;25(2):264-275
6. **Ramachandran S**, Henikoff S. Transcriptional Regulators Compete with Nucleosomes Post-replication. *Cell* 2016 Apr 21;165(3):580-92
7. Wang L, Xie L, **Ramachandran S**, Lee Y, Yan Z, Zhou L, Krajewski K, Liu F, Zhu C, Chen DJ, Strahl BD, Jin J, Dokholyan NV, Chen X. Non-canonical Bromodomain within DNA-PKcs Promotes DNA Damage Response and Radioresistance through Recognizing an IR-Induced Acetyl-Lysine on H2AX. *Chemical Biology* 2015 Jul 23;22(7):849-61
8. **Ramachandran S**, Zentner GE, Henikoff S. Asymmetric nucleosomes flank promoters in the budding yeast genome. *Genome Research* 2015 Mar;25(3):381-90
9. Shirvanyants D, **Ramachandran S**, Mei Y, Xu L, Meissner G, Dokholyan NV. Pore dynamics and conductance of RyR1 transmembrane domain. *Biophysical Journal* 2014 Jun 3;106(11):2375-84
10. Henikoff S, **Ramachandran S**, Krassovsky K, Bryson TD, Codomo CA, Brogaard K, Widom J, Wang JP, Henikoff JG. The budding yeast Centromere DNA Element II wraps a stable Cse4 hemisome in either orientation in vivo. *Elife* 2014 Apr 15;3:e01861
11. Weber CM, **Ramachandran S**, Henikoff S. Nucleosomes are context-specific, H2A.Z-modulated barriers to RNA polymerase. *Molecular Cell* 2014 Mar 6;53(5):819-30 ***recommended in F1000***
12. **Ramachandran S***, Chakraborty A*, Xu L*, Mei Y, Samsó M, Dokholyan NV, Meissner G. Structural determinants of skeletal muscle ryanodine receptor gating. *Journal of Biological Chemistry* 2013 Mar 1;288(9):6154-65
13. **Ramachandran S**, Ding F, Weeks KM, Dokholyan NV. Statistical analysis of SHAPE-directed RNA secondary structure modeling. *Biochemistry* 2013 Jan 29;52(4):596-9
14. **Ramachandran S**, Temple B, Alexandrova AN, Chaney SG, Dokholyan NV. Recognition of platinum-DNA adducts by HMGB1a. *Biochemistry* 2012 Sep 25;51(38):7608-17
15. Shirvanyants D, Ding F, Tsao D, **Ramachandran S**, Dokholyan NV. Discrete molecular dynamics: an efficient and versatile simulation method for fine protein characterization. *Journal of Physical Chemistry B*. 2012 Jul 26;116(29):8375-82
16. King CL, **Ramachandran S**, Chaney SG, Collins L, Swenberg JA, DeKrafft KE, Lin W, Cicurel L, Barbier M. Debio 0507 primarily forms diaminocyclohexane-Pt-d(GpG) and -d(ApG) DNA adducts in HCT116 cells. *Cancer Chemotherapy and Pharmacology* 2012 Mar;69(3):665-77
17. Bhattacharyya D*, **Ramachandran S***, Sharma S, Pathmasiri W, King CL, Baskerville-Abraham I, Boysen G, Swenberg JA, Campbell SL, Dokholyan NV, Chaney SG. Flanking bases influence

the nature of DNA distortion by platinum 1,2-intrastrand (GG) cross-links. PLoS One 2011;6(8):e23582. doi: 10.1371/journal.pone.0023582

18. Gyimesi G, **Ramachandran S**, Kota P, Dokholyan NV, Sarkadi B, Hegedus T. ATP hydrolysis at one of the two sites in ABC transporters initiates transport related conformational transitions. *Biochimica et Biophysica Acta* 2011 Dec;1808(12):2954-64
19. Kota P*, Ding F*, **Ramachandran S**, Dokholyan NV. Gaia: automated quality assessment of protein structure models. *Bioinformatics* 2011 Aug 15;27(16):2209-15
20. **Ramachandran S**, Vogel L, Strahl BD, Dokholyan NV. Thermodynamic stability of histone H3 is a necessary but not sufficient driving force for its evolutionary conservation. *PLoS Computational Biology* 2011 Jan 6;7(1):e1001042
21. **Ramachandran S***, Kota P*, Ding F, Dokholyan NV. Automated minimization of steric clashes in protein structures. *Proteins* 2011 Jan;79(1):261-70
22. **Ramachandran S**, Serohijos AW, Xu L, Meissner G, Dokholyan NV. A structural model of the pore-forming region of the skeletal muscle ryanodine receptor (RyR1). *PLoS Computational Biology* 2009 Apr;5(4):e1000367
23. **Ramachandran S**, Temple BR, Chaney SG, Dokholyan NV. Structural basis for the sequence-dependent effects of platinum-DNA adducts. *Nucleic Acids Research* 2009 May;37(8):2434-48
24. Jayanth N, **Ramachandran S**, Puranik M. Solution structure of the DNA damage lesion 8-oxoguanosine from ultraviolet resonance Raman spectroscopy. *Journal of Physical Chemistry A*. 2009 Feb 26;113(8):1459-7
25. Meissner G, Pasek DA, Yamaguchi N, **Ramachandran S**, Dokholyan NV, Tripathy A. Thermodynamics of calmodulin binding to cardiac and skeletal muscle ryanodine receptor ion channels. *Proteins* 2009 Jan;74(1):207-11

Peer reviewed review articles

1. **Ramachandran S**, Ahmad K, Henikoff S. Capitalizing on disaster: establishing chromatin specificity behind the replication fork. *Bioessays* 2017 Apr;39(4)
2. **Ramachandran S**, Henikoff S. Nucleosome dynamics during chromatin remodeling in vivo. *Nucleus*. 2016 Mar;7(1):20-6
3. **Ramachandran S**, Henikoff S. Replicating Nucleosomes. *Science Advances* 2015
4. Redler RL, Shirvanyants D, Dagliyan O, Ding F, Kim DN, Kota P, Proctor EA, **Ramachandran S**, Tandon A, Dokholyan NV. Computational approaches to understanding protein aggregation in neurodegeneration. *Journal of Molecular Cell Biology* 2014 Apr;6(2):104-15

Book chapters

1. **Ramachandran S**, and Dokholyan N. V. "Homology modeling: generating structural models to understand protein function and mechanism" in "Computational Modeling of Biological Systems: From Molecules to Pathways", Editor: Dokholyan N. V., Springer Press (2012)

- Chaney, S. G., **Ramachandran, S**, Sharma, S., Dokholyan, N. V., Temple, B., Bhattacharyya, D., Wu, Y., and Campbell, S. "Differences in Conformation and Conformational Dynamics Between Cisplatin and Oxaliplatin DNA Adducts" in "Platinum and Other Heavy Metal Compounds in Cancer Chemotherapy", Editors: Bonetti, A., Leone, R., Muggia, F. M., and Howell, S. B., Humana Press, (2009)

AWARDS AND SCHOLARSHIPS

- 2012 F1000 Associate Faculty Member Travel Grant
2009-2011 American Heart Association Predoctoral Fellowship
2006-2007 Molecular and Cellular Biophysics Graduate Research Fellowship

TRAINING PROGRAMS (Degree granting)

- 2018 – current Structural Biology and Biochemistry, UC Denver

TEACHING

- 2018 Advanced Topics in Molecular Biology (MB7800, Genome Biology, **20 hours**) at University of Colorado Graduate School

PEER REVIEW

- 2007 – current Molecular Cell, Proceedings of the National Academy of Sciences, Nucleic Acids Research, PLoS Computational Biology, Epigenetics and Chromatin, Proteins, Journal of Theoretical Biology, Central European Journal of Biology, Open Life Sciences, Scientific Reports

MEETINGS

- 2017 Colorado chromatin meeting (Talk: “Chromatin dynamics during transcription”)
2016 ASBMB Special Symposium: Transcriptional Regulation by Chromatin and RNA Polymerase II, Snowbird, UT (Talk: “Transcriptional regulators compete with nucleosomes post-replication”)
2016 Cell Symposia: Transcriptional Regulation in Development and Disease, Chicago, IL (Talk: “Transcriptional regulators compete with nucleosomes post-replication”)
2016 Biology of Genomes, Cold Spring Harbor Laboratories, NY (Talk: “Transcriptional regulators compete with nucleosomes post-replication”)
2015 Keystone Epigenomics Conference, Keystone CO (Poster: “Asymmetric nucleosomes flank promoters in budding yeast genome”)
2011 ASBMB Annual Meeting Washington D.C. (Talk: “Thermodynamic stability of histone H3 is a necessary but not sufficient driving force for its evolutionary conservation”)
Abstract selected for the ASBMB graduate travel award
2011 Biophysical Society Meeting, Baltimore, MD (Poster: “Thermodynamic stability of histone H3 is a necessary but not sufficient driving force for its evolutionary

conservation”) *Abstract selected for the Biophysical society travel award*

- 2009 AACR Annual Meeting, Denver CO (Poster: “The effect of conformational dynamics of cisplatin- and oxaliplatin-DNA Adducts on binding of DNA damage recognition proteins such as HMGB1”)
- 2009 Biophysical Society Meeting, Boston MA (Poster: “Ryanodine receptor pore structure and function”)
- 2007 X International Symposium on Platinum Coordination Compounds in Cancer Chemotherapy, Verona, Italy (Talk: “Effect of Sequence Context on Conformational Dynamics of DNA adducts of Platinum Anticancer Drugs: MD simulations of Cisplatin and Oxaliplatin-DNA Adducts”)

TALKS

- November 1, 2017 Genome Sciences and the Computational Molecular Biology Program, University of Washington, Seattle WA. Title: “Caught in the act: Mapping chromatin dynamics during transcription.”
- July 24, 2017 Western Washington University, Bellingham, WA. Title: “Caught in the Act: Mapping Chromatin Dynamics During Transcription and Replication”
- Feb 19, 2014 Genome Sciences and the Computational Molecular Biology Program, University of Washington, Seattle WA. Title: “Asymmetric Nucleosomes Poise Yeast Promoters for Activation”
- May 10, 2013 Department of Biochemistry, University of North Carolina at Chapel Hill, Chapel Hill NC. Title: “Chromatin and Transcription: From A to H2A.Z”

TRAINEES

Postdoctoral fellows

Kameswaran Ravichandran Ph.D. 2018 – current

Research Associates

Grace Gamba, BS 2018 – current

THESIS COMMITTEES

Candidate

Advisor

Alexandra Born Beat Vogeli (Structural Biology and Biochemistry Program)

Rueben Rosas Ospina Mair Churchill (Structural Biology and Biochemistry Program)

PROFESSIONAL SERVICE

2010-2017 F1000 Associate Faculty Member