Shilpa Nadimpalli Kobren

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Currently seeking a position as a postdoctoral researcher in the New York City or Boston areas.

Education

exp. 2017 **Ph.D. in Computer Science** • Princeton University
Thesis: Detecting and Analyzing Variation in Protein Interaction Interfaces
Advisor: Mona Singh

2013 **M.Sc. in Computer Science** • Princeton University

2011 **B.Sc. in Biology & Computer Science**, *summa cum laude* • Tufts University
Thesis, Awarded Highest Honors: Correcting Protein Multiple Structural Alignments by Sequence Peeking
Advisor: Lenore Cowen

Awards & Honors

08/2015 **Siebel Scholar, Class of 2016** *awarded annually for academic excellence and demonstrated leadership to 93 top students from the world's leading graduate schools*

09/2011–09/2015 **NSF Graduate Research Fellowship** *for graduate study in STEM disciplines*

09/2011–09/2015 **Princeton Gordon Wu Fellowship** *for engineering graduate study*

05/2011 **Tufts James Schmolze Award** *for top undergraduate achievement in computer science*

05/2010 **Google Anita Borg Memorial Scholarship** *for women in computer science*

08/2007–05/2011 Tufts Neubauer Scholarship *for aptitude in research; grants to fully cover all four years of undergraduate student loans (1 in 10 of ∼1500)*

04/2011 Tufts Class of 1882 Prize Scholarship *for intellectual leadership (1 in 4 of ∼5000)*

04/2010 Tufts Audrey Butvay Gruss Award *for scientific achievement (1 in 4 of ∼5000)*

06/2009–10/2009 CRA-W/CDC Distributed Research Experiences for Undergraduates Fellowship

09/2008–05/2009 CRA-W Multidisciplinary Research Opportunities for Women Fellowship

06/2008–09/2008 NSF/NIH Southern California Bioinformatics Summer Institute Fellowship

05/2006 Massachusetts State Science Fair, 1st Place Award

Publications

2017 **SN Kobren**, M Singh. (2017). ″Structure-informed approach to discovering perturbed interaction interfaces in cancer.″ *Manuscript in preparation.*

SN Kobren, M Singh. (2017). ″Structure-based assessment of domain binding potential.″ *Manuscript in preparation.*

2015 **S Nadimpalli**, AV Persikov, M Singh. (2015). ″Pervasive variation of transcription factor orthologs contributes to regulatory network divergence.″ *PLoS Genetics*. 11: e1005011.

2012 N Daniels, **S Nadimpalli**, L Cowen. (2012). ″Formatt: Correcting protein structural alignments by incorporating sequence alignment.″ *BMC Bioinformatics*. 13: 259–266

2011 **S Nadimpalli***, N Daniels*, L Cowen. (2011). ″Formatt: Correcting protein structural alignments by sequence peeking.″ *Proceedings of the 2011 ACM Conference on Bioinformatics, Computational Biology, and Biomedicine*. 2: 315–319.

2009 J Rieffel, F Sauders, **S Nadimpalli**, H Zhou, S Hassoun, J Rife, B Trimmer. (2009). ″Evolving soft robotic locomotion in PhysX.″ *Proceedings of the 2009 ACM Conference on Genetic and Evolutionary Computation*. 2: 315–319.

Research & Work Experience

03/2012–Present **Graduate Research Assistant**, Princeton University • *Princeton, NJ*
"Detecting and Analyzing Variation in Protein Interaction Interfaces"
Investigating the evolution, natural variation, and disease-related mutation of gene regulatory networks through analysis of protein interaction interfaces under Prof. Mona Singh

Undergraduate Research Assistant, Tufts University • *Medford, MA*

01/2010–05/2011 *"Formatt: Correcting Protein Multiple Structural Alignments by Sequence Peeking"*
Improved the Matt protein structural aligner by incorporating a sequence alignment correction step and validating using objective measures under Prof. Lenore Cowen

09/2008–05/2009 *"Modeling the Neuro-Mechanical Control of a Soft-Tissue Organism"*
Evolved a solution representing the firing of neurons for muscle contraction using genetic algorithms to successfully elicit motion in a SoftBot under Prof. Soha Hassoun

06/2009–10/2009 **Summer Intern, Bioinformatics Dept**, Virginia Tech • *Blacksburg, VA*
"Cataloging Animal Retrocopies for Retrotransposon Model"
Developed a genome annotation independent algorithm to identify and classify retrocopies and chimeric genes given a transcriptome under Prof. Liqing Zhang

06/2008–09/2008 **Summer Intern, Biochemistry Dept**, University of California, Los Angeles • *Westwood, CA*
"Discovery of Novel Metabolic Types of Bacterial Microcompartments"
Implemented a pipeline to analyze oceanic metagenomic sequencing data for bacterial microcompartment (BMC) shell proteins to identify potentially novel metabolic BMC types under Prof. Todd Yeates

05/2007–08/2007 **Summer Intern, Preclinical Dept**, Shire Pharmaceuticals • *Cambridge & Lexington, MA*
Set up a secure database containing clinical and research reports for drugs in production or under testing.

06/2006–09/2006 **Summer Intern, Microbiology Dept**, Univ. of Massachusetts Medical School • *Worcester, MA*
"Identification of Genes Involved in Expansion of Chromosomal Repeat in E. Coli"
Developed a series of knockout bacterial strains and tested viability of bacteria and amplification of a specific chromosomal repeat under Prof. Anthony Poteete

Teaching & Mentoring Experience

01/2016–02/2017 **Mentor for First-Year Graduate Students**, Princeton University • *Princeton, NJ*
Spring 2016 Quantitative & Computational Biology graduate student project: "Identifying functional protein domain positions using population variation data"
Fall 2016 Computer Science graduate student project: "Framework for structural integration of nonsynonymous mutations in protein binding pockets"

06/2013–07/2013 **Mentor for Undergraduate Students**, Princeton University • *Princeton, NJ*
Summer 2013 Co-advised three undergraduates on a summer project through the Summer Programming Experiences program to build a secure voting mobile application

09/2012–05/2013 **Assistant Instructor**, Princeton University • *Princeton, NJ*
Fall 2012 & Spring 2013 Taught precepts twice weekly for *COS126: General Computer Science*, held office hours (∼10 hours/week), graded assignments and proctored midterm and final exams.
*Top rated (4.5/5 on average) by students for all precepts taught over both semesters.

09/2009–05/2010 **Teaching Assistant**, Tufts University • *Medford, MA*
Fall 2009 & Spring 2010 Attended lectures, assisted in labs, held office hours (∼10-18 hours/week) and graded assignments for two courses *CS40: Machine Structure and Assembly Language Programming* and *CS80: Programming Languages*.

02/2009–06/2009 **High School Bioinformatics Instructor**, Somerville High School • *Somerville, MA*
Analyzed *Illumina*-sequenced soil metagenomic data to discover new soil microbes, and led four spring seminars for Somerville High School students about gene sequencing, alignment algorithms, and BLAST. Project funded via a Tufts University Chemistry Department HHMI ARRAYS grant.

Presentations

Talks

01/06/2017 Structure-informed approach to discovering perturbed interaction interfaces in cancer, *Princeton Area Alumni Association First Friday Series, Princeton, NJ*

01/06/2016 Pervasive variation of TF orthologs contributes to regulatory network divergence, *Icahn Institute Think & Drink Symposium, Princeton, NJ*

04/02/2011 Formatt: Correcting Protein Structural Alignments, *Tufts 13th Annual Undergraduate Research Symposium, Medford, MA*

Posters

11/15/2015 Pervasive variation of transcription factor orthologs contributes to regulatory network divergence, *RECOMB/ISCB Conference on Regulatory and Systems Genomics, Philadelphia, PA*

03/20/2014 Pervasive binding specificity variation of Cys_2-His_2 zinc finger orthologs suggests trans mutations as major drivers of regulatory network divergence, *Systems Biology Meeting: Global Regulation of Gene Expression, Cold Spring Harbor, NY*

04/09/2011 Formatt: Correcting protein structural alignments by sequence peeking, *3rd Annual New England Undergraduate Computing Symposium, Boston, MA*

04/17/2010 Improving Matt Structural Alignments by Considering Sequence Homology, *2rd Annual New England Undergraduate Computing Symposium, Boston, MA*

10/09/2009 Cataloging Animal Retrocopies: An Annotation-Independent Methodology, *Midwest Women in Computing Conference, Chicago, IL*

Panels

10/02/2015 Questions about Going to Graduate School in Computer Science, *Department of Computer Science at Princeton University, Princeton, NJ*

03/28/2013 Getting More Out of Office Hours, *Princeton University McGraw Teaching Center, Princeton, NJ*

04/09/2011 Graduate School Application Process and Visit Experience, *3rd Annual New England Undergraduate Computing Symposium, Boston, MA*

Service & Outreach

08/2017 **ACM BCB'17 Student Activity Co-Chair**, *ACM Conference on Bioinformatics, Computational Biology, and Biomedicine, Boston, Massachusetts*

05/2017 **RECOMB 2017 Sub-reviewer for submitted papers**, *21st Annual International Conference on Research in Computational Molecular Biology, Hong Kong*

07/2010, 07/2015 **ISMB 2010 & 2015 Student Volunteer**, *International Conference on Intelligent Systems for Molecular Biology, Boston, Massachusetts*

05/2012–02/2015 **Princeton Graduate Student Government**, *Computer Science Representative, Events Board Member*

09/2011–Present Princeton Graduate Women in Science and Engineering, *Mentoring Program Participant*

08/2011–Present Tufts Alumni Admissions Program, *Applicant Interviewer*

07/2012–05/2014 Princeton Jewish Graduate Students and Young Professionals, *President, Coordinator*

10/2009–05/2011 Tufts Computer Science Reading Group, *Member & Coordinator*

09/2008–05/2011 Tufts Admissions Office, *April Open House Host, Voices Host, Speaker at Engineering Open House*

09/2007–05/2011 Tufts Association for Computing Machinery, Women, *Mentor & Outreach Contact*