Vivek Rai

B.Tech & M.Tech (Dual Degree), *Biotechnology*
Indian Institute of Technology Kharagpur, India
GPA: **8.64** (out of 10)   Jul 2012 - Apr 2017

RESEARCH EXPERIENCE

RESEARCH INTERN, Institute for Systems Biology, Seattle   May '16–Jul '16
Dr. Gustavo Glusman, Leroy Hood's Group

– Characterized *autosomal* sex-specific biases between male and female cohorts of 2000 whole-genome sequences from Complete Genomics and Illumina platforms.
– Analyzed *reference* coverage profiles and raw reads quality data, prepared controls, performed statistical analysis, and developed visualizations.

SENIOR THESIS, Indian Institute of Technology Kharagpur   Jul '16–present
Prof. Amit Kumar Das, Structural Biology Lab.

– Investigating the role of structural and functional patterns — for example, sequence, secondary structure, hydrophobicity — in origin of knotted proteins and how they may influence the knotting mechanism. (Talk)

RESEARCH FELLOW, Indian Institute of Science, Bangalore   May '15–Jul '15
Prof. Sandya V. Visweswariah

– Extracted, purified, and labeled the wild type and mutant (Q56C) Cytolysin A protein obtained from expression vectors in BL21(DE3) host strain. (Report)
– Assessed lytic activity and qualitatively demonstrated a lipid phase dependent kinetic behavior of Cytolysin A; one of the foremost such study of the protein.

PROGRAMMING EXPERIENCE

DEVELOPER, OpenSNP, Open Bioinformatics Foundation   May '16–Aug '16
Summer of Code, Google Inc.

– Proposed project to link Phenotypes to SNPs in OpenSNP.org portal — a crowdfunded, open-data repository with over *90 stars* on GitHub and *4000 users.*
– Used text-mining to rank matches, implemented database models and backend changes in Rails framework, and developed frontend visualizations.

DEVELOPER AND RESEARCHER, Wikidata Human Gender Indicators   May '15–Jan '16
Wikimedia Foundation Inc.

– Analyzed raw Wikidata information, as a part of $22,500 Inspire Grant grant from Wikimedia foundation, to quantify gender biases in Wikipedia corpus.
– Performed statistical analysis, developed the website for showcasing results, and assisted in research and community efforts by writing research paper, blog posts and reviewing reports.

CONTRIBUTOR, Sequenceserver, Wurm Lab   Jun '14–present
Dr. Yannick Wurm, QMUL, London

– Contributed more than *115 commits* over an year—project has over *100 stars* on GitHub and *30 citations*—and co-authored the research paper.
– Implemented BLAST+ output parser module, backend data-module in *Ruby*, and designed graphical overview scheme for BLAST hit information using D3.js.

Publications[1]

- Klein M, Gupta H, *Rai V*, Konieczny P, Zhu H. 2016. "Monitoring the Gender Gap with Wikidata Human Gender Indicators." OpenSym '16. `whgi.wmflabs.org`

- Priyam A, Woodcroft BJ, *Rai V*, Munagala A, Moghul I, Ter F, Gibbins MA, Moon H, Leonard G, Rumpf W & Wurm Y. 2015. "Sequenceserver: a modern graphical user interface for custom BLAST databases." biorXiv. `sequenceserver.com`

Skills

Bioinformatics, Systems Biology, Data Analysis, Data Visualization

Python (+scipy), R, Ruby, SQL, JavaScript, C, Shell scripting

GNU/Linux, Vim, Git, LaTeX, CLI

Awards & Achievements

- GATE Scholarship by University Grants Commisson, Ministry of Human Resource Development, India for pursuing master's degree.

- First place and third place in ISCB Wikidata and Wikipedia Competition 2015 respectively at ISMB, Orlando, FL.

- Tution fee waiver through Merit-cum-Means Scholarship for four consecutive years (2012-2016) to pursue undergraduate degree at IIT Kharagpur.

Conferences & Workshops

- Received Simons Foundation Fellowship to attend Intelligent Systems for Molecular Biology (ISMB) 2016 conference in Orlando, Florida.

- Attended Software Carpentry Workshop 2016, as a *Python and Git helper*, organized at Data Science Studio, eScience Institute, University of Washington.

- Two day workshop and lectures series (WMCB 2016) on trends in biological networks, computational protein design, and single cell data analysis at IISER, Kolkata.

- Attended winter school on Quantitative Systems Biology (QSB) 2015 organized at International Centre for Theoretical Science, Bangalore in association with ICTP, Italy.

- Attended a seminar series on sequencing, biological networks, and metabolic engineering in a Short Term Course on Computational Systems Biology 2014 organized at IIT Kharagpur.

Extra Curricular Activities

Core Team Member, iGEM IIT Kharagpur '15
- Wet lab team member and content writer for the iGEM IIT Kharagpur team.

Contributor, Wikipedia '12–'15
- Experienced editor with over 30 english articles and 1600+ edits.

Problem Setter, Hackerrank '15
- Authored tutorial coding problems for Ruby, Python and Linux sections.

Community Service, National Service Scheme '15
- Volunteered for teaching and community service for two years in nearby villages.

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[1]Google Scholar Profile