

Vijender Singh PhD

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Summary: Experienced bioinformatician with 15 years of experience in conducting and supervising research. Skilled in planning and managing budgets and multi-stakeholder projects. Proven track record of large genomic dataset analysis. Experience running research core facility with a strong focus on customer and stakeholder satisfaction. Possess excellent written, leadership, research, and problem-solving skills. Highly appreciated in teaching and training role.

Professional Experience

Associate Director -CBC (Oct 2018 – Present)

Computational Biology Core,
UConn Health,
University of Connecticut
Storrs, USA

Key Accomplishments:

- Provided AWS EC2 instance services for computationally intensive bioinformatics projects (Genome assembly).
- Developed workflow for surveillance and analysis of SARS-CoV-2 virus from clinical and waste-water-treatment samples. (https://github.com/vijender-singh/SARS-CoV-2_analysis-Visualisation)
- Developed workflows and provided hands-on analysis of RNA-seq (mRNA, ncRNA, miRNA), ChIP-seq, ATAC-Seq, transcriptome assembly, genome assembly, genome annotation, single-cell transcriptomics, CITE-Seq etc of clinical and non-clinical data (28 projects).
- Build and lead bioinformatics team to offer support to researchers at six regional campuses of University of Connecticut.
- Developed a financial strategy to build cash flow to support core's activities by introducing fee-for-service model (https://bioinformatics.uconn.edu/cbc_rates/).
- Lead the evaluation and introduction of commercial (GeneXplain, IPA, Geneious) and open-source bioinformatics solutions that were successfully integrated into the centre's analysis workflows.
- Provided consultancy on experimental design and analysis methodology that became the bases of 12 successful grant applications and 30+ research publications.
- Streamlined and improved the analytical pipeline and software in terms of features, accuracy and runtime.

Lead Bioinformatics Scientist (Oct 2016 – Oct2017)

Computational Biology Core,
UConn Health,
University of Connecticut
Storrs, USA

Key Accomplishments:

- Developed and implemented robust and scalable workflows for functional genomics assays.
- Established channels of communication between the core and clients that allowed the continuous update on project progress and feedback. (Asana, Slack, google docs).
- Provided an informed decision on the configuration of new high-performance computing cluster for advanced research analytics. Assisted in the maintenance of updated version of commonly used databases (<https://bioinformatics.uconn.edu/databases/>) and software packages (<https://bioinformatics.uconn.edu/software/>).
- Provided expert advice on study design to ensure that projects have sufficient power for downstream analysis.
- Developed tutorials in RNAseq analysis, ChIP-seq analysis, Genome size estimation, genome assembly, transcriptome assembly. (<https://bioinformatics.uconn.edu/resources-and-events/tutorials/>).
- Organized RNA-seq, ChIP-seq, de-novo transcriptome assembly) workshops to train researchers in bioinformatics skills (<https://bioinformatics.uconn.edu/data-therapy-sessions/>).

- Developed short training courses in computational languages (Linux, R, python) for researchers.
- Actively provided bioinformatics support to over 100+ research laboratories across 6 university campuses.

Senior Research Associate (NGS Data Analyst)
May 2011 – Oct 2016

Division of Gene Regulation and Expression
University of Dundee
Dundee UK

Key Accomplishments:

- Planned, coordinated and executed project “Understanding the role of chromatin remodeling ATPases SNF2H and SNF2L in nucleosomes positioning adjacent to CTCF and other transcription factors in HeLa cells” (2013-2016).
- Developed new workflows for RNA-seq, ChIP-seq and ATAC-seq and implemented in ongoing projects.
- Initiated collaborations and coordinated research activities with national (Edinburgh University, Dundee University) and international teams (FMI Switzerland, CNRS France).
- Initiated industry collaboration by outsourcing projects (Genotypic technology India, Edinburgh Genomics).
- Presented research work at EMBO conference series on chromatin and epigenetics. Heidelberg, Germany (2015) and British Yeast Group Meeting 2013, Nottingham, UK (2013)
- Published 5 research articles in peer-reviewed international journals.
- Tutored and evaluated coursework of Bachelors’ students (essay & article writing) (2013).
- Deputy Postdoc (research staff) representative with duties to attend the monthly divisional meetings and voice the issues of postdocs and research staff, organise seminars and presentations (2014-2016).

Postdoctoral Research Assistant
May 2007 – Oct 2011

Division of Gene Regulation and Expression
University of Dundee
Dundee UK

Key Accomplishments:

- Managed research project aimed “Understanding the role of ATP dependent chromatin remodelers in the organisation of chromatin” (2007-2011).
- Initiated and Coordinated research projects with national and international collaborators.
- Successfully developed an in-vivo assay for the functional characterisation of Chd1p a key chromatin remodeling enzyme.
- Developed methodology for in-vivo chemical mapping of nucleosomes.
- Published 5 research article in peer-reviewed international journals.
- Presented research work (Poster and Oral) at EMBO conference series on chromatin and epigenetics. Heidelberg, Germany (2011).
- Prepared and delivered lectures on molecular biology, PCR and sequencing methods (2009, 2010).

Education & Training

Certificate :

Supervised Machine Learning: Regression and Classification (Stanford University)
Statistics for Genomic Data Science (John Hopkins University)

Biostatistics for Health Professionals, University of Connecticut, 2018)(Audit).

PhD in Life sciences, Indian Institute of Science (IISc), India, 2007.

Master of Science in Chemistry, Bangalore University, India, 2000.

Bachelor of Science in Life Sciences, Rajasthan University, India, 1997.

MA Evening modules:

'Introduction to Project Management' and 'Practical & Effective Project Management' University. of Dundee (Nov 2013);
 12 weekly once course on 'Principles of Management' University of Dundee (Jan 2011);
 12 weekly once course on 'Strategic Management' University of Dundee (Jun 2012)

GRANTS

CoPI: Institute for Systems Genomics Seed Grant, Identifying Novel miRNAs to Investigate as Diagnostic Biomarkers in Patients with Statin-Associated Muscle Symptoms. \$12,399.81. PI: Amanda Zaleski

CoPI: National Science Foundation – Characterization of a novel, evolutionarily distinct chaperone for centromeric histone H3. PI: Barbara Malone (Not Funded)

CoPI: Research Enhancement Program: Assessing Structural Disorder as a New Key to Unlock Protein-Protein Interaction in Inflammatory Signaling. PI: Brian J. Aneskievich(Not Funded)

Co-Mentor: NIH K01 career development Application: "Development of Exosome-Based Biomarkers to aid Treatment of Diabetic Foot Ulcers. PI: Roshanak Sharafieh

TRAINING EXPERIENCE**Virtual Workshops**

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| Instructor , RNA-Seq workshop (Model) | 2016-2023 |
| Instructor , RNA-Seq workshop Non-Model | 2016-2022 |
| Instructor , Variant Detection | 2020-2023 |
| Instructor , HPC-Linux intro workshop | 2016-2023 |
| Instructor , RAD-Seq Workshop | 2020-2022 |
| Instructor , Genome Assembly Workshop | 2020-2022 |
| Instructor , Genome Annotation Workshop | 2020-2022 |
| Instructor , Somatic Mutation detection in Cancer | 2020-2022 |
| Instructor , Single Cell Transcriptomics | 2021-2023 |
| Instructor , Single Cell CITE-Seq | 2022 |
| Instructor , Structural Variants detection | 2022 |

UConn, Storrs, CT

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| Instructor , R - From basics to advance analytics | 2019-2022 |
| Guest Lecture , Bioinformatics of Pathway and Network Analysis (ANSC5619) | 2016-2018 |
| Guest Lecture , High performance computing in Bioinformatics (MCB 5430) | 2018-2022 |

University of Dundee

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| Guest Lecture , Molecular Biology Techniques | 2009, 2010 |
| Co-Instructor , Proteomics and Transcriptomics Data interpretation | 2013, 2014 |
| Co-Instructor , Software Carpentry Bootcamp | 2013 |

Indian Institute of Science, India

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| Instructor , Application of PCR and RT-PCR in clinical Diagnosis (Sir Dorabji Tata Centre for research in Tropical Diseases.) | 2003 |
| Instructor , Hands on Microarray Workshop and Data analysis, | 2002 |

Awards and Activities

Best Poster Prize, EMBO Conference Series, Heidelberg, Germany (2011).
Awarded Research Fellowship during PhD from Indian Institute of Science.
Awarded NET-CSIR Junior Research fellowship, CSIR, HRD Ministry, India (1999).

STEMNET Ambassador: Actively participate in school visits to encourage students to enjoy STEM subjects (2014-2016).

Lead a team of 6 people at Biotechnology Young Entrepreneurs Scheme, the BBSRC exercise on developing a business plan and competed in B-Yes competition at Edinburgh (2009).

Code Club Coordinator at St. Josephs RC Primary School, Dundee; Organise, plan and manage resources for effective club activities (2014-2016).

Genomics and Data Analysis Experience

BIOINFORMATICS

RNA-seq- (mRNA, miRNA, ncRNA)
ChIP-seq, ATACseq analysis
De novo Transcriptome assembly
De novo genome Assembly
Single Cell Genomics
Genome annotation
RAD-seq analysis
Cancer Genomics
Workflow development

DATA ANALYTICS

Data munging
Exploratory Data Analysis
Data visualisation
Supervised Learning (Regression/
classification)
Clustering
MySQL
Python /R / Linux
High-performance computing

MANAGEMENT

Project Management
Genomics project Consultant
Team Leadership/Coordination
Contract Research Organisation

Technical Support
Budget Management
Research and Analysis