

SANDEEP
Assistant Professor
Department of Bioinformatics
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DOB: 5th September 1986



Educational Qualifications

Ph.D. (Pursuing)

Department of Biophysics, Panjab University Chandigarh, India. PhD Thesis: Data Base filtering Technology Based Design and Characterization of Novel Anticancer Peptides.

M.Sc. (Bioinformatics) Department of Bioinformatics, GGDSD College, Panjab University Chandigarh, India (2008- 2010).

Bachelor of Science (Bioinformatics) M.L.N College Yamuna Nagar, Haryana, India (2005-2008).

Teaching/Research Experience

Assistant Professor in Department of Bioinformatics, GGDSD College, Chandigarh.

- 29 August 2023 – till date (Ad-hoc).
- 01 July 2016 – 20 June 2022 (Ad-hoc).
- 29 January 2015- 20 April 2016 (Guest Faculty).

Teaching Biochemistry, Application of Computational Biology, Molecular Modeling and Pharmacoinformatics, Biosafety and IPR, Metabolic Pathway analysis, Protein and Proteomics at Graduate and Post-graduate level.

Guest Researcher, CSIR IGIB-Delhi

(01 September 2022- 28 February 2023)

Assistant Professor in Department of Biotechnology, Post Graduate Government College, Sec-11, Chandigarh, Chandigarh.

(2014-2015)

Taught Bioinformatics, Genomics and Proteomics and IPR and Entrepreneurship

Job Experience

Pharmacovigilance Subject Matter Expert in Academy of Clinical Intelligence, Sector 8c, Chandigarh.

(May 2014 - January 2015.)

Role: Providing Training on Argus Safety, Clinical trial and Pharmacovigilance process, mentoring new trainee on database searching, case processing and narrative writing, Forming search strategies for mining medical literature, Drug Safety Case Processing on Oracle Argus Safety 7.0.2., Assessment of case reports for seriousness, causality and expectedness, MedDRA coding and WHO-Drug Dictionary coding, Case Triage, Case Narrative writing, Causality determination, and work according to GCP and ICH guidelines.

Pharmacovigilance Case Processing Associate in Academy of Clinical Intelligence, Sector 8c, Chandigarh.

(Jan 2014 – April 2014.)

Role: Drug Safety Case Processing on Oracle Argus Safety 7.0.2., Assessment of case reports for seriousness, causality and expectedness, MedDRA coding and WHO-Drug Dictionary coding, Case Triage, Case Narrative writing.

Project Trainee (GOSTAR Database) in *GVK Biosciences Pvt. Ltd. (Now Excelra), Hyderabad.*
(19 July 2010 – 20 July 2011)

Role: Curation and review of biological Databases like Medicinal Chemistry Journal database, Target database of GPCR, Hydrolase, Kinases, Transporters, NHR, Oxidoreductase, Protease etc.

Areas of Interest

- Non-coding RNAs, Peptide design, Machine learning, Genomics and Proteomics.
- Molecular Modeling and computational drug discovery.

Publications (Journal/Book Chapters)

Journal Publications:

1. Kushwaha, Vikas, **Sandeep Saini**, and Neena Capalash. "**Gene silencing of Histidyl-tRNA synthetase in Leishmania donovani promastigotes inhibits parasite growth and reduces virulence: A comprehensive computational and in vitro study.**" *Microbial Pathogenesis* (2024): 107138. **PubMed ID:** 39571830.
2. **Saini, Sandeep**, Aayushi Rathore, Sheetal Sharma, and Avneet Saini. "**Exploratory data analysis of physicochemical parameters of natural antimicrobial and anticancer peptides: Unraveling the patterns and trends for the rational design of novel peptides.**" *BioImpacts: BI* 14, no. 1 (2023): 26438. **PubMed ID:** 38327633.
3. **Saini, Sandeep**, Savi Khurana, Dikshant Saini, Saru Rajput, Chander Jyoti Thakur, Jeevisha Singh, Akanksha Jaswal, Yogesh Kapoor, Varinder Kumar, and Avneet Saini. "**In silico analysis of genomic landscape of SARS-CoV-2 and its variant of concerns (Delta and Omicron) reveals changes in the coding potential of miRNAs and their target genes.**" *Gene* 853 (2023): 147097. **PubMed ID:** 36470485.
4. Prerna Goel; Tanya Panchal; Nandini Kaushik; Ritika Chauhan; **Sandeep Saini**; Vartika Ahuja; Chander Jyoti Thakur. "**In silico functional and structural characterization revealed virulent proteins of *Francisella tularensis* strain SCHU4**". *Molecular Biology Research Communications* 2022, 73-84. doi: 10.22099/mbr.2022.43128.1719. **PubMed ID:** 36059929

5. Chander Jyoti Thakur, **Sandeep Saini**, Aayushi Notra, Bhawanshu Chauhan, Sarthak Arya, Rishabh Gupta, Jyotsna Thakur, Varinder Kumar **“Deciphering the Functional Role of Hypothetical Proteins from *Chloroflexus aurantiacs* J-10-f1 using Bioinformatics Approach.”** Molecular Biology Research Communications 2020;9(3):129-139 DOI: 10.22099/mbrc.2020.36894.1495. **PubMed ID:** 33313333.
6. Rathore, Aayushi, Anu Saini, Navjot Kaur, Aparna Singh, Ojasvi Dutta, Mrinal Bamhotra, Avneet Saini, and **Sandeep Saini**. **"Amino Acid Composition and Charge Based Prediction of Antisepsis Peptides by Random Forest Machine Learning Algorithm."** bioRxiv (2021): 2021-09.
7. **Sandeep Saini***; Avneet Saini; Chander Jyoti Thakur; Varinder Kumar; Rishabh Dilip Gupta; Jogesh Sharma. **"Genome-wide computational prediction of miRNAs in severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) revealed target genes involved in pulmonary vasculature and antiviral innate immunity"**. Molecular Biology Research Communications, 9, 2, 2020, 83-91. DOI: 10.22099/mbrc.2020.36507.1487. **PubMed ID:** 32802902
8. **Sandeep Saini***, Chander Jyoti Thakur, Varinder Kumar, Suchita Tandon, Varuni Bhardwaj, Sonia Maggar, Stanzin Namgyal, Gurpreet Kaur. **“Computational prediction of miRNAs in Nipah virus genome reveals possible interaction with human genes involved in encephalitis”**. Molecular Biology Research Communications 2018;7(3):107-118 DOI: 10.22099/mbrc.2018.29577.1322. **PubMed ID:** 30426028
9. **Sandeep Saini***, Chander Jyoti Thakur and Varinder Kumar. Akshay Suhag, Niharika Jakhar. **“In silico mutational analysis and identification of stability centers in human interleukin-4”**. Molecular Biology Research Communication (MBRC) (June 2018);7(2) ;67-76. pISSN: 2322-181X, eISSN:2345-2005. **PubMed ID:** 30046620
10. **Sandeep Saini***, Chander Jyoti Thakur and Varinder Kumar. **“Genome Wide Computational Prediction of miRNAs in Kyasanur Forest Disease Virus and their Targeted Genes in Human”**. Innovative Thoughts International Research Journal (ITIRJ) (Dec 2017); 5(3);3-47. ISSN 2321-5453.

11. Chander Jyoti Thakur, **Sandeep Saini**, Varinder Kumar, Kajal Abrol, Kanchan Pandey, Ankit Sharma. "**Comparative Analysis of Gene Prediction Tools: RAST, Genmark hmm and AMIgene**", International Journal of Engineering Trends and Technology (IJETT) (Jan 2017);43(4);234-237. ISSN:2231-5381.

Book Chapters:

1. Dasgupta, Ishita*, **Sandeep Saini***, Md Abuzar Khan, and Kumardeep Chaudhary. "**Population-level differences in COVID-19 prevalence, severity, and clinical outcome.**" Genomic Surveillance and Pandemic Preparedness (2023): 1. (Book Chapter). ***Equal Contribution.**

Seminars/ Conferences/Symposiums (Paper Presented)

- Attended one day symposium on "**New Horizon in Biomedical Sciences**" organized by GGSDS College, Sector-32 C, Chandigarh on **23 November, 2024.**
- Won second prize for the oral presentation on the work "**Viral coding miRNAs: Guardian of genomic surveillance in infectious disease**" in international seminar on Lab-to-field: Need for translational research organized by GGSDS College, Sec-32 C, Chandigarh and Indian Science Congress Association Chandigarh Chapter on **January 09, 2024.**
- Presented scientific poster on "**ACP-filter: an R shiny dashboard for filtering of novel peptide analogs based on the physicochemical patterns derived from natural anticancer peptides (ACPs)**" at AI-SPARK 2023, international conference cum workshop on artificial intelligence solutions for pharmaceutical research and knowledge organised by Dept. of Pharmacoinformatic, NIPER, Mohali, Panjab from **October 9 – 11, 2023.**
- Presented scientific poster on "**Exploratory data analysis of physicochemical parameters of natural antimicrobial and anticancer peptides: Unraveling the patterns and trends for the rational design of novel peptides**" at Recent Trends in Biomolecules and Therapeutics (RTBT-2023)" organized by Department of Biophysics, Panjab University on **December 23rd-24th March, 2023.**
- Presented scientific poster on "**A Random Forest Based Machine Learning Model for prediction of Lifespan extending Compounds in Drosophila melanogaster**" at 14th Chandigarh Science Congress (CHASCON-2020) jointly organized by Panjab University and Chandigarh

Region Innovation and Knowledge Cluster on **December 17th-19th, 2020.**

- Presented scientific poster on “**Differential RNA sequencing data analysis of anterior region of female *Drosophila melanogaster***” at National Symposium on “Biotechnology: Trends and Innovations”, organized by Department of Biotechnology, GGSDS College, Chandigarh on **February 7-8, 2020.**
- Presented scientific poster on “**In Silico Mutational Analysis of Human Interleukin-6 Using Evolutionary based Bioinformatics Approach**” in International Symposium on Bioinformatics: An Annual Event of APBioNET (Asia Pacific Bioinformatics Network) organized at HMV College, Jalandhar on **December 21-22, 2019.**
- Presented scientific poster on “**In Silico Prediction of miRNAs in Zika Virus Genome Reveals Their Possible Association with Human Genes Involved in Microcephaly.**” at BIO-cAMP 2018, a National Symposium on “Current Trends and future prospects in Biotechnology”, (Sponsored by TEQIP-III) organized by Department of Biotechnology, UIET, Panjab University, Chandigarh on **November 1 & 2, 2018.**
- Presented scientific poster on “**In silico mutational analysis and identification of stability centers in interleukin-4**” in UGC-Sponsored National Conference on “Recent Advances of Insilico Analysis: Role in Plant Stress Biology”, at Lyallpur Khalsa College, Jalandhar, Punjab from **October, 27-28, 2016.**

**Refresher
Courses/Workshops/
Training Programmes**

- Attended two-week FDP on “**NEP2020 Orientation & Sensitization Programme**” from **01.02.2024 to 14.02.2024** under Malaviya Mission Teacher Training Programme (MM-TTP) of University Grants Commission (UGC) Organized by UGC-Malaviya Mission Teacher Training Centre (MMTTC), Panjab University, Chandigarh.
- Attended one week FDP on “**Subject-Specific Benchmarking of Learning Outcomes: Outcome-Based Education**” organized by Goswami Ganesh Dutta Sanatan Dharma College and Guru Angad Dev Malaviya Mission Teacher Training Centre, SGTB Khalsa College, University of Delhi from **26th October – 1st November 2023.**
- Attended Eight-week FDP-cum-certification programme on course entitled “**Descriptive Statistics with R Software**” conducted by **IIT-Madras** from **August – October 2021** under NPTEL programme of Ministry of HRD, India.

- Attended five days national level online FDP on “**Perl Scripting**” organized by the Department of Computer Science and Engineering, Lords institute of engineering and technology, Hyderabad in association with Spoken Tutorial **IIT-Bombay** from **10-14 June, 2020**.
- Attended twelve-week FDP-cum-certification programme on course entitled “**Bioinformatics: Algorithms and Applications**” conducted by **IIT-MADRAS** from **January 27 - April 17, 2020** under NPTEL programme of ministry of HRD, India.
- Attended one week FDP programme on “**Biological Data Analysis & Data Science**” organized under RUSA by Department of Bioinformatics and Department of Biochemistry, GGSDS College, Chandigarh from February 27 - **March 04, 2020**.
- Attended four-week FDP-cum-certification programme on course entitled “**Functional Genomics**” conducted by **IIT-Kanpur** from August 26 – **September 20, 2019** under NPTEL programme of Ministry of HRD, India.
- Attended four-week FDP-cum-certification programme on course entitled “**Python for Data Science**” conducted by **IIT-MADRAS** from August 26 – **September 20, 2019** under NPTEL programme of ministry of HRD, India.
- Attended one day FDP organized by **Association of Microbiologist of India** organizes in **GGSDS College** on **November 8, 2016**.
- Attended an online workshop on “**An NCBI Guide to Finding and Analysing Metagenomic Data**” organised by NCBI (National Centre for Biotechnology Information), National Institute of Health, USA on **28 October, 2021**.
- Attended two-day online workshop on “**Orientation to online databases and algorithms for biologists**” organized by Biomedical Informatics Centre, ICMR-NIRRH, Mumbai from **30th September to 1st October 2021**.
- Attended e-workshop on “**Targeting Journals for Publications**” organized by PharmaState Academy on **24 December, 2020**.
- Attended one day International Workshop on “**Introduction to RNA-Seq and Variant Analysis Workflows using GALAXY**” organized by Department of Bioinformatics, HMV College, Jalandhar on **December 22, 2019**.
- Attended two days Workshop on “**Introductory Workshop on data Science for Biology**” organized by Centre for Systems Biology & Bioinformatics, Panjab University, Chandigarh on **March 7-8, 2019**.

- Attended one day Lecture-cum-Workshop on “**Indian Research Information Network System (IRNIS)**” organized by GGSDS College, Chandigarh under capacity building program of RUSA, U.T. administration, Chandigarh on **December 01, 2018**.
- Attended two days workshop on “**Automation System in Education Sector**” organized by GGSDS College Sect 32 C under RUSA programme of Director of higher education, Chandigarh Administration from **February 18-20, 2016**.
- Attended one day Workshop on “**Next Generation Sequencing, Data Analysis & Annotation**” organized by Centre for System Biology & Bioinformatics, Panjab University, Chandigarh on **April 3, 2015**.
- Attended 5 days Workshop on “**Next Generation Sequencing and Data Analysis**” organized by GGSDS College, Chandigarh from **February 18-22, 2015**.
- Participated in “**International Symposium on Drug Design and Development Research (DDR-2021)**” organized by the Global Institute of Pharmaceutical Education and Research, Kashipur, Uttarakhand held on **17th - 18th of December 2021**.
- Participated in “**Health Informatics Summit**” organized by the Department of Computational Biology, Indraprastha Institute of Information Technology Delhi (IIIT-D) and APbians (Bioinformatics Society) held on **16th - 19th of October 2021**.
- Participated in “**International symposium on Bioinformatics (InSyB 2020) for Disease Therapeutics**” organized by the Department of Biotechnology, Vignan’s Foundation for science, technology and research and APBioNET (Asia Pacific Bioinformatics Network) on **21 – 22 December, 2020**.
- Participated in the two days “**International symposium on bioinformatics and artificial intelligence in Covid-19 Era and beyond**” organized by Centre for computational biology and & bioinformatics, Amity institute of biotechnology, Amity University, Noida on **24-25 November, 2020**.
- Participated in “**International E-conference on Recent Trends in Drug Discovery, Diagnostics and Therapeutics**” organized by the Department of Biotechnology, Vignan’s Foundation for science, technology and research and Kansas State University on July **2nd – July 4th, 2020**.
- Attended two days online international symposium on “**Biotechnological Potential of Mushroom: An Emerging**

approach to Fight against COVID-19” organized by Department of Biotechnology, Sri Guru Tegh Bahadur Khalsa College, Jabalpur (MP) from **May 23-24, 2020**.

- Attended one day National Symposium on **“Perspectives in Genomics and Proteomics”** organised by Panjab university on **October 21, 2016**.
- Attended IPR Seminar on **“A Global Outlook on Biotech & Pharma Patents”** P.G. Department of Biotechnology, GGSDS College, Sector 32, Chandigarh on **February 24, 2015**.
- Delivered a talk on **“MOLECULAR DOCKING”** in 5 days Faculty Development Program on **“Excellence in Teaching Practices and Research Techniques: Pharma and Biotech Perspective”** organized by Chandigarh College of Pharmacy (CCP) under the aegis of Chandigarh Group of Colleges (CGC), Landran from 3rd to 7th July.
- Conducted an online workshop on **“Basics of Bioinformatics”** on April 14th 2022 at the school of life science, ITM University, Raipur, Chhattisgarh, India.

Invited Talks

No. of B.Sc. Projects Supervised Students

33

No. of M.Sc. Projects Supervised Students

35

Administrative Experience

- Acted as Faculty coordinator for the Manav, the Human Atlas project, collaboratively started by IISER Pune, National Centre for Cell Science (NCCS), and the Persistent Labs, Pune, India.
- Acted as Mentor in Desh Ke Mentor program of Delhi Government.
- Organizing Secretary **“Byte-Buddies: Python for Bioinformatics”** organized by department of bioinformatics.
- Performed the Admission counseling duties during the Centralized admission process.
- Organizing members of Department organized events.

Reviewer

Acting as peer-reviewer for the journals: Computer in biology and medicine, Gene, Gene reports, Plos One, ACS-omega, BMC infectious diseases, Protein: structure, function and bioinformatics, European Journal of inflammation, Human Heredity, Medicine, Open chemistry, Bioinformatics and Biology insights, Pharmaceutical Sciences, Journal of Taibah university of science.

Membership

- Life Membership of BIOinformatics CLU**b** for Experimenting Scientists (BIOCLUES) Society India.