Satyam Sangeet *PhD Candidate (Founder - CompObelisk)*

India   satyam_verma20@yahoo.in

(+91)-7028510659   LinkedIn

Research Gate   Company Website

Github   ORCID

Google Scholar   Personal Page

Education

2024/01 – present Sydney, Australia	**Doctor of Philosophy (Chronophysics & Chronobiology)** *University of Sydney*

2018/07 – 2020/06 Bhopal, India	**Master of Technology (Biotechnology)** *Maulana Azad National Institute of Technology*

- Average GPA - 9.59/10
- Master Dissertation - "**Effect of Stochasticity on neuronal signaling**" under the guidance of Dr. Suhita Nadkarni at Indian Institute of Science Education and Research (IISER) - Pune (12 months)

2014/08 – 2018/05 Pune, India	**Bachelor of Technology (Biotechnology)** *Dr D.Y. Patil Biotechnology and Bioinformatics Institute*

- Average GPA - 9.42/10
- Bachelor Dissertation - "**Development of Microbial zombies using synthesized metal nanoparticles**" under the guidance of Dr. Swapnil Gaikwad at Dr. D.Y. Patil Biotechnology & Bioinformatics Institute (6 months)
- Sports Secretary

Awards

2021/01/05	**Har Gobind Khorana IYBA (Innovative Young Biotechnologist Award)** **Junior Research Fellow Award** *Department of Biotechnology (DBT), Government of India*

Awarded the prestigious Har Gobind Khorana IYBA Junior Research Fellow Award for the project funded by the Department of Biotechnology (DBT), Government of India, to be conducted at Indian Institute of Science Education and Research (IISER) - Kolkata

2020/10/12	**Junior Research Fellow** *Department of Biotechnology (DBT), Government of India*

Awarded the Junior Research Fellow Award for the project funded by the Department of Biotechnology (DBT), Government of India, to be conducted at Indian Institute of Science Education and Research (IISER) - Bhopal

2018/07/19	**GATE Scholarship** *AICTE, Government of India*

Awarded the GATE scholarship by AICTE, Government of India for the completion of Master studies

2018	**Subroto Memorial Scholarship**
	Indian Air Force Benevolent Association
	Awarded the Subroto Memorial Scholarship for academic excellence in Bachelor Studies by Indian Air Force.
2013	**Subroto Memorial Scholarship**
	Indian Air Force Benevolent Association
	Awarded the Subroto Memorial Scholarship for academic excellence in Middle and High school
2011	**Jagdish Bose National Science Talent Search**
	Department of Science and Technology (DST), Government of India
	Represented my high school at JBNSTS organized by the Department of Science and Technology (DST), Government of India

Independent Technical Projects

EVOLVE Webserver ⧉

Developed a web-server that allows an easy user interface to perform feature calculation and machine learning model training on viral protein sequences to predict future mutations in variants of the virus. This webserver is developed based on my previous published work: "***Quantifying Mutational Response to Track the Evolution of SARS-CoV-2 Spike Variants: Introducing a Statistical-Mechanics-Guided Machine Learning Method*** ⧉ "

ARIAS (Article Research Intelligence And Summarization) ⧉

Developed a webserver that allows easy summarization of the research articles. The webserver also allows the user to interact with the research article and ask specific questions based on the published work. I integrated the language model ChatGPT to make the summarization and questions asked by the user to be interactive with the AI.

Research Experience

2021/01 – 2023/12	**Tracking Mutational Response of SARS-CoV-2 Variants**
	Har Gobind Khorana Junior Research Fellow | *Indian Institute of Science Education and Research (Kolkata)* | *PI: Dr. Susmita Roy*
	• Planned and organized the experiments to investigate the genomic fluctuations of SARS-CoV-2 sequences
	• Visualized the mutational pattern of different Variant of Concerns (VOCs) and Variant of Interests (VOIs)
	• Developed mathematical parameter and multi-layer perceptron model to quantify the mutational response
2020/10 – 2020/12	**Synthesis of Double Knot Toxins (DkTx) and sub-variants for TRPV1 Activation**
	Junior Research Fellow | *Indian Institute of Science Education and Research (Bhopal)* | *PI: Dr. Jeet Kalia*
	• Reviewed pieces of literature on Double knot toxins (DkTx) and their role in ion channel activation and concluded that the development of hybrid variants of DkTx will allow investigating the mechanism of ion channel activation.
	• Purified DkTx and different variants using HPLC and buffer preparations.
	• Handled the culture of *Xenopus laevis*

| 2019/05 – 2020/06 | **Effect of stochasticity on Neuronal Signalling** |
| | *M.Tech Dissertation | Indian Institute of Science Education and Research (Pune) | PI: Dr. Suhita Nadkarni* |

- Constructed the neural signaling model of CA3-CA1 hippocampal synapse.
- Inspected the effect of noise on neural signaling by varying ion channel numbers.

| 2019/01 – 2019/04 | **Targeting Chemotaxis Inhibitory Proteins (CHIP) of Staphylococcus aureus using bio-inspired Iron nanoparticles** |
| | *Independent Research Project | Maulana Azad National Institute of Technology | PI: Dr. Khushhali M. Pandey* |

- Developed iron nanoparticles using plant source against Staphylococcus aureus.
- Determined the surface topology of the nanoparticles by employing different characterization techniques.
- Mentored 10 undergraduate students for their bachelor thesis.
- Addressed the results in a reputed international conference.

| 2018/01 – 2018/05 | **Development of Microbial Zombies using synthesised metal nanoparticles** |
| | *B.Tech Dissertation | Dr. D.Y. Patil Biotechnology & Bioinformatics Institute | PI: Dr. Swapnil Gaikwad* |

- Developed and characterized silver nanoparticles to examine their antibacterial activity against *Pseudomonas aerugionsa.*
- Systematized the protocol for nanoparticle synthesis and reported the observations to a reputed journal

Publications

An in-silico approach to identify bioactive phytochemicals from Houttuynia cordata Thunb. As potential inhibitors of human glutathione reductase
Journal of Biomolecular Structure and Dynamics
Sangeet S, Khan A
doi: 10.1080/07391102.2023.2294181 ⬀

Evolution of Sequence and Structure of SARS-CoV-2 Spike Protein: A Dynamic Perspective
ACS Omega (2023)
Sinha A*, **Sangeet S***, Roy S (*equal authorship)
doi: 10.1021/acsomega.3c00944

In-silico screenign of potential phytochemicals against Extracellular Adherence Proteins (EAP) of Staphylococcus aureus from Indian Medicinal Plants
Research Journal of Pharmacy and Technology (2023)
Zeenat L, Prajapati S, **Sangeet S**, Khan A, Pandey KM
doi: 10.52711/0974-360X.2023.00762 ⬀

Quantifying Mutational Response to track the evolution of SARS-CoV-2 Spike variants: Introducing a Statistical Mechanics-guided Machine Learning Method
The Journal of Physical Chemistry B (2022)
Sangeet S, Sarkar R, Mohanty SK, Roy S
doi: 10.1021/acs.jpcb.2c04574 ⬀

Computational Analysis of Bacopa monnieri (L.) Wettst. compounds for drug development against Neurodegenerative Disorders

Current Computer Aided Drug Design (*2022*)

Sangeet S, Khan A, Mahanta S, Roy N, Das SK, Mohanta YK, Saravanan M, Tag H, Hui PK

doi: *10.2174/1573409918666221010103652* ↗

Exploratory Data Analysis of Genomic Sequence of Variants of SARS-CoV-2 Reveals Sequence Divergence and Mutational Localisation

Bioinformatics and Biology Insights (*2022*)

Sangeet S, Khan A

doi: 10.1177/11779322221126294 ↗

Computational Approach to attenuate the virulence of Pseudomonas aeruginosa through Bioinspired silver nanoparticles

3 Biotech, Springer (*2022*)

Sangeet S, Pawar S, Nawani N, Junarkar M, Gaikwad S

doi: 10.1007/s13205-022-03367-0 ↗

Antibacterial property of Biologically synthesized Iron Nanoparticles against Staphylococcus aureus

International Conference on Advancement in Materials, Manufacturing, and Energy Engineering (ICAMME-2021). Chapter 58, Springer Nature (*2021*)

Sangeet S, Khan A, Prabha S, Menaria K

doi:10.1007/978-981-16-8341-1_7 ↗

Drug Development against SARS-CoV-2 from Indian Medicinal Plants - Computational Approach

International Journal of Engineering Applied Sciences and Technology (*2020*)

Sangeet S, Khan A

doi:10.33564/IJEAST.2020.v05i06.047 ↗

Manuscripts Under Progress

EVOLVE: A webserver for exploring and analysing the mutational pattern of viral sequences
Nucleic Acid Research

Satyam Sangeet, Anushree Sinha, Madhav B Nair, Arpita Mahata, Raju Sarkar, Susmita Roy (2023) (under review)
To view the webserver ***Click Here*** ↗

The Quest for Novel Drugs Against COVID19: In silico study
ICAMME 2023

Shalini Prajapati, Lubna Zeenat, **Satyam Sangeet**, Arshad Khan, Khushalli M Pandey (2023). (under review)

Small molecules from Bacopa monneiri as potent inhibitors against Neurodegenerative disorders
Current Computer-Aided Drug Design

Sangeet S, Khan A. (2022) (under review). doi: 10.21203/rs.3.rs-1291471/v1

Academic Conference and Co-curricular Activities

2023   **iGEM IISER Kolkata**
Developing Machine Learning Models for Mutation Prediction in Xanthomonas oryzae
Won Gold Medal in iGEM 2023 held in France on the topic "Understanding the Social Language and Virulence Mechanisms of Bacteria: Strategy for Designing Disease Interference for *Xanthomonas oryzae*"

2018   **Volunteered in Industry-Academia Conclave organised by Dr. D.Y. Patil Biotechnology & Bioinformatics Institute**

2017   **Hutington's Disease: Pathophysiology and Genetic causes**
Poster Presentation
Sangeet S, Kapse S, Khan S | Dr. D.Y. Patil Biotechnology & Bioinformatics Institute

2016   **Usage of DNA as Memory Storage Device**
Poster Presentation
Sangeet S, Singh D, Kapse S | Dr. D.Y. Patil Biotechnology and Bioinformatics Institute

Invited Talks

2023/03   **Invited as a Speaker/Tutor to deliver a workshop on "Molecular Docking & Molecular Dynamic Simulations for Drug Discovery" for Faculty Members**
Part of Faculty Training Program
NEMCARE Group of Institutions

2022/01   **Invited as a guest lecturer for Science Foundation on the topic "Exploring DNA using Biopython"**
Deen Dayal Upadhyay College, University of Delhi

2021/02   **Workshop on "Molecular Docking in Drug Screening"**
CompObelisk

2020/08 – 2020/09   **Workshop on "Importance of Python & Biopython for Data analysis in Biological Systems"**
LifeGenBio

Technical Skills

Microbiological techniques	●●●●○	Analytical Techniques	●●●○○
Computational and Bioinformatics	●●●●○	Molecular Biology	●●●○○
Machine Learning	●●●○○		

Relevant Courses

Computational Biology

Bioinformatics, Cheminformatics, Drug Screening, Structural Biology, Data Analysis, Computational Neuroscience

Programming

Python, Biopython, R, C-programming, Matlab

Molecular Biology & Nanotechnology

Molecular Biology, Analytical Skills, Immunology, Animal Tissue Culture, Biosensor, and Nanotechnology, Virology

Microbiology and Cell BIology

Microbiology, Mammalian Physiology, Culture techniques, Cell Biology

Bioinformatic Skills

BLAST, Genomic Data Analysis, Database Scrapping, Machine Learning with Omics Data, Protein Sequence Analysis, Sequence Alignments

References

Dr. Swapnil Gaikwad, *Assistant Professor,* Dr. D.Y. Patil Biotechnology and Bioinformatics Institute
swapnil.gaikwad@dpu.edu.in, +91-20-65101870

Dr. Jeet Kalia, *Associate Professor,* Indian Institute of Science Education and Research (Bhopal)
jeet@iiserb.ac.in, +91-0755-2691437

Dr. Susmita Roy, *Assistant Professor,* Indian Institute of Science Education and Research (Kolkata)
susmita.roy@iiserkol.ac.in, +91-3361360000