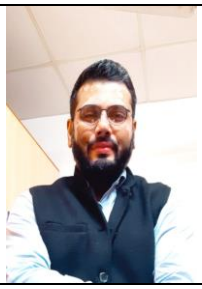
NAME	**ABHISHEK SENGUPTA**	
DESIGNATION	Assistant Professor - III	
EMAIL ID	asengupta@amity.edu	
CONTACT NUMBER	+91-8800662904	
RESEARCH INTERESTS	I am currently conducting extensive studies in the field of biological networks, constraint-based and predictive modelling, and multi-omics data integration. My research involves the application of Systems Biology and Machine Learning to analyse and model these complex systems. I am focused on generating hypotheses based on data analysis to gain a deeper understanding of physiological systems and discover new insights into disease mechanisms. Amity University, Noida is home to our dedicated research group that focusses on using computational methods to explore various aspects of biology and medicine. Our team is particularly interested in studying metabolic and gene regulatory networks, understanding disease development, unravelling molecular mechanisms, and identifying potential drug targets and potential markers. Our ultimate aim is to create accurate computational models and user-friendly web-tools/databases/pipelines/algorithms that can help advance scientific knowledge in these areas. **Key Research Areas:** • Reproductive Health • Infectious Diseases • Microbiomics and Metagenomics • Mental Health **Core Research Focus:** • AI/ML in Predictive Healthcare • Genome Scale Metabolic Modeling • Biological Network Inference and Analysis • Biomarker and Target Identification • Multi-Omics Data Integration and Analytics • Tool, Database and Pipeline Development	

EDUCATIONAL QUALIFICATIONS:

Name of College / University	Degree	Year
AUUP, Noida	B. Sc (Hons) Biotechnology	2006
Nottingham Trent University, Nottingham, United Kingdom	M.Sc Bioinformatics	2007
Amity University, Uttar Pradesh, Noida	Ph. D	2015

Title of Ph.D. thesis: "Modeling and Analysis of Human Energy Metabolic Network"

EXPERIENCE (in chronological order): Total 20 Years Research & Teaching

Designation	Type of post held (teaching/ research)	Name of the Institute	Year (From – To)
Assistant Professor	Teaching and Research	Systems Biology and Data Analytics Research Lab, Center for Computational Biology and Bioinformatics, Amity Institute of Biotechnology, Amity University, Noida. (Lab website: www.sbdaresearch.in)	2009 – till Date
PhD Scholar	Research	Systems Biology, Center for Computational Biology and Bioinformatics, Amity Institute of Biotechnology, Amity University, Noida	2011-2015
Lecturer	Teaching	Krupanidhi Degree College, Bangalore	2008-2009

No. of Ph.D. students supervised	03 (Ongoing) 01 (Thesis submitted)
No. of M.Tech. Students supervised:	95
No. of B.Tech. Students supervised:	270
PUBLICATIONS – 41	1. Kulshrestha, S., Narad, P., Singh, B., Pai, S.S., Vijayaraghavan, P., Tandon, A., Gupta, P., Modi, D. and **Sengupta, A**. (2024), **"Biomarker Identification for Preterm Birth Susceptibility: Vaginal Microbiome Meta-Analysis Using Systems Biology and Machine Learning Approaches"**. Am J Reprod Immunol, 92: e13905. https://doi.org/10.1111/aji.13905 2. **Sengupta A**, Gupta T, Chakraborty A, Kulshrestha S, Redhu R, Bhattacharjya R, Tiwari A, Narad P. "**A Novel Draft Genome-Scale Reconstruction Model of *Isochrysis* sp: Exploring Metabolic Pathways for Sustainable Aquaculture Innovations"**. Microbiol. Biotechnol. Lett 2024;52:141-

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4. Sudeepti Kulshrestha, Priyanka Narad, Somnath S. Pai, Brojen Singh, Deepak Modi, **Abhishek Sengupta**, **"Metagenomic investigation of 16S rRNA marker gene samples to analyze the role of race, ethnicity, and location in preterm birth: A comprehensive vaginal microbiome meta-analysis"**, Human Gene, Volume 39, 2024, 201260, ISSN 2773-0441. https://doi.org/10.1016/j.humgen.2024.201260.

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6. A, Tandon *et al*., **"Precision at its Core: Machine Learning-Infused Metabolomics Model for Preterm Birth Prediction in Human,"** *2023 14th International Conference on Computing Communication and Networking Technologies (ICCCNT)*, Delhi, India, 2023, pp. 1-7. https://doi.org/10.1109/ICCCNT56998.2023.10307581.

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8. Gupta P, Dube S, Priyadarshini P, Singh S, R AP, Srivastava VL, **Sengupta A**, Narad P. "**Deciphering Key Genes of Proliferative**

	and Secretory Phase Using Integrated Transcriptomics and Network Analysis". Microbiol. Biotechnol. Lett 2023;51:317-324. https://doi.org/10.48022/mbl.2304.04008 9. Narad, P., Kulshrestha, S., Chikara, A., Gupta, V., Kakrania, M., Saxena, R., … **Sengupta, A**. (2023). **"Systems-wide analysis of *A. fumigatus* using kinetic modeling of metabolic pathways to identify putative drug targets".** *Journal of Biomolecular Structure and Dynamics*, *42*(9), 4379–4394. https://doi.org/10.1080/07391102.2023.2223726 10. T. Gupta, S. Vashistha, S. Kulshrestha, P. Narad and **A. Sengupta**, **"Mucormycosis Metabolic Network Modeling: A Constraint-Based Approach,"** *2023 6th International Conference on Information Systems and Computer Networks (ISCON)*, Mathura, India, 2023, pp. 1-5, https://doi.org/10.1109/ISCON57294.2023.10111947. 11. **Sengupta A**, Narad P, Gupta R, Gupta A, Abbasi N. **"Deciphering the Role of Phosphoglycerate Kinase 1 in polycystic ovarian syndrome using Differential Gene Expression Analysis Approach"**. Biomed Pharmacol J 2023;16(2). https://dx.doi.org/10.13005/bpj/2659 12. Kulshreshtha S, Narad P, Singh B, Modi D, **Sengupta A**. "**Identification of Distinct Vaginal Microbiota Signatures Contributing Toward Preterm Birth Using an Integrative Computational Approach"**. Microbiol. Biotechnol. Lett 2023;51:109-123. https://doi.org/10.48022/mbl.2210.10008 13. Kamboj H, Gupta L, Kumar P, Sen P, **Sengupta A** and Vijayaraghavan P (2022), **"Gene expression, molecular docking, and molecular dynamics studies to identify potential antifungal compounds targeting virulence proteins/genes VelB and THR as possible drug targets against *Curvularia lunata"***. Front. Mol. Biosci. 9:1055945. https://doi.org/10.3389/fmolb.2022.105594 14. Narad, P., Gupta, R., Mohanty, S., Sharma, R., Abbasi, N., **Sengupta, A**. (2023). **"Systems Biology Paradigm for Exploring the Relation Between Obesity and Ovarian Cancer with a Focus on Their Genome-Scale Metabolic Models. In: Dutta, P.,**

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1. Narad, P., Gupta, R., Kulshrestha, S., **Sengupta, A.** (2024). **"Systems Biology in Understanding the Human Gut Microbiome and Related Diseases Highlighting Metabolic Modeling and Analysis. In: Joshi, S., Ray, R.R., Nag, M., Lahiri, D. (eds) Systems Biology Approaches: Prevention, Diagnosis, and Understanding Mechanisms of Complex Diseases"**. Springer, Singapore. **https://doi.org/10.1007/978-981-99-9462-5_17**

2. Narad, P., Gupta, R., Gupta, I., **Sengupta, A**. (2023). **"Protein Engineering Methods to Design Protein Therapeutics. In: Singh, D.B., Tripathi, T. (eds) Protein-based Therapeutics"**. Springer, Singapore. **https://doi.org/10.1007/978-981-19-8249-1_3**

3. Narad, Priyanka, **Sengupta Abhishek**, Gupta, Payal, Priyadarshini, Payal, Kulshrestha, Sudeepti and Chaurasia, Ankur. **"Integrating artificial intelligence techniques for analysis of next-generation sequencing data"**. *Artificial Intelligence and Computational Dynamics for Biomedical Research*, edited by Ankur Saxena and Nicolas Brault, Berlin, Boston: De Gruyter, 2022, pp. 67-96. **https://doi.org/10.1515/9783110762044-005**

4. Priyanka Narad, Romasha Gupta, **Abhishek Sengupta**, **"Chapter 9 - Plant metabolomics: a new era in the advancement of agricultural research, Editor(s): Pradeep Sharma, Dinesh Yadav, Rajarshi Kumar Gaur, Bioinformatics in Agriculture"**, Academic Press, 2022, Pages 139-160, ISBN 9780323897785, **https://doi.org/10.1016/B978-0-323-89778-5.00008-8.**

5. Priyanka Narad, G. Naresh, **Abhishek Sengupta, "Chapter 21 - Metabolomics and flux balance analysis, Editor(s): Dev Bukhsh Singh, Rajesh Kumar Pathak, Bioinformatics, Academic Press",** 2022, Pages 337-365, ISBN 9780323897754, **https://doi.org/10.1016/B978-0-323-89775-4.00008-0**.

	6. Chaurasia, A., Vats, S., **Sengupta, A.**, Bansal, A., Narad, P. (2021). **"Practical Applications of Artificial Intelligence for Disease Prognosis and Management. In: Saxena, A., Chandra, S. (eds) Artificial Intelligence and Machine Learning in Healthcare".** Springer, Singapore. **https://doi.org/10.1007/978-981-16-0811-7.** 7. **Abhishek Sengupta**, G. Naresh, Astha Mishra, Diksha Parashar, Priyanka Narad. **"Chapter Five - Proteome analysis using machine learning approaches and its applications to diseases, Editor(s): Rossen Donev, Tatyana Karabencheva-Christova, Advances in Protein Chemistry and Structural Biology, Academic Press"**, Volume 127, 2021, Pages 161-216, ISSN 1876-1623, ISBN 9780323853194, **https://doi.org/10.1016/bs.apcsb.2021.02.003**
PATENTS ***2 Copyrights granted and 1 technology transfer***	**1. Copyright Registered: ARTPRE:** An Online Tool to Predict the Success Rates of Assisted Reproductive Procedures in Indian Subcontinent (Registration number: L-109979/2021) **2. Copyright Registered: Fertility Predictor:** Web Application for Prediction of the Likelihood of a Successful Sperm Retrieval, Fertilization, Clinical Pregnancy And Live Birth In Males With "Y" Chromosome Microdeletions (Registration number: L-116225/2022) **This particular product has been commercially licensed APS Life Tech, Pune in October 2023**
RESEARCH PROJECTS Ongoing: ***(total no. 01)***	**Ongoing: DBT, Govt. of India,** A hybrid Bayesian approach to address socio-economic challenges in Assisted Reproductive Techniques across Indian sub population through a web-based implementation **amounting to (ongoing) 24.67 lakhs. 2020-2023: Principal Investigator**
AWARDS & HONOURS/ DISTINCTIONS	• DST SERB Young Scientist Travel Award • Selected for Advanced Course on In-silico Systems Biology at WellCome Trust Genome Campus, EMBL-EBI, UK. • Resource Person/Instructor, DBT Sponsored Short Term Training Course on "Application of Metagenomics Tools for Bioremediation Towards Environmental

	Restoration" on November 14th - 29th, 2017. • Resource Person, DST INSPIRE Internship Program for school students. • Reviewer: PLoS One, Heliyon, Frontiers in Pharmacology, Nature Scientific Reports, Nature Molecular Psychiatry • Reviewer: Computers in Biology and Medicine (Elsevier) • Reviewer: BMC Medical Genomics • Reviewer: Journal of Biomolecular Structure & Dynamics (Taylor & Francis) • **Appointed as a board member of the SIG-Applied Genetics of the prestigious Indian Fertility Society – IFS**
MEMBERSHIP with Professional/ Academic bodies	• Indian Fertility Society • Member of Society of Mathematical Biology • Member of European Systems Biology Community • Member of International Society of Computational Biology • Member of Nordic Metabolomics Society • Member of Swiss Metabolomics Society • Member of the Asia Pacific Bioinformatics Network (APBioNET)