Nayana P

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Born: 26.10.1995
Nationality: Indian

Research Interests

- Cancer Biology and Molecular biology
- Computational systems pharmacology and systems biology
- Computational Molecular Design, Molecular Dynamics simulations and Computational Drug Design

Research Skills

Formal education in biotechnology, molecular biology, bioinformatics and computational/systems biology
Programming knowledge of Python and R
Number of publications: 10 research papers, talks at scientific meetings and poster presentations

Experience

2024-Till date	Guest Faculty, Department of PG Studies and Research in Food Technology, Jnana Sahyadri Campus, Kuvempu University, Shankaraghatta-577451, Shivamogga, Karnataka, India.

Training

- Participating in the Transformative Leadership in STEMM (TLS) workshop, organized by the Initiative for Caste Equity (ICE), Office of Diversity & Inclusion, in collaboration with the SC/ST Cell, IIT Delhi, New Delhi, from 28th to 30th January 2025.

- Participated in a SERB-DST, Government of India sponsored workshop on "Panoramic Development of Radioprotector: Opportunities and Challenges" at Central Research Laboratory, K.S. Hegde Medical Academy, Nitte (Deemed to be University), Mangalore on 22-23 January 2025.

- Participated and acquired hands-on training by INDIAN SCIENCE ACADEMIES-SPONSORED 15-DAY REFRESHER COURSE on "Phytoengineering: Hands-on

training workshop on Genetic Engineering methods towards plant transgenics development" at the Departments of Biotechnology and Genetics, and Microbiology and Botany, School of Sciences, JAIN (Deemed-to-be University), Bengaluru – 560 027, Karnataka from 19 th Feb – 6 th March 2024.

- Research internship program under the SERB-CRG project at Central Research Laboratory, Nitte (Deemed to be University), Mangalore for a period of two months (1st December 2023 to 31st January 2024) for hands-on training in computational systems biology and Molecular dynamic simulations.

Education

2024	PhD in Biotechnology, Department of Biotechnology and Bioinformatics, Kuvempu University, Shankaraghatta, Shivamogga, Karnataka. Thesis: "Evaluation of Anti-cancer property of Piperine based on network pharmacology" Research Adviser: Dr. Manjunatha H Date of Award: 06.06.2024
2018	M. Sc (Biotechnology) Department of Biotechnology and Bioinformatics, Kuvempu University, Shankaraghatta, Shivamogga, Karnataka with 7.3 (CGPA).
2016	B. Sc (CZBt) University College of Science, Tukur (affiliated with Tumkur University), 73.8%.
2013	Pre-University College (PUC), Maharani Lakshmi Ammann college, MALLESHWARAM Bangalore, 58 %.
2011	Secondary School Leaving Certificate (SSLC) Government girls' junior college TIPTUR, 76 %.

Publications

> **Research Papers Published in International Journals**

1. **Nayana, P**., Gollapalli, P & Manjunatha, H., (2024). Investigating the structural basis of piperine targeting AKT1 against prostate cancer through in vitro and Molecular dynamics simulations. Journal of biomolecular structure & dynamics. DOI: 10.1080/07391102.2024.2331096.
2. **Nayana, P.** (2024). Evaluating the Impact of Piperine receptors on Prostate cancer through Computer Aided drug Designing. Proceedings of the National Academy of Sciences, India Section B: Biological Sciences. https://doi.org/10.1007/s40011-024-01577-5.
3. **Nayana, P**., Manjunatha, H., Gollapalli, P., Ashok, A. K., Karal Andrade, P., & V, V. (2023). A combined in vitro and molecular dynamics simulation studies unveil the molecular basis

of the anticancer potential of piperine targeting AKT1 against prostate cancer. Journal of biomolecular structure & dynamics, 42(7):3616-3629. https://doi.org/10.1080/07391102.2023.2220045. Impact Factor: 4.4.

4. **Prakash, N**., Hanumanthappa, M., Preema, K.A., & Vijayalaksmi, V. (2022). "Investigating Drug-Target Interactions of Piperine in PCa using Network Pharmacology and Docking studies". *Res. J. Biotech, 17*(10), 32-42. https://doi.org/10.25303/1710rjbt32042

5. **Prakash, N**. Evaluation of piperine analogs against prostate cancer targeting AKT1 kinase domain through network pharmacological analysis. In Silico Pharmacol. 11, 7 (2023). https://doi.org/10.1007/s40203-023-00145-5

6. Ashok AK, Gnanasekaran TS, Santosh Kumar HS, Srikanth K, **Prakash N**, Gollapalli P. High-throughput screening and molecular dynamics simulations of natural products targeting LuxS/AI-2 system as a novel antibacterial strategy for antibiotic resistance in *Helicobacter pylori*. J Biomol Struct Dyn. 2023 42(6):2913-2928. doi: 10.1080/07391102.2023.2210674.

7. **Prakash Nayana**. (2023). In silico Analysis of Phytochemicals for Identifying Novel Hub Genes against Prostate Cancer. Research Journal of Biotechnology. Vol. 18 (5): 69-77. https://doi.org/10.25303/1805rjbt069077

8. Preema K.A, Manjunatha H, Vijayalakshmi V and **Nayana P**. (2023). Protein interaction network analysis of β-catenin to map its crucial interacting genes using a systems biology approach. International Journal of pharmaceutical sciences and drug research, 15(2):176-188. https://doi.org/10.25004/IJPSDR.2023.150209.

9. Vijayalakshmi V Manjunatha H, Preema K.A and **Nayana P**. (2023). Computer-assisted drug design of AITC for treatment of cancer: A combined molecular target identification study and drug-target prediction. Research Journal of Biotechnology, vol.18 (3): 107-115. doi: https://doi.org/10.25303/1803rjbt1070115

10. Vijayalakshmi V Manjunatha H, Preema K.A, **Nayana P**. and Jyothi V. (2023) Unraveling the molecular mechanism of Allyl isothiocyanate (AITC) through network pharmacological approach: Protein-ligand interaction study and its validation on a biological system. Inter. J. Biol. Biotech, 20(1): 17-29. 10.5555/20230121025

National / International workshop attended

- Participated in the workshop on "Cytogenetics, Cell and Molecular biology techniques" conducted by JSS Academy of Higher Education and Research (JSS AHER), Mysore under the Department of Science and Technology, Synergistic training program utilizing the Scientific and Technology Infrastructure (DST-STUTI) scheme at the Department of Biotechnology and Department of Medicine, JSS Medical College and Hospital, Mysore between June 18th to 24th 2022.

National / International conferences

1. Presented a poster entitled "Exploring the Molecular mechanism of Piperine in PCa using network pharmacology approach" in a one-day National Seminar on Recent Perspectives in

Biotechnology Research, on 31st March 2022, organized by Dept. of Biotechnology, Kuvempu University, Shankaraghatta, Shimoga, Karnataka-577451.

2. Delivered an oral presentation on "Investigating Drug-Target Interactions and mechanism of Piperine in PCa by using docking studies and network pharmacology approach" in an International Virtual conference on "Biological Innovations and Computational Exploration for Pandemic Challenges (BICPAC 22), on 24-25 February, organized by Department of Biotechnology and Bioinformatics BISHOP HERBER COLLEGE (AUTONOMOUS).

3. Participated and presented (Oral and Poster) on a Research paper entitled "Investigating Drug-Target Interactions of piperine against PCa using Network Pharmacology approach" at Research Scholar Meet-2022(RSM-2022) held on 10th & 11th November, 2022 organized by the school of Biotechnology and Bioinformatics, D.Y.Patil Deemed to be University, Navi Mumbai.

TECHNICAL SKILLS AND COMPETENCES

➢ **Experimental Skills**

- DNA and RNA isolation, PCR, cloning, cell cycle analysis, SDS-PAGE, Western blot, Agarose gel electrophoresis, COMET assay and other molecular biology techniques

➢ **Bioinformatics Applications**

• **Systems Biology**	Cytoscape, Cell designer
• **Gene Ontology & Enrichment analysis**	DAVID Functional annotation tool, PANTHER database
• **Molecular dynamic simulations**	AMBER20, GROMACS
• **Quantitative kinetic modeling**	Copasi, MATLAB, COBRAToolbox
• **Molecular Modeling**	Autodock, Accelary's Discovery studio, Chemdraw, Modeller.
• **Sequence Analysis**	MEGA, Bio3D, other online tools etc.

➢ **Computer skills**

- Programming with R and Python.
- Operating System: Windows, Linux.

Referees

1. Dr. Manjunatha H
   Professor and chair,
   Department of Biochemistry
   Bangalore University
   Bangalore.
   Mobile: +91 9762661348
   Email: manjunatha75@gmail.com

2. Dr. Santosh Kumar H.S.
   Associate Professor
   Department of Biotechnology and Bioinformatics
   Kuvempu University
   Shankaraghatta, Karnataka.
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3. Dr. Gollapalli Pavan,
   Assistant Professor Grade-II
   Center for Bioinformatics
   Nitte (Deemed to be University),
   Mangalore, Karnataka.
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Declaration

I hereby declare that the above-mentioned information is correct and true to my knowledge.

Nayana P