

Dr. Amit Ranjan



Designation: Associate Professor

Email ID: amith.ranjan@dpu.edu.in, mtranjan@yahoo.com

Qualification: M.Sc. Ph.D.

Area of Specialization: Cancer metastasis, Glycobiology, Recombinant DNA Technology

Research Interest:

1. Role of tetrasapnin (CD151 and CD63) in cancer metastasis
2. Role of O-GlcNAcylation and N- linked glycosylation in process critical for cancer metastasis.
3. *In-silico* approaches for studying and solving biologically relevant questions

EDUCATIONAL QUALIFICATIONS:

Ph.D.: ACTREC, Tata Memorial Centre, Homi Bhabha National Institute (HBNI), Mumbai; Thesis title: Role of β 1,6 branched N-oligosaccharides in regulating key cellular processes Involved in cancer cell invasion.

Master of Science: (Molecular Biology and Biotechnology), Tezpur University, India.

Bachelor of Science: (Zoology), St. Columba's College, Vinoba Bhave University, India

ACADEMIC AND RESEARCH EXPERIENCE:

Associate Professor: Dr. D. Y. Patil Biotechnology and Bioinformatics Institute, Tathawade, Pune (August 2024 till now)

Assistant professor: Dr. D. Y. Patil Biotechnology and Bioinformatics Institute, Tathawade, Pune (August 2014 till 30th July)

Senior Research Fellow: ACTREC, Mumbai January 2012 to January 2014

AWARDS AND ACHIEVEMENTS:

1. Qualified Biotechnology Entrance Test (DBT-BET), in 2005, conducted by Department of Biotechnology, Government of India (AIR-23).
2. Qualified National Eligibility Test for Lectureship (NET-LS) in December 2005, jointly conducted by Council for Scientific and Industrial Research (CSIR) and University Grants Commission (UGC), Government of India.
3. Qualified GATE conducted by IIT, Kharagpur, India, 2006 (AIR-161).
4. Qualified All India M.Sc. DBT entrance Exam. 2004, conducted by Jawaharlal Nehru University, India.
5. Received Travel award from Society of Glycobiology for attending "The joint meeting of the

Society for Glycobiology and American Society for Matrix Biology (ASMB)", 2012.

6. Received travel fellowship from **PATEL KANTABEN KANTILAL** for attending "The Joint Meeting of the Society for Glycobiology (SFG) and American Society for Matrix Biology (ASMB), 2012.

7. Member of Society of Glycobiology (2012 -2014).

8. Recognition as Research guide for Ph.D. program from Dr. D.Y. Patil University in 2020

9. IIC, MHRD "Innovation ambassador" 2020-2021

REVIEWER:

- Advanced Biology
- Translational Cancer Research
- ChemMedChem

SCIENTIFIC COMMITTEE MEMBER:

1. Member of Faculty of Science and Technology (from 29th May 2024 till 28th May 2027).
2. Member of Board of Studies in Biotechnology and Bioinformatics under faculty of Science and Technology (from 29th May 2024 till 28th May 2027).
3. Member of Board of Studies in Biotechnology and Bioinformatics under faculty of Science and Technology (from 1st March 2021 till 28th February 2024).
4. Member of Society for Glycobiology (2012 till 2015).

PUBLICATIONS:

1. Vishal Kumar Sahu, Kiran Bharat Lokhande, Venkateswar K. Swamy, Soumya Basu, **Amit Ranjan** Role of the transmembrane polar residues on CD151 in cholesterol binding in Journal of Biomolecular Structure and Dynamics.TBSD-2024-1320 (Accepted 30th July 2024)
2. Vishal Kumar Sahu, Ankita Subhadarsani Parida, **Amit Ranjan**, Harishkumar Madhyastha, Soumya Basu miRVim: Three-dimensional miRNA Structure Database, Microna. 2024 Aug 20. doi: 10.2174/0122115366307988240809045125. Epub ahead of print. PMID: 39171462.
3. Saurabh Dey, Bini Biswas, Sangeeta Ballav, Vishal Kumar Sahu, **Amit Ranjan***, Soumya Basu, Dietary flavonoids as modulators of non-coding RNAs in Hormone-associated Cancer, Food Chemistry Advances 3, 16th May 2023 <https://doi.org/10.1016/j.focha.2023.100321>
4. Saurabh Dey, Soumya Basu, **Amit Ranjan***, "Revisiting the role of CD63 as pro-tumorigenic or anti-tumorigenic tetraspanin in cancers and its theragnostic implications" Advanced Biology, 4th May 2023 <https://doi.org/10.1002/adbi.202300078>
5. Sangeeta Ballav, **Amit Ranjan**, Soumya Basu, "Partial Activation of PPAR- γ by Synthesized Quercetin Derivatives Modulates TGF- β 1-Induced EMT in Lung Cancer Cells Advanced Biology, 12 April 2023 <https://doi.org/10.1002/adbi.202300037>.
6. Sangeeta Ballav, Mrinalini Bhosale, Kiran Bharat Lokhande, Manash K. Paul, Subhash Padhye, K. Venkateswara Swami, **Amit Ranjan***, Soumya Basu "Design, synthesis and biological evaluation of novel quercetin derivatives as PPAR- γ partial agonists by modulating Epithelial-mesenchymal transition in lung cancer metastasis" Advanced Biology, 5 April, 2023 DOI: <https://doi.org/10.1002/adbi.202300036>
7. Sangeeta Ballav, Bini Biswas, Vishal K Sahu, **Amit Ranjan***, Soumya Basu, "PPAR- γ Partial Agonists in Disease-Fate Decision with Special Reference to Cancer" Cells 11 (20), 3215, 2022

DOI: 10.3390/cells11203215

8. Tushar Das, **Amit Ranjan**, Lesław Sieroń, Waldemar Maniukiewicz, Subrata Das, "Direct Synthesis, Characterization and Theoretical Studies of N-(6-Amino-1,3-dimethyl-2,4-dioxo-1,2,3,4-tetrahydropyrimidin-5-yl) benzamide Derivatives" 6 (4) 726-732, 2021
9. Pritam Banerjee, Chiranjit Roy, Mohamed A.-H. Gepreel, **Amit Ranjan**, Soumya Basu, Somnath Bhattacharyya "Probing nano-scale phase separation at atomic resolution within β -type Ti - Mn alloy; a potential candidate for biomedical implants" ACS Biomater. Sci. Eng. 2019, 5, 5005–5014
10. **Amit Ranjan**, Rajiv Kalraiya "Invasive potential of melanoma cells correlates with the expression of MT1-MMP and regulated by modulating its association with motility receptors via N glycosylation on the receptors", BioMed Research International, August 2014
11. **Amit Ranjan**, Sanjay M. Bane, Rajiv Kalraiya "Glycosylation of the laminin receptor ($\alpha 3\beta 1$) regulates its association with tetraspanin CD151: Impact on cell spreading, motility, degradation and invasion of basement membrane by tumor cells" Experimental Cell Research, Volume 322, Issue 2, 1 April 2014, Pages 249–264 (DOI 10.1016/j.yexcr.2014.02.004).
12. **Amit Ranjan**, Rajiv Kalraiya "Alpha 2,6 sialylation associated with increased $\beta 1,6$ branched N-oligosaccharides influences cellular adhesion and invasion" J Biosci 38(5), December 2013, 1-10 (DOI 10.1007/s12038-013-9382-z)
13. **Amit Ranjan**, Akhauri Yash Sinha, Badrinath Dubey, Ankur Saikia, Alak Kumar Buragohain and Suvendra Kumar Ray "Analysis of Bacterial Genomes for In-frame Dinucleotide Abundance, Abundance of the Encoded Amino Acids and Synonymous Codon Choice Reveals a Common Pattern" Current science, vol. 94, no. 2, 25 January 2008.

BOOK CHAPTERS:

1. Sangeeta Ballav, **Amit Ranjan**, Shubhayan Sur and Soumya Basu, Organoid Intelligence: Bridging Artificial Intelligence for Biological Computing and Neurological Insights. DOI: 10.5772/intechopen.114304, Published: 08 March 2024
2. Samiksha Garse, Khadija Turabi, Jyotirmoi Aich, **Amit Ranjan**, Shuchi Nagar, Soumya Basu, Shine Devarajan, Cancer Diagnosis Using Artificial Intelligence (AI) and Internet of Things (IoT); Chapter 4, DOI: 10.4018/978-1-6684-5422-0, ISBN10: 166845422X published in 2023
3. Vishal Sahu, **Amit Ranjan**, Manash Paul, Shuchi Nagar, Shine Devarajan, Jyotirmoi Aich, Soumya Basu; AI Techniques and IoT Applications Transforming the Future of Healthcare; Chapter 14 DOI: 10.4018/978-1-6684-5422-0, ISBN10: 166845422X published in 2023
4. Vishal K. Sahu, **Amit Ranjan**, A.S.M. Shailaja, Jyotirmoi Aich, Soumya Basu "Microfluidics enabled Aptamer-based Sensing Devices - The Aptafuidics Microdevices" Chapter 8, In the book Aptasensors for Point-of-Care Diagnostics: Fundamentals and Biomedical Applications/CRC Press, ISBN 9781032302621 published in 2023
5. Shirsha Nandi, Sayantani Ghosh, **Amit Ranjan**, Rajkumar S. Sood, Jayanta K. Pal, Krishnan Hajela, Rajesh Kumar Gupta "Lectins in Health and Diseases: Galectin and Cancer" In book: Lectins published by Springer Singapore (pp.215-271), DOI:10.1007/978-981-16-7462-4_11 published in 2022

Book (co-editor)

1. Technologies in Cell Culture - A Journey From Basics to Advanced Applications ISBN: 978-1-83768-328-4 ISSN: 2632-0983, DOI 10.5772/intechopen.107775 Publisher IntechOpen, Published on 26 June 2024.

CONFERENCE PROCEEDINGS:

1. Amit Ranjan, Rajiv Kalraiya "Glycosylation of laminin receptor integrin ($\alpha3\beta1$) regulate their association with tetraspanin CD151 and thus motility/invasion on basement membrane component (matrigel)" Glycobiology, (2012) 22(11): 1487-1661 doi:10.1093/glycob/cws127
2. Sangeeta Ballav, Kiran Bharat Lokhande, Ipshita Dabhi, Sonal Inje, **Amit Ranjan**, K. Venkateswara Swamy, Soumya Basu "Designing Novel Quercetin Derivatives as Matrix Metalloproteinase-9 Inhibitors in Colon Carcinoma: An *In-vitro* and *In-silico* Approach" February 2020 DOI: 10.4103/jdr.jdr_67_19

CERTIFICATIONS:

1. Python Fundamentals for Beginners

CONFERENCES (Abstracts/Oral/Poster):

1. Poster Presentation entitled "**Exploring the Relation between Circulatory miRNAs and Mitochondrial Partners by Deciphering Interaction Patterns in the Metastasis of Breast Cancer**"; at Biology Beyond Boundaries: Mitochondrial Insights, Computational Breakthroughs, and Clinical Transformations (2024) organized by DBT, SPPU, Pune, India Akshita Saravanan, Palak Bafna, Vishal Kumar Sahu¹, Subhayan Sur, **Amit Ranjan**, Soumya Basu
2. Poster Presentation entitled "**NVE miRNAs dataset for precision diagnostic biomarkers for early detection of diseases**" at International Conference on Advances in Biotechnology: Current Discoveries and Future Perspectives (ICAB-2023), October 2023. Sanjana Agarwal, Vishal Kumar Sahu, **Amit Ranjan**, Soumya Basu
3. Poster Presentation entitled "**miRVim: microRNA structure database**" at International Conference on Advances in Biotechnology: Current Discoveries and Future Perspectives (ICAB-2023) organized by Amity University, Mumbai, India on October 2023 Vishal Kumar Sahu, Ankita Subhadarsani Parida, Amit Ranjan, Soumya Basu Sil
4. Poster Presentation entitled "**ExoLogger: Prediction of unidentified exosomal microRNAs (exo-miRs) using machine learning:**" on December 2022 at The 11th RNA Group Meeting, India. Vishal Kumar Sahu, Soumya Basu Sil, **Amit Ranjan**
5. Poster Presentation entitled "**Novel Synthesized Quercetin derivatives modulates phenotype and cell migration of TGF- β 1-induced EMT in lung cancer through the partial activation of PPAR- γ** " at 42nd Annual Conference of Indian Association for Cancer Research, Advanced Centre for Treatment Research and Education in Cancer (ACTREC), Tata Memorial Centre, Mumbai, 12th - 16th January 2023 .Sangeeta Ballav, Mrinalini Bhosale, Kiran Bharat Lokhande, Manash K. Paul, Subhash Padhye, K. Venkateswara Swamy, **Amit Ranjan**, Soumya Basu

6. Poster Presentation entitled “**Computational prediction of Kaempferol, Resveratrol and Quercetin derivatives for cancer therapy against PPAR- α , β and γ : An in silico approach**” at International Conference on Drug Discovery, BITS Pilani, KK Birla Goa Campus, Goa, 10th - 11th November 2022. Sangeeta Ballav, Kiran Bharat Lokhande, Vishal Kumar Sahu, **Amit Ranjan**, K. Venkateswara Swami, Payel Ghosh, Soumya Basu
7. Poster Presentation entitled” ***In-silico* analysis and generation of transmembrane polar residue mutants of CD151**” at Indo-Australian Symposium on epithelial – mesenchymal transition held at NCCS, Pune, India, on 24th October 2018 Mohini Pawar and **Amit Ranjan**
8. Participated in International symposium on “**Conceptual advances in cellular homeostasis regulated by Proteases and Chaperons the Present, the Future and Impact on Human Diseases**”, held at ACTREC, Mumbai, India on 3-6 December 2013.
9. Presented Poster entitled “**Glycosylation of laminin receptor integrin ($\alpha 3\beta 1$) regulates their association with tetraspanin CD151 and thus motility/invasion on basement membrane component (matrigel)**” at the Joint meeting of the Society For Glycobiology (SFG) and American Society for Matrix Biology (ASMB) held at hotel Sheraton and Marina, San Diego, California, USA (10-14th November 2012). **Amit Ranjan**, Rajiv Kalraiya
10. Presented Poster entitled “**Role of $\alpha 2,6$ linked sialic acid substituted $\beta 1,6$ branched N-Linked oligosaccharides in modulating cellular adhesion**” at 33rd All India Cell Biology Conference (AICBC, Dec., 2009) held at University of Hyderabad, Hyderabad, India. **Amit Ranjan**, Rajiv Kalraiya
11. Participated in the “**1st Global Cancer Genomics Consortium (GCGC)**”, held at ACTREC, Mumbai on 10-12, November 2011.
12. Participated in Annual conference of “**International society for cell and gene therapy in cancer (ISCGT)**” held at Mumbai 16-18, November 2007.
13. Participated as an organizing member (Volunteer) in an international symposium on “**Intermediate filament proteins: recent trends in keratin biology**” held at TMC-ACTREC, Mumbai, on September 28-29, 2007.

WORKSHOPS AND FDP:

1. Participated in a one day workshop on “**Grant Writing and Funding opportunities at DBT alliance**”, Jointly Organized by Dr. D. Y. Patil Biotechnology and Bioinformatics Institute, DPU and DBT Wellcome Trust Alliance India, on 3rd February 2023.
2. Participated in the Five Days Faculty development on “**Entrepreneurship, Incubation and Innovation**” Organized by Dr. T. Thimmaiah Institute of Technology, From 19th September- 23th September, 2022
3. Participated in National Workshop on **Entrepreneurship and Patent**, Organized by BRIC, IIC Assam Don Bosco University on 28th July and 4th June, 2022
4. Participated in “**IP awareness/ Training program**”, under National Intellectual Property Awareness Mission, on January 05, 2022, organized by Intellectual Property Office, India.
5. Participated in “**Advanced level Innovation Ambassador Training Programme**” Conducted by MHRD, IIC, from 30th June - 31st July 2021.
6. Participated in the Five Days webinar series “**Dive Into The World of Drug Discovery**” Organized by Schrödinger and Biotechnika Info Labs Pvt Ltd. From 19th July- 28th July.
7. Participated in “**Incorporating Universal Human Values in Education**” workshop organized

by AICTE from 14-18 June 2021.

8. Participated in the ATAL-AICTE sponsored Faculty Development Program on “**Genome Engineering & Technology**” from 28/09/2020 to 02/10/2020 organized by University BDT College of Engineering.
9. Participated in Second Short Term Training Programme (STTP) under AICTE-AQIS on “**Image Processing and its Application**” from September 7-12, 2020 organized by the Department of Computer Engineering, Poornima Institute of Engineering & Technology, Jaipur.
10. Participated in the ATAL-AICTE sponsored Faculty Development Program on “**Biomedical Instrumentation: What and how to teach**”, from 24th August 2020 to 28th August 2020, organized by Rajasthan Technical University.
11. Participated in “**Science leadership workshop**” Organized by Central University of Punjab, Bathinda from June 22 to June 28 2020.
12. Participated in One week Faculty Development Programme (online) on “**e-learning: Managing Online Classes and Creating e-Content**” from 8-12 June 2020, organized by IQAC Cell of Anuradha Engineering College, Chikhli, Pune Maharashtra.
13. Participated in the Online International Faculty Development Program on “**Skilling Teachers for Online Education**” held during June 2 to 6, 2020 organized by the Department of Humanities, Uka Tarsadia University.
14. Participated in seven days FDP on “**Entrepreneurship Development**” from 10th - 17th August, 2020 organized by Centre for Molecular and Nanomedical Sciences, Sathyabama Institute of Science and Technology, Chennai.

BIOINFORMATICS AND BIOTECHNOLOGY SKILLS:

1. **Animal Cell culture and cell-based assays:** Handling of several murine and mammalian cell lines, transfection of genes cloned in plasmids and generation of virus particles for transduction in these cell lines and Stable cell line generation, Flow cytometry, immunofluorescence, adhesion, migration, invasion and matrix degradation assay (Zymography), MTT assay.
2. **Biochemical techniques:** Protein expression and purification, SDS PAGE, immunoprecipitation, immunoblotting, 2D PAGE.
3. **Glycobiology techniques:** Analysis of expression of different sugars on proteins using lectin blotting as a tool.
4. **Molecular Biology techniques:** Gene cloning, PCR, Real Time PCR, Gene silencing.
5. **Bioinformatics tools:** Primer designing, Protein modeling, Swiss ADME analysis
6. **Tools:** Image J, Adobe Photoshop, Microsoft office, Canava
7. **Instrument handled:** Real Time PCR Machine (BioRad), Image Analyser (Thermofisher), Microplate Reader (Biotek)
8. Basic Knowledge of Python