



HOME

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*Laboratory of Cellular & Molecular
Neurobiology*

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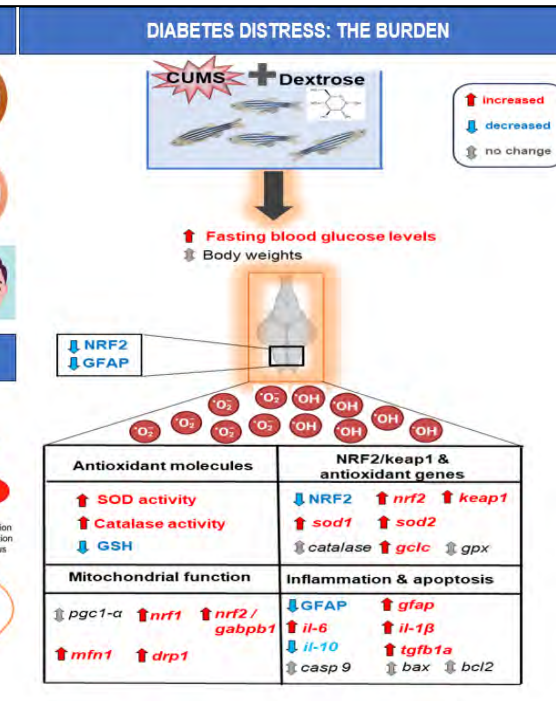
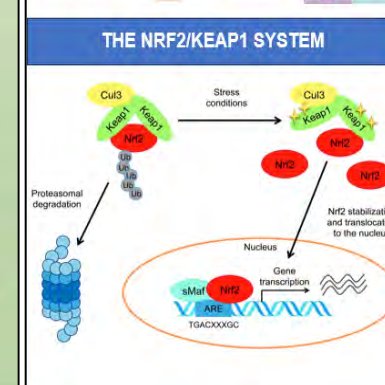
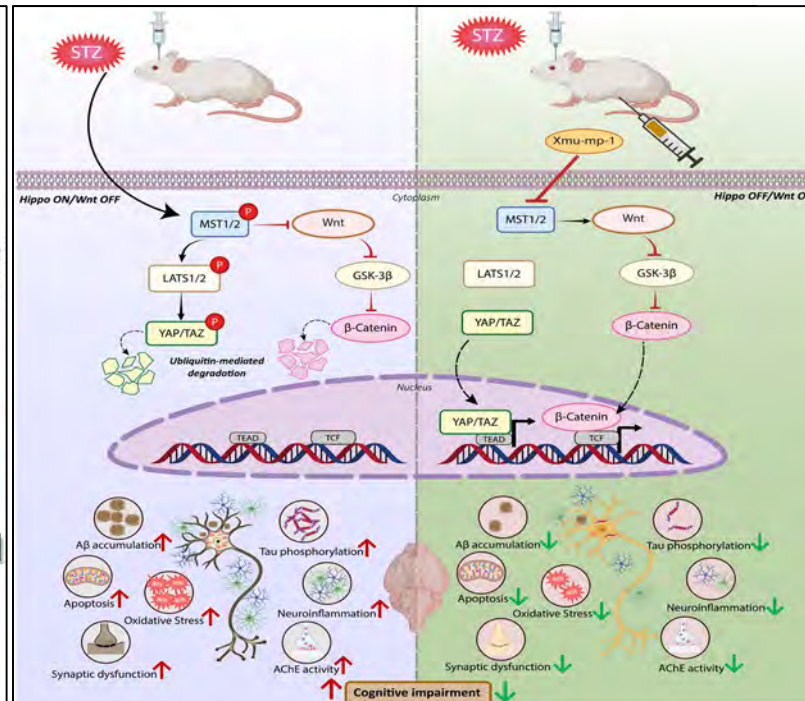
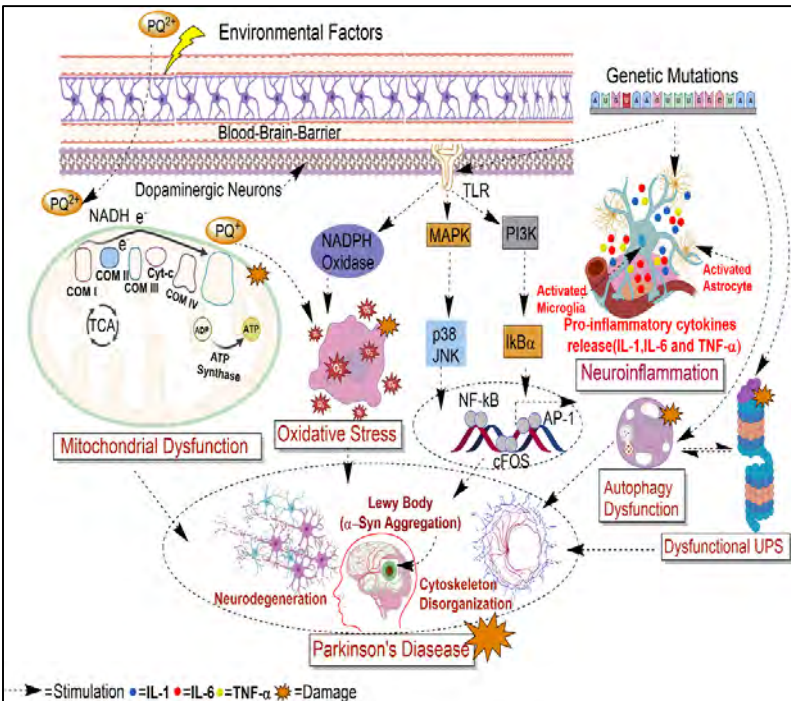
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Scopus Id: 7101751569

Research gate:
<https://www.researchgate.net/profile/Amal-Mondal>

RESEARCH AREA

Our lab investigates the cellular and molecular basis for human neurological disorders, including **Alzheimer's disease, Parkinson's disease, Depression, Type-II Diabetes, and Neuropathic pain** to understand their pathophysiology, molecular mechanisms, and therapeutic strategies. We are especially interested in the identification and therapeutic investigation of novel synthetic and natural therapeutic agents (phytochemicals, polyphenols), small molecule inhibitors against these devastating conditions using cellular and rodent model systems. We venture into understanding how modulating cellular signaling pathways leads to changes in cellular oxidative stress, mitochondrial dysfunction, neuroinflammation, synaptic dysfunction, neuronal death, and eventually degeneration of physiological functions in an attempt to find a solution against these diseases. To achieve this, we employ a multi-disciplinary approach combining 1) advanced imaging in differentiated neuronal models, 2) cell-based assays, 3) rodent behavior assays, 4) biochemical estimations, 5) histopathological studies, 6) molecular studies, and beyond. We are also currently investigating therapeutic potential of iPSC derived neural progenitor cells in 6-OHDA induced rat model of Parkinson's diseases.



TEACHING

M.Sc. Courses

LS-104- Animal Biology
LS 427A- Animal Physiology
LS 431A- Life Sciences Practical-II-Animal Physiology
LS 452A- Research Design, Ethics and Scientific publishing
LS 475A- Research Project
LS 492 - Seminar
LS 569- Neural and Behavioural Biology
LS 580- Research Design, Ethics and Scientific publishing
LS 590A – Advances in Molecular Metabolism

Ph.D. Courses

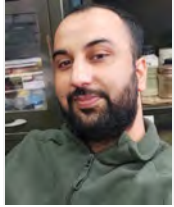
LS 611A- Research Methodology-II
LS 642A- Cellular and Molecular Neurobiology

AWARDS & HONOURS

1. Elected Fellow, West Bengal Academy of Science & Technology (FAScT) - 2022
2. Awarded NESAI Eminent Scientist of the Year - 2022
3. Awarded Prof. A. K. Mukherjee Memorial Oration from The Physiological Society of India, 2021.
4. Received Dr. A. Namasivayam Award by IABMS-2016
5. Awarded ITG by UGC to attend XXI World Congress of Neurology in Vienna, Austria- 2013.
6. Awarded ITG by UGC to attend XIX World Congress on Parkinson's disease and related disorders in Shanghai, China- 2011.
7. Awarded Dr. K. Anji Reddy Prize, a certificate & cash award from PSI- PHYSICON-2011
8. Awarded Post Doctoral Research Fellowship, University of Illinois at Chicago(UIC), Chicago, USA.
8. Young Scientist Award-2000 by ISCA & Pune University.

GROUP MEMBERS

Current Members



Dr. Mir Hilal Ahmad

Post-Doctoral Fellow

Project title: Exploring the therapeutic potential of neural stems cells in Parkinson's Disease



Punit Prasanna Kujur

Ph.D. (Pursuing) (2023 -)

Thesis title: Studying the potential therapeutic effects of flavonoids in a rat model of chronic constriction injury (CCI)-induced neuropathic pain



Surendar E

Ph.D. (Pursuing) (2024 -)

Course-work



Sehar Siddiqui

Ph.D. (Pursuing) (2024 -)

Course-work



Sana Naz

Ph.D. (Pursuing) (2025 -)

Course-work



Sunidhi Bisht

M.Sc. Dissertation (Pursuing) (2024 -)

Lab Alumni



Dr. Ritabrata Banerjee

*Asst. Professor in Zoology, Parimal Mitra Smriti Mahavidyalaya,
West Bengal*



Dr. Somoday Hazra

Research Scientist, Humboldt-Universität zu Berlin, Germany



Dr. Sourav Kumar

Post-Doctoral Fellow, Tel-Aviv University, Israel



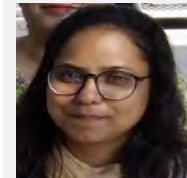
Dr. Dibyendu Ray

*Asst. Professor in Physiology, Serampore College,
West Bengal*



Dr. Sourav Srivastav

*Post-Doctoral Fellow, Duncan Neurological Research Institute,
Baylor College of Medicine, Houston, Texas, USA*



Dr. Mahino Fatima

SERB Post-Doctoral Fellow



Dr. Surendra Kumar Anand

Post-Doctoral Fellow, University of South Florida, USA



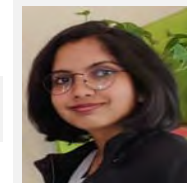
Dr. Deshdeepak Ratna

Post-Doctoral Fellow, University of South Carolina, USA



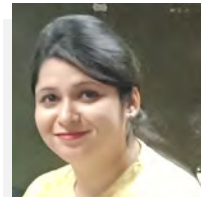
Dr. Manas Ranjan Sahu

Post-Doctoral Fellow, University of Dundee, Scotland



Dr. Sushma

*Post-Doctoral Fellow, Translational Health Science and
Technology Institute (THSTI), India*



Dr. Linchi Rani

Ph.D. Awarded (2024)



Dr. Rhea Subba

Ph.D. Awarded (2024)

LAB TRAINEES

Dissertation

- Ms. Anamika Singh (2017)
- Ms. Rhea Subba (2018)
- Mr. Sandeep (2019)
- Mr. Manuvendra Nandan (2020)
- Ms. Roshni Sherpa (2021)
- Ms. Payyavula Ragini (2022)
- Ms. Priyanka Biswal (2023)
- Ms. Palak Gupta (2024)
- Ms. Rubi (2024)
- Ms. Sunidhi Bisht (Persuing)

Internship

- Ms. Aditi Thakur (2017)
- Mr. Divyam Singh (2017)
- Md. Abu Nasar (2018)
- Ms. Anjali (2019)
- Ms. Surbhi Mishra (2020)
- Ms. Surbhi Bihani (2021)
- Mr. Aman (2022)
- Ms. Kirti (2023)
- Mr. Vivekanand Choudhury (2023)
- Ms. Anuska Garg (2024)

RESEARCH PUBLICATIONS (SELECTED)

1. Sahu MR, Ahmad MH, & **Mondal AC*** MST1 selective inhibitor Xmu-mp-1 ameliorates neuropathological changes in a rat model of sporadic Alzheimer's disease by modulating Hippo-Wnt signaling crosstalk. **Apoptosis** 2024 Oct; 29 (9-10):1824-1851. doi:10.1007/s10495-024-01975-0. **JIF- 7.2** ([Link](#))
2. Sushma, Sahu MR, Murugan NA, & **Mondal AC***. Amelioration of Amyloid- β Induced Alzheimer's Disease by Bacopa monnieri through Modulation of Mitochondrial Dysfunction and GSK-3 β /Wnt/ β -Catenin Signaling. **Molecular Nutrition & Food Research** 2024 Jul; 68 (13): e2300245. doi: 10.1002/mnfr.202300245). **JIF- 5.20** ([Link](#))
3. Ahmad MH, Rizvi MA, Ali M & **Mondal AC***. Neurobiology of depression in Parkinson's disease: Insights into epidemiology, molecular mechanisms and treatment strategies. **Ageing Research Reviews** 2 Jan, (85) 2023. doi.10.1016/j.arr.2022.101840). **JIF- 13.10** ([Link](#))
4. Rani L, Ghosh B, Ahmad MH, & **Mondal AC***. Potential neuroprotective effects of Vanillin against MPP+/MPTP-induced dysregulation of dopaminergic regulatory mechanisms in SH-SY5Y cells and a mouse model of Parkinson's disease. **Molecular Neurobiology** 2023 Aug; 60(8): 4693-4715, doi.10.1007/s12035-023-03358-z). **IF- 5.68** ([Link](#))
5. Ahmad MH, Fatima M, Ali M, Rizvi MA, **Mondal AC***. Naringenin alleviates paraquat-induced dopaminergic neuronal loss in SH-SY5Y cells and a rat model of Parkinson's disease. **Neuropharmacology**, 2021, 201, 108831 Oct 13. doi:10.1016/j.neuropharm. 2021.108831. **IF-5.27** ([Link](#))
6. Paul A, Kumar S, Kalita S, Kalita S, Sarkar D, Bhunia A, Bandyopadhyay A, **Mondal AC***, Mondal B. An explicitly designed paratope of Amyloid- β prevents neuronal apoptosis in vitro and hippocampal damage in rat brain. **Chemical Science**, 2020 Dec 22; 12(8): 2853-2862. Edge article. **IF-9.96** ([Link](#))
7. Srivastav S, Anand BG, Fatima M, Prajapati KP, Yadav SS, Kar K, **Mondal AC***. Piperine coated gold nanoparticles alleviate paraquat-induced neurotoxicity in Drosophila melanogaster. **ACS Chemical Neuroscience** 2020; 11(22): 3772-3785. **IF-5.78** ([Link](#))
8. Kumar S, Srivastav S, Fatima M, Giri RS, Mandal B, **Mondal AC***. A Synthetic Pro-Drug Peptide Reverses Amyloid- β -Induced Toxicity in the Rat Model of Alzheimer's Disease. **Journal of Alzheimer's Disease** 2019, 69(2): 499-512. **IF-4.46** ([Link](#))
9. Fatima M, Srivastav S, Ahmad MH, **Mondal AC***. Effects of chronic unpredictable mild stress induced prenatal stress on neurodevelopment of neonates: Role of GSK-3 β . **Scientific Reports** 2019 Feb 4, 9 (1):1305 (doi: 10.1038/s41598-018-38085-2). **IF-5.13** ([Link](#))
10. Ahmad MH, Fatima M, Hossain M, **Mondal AC***. Evaluation of naproxen-induced oxidative stress, hepatotoxicity and in-vivo genotoxicity in male Wistar rats. **Journal of Pharmaceutical Analysis**, 2018 Dec; 8(6):400-406. **IF-8.80** ([Link](#))

[Complete of Publications-Click Here](#)

ONGOING RESEARCH PROJECTS

1. Assessment of therapeutic role of induced pluripotent stem cell (iPSC)-derived unmodified and engineered neural progenitor cells (NPCs), dopaminergic neurons transplanted in 6-OHDA and Paraquat rat model of Parkinson's disease (PD)” funded by Eystem Research Private Limited (ERPL), Bangalore.
2. Calcium-permeable ion channels as therapeutic targets to manage neuropathic pain funded by DBT (Ministry of Science & Technology, Govt. of India).
3. A Study on Enriched Bacopa monnieri active component delivery targeting Glioblastoma and associated Neurocognitive Dysfunction funded by DBT (Ministry of Science & Technology, Govt. of India).

RESEARCH COLLABORATIONS

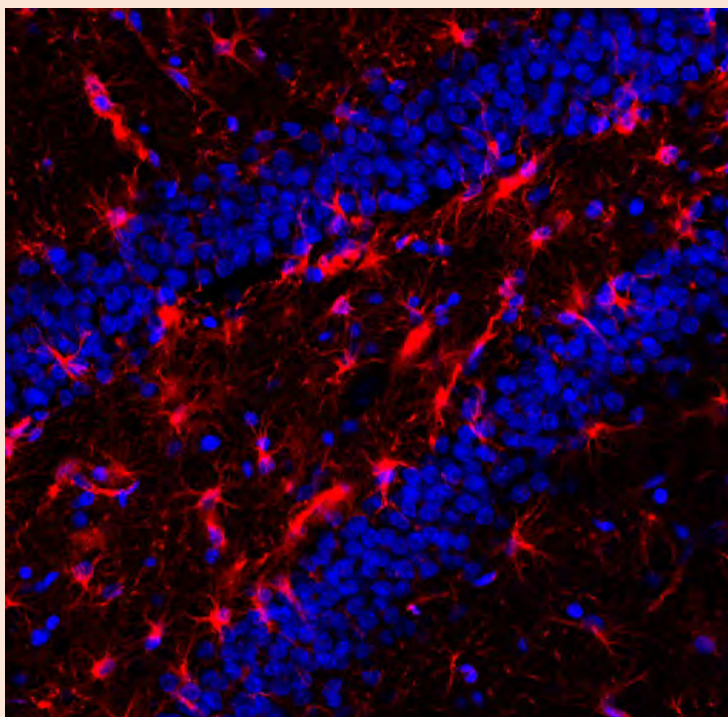
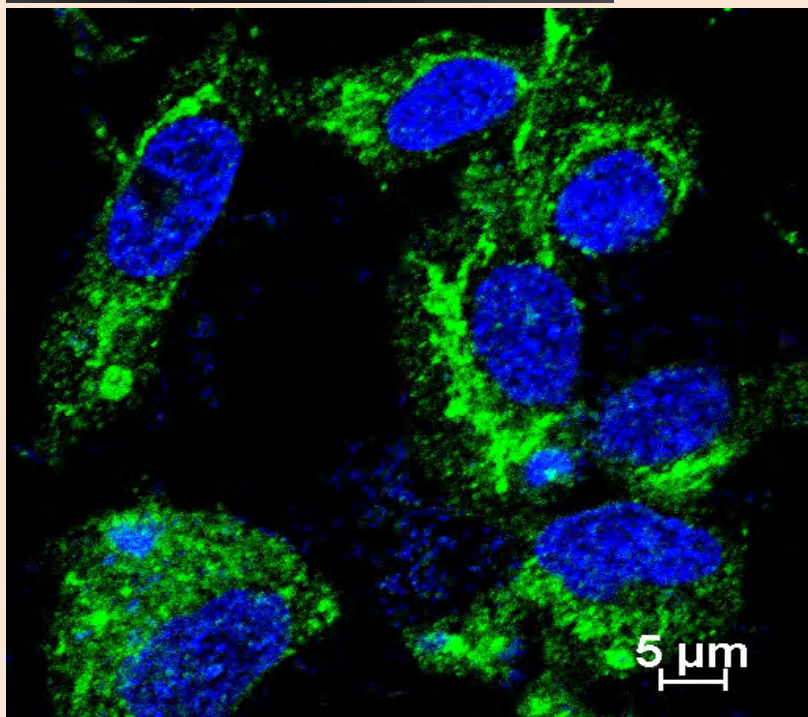
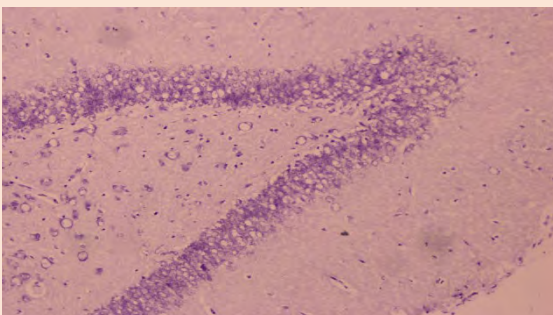
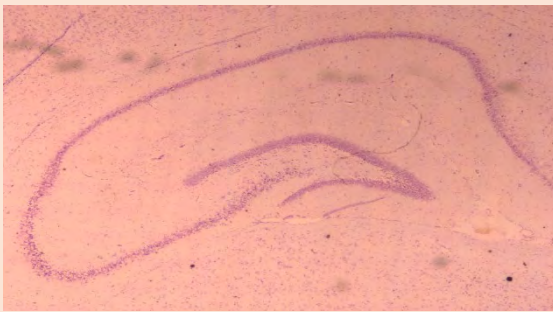
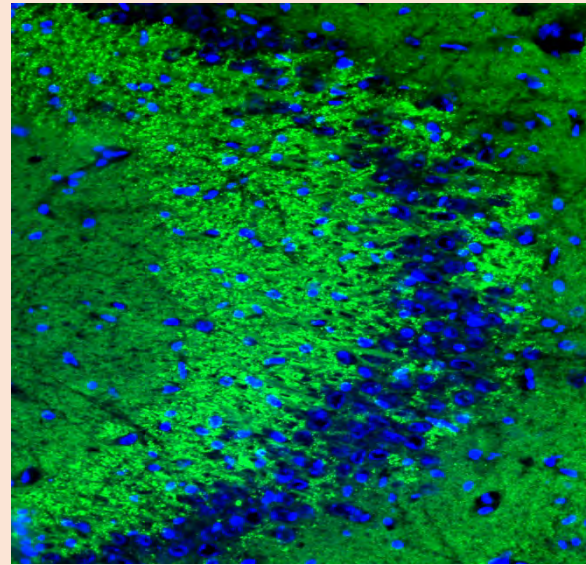
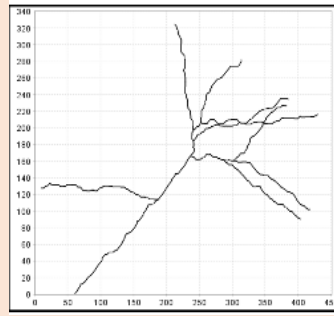
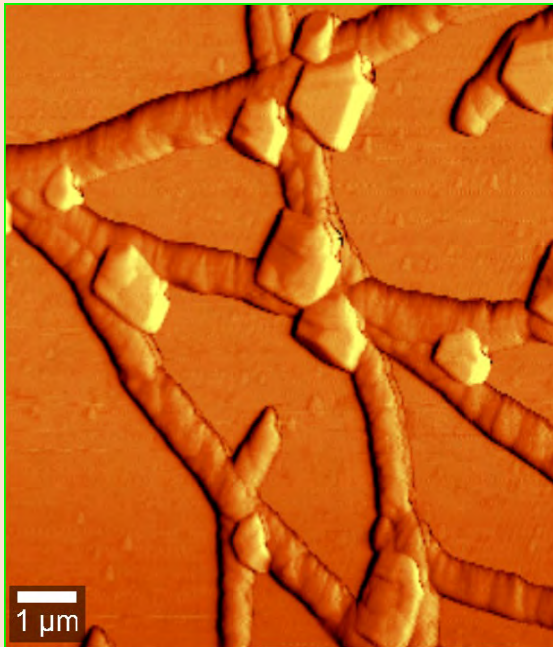
- **National**

- IIT Delhi, IIT Kanpur, IIT Guwahati, IIT Ropar, AIIMS Delhi, Aligarh Muslim University, Jamia Millia Islamia, Bose Institute, Chittaranjan National Cancer Institute, Kolkata

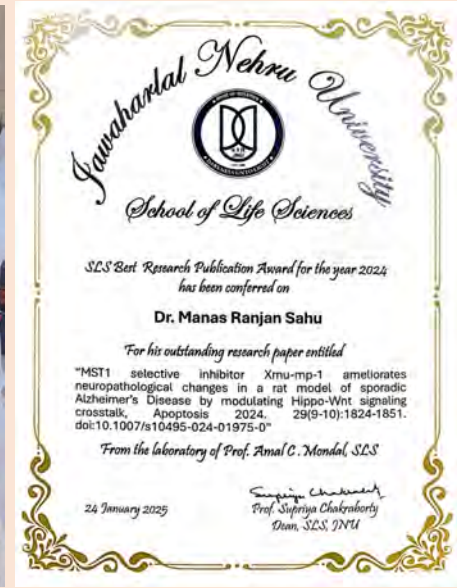
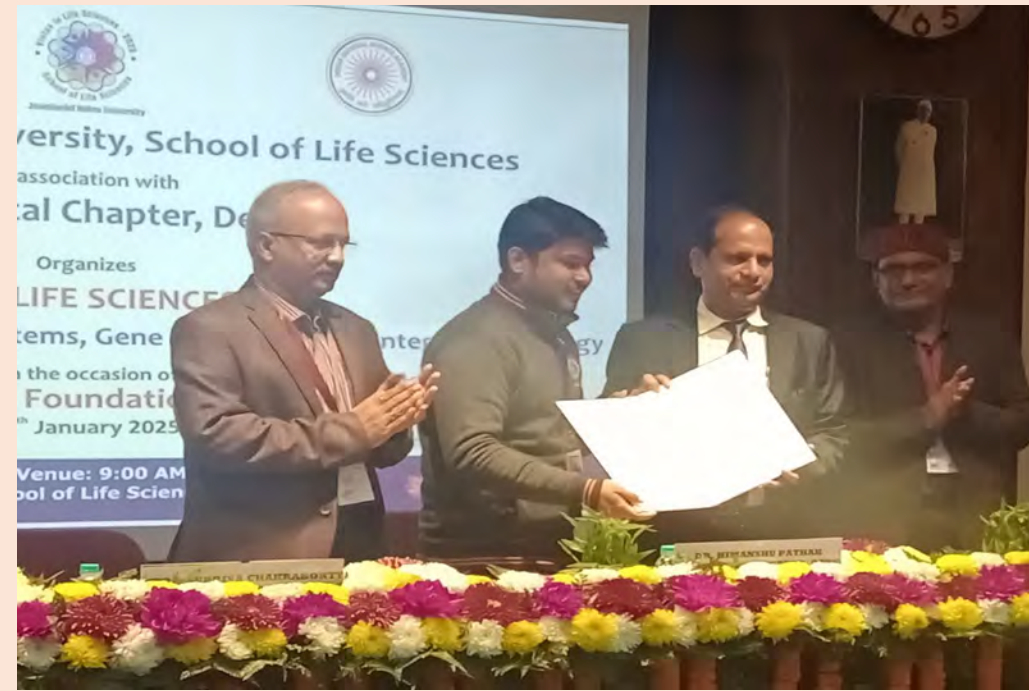
- **International**

- University of Naples Federico II, Naples, Italy

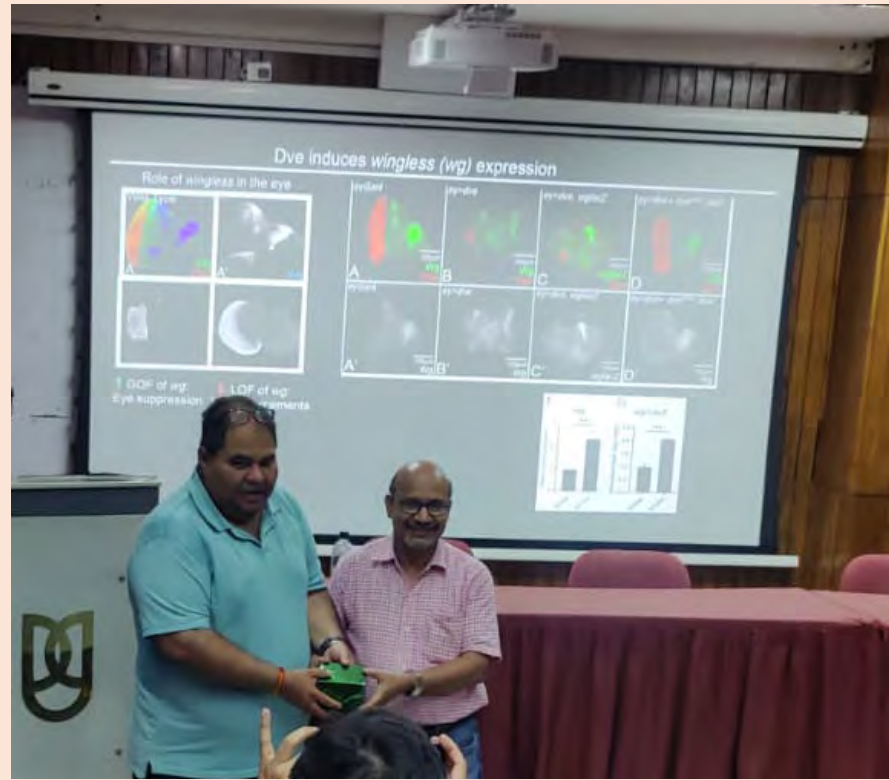
LAB FINDINGS



LAB PHOTOS



LAB PHOTOS



CONFERENCE PHOTOS





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For Experts on
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Aug 2nd, 3rd 2024
- EXPERTS -

 Dr. AMAL CHANDRA MONDAL <small>Professor in Cellular & Molecular Neurobiology School of Life Sciences, Jawaharlal Nehru University, New Delhi</small>	 DR. BANDANA SINGH <small>Senior Scientist, Vascular Biology Program at Boston Children's Hospital and a Research Associate, Department of Surgery, Harvard Medical School, USA</small>	 DR. WONG WAI KIT <small>Associate Professor FACULTY OF ENGINEERING AND TECHNOLOGY (PETI) Multimedia University, Jalan Ayer Keroh Lama</small>	 DR. B. SUNDARAVIVAZHAGAN <small>DEPARTMENT OF INFORMATION TECHNOLOGY, UNIVERSITY OF TECHNOLOGY AND APPLIED SCIENCES AL-MUSANNA, OMAN</small>	 DR. KRISHNA PRIYA REMAMANY <small>Dean, Research and Consultancy, College of Engineering and Technology, University of Technology and Applied Sciences, Wusander, Oman</small>
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