

INSA MEDAL FOR YOUNG SCIENTIST AWARDEES- 2019

1. **Dr Mainak Bose** (b 29.07.1986), PhD, European Molecular Biology Laboratory (EMBL), Germany

Dr Bose discovered important steps of miRNA regulation involving biogenesis, turnover and exosome-mediated transport between mammalian cells. His work in the context of *Leishmania* contributes important therapeutic angles in macrophages.

2. **Dr Anirvan Chakraborty** (b 19.09.1985), PhD, Department of Mathematics and Statistics, Indian Institute of Science Education and Research (IISER) Kolkata, Mohanpur, Nadia

Anirvan Chakraborty has made fundamental contributions in developing statistical methods for infinite dimensional data. His work provides useful and interesting insights into probabilistic models for high dimensional data

3. **Dr Krishna Reddy Challa** (b 14.06.1985), PhD, Department of Biology and AERS, West Virginia State University, USA

Dr Challa Krishna Reddy has done outstanding work on mechanisms by which plant morphogenesis is regulated by key developmental genes. One such component was the TCP4 transcription factor, whose role he addressed using in depth genetic, cellular and molecular analysis.

4. **Dr Abhik Narayan Choudhury** (b 04.11.1984), PhD, Department of Materials Engineering, Indian Institute of Science, Bengaluru

For his outstanding contributions to the development of phase field models to address microstructural evolution in complex systems and in their experimental validation.

5. **Dr Tanmay Neelesh Deshpande** (b 15.11.1984), PhD, School of Mathematics, Tata Institute of Fundamental Research, Mumbai

Tanmay Deshpande has made outstanding contributions to the field of “Geometric Representation Theory”. His work on character sheaves on unipotent and solvable groups is highly commendable and has opened up the area.

6. **Dr Siddhesh Balkrishna Ghag** (b 25.03.1986), PhD, Centre for Excellence in Basic Sciences (UM-DAE CEBS), University of Mumbai, Mumbai

Dr. Ghag, presently a DST-INSPIRE faculty and NASI Young scientist awardee did focused work to develop banana for wilt resistance. He deployed a defensin protein from *Petunia* and developed *Fusarium* wilt resistant transgenic banana, used SiRNA strategy against a transcription factor to control the pathogen, developed somaclonal mutants and is currently working on biocontrol. His evaluation of different strategies could lead to the development of agronomically good banana lines with resistance to this important disease.

7. **Dr Gnanasekaran Gunadayalan** (b 05.07.1986), PhD, Department of Botany, Madras Christian College, Chennai

His contributions in plant taxonomy using field data and modern tools with special reference to genus *Andrographis* and family Acanthaceae are highly commendable.

8. **Dr Trinath Jamma** (b 16.09.1986), PhD, Department of Biological Sciences, BITS Pilani-Hyderabad Campus, Hyderabad

Cross-communication between signalling pathways during Mycobacterial infection.

9. **Dr Anukul Jana** (b 27.01.1984), PhD, Tata Institute of Fundamental Research Hyderabad, Hyderabad.

For his exploratory studies of low-valent low-coordinate main group compounds, their applications in developing novel catalysts and materials, and reactions of diradicals.

10. **Dr Geetharani K** (b 22.05.1984), PhD, Department of Inorganic and Physical Chemistry, Indian Institute of Science, Bengaluru.

For her contributions to the development of cost effective and earth abundant metal catalysts for the synthesis of organoboranes as synthetic intermediates for pharmaceuticals, agrochemicals and functional materials.

11. **Dr Siddhesh Shashikant Kamat** (03.01.1985), PhD, Department of Biology, Indian Institute of Science Education and Research, Pune

Dr Kamat has uncovered lipid changes in PHARC human disease where he showed important changes in lipase function. Currently he is mapping lipid epoxide changes during cellular oxidative stress. His collaborative help is significantly contributing in other areas of work involving lipid vesicle recycling and proteome changes.

12. **Dr Bidya Binay Karak** (b 25.08.1984), PhD, Department of Physics, Indian Institute of Technology (Banaras Hindu University), Varanasi

Dr. Bidya Binay Karak made fundamental contributions to our understanding of how the 11-year sunspot cycle is produced by the dynamo process. His work led to a comprehensive theory of the large fluctuations in the sunspot cycle, especially the Maunder minimum. He also carried out state-of-the-art 3D simulations of the dynamo process.

13. **Dr Rohan Jayant Khadilkar** (b 22.04.1987), PhD, Department of Cellular and Physiological Sciences, Faculty of Medicine, Life Sciences Institute, University of British Columbia, Canada

Dr Khadilkar's work uncovered mechanistic description of ARF1-ASrig mediated cross-talk in the endosomal pathway relevant for stem cell maintenance in *Drosophila* hematopoiesis. Interestingly the same interaction plays important role in NFKb pathway.

14. **Dr Mudasisir Ahmad Khanday** (b 21.06.1985), PhD, Harvard Medical School, Harvard University, USA

Dr. Mudasisir Khanday's research *in vivo* system in rats has advanced our knowledge in delineating the neurophysiological and neurochemical regulation of rapid eye movement sleep.

15. **Dr Nikhil Kunjali Lokesh** (b 19.10.1988), PhD, Charité - Universitätsmedizin Berlin, Berlin

Dr. Nikhil Lokesh's work unraveled the physiology and molecular basis of "early" and "late" chronotypes exhibited by circadian rhythms in *Drosophila*.

16. **Dr Uttam Manna** (b 01.09.1984), PhD, Department of Chemistry, Indian Institute of Technology Guwahati, Guwahati.

For his outstanding contributions to design and synthesis of reactive and self-healing polymeric gels and of unique three-dimensional materials exhibiting superhydrophobicity.

17. **Dr Archita Mishra** (b 19.10.1986), PhD, Singapore Immunology Network, Agency for Science, Technology and Research, Singapore

Repurposing FDA approved drugs to target *Mycobacterium tuberculosis* metabolic pathways.

18. **Dr Puneet Kumar Patra** (b 08.06.1988), PhD, Department of Civil Engineering, Indian Institute of Technology Kharagpur, Kharagpur.

Innovative molecular simulation methods to study the energy transport in low-dimensional systems using molecular simulations, and the development of novel thermostats for non-equilibrium systems.

19. **Dr Raghavendra S Patwardhan** (b 27.12.1984), PhD, Radiation Biology & Health Sciences Division, Bhabha Atomic Research Centre, Mumbai

He has made significant contributions in the field of radiation biology. Undertook exploration to search for radiation modifying strategies which would be of help to cancer patients undergoing radiation therapy. He has identified baicalein and chlorophyllin as putative radio protectors with potential for immediate phase 1 trial.

20. **Dr Rishi Raj** (b 21.02.1984), PhD, Department of Mechanical Engineering, Indian Institute of Technology Patna, Patna

Innovative techniques for significantly enhancing phase-change heat transfer in zero gravity environments.

21. **Dr Irfan Rashid** (b 17.08.1984), PhD, Department of Earth Sciences, University of Kashmir, Srinagar

For his outstanding research on implications of changing climate and other anthropogenic forcings on glacier dynamics & hazards, snow cover changes, land system-alpine vegetation dynamics, lake & wetland health over Jammu and Kashmir region.

22. **Dr Aritra Sarkar** (b 25.12.1984), PhD, Fatigue Studies Section, Metallurgy and Materials Group, Indira Gandhi Centre for Atomic Research, Kalpakkam

Significant contribution to the experimental determination and analysis of creep fatigue interactions in life estimation of steels

23. **Dr Namisha Sharma** (b 29.08.1987), PhD, National Institute of Plant Genome Research, New Delhi

Dr. Namisha Sharma has made significant contributions towards understanding the small RNA-mediated defense response in tomato against *Tomato leaf curl New Delhi virus* (ToLCNDV). Dr. Sharma has demonstrated the novel role of miR159-MYB33 regulatory module in facilitating disease resistance by activating Sw5-mediated HR mechanism. Dr. Sharma has also developed a novel method for developing transgenic tomato cultivars tolerant to ToLCNDV infection.

24. **Dr Tarun Kumar Sharma** (b 08.09.1985), PhD, Center for Biodesign and Diagnostics, Translational Health Science & Technology Institute, Faridabad

Dr Sharma has expertise in aptamer based diagnostics and has made significant contributions in the field of TB diagnostics. These tests which appear to perform better than the existing nucleic acid amplification tests and antibody based ELISA are in the process of commercialisation. He is also involved in the process of developing aptamer based assay for detection of snake venom.

25. **Dr Pallavi Singh** (b 03.08.1985), PhD, Department of Plant Sciences, University of Cambridge, Cambridge

Dr. Pallavi Singh has done pioneering work to identify and delineate the key role of a mitogen activated protein kinase in conferring submergence tolerance in rice.

26. **Dr Anjani Kumar Tiwari** (b 01.07.1986), PhD, Department of Physics, Indian Institute of Technology Kanpur, Kanpur

For innovative experiments on random lasing in scattering media and for devising methods to control lasing properties in interesting cavity geometries.

27. **Dr Chandni U** (b 22.05.1985), PhD, Department of Instrumentation and Applied Physics, Indian Institute of Science, Bengaluru

For her innovative and challenging experimental work on electron transport in a variety of low-dimensional systems and structural transitions and critical phenomena in shape memory systems.

28. **Dr Supradeepa VR** (b 21.09.1984), PhD, Centre for Nano Science and Engineering, Indian Institute of Science, Bengaluru

Development of efficient cascaded Raman fibre lasers with tunable wavelength for high power laser applications.

29. **Dr Sneha Yadav** (b 10.04.1984), PhD, Space Physics Laboratory, Vikram Sarabhai Space Centre, Thiruvananthapuram

For her outstanding contribution towards understanding of low latitude ionosphere specific to Indian longitudes under varying space weather conditions.

30. **Dr Vikas Yadav** (b 18.10.1989), PhD, Department of Molecular Genetics and Microbiology, Duke University Medical Center, USA

Involvement of RNAi in *Cryptococcus* centromere structure and their dynamics.

INSA Medal for Young Historian of Science Awardee 2019

Dr Aditya Kolachana, Research scholar, Cell for Indian Science and Technology in Sanskrit, Department of Humanities and Social Sciences, Indian Institute of Technology, Bombay.

The significant contributions to the advancement of studies in the history of Indian astronomy by way of analysing the unpublished manuscripts such as the Lagnaprakaraṇa of Mādhava, and the Candrārki of Dinakara.