

INSA MEDAL FOR YOUNG SCIENTISTS- 2015

1. **Dr B Anand** (b 06.01.1981), PhD, Department of Biosciences and Bioengineering, Indian Institute of Technology Guwahati, Guwahati.

Dr B Anand's work has provided novel insights into mode of action of GTPases and diverse cellular functions that they regulate. His work on CRISPR-cas system has potential applications in genome engineering.

2. **Dr Rehna Augustine** (b 18.05.1981), PhD, National Institute of Plant Genome Research, New Delhi

Dr Rehna Augustine has done significant work on the manipulation of glucosinolate pathway in oilseed mustard (*Brassica juncea*). Her transgenics for MYB2 gene could be of high agronomic value in developing low glucosinolate varieties and hybrids

3. **Dr Jyotishman Bhowmick** (b 05.11.1981), PhD, Stat Math Unit, Indian Statistical Institute, Kolkata

Dr Jyotishman Bhowmick has obtained very illuminating results on quantum isometry groups of compact quantum groups which have attracted the attention of, and been put to good use by, established experts in the area.

4. **Dr Arup Kumar Das** (b 18.04.1980), PhD, Department of Mechanical and Industrial Engineering, Indian Institute of Technology Roorkee, Roorkee.

For Development of computational algorithms for dispersed two phase flow with complex interfaces and its experimental validation.

5. **Dr Rajendra Singh Dhaka** (b 10.06.1980), PhD, Department of Physics, Indian Institute of Technology Delhi, New Delhi.

Dr Dhaka has carried out unique and significant experiments on rare-gas nanobubbles in metallic surfaces and has established a general relation between the nanobubbles and the binding energies of the rare gas atoms.

6. **Dr Sumit Ghosh** (b 01.05.1980), PhD, Department of Plant Biotechnology, CSIR-Central Institute of Medicinal and Aromatic Plants, Lucknow

Dr Ghosh has cloned and functionally characterized novel amyriin synthase genes from sweet basil for the biosynthesis of medicinally important pentacyclic triterpenes. He also engineered slow ripening of tomato by silencing genes that control N-glycan processing.

7. **Dr Jitender Giri** (b 01.07.1980), PhD, National Institute of Plant Genome Research, New Delhi.

Dr Giri discovered that rice genes for stress-associated proteins (SAP 1 and SAP 11) and receptor-like cytosolic kinase (RLCK 253) confer abiotic stress tolerance in rice and in transgenic *Arabidopsis* plants. His findings show that kinase phosphatase interplay is the key in cellular signaling.

8. **Dr Ashish Gupta** (b 22.08.1980), PhD, Department of Life Sciences, Shiv Nadar University, Greater Noida

For his discovery and functional characterization of the homologue of eukaryotic Origin Recognition Complex (ORC) subunits in *Plasmodium*. He identified the presence of proliferating cell nuclear antigen (PfPCNA) Interacting Protein (PIP) motif in PfOrcl and confirmed the physical interaction between PfORC and PfPCNA by interaction studies and complementation assay.

9. **Dr Nilesh Prakash Gurao** (b 11.03.1983), PhD, Department of Materials Science and Engineering, Indian Institute of Technology Kanpur, Kanpur.

For his outstanding work in elucidating deformation mechanisms at multiple length scales (from nanometer to millimeter). In particular, he demonstrated the similarity of deformation mechanisms in coarse grained and nanocrystalline Nickel on the basis of misorientation angles determined by electron back scattered diffraction.

10. **Dr Tanvi Jain** (b 17.05.1981), PhD, Indian Statistical Institute, New Delhi.

Dr Tanvi Jain works in Matrix Analysis. In collaboration with Rajendra Bhatia, she has come out with a spectacularly simple proof of the variational principle for symplectic eigenvalues of strictly positive real matrices of even order. The proof of this result given by Dr. Jain using the theory of majorisation is far more elegant than the existing proofs.

11. **Dr Vikas Jain** (b 06.02.1980), PhD, Department of Biological Sciences, Indian Institute of Science Education and Research Bhopal, Bhopal.

Research work of Dr Vikas Jain involves the understanding of the interactions that occur between a bacterium and its phage. Besides this, his group developed expression vectors for the rapid cloning and expression of proteins with hexahistidine tag at either termini.

12. **Dr Sameena Khan** (b 23.05.1984), PhD, Translational Health Science and Technology Institute, Faridabad.

Dr Sameena Khan's work has unraveled the structural basis of aminoacylation of tRNA in *Plasmodium falciparum*. This work has potential application in development of novel therapies against malaria.

13. **Dr Hima Bindu Kudapa** (b 22.04.1980), PhD, Center of Excellence in Genomics, International Crops Research Institute for the Semi-Arid Tropics, Greater Hyderabad

Dr Kudapa has done excellent work on gall midge during her doctoral work. Her work on legume transcriptome is of high value and will be useful for breeding of chickpea. She has been a productive scientist.

14. **Dr Biman Behari Mandal** (b 07.07.1981), PhD, Department of Biosciences and Bioengineering, Indian Institute of Technology Guwahati, Guwahati.

For developing an innovative use of silk fibre base scaffolds for human tissue engineering using structures designed using silk from Indian silk worm. He has demonstrated their versatility in applications ranging from skin repair to scaffolds for bone repair.

15. **Dr Athi Narayanan Naganathan** (b 28.11.1980), PhD, Department of Biotechnology, Indian Institute of Technology Madras, Chennai.

Dr Athi Narayan Naganathan has developed statistical mechanical models for computational prediction of folding thermodynamics and has compared his predictions with experimental results on biologically important proteins like ACBP, I κ B α , RNaseH etc. Such models can have potential applications in protein engineering.

16. **Dr Rajesh V Nair** (b 24.05.1980), PhD, Department of Physics, Indian Institute of Technology Ropar, Punjab

Dr Nair has synthesized and studied high quality photonic crystals in the visible and near infrared wavelength ranges. He has succeeded in obtaining photonic band edge lasing from Si-nanophotonic structures.

17. **Dr Santanu Kumar Pal** (b 18.03.1981), PhD, Indian Institute of Science Education and Research Mohali, Mohali

Liquid crystal based sensors in detection of cellular analytes.

18. **Dr Vivek Vijay Parkar** (06.09.1980), PhD, Nuclear Physics Division, Bhabha Atomic Research Centre, Mumbai.

Dr Parker has made experimental measurements of fusion cross sections of weakly-bound nuclei on a range of targets. This work has opened novel possibilities for studying nuclei away from the line of stability.

19. **Dr Anbarasan Pazhamalai** (b 03.06.1982), PhD, Department of Chemistry, Indian Institute of Technology Madras, Chennai

Transition metal catalyzed methodology for synthesis of pharmaceutical and useful molecules through cross coupling reactions.

20. **Dr Vijay Kumar Prajapati** (b 05.07.1984), PhD, Department of Biochemistry, School of Life Sciences, Central University of Rajasthan, Ajmer

Nanonization of amphoteresin B, a newer experimental approach in hamster animal model to increase the antileishmanial efficacy.

21. **Dr Upasana Ray** (b 11.10.1982), PhD, National Cancer Institute, National Institutes of Health, Bethesda, USA.

For establishing the existence of switch from translation to replication of HCV RNA and that human La protein and HCV NS3 proteins play a key role in such switching over. She also designed peptide based antivirals that target La protein and HCV NS3 protein and could inhibit the HCV RNA function.

22. **Dr Nitin Saxena** (b 03.05.1981), PhD, Department of Computer Science and Engineering, Indian Institute of Technology Kanpur, Kanpur

Dr Nitin Saxena is internationally renowned for his contributions to the area of algebraic complexity theory. In particular, he has contributed significantly to the development of important deterministic algorithms for primality testing, polynomial identity testing and construction of hitting sets.

23. **Dr Maheswaran Shanmugam** (b 01.06.1980), PhD, Department of Chemistry, Indian Institute of Technology Bombay, Mumbai

For understanding the electronic and magnetic properties of molecular nanomagnets.

24. **Dr Narendra Pratap Singh** (b 23.03.1981), PhD, Stowers Institute for Medical Research, Kansas City, Missouri, USA.

Elucidating the divergence of the developmental roles of *Drosophila* Abd-a and Abd-b in determining segment identity and proliferation in body segments where they are co-expressed.

25. **Dr Pankaj Kumar Singh** (b 03.02.1980), PhD, Department of Translational Medicine and Neurogenetics, Institut de Genetique et Biologie Moleculaire et Cellulaire (IGBMC), France.

Unravelling cellular functions of Lafora disease proteins and proposed inhibition of SGK 1 as a potential therapeutic strategy for the treatment of the Lafora disease.

26. **Dr Hari Sridhar** (b 28.04.1982), PhD, Centre for Ecological Sciences, Indian Institute of Science, Bengaluru.

Field studies leading to the understanding of the relative roles of predation and foraging success in driving multi-species flocking in birds.

27. **Shri Shashi Kant Tiwari** (b 10.07.1985), MSc, PhD (Thesis Submitted), Developmental Toxicology Division, Indian Institute of Toxicology Research, Lucknow.

He has demonstrated the mechanisms by which Bisphenol A (BPA) affects the endogenous neural stem cells and oligodendrocyte progenitor cells. The effects of BPA on neurogenesis and myelination, development signaling pathways and finally on behavior have been convincingly elucidated. This has led to identification of means of its amelioration by curcumin.

28. **Dr Gyana Ranjan Tripathy** (b 05.07.1981), PhD, Earth and Climate Sciences, Indian Institute of Science Education and Research Pune, Pune.

Dr Tripathy worked on $^{187}\text{Os} / ^{188}\text{Os}$ isotope ratios of the black shale and reported the usefulness of this technique in estimating the atmospheric oxygen levels in the geological past. He identified the age of the shale in Vindiyans. He also focused on low temperature weathering in the Himalayas and its linkage to the tectonic processes.

29. **Dr Shri Ram Yadav** (b 09.07.1980), PhD, Department of Biotechnology, Indian Institute of Technology Roorkee, Roorkee.

Dr Yadav's work has revealed the molecular mechanism of action of a gene that regulated floral organ specification and development in rice. He has also

demonstrated the role of gene duplication and diversification of function during evolution of rice floral development.