

Indian National Science Academy Medal

Honouring the outstanding research acumen and contributions of young Indian researchers, Indian National Science Academy has announced the INSA Young Scientists Medals for the year 2016.

While the medals recognised, interdisciplinary and cutting edge research in various areas of science and engineering, The Indian Institute of Science (IISc), Bangalore has emerged as the leader. Of the 22 winners this year 5 are from IISc Bangalore.

Taking a look at the winners this year

1. Dr Nazia Abbas, PhD, Plant Biotechnology Division, Indian Institute of Integrative Medicine, Srinagar Interaction of CAM7 and HY5 transcription factors in light-dependent control of plant seedling development.
2. Dr Sadeem Ahmad, PhD, Boston Children's Hospital/ Harvard Medical School, Center for Life Science Building, Boston His studies have uncovered the mechanism by which D-amino acids are uncoupled from tRNA and a primordial mode of function of RNA- protein hybrid enzymes.
3. Dr Prabeer Barpanda, PhD, Materials Research Center, Indian Institute of Science, Bengaluru He has developed new classes of Li- and Na-cathode materials for next generation battery and storage application.
4. Dr Sivaraman Bhalamurugan, PhD, Atomic Molecular and Optical Physics Division, Physical Research Laboratory, Ahmedabad For his contributions in low temperature astrochemistry and planetary science and to understand the occurrence of IC objects on planetary surfaces.
5. Dr Ashima Bhaskar, PhD, National Institute of Immunology, New Delhi Dr Ashima Bhaskar developed a genetic biosensor to measure cellular and subcellular redox changes in HIV/Mtb/HIV-TB infected macrophages. Importantly, her study provides meaningful numerical indicators of redox potential changes required to induce HIV-1 reactivation from persistence. Her findings have implications for targeting viral persistence using redox-based strategies.
6. Dr Kanishka Biswas, PhD, New Chemistry Unit, Jawaharlal Nehru Centre for Advanced Scientific Research, Bengaluru For probing and developing new thermoelectrics for energy harvesting.
7. Dr Abhishek Bohra, PhD, Crop Improvement Division, Indian Institute of Pulses Research, Kanpur Dr Abhishek Bohra has made significant contribution in the area of development and application of molecular tools for facilitating hybrid pigeonpea improvement. He has developed molecular markers in large number and constructed first genetic as well as consensus map in pigeonpea that are being used in practical breeding as well as cited widely.
8. Dr Soumitra Ghosh, PhD, Department of Biochemistry, University of Lausanne, Switzerland Dr Ghosh provided the critical insights into the regulation of genome

organization in mycobacteria by nucleoid-associated proteins (NAPs). He demonstrated that DNA architectural protein HU is a novel target for anti-bacterial drug development.

9. Dr Sai Siva Gorthi, PhD, Department of Instrumentation and Applied Physics, Indian Institute of Science, Bengaluru For his contributions to Innovative Optofluidic Technologies: In-vitro Diagnostics, Green NanoSynthesis, Analyte Detection.

10. Dr Aditi Gupta, PhD, Interdisciplinary Center for Plant Genomics, University of Delhi, South Campus, New Delhi Sugar signaling to sustain early development and seedling fitness under different environmental conditions.

11. Dr Rajat Subhra Hazra, PhD, Theoretical Statistics and Mathematics Unit, Indian Statistical Institute, Kolkata Hazra has made significant contributions to the study of spectral limits of patterned Gaussian free fields, random matrix theory and free probability.

12. Dr Mohd Askandar Iqbal, PhD, Department of Biotechnology, Jamia Millia Islamia, New Delhi Dr. Iqbal's work has demonstrated a key determinant role of mutation in the Pyruvate Kinase M2 (PKM2) isoform in promotion of cancer-specific metabolism and tumour growth. He also identified factors/pathways that mimic PKM2 mutant condition in absence of mutation in this gene and thus promote cancer metabolism.

13. Dr Santanu Kapat, PhD, Department of Electrical Engineering, Indian Institute of Technology Kharagpur, Kharagpur For his contributions to High-Performance, Energy-Efficient, EMI-Aware MixedSignal Dynamic Power Management.

14. Dr Praveen Kumar, PhD, Department of Materials Engineering, Indian Institute of Science, Bengaluru He has discovered electric-field induced changes in mechanical behavior of CNT cellular materials and developed instrumentation to study the behavior in detail.

15. Dr Nirbhay Kumar Kushwaha, PhD, Molecular Virology Laboratory, School of Life Sciences, Jawaharlal Nehru University, New Delhi He has made significant contribution in elucidating interactions among chilli leaf curl virus (ChiLCV). Highly efficient infectious constructs of ChiLCV was developed for screening chilli germplasm for identification of resistant sources.

16. Dr Aastha Mishra, PhD, Prof. Randall Johnson's Laboratory, Department of Physiology, Development and Neurosciences, University of Cambridge, Cambridge She has done outstanding work on the apelin pathway under conditions of hypoxia and the correlated aberrations of the same to maladaptation to high altitude and the pathophysiology of high altitude pulmonary edema. She has provided a molecular understanding of disease susceptibility and also a basis of genetic predisposition to the same.

17. Dr Kiran Kumar Nakka, PhD, Sprott Centre for Stem Cell Research, Ottawa Hospital Research Institute, Ontario His work uncovered the way of alternate splicing by specific factors. He has elaborated the role of tumor suppressor SMAR1 in performing such function in cancers.

18. Dr Anshu Pandey, PhD, Solid State and Structural Chemistry Unit, Indian Institute of Science, Bengaluru For his outstanding contributions in the area of low threshold quantum dot lasers

19. Dr Swathi Srinivasamurthy Rotti, PhD, School of Chemistry, Indian Institute of Science Education and Research, Thiruvananthapuram For her contributions on theoretical understanding of carbon-based and metalbased nanostructures

20. Dr Chandan Saha, PhD, Department of Computer Science and Automation, Indian Institute of Science, Bengaluru Saha's work on arithmetic circuit lower bounds, polynomial identity testing and reconstruction of arithmetic circuits has led to the discovery of new mathematical techniques and substantial progress on these problems

21. Dr Somlata, PhD, School of Life Sciences, Jawaharlal Nehru University, New Delhi She elucidated the mechanism of phagocytosis in *E. histolytica*. Dr Somlata discovered the recruitment of a calcium binding protein by the C2 domain containing kinase to the site of phagocytosis and subsequently initiation of action dynamics at the site. Her detailed biochemical characterization along with detailed confocal microscopic examination of kinase has helped to understand the biological relevance of the molecule in the process.

22. Dr Srikanth Srinivasan (b 13.06.1984), PhD, Department of Mathematics, Indian Institute of Technology Bombay, Mumbai Srinivasan's work deals with the complexity of algebraic circuits. In particular, he has studied the problem of computing the determinant (over non commuting domains), and iterated matrix multiplication. He has also made substantial progress in producing lower bounds for threshold circuits.

The winners from IISc this year are following:

- **Dr Prabeer Barpanda** for his work on the development of new classes of Lithium and Sodium cathode materials for next generation battery and storage application.
- **Dr Sai Siva Gorthi**, for contribution to the field of Innovative Optofluidic technologies, an area that combines the advantages of microfluidics and optics,
- **Dr Chandan Saha**, for his work on arithmetic circuit lower bounds, polynomial identity testing and reconstruction of arithmetic circuits.
- **Dr Praveen Kumar** for discovering electric-field induced changes in mechanical behaviour of CNT cellular materials.

- **Dr Anshu Pandey**, for his contributions in the area of low threshold quantum dot lasers.

The INSA annually presents the Young Scientist Award to distinguish young scientists who have made notable research contributions in science and technology. Started in 1974, about 760 scientists have been recognised so far. A maximum of 30 awards are given each year.