

# The National Academy of Sciences, India

5, Lajpatrai Road, Allahabad - 211002

## Fellows Elected for the Year 2015

1. **Prof. Niyaz Ahmed**, Ph.D., Head, Department of Biotechnology & Bioinformatics, University of Hyderabad, Hyderabad, for his seminal contribution in the understanding of molecular epidemiology of bacterial pathogens with special reference to *H. pylori* and *M. tuberculosis*.
2. **Dr. Ruby John Anto**, Ph.D., Scientist F, Division of Cancer Research, Rajiv Gandhi Centre of Biotechnology, Thiruvananthapuram, for her outstanding contribution towards understanding the regulation of apoptotic pathways and elucidating the mechanism of action of chemosensitizers and chemopreventives. She has developed an effective combination of taxol and curcumin for cervical cancer.
3. **Prof. Elangannan Arunan**, Ph.D., FASc, Department of Inorganic & Physical Chemistry, Indian Institute of Sciences, Bangalore, for his manifold contributions in experimental physical chemistry with home-built equipments; he has fabricated a pulsed nozzle Fourier transform microwave spectrometer. His work on H-bonds using the spectrophotometer is outstanding and provided the first dynamic criterion for H-bond.
4. **Prof. Gurmeet Kaur Bakshi**, Ph.D., Centre for Advanced Study in Mathematics, Panjab University, Chandigarh, for her significant contribution in Group Rings and Algebraic Coding theory. She, with her student, has provided necessary and sufficient condition for a finite group to be normally monomial. She has also obtained many interesting results, with her coworkers, on irreducible cyclic codes, polyadic codes and constacyclic codes.
5. **Prof. Suddhasatwa Basu**, Ph.D., Head, Department of Chemical Engineering, I.I.T. Delhi, New Delhi, for his outstanding contributions in the field of alternative energy sources, particularly fuel cells. The fuel cell technology, developed holds promise as a power source for portable electronic equipment.
6. **Dr. Mausami Bharadwaj**, Ph.D., Scientist F, Division of Molecular Genetics & Biochemistry, Institute of Cytology and Preventive Oncology, Noida, for her significant contributions in the molecular pathogenesis of cervical cancer with special reference to HPV infection.
7. **Prof. Souvik Bhattacharyya**, Ph.D., FNAE, Department of Mechanical Engineering & Deputy Director, IIT Kharagpur, Kharagpur, for his pioneering research in the field of thermal engineering. His novel work on endoreversible systems through finite time thermodynamics is commendable.
8. **Prof. Mrityunjoy Chakraborty**, Ph.D., FNAE, Department of Electronics & Electrical Communication Engineering, IIT Kharagpur, Kharagpur, for his fundamental contributions to the design of adaptive filters and to VLSI signal processing.
9. **Prof. Mitali Chatterjee**, Ph.D., Department of Pharmacology, Institute of Postgraduate Medical Education and Research, Kolkata, for her work on the clinico-immunological determinants of Indian leishmaniasis, most specifically post kala-azar dermal leishmaniasis; its causation and biomarkers for response to treatment.
10. **Prof. Sukalyan Chattopadhyay**, Ph.D., Head, HENPP Division, Saha Institute of Nuclear Physics, Kolkata, for his experimental studies of nuclear structure; and also for his important contributions to ALICE experiment at CERN.
11. **Prof. Amita Das**, Ph.D., Institute for Plasma Research, Bhat, Gandhinagar, for her seminal contributions to tokamak edge turbulence and physics of strongly coupled dusty plasmas.
12. **Dr. Anuradha Dube**, Ph.D., FNA, FASc, Chief Scientist, Division of Parasitology, Central Drug Research Institute, Lucknow, for her excellent work in the development of rapid screening models for *Leishmania* which are being used in various National and International labs.
13. **Prof. G.D. G. Veerappa Gowda**, Ph.D., Tata Institute of Fundamental Research, Bangalore, for his fundamental contribution in the theory of autonomous Hamilton- Jacobi equations, conservation laws with initial boundary value condition and interface/boundary entropy condition.

14. **Prof. Manas K. Ghorai**, Ph.D., Department of Chemistry, Indian Institute of Technology Kanpur, Kanpur, for his original contribution in developing concepts of memory of chirality, along with Lewis acid catalyses of activated aziridin and azetidines SN<sub>2</sub> opening to give rise to chiral intermediates for the synthesis of natural products.
15. **Dr. Mrinal K. Ghosh**, Ph.D., Principal Scientist, CB&ID Division, Signal Transduction in Cancer & Stem Cell Laboratory, CSIR-Indian Institute of Chemical Biology (IICB), Kolkata, for his manifold contributions to drug target identification in cancer therapy by dissecting signaling pathways. He is among the first few to initiate cancer cell signaling research in India.
16. **Prof. Sankar Kumar Ghosh**, Ph.D., Department of Biotechnology, Assam University, Silchar, for his very significant contribution in the area of cancer research pertaining to the population of the North-East India.
17. **Dr. Ashok Kumar Giri**, Ph.D., D.Sc., FNA, Emeritus Scientist, Division of Molecular and Human Genetics, Indian Institute of Chemical Biology, Kolkata, for his pioneering contributions to the understanding of arsenic susceptibility, toxicity and carcinogenicity, a significant environmental health problem of the country. He showed that arsenic exposure can lead to senescence in humans and identified that the peripheral blood lymphocytes are the most sensitive and suitable cell type to detect arsenic induced genetic changes.
18. **Prof. Srubabati Goswami**, Ph.D., Physical Research Laboratory, Navrangpura, Ahmedabad, for her fundamental contributions to neutrino mixing from neutrino oscillations; and also for providing strong theoretical support to INO experiments.
19. **Prof. Debatosh Guha**, Ph.D., FNAE, Institute of Radio Physics and Electronics, University of Calcutta, Kolkata, for his pioneering contributions to the design and development of 'antennas with defected ground structure' for wireless communication applications.
20. **Dr. Saman Habib**, Ph.D., Principal Scientist & Head, Division of Molecular & Structural Biology, Central Drug Research Institute, Lucknow, for her extensive contributions towards understanding critical malaria parasite processes, like DNA replication and protein translation. She has also studied human genetic variation in context of *P. falciparum* malaria in India.
21. **Dr. Sugeerappa Laxmanappa Hoti**, Ph.D., Scientist F/ Dy. Director, Regional Medical Research Centre (ICMR), Belgaum, for his excellent and commendable contributions in control of vector-borne diseases (especially Filariasis) and monitoring Global Filariasis Elimination Programme.
22. **Dr. Mukesh Jain**, Ph.D., Staff Scientist, National Institute of Plant Genome Research, New Delhi, for his outstanding contributions in the area of rice and chickpea genomics. He has contributed towards identification of several promising target genes involved in abiotic stress response in rice; and discovery of molecular markers in rice and chickpea.
23. **Prof. Arun Kumar Joshi**, Ph.D., Department of Genetics and Plant Breeding, Institute of Agricultural Sciences, BHU, Varanasi, for his significant contribution in the field of wheat genetics leading to breeding of disease resistant and thermo-tolerant genotypes using QTL based molecular markers. The work involves genetics research reaching the farmer's fields in the form of high yielding varieties and seed production.
24. **Prof. Santosh Kapuria**, Ph.D., FNA, FNAE, Department of Applied Mechanics, Indian Institute of Technology Delhi, New Delhi, for his fundamental contributions in the area of smart materials and structures.
25. **Dr. Navin Chandra Khanna**, Ph.D., Group Leader, Mammalian Biology Division, Recombinant Gene Products Laboratory, International Centre for Genetic Engineering and Biotechnology, New Delhi, for designing several novel multiepitope recombinant proteins for high sensitive and specific diagnostic. His efforts resulted in generating recombinant clones for detecting Hepatitis B, Hepatitis C, HIV and Dengue for commercial use in India and abroad.
26. **Dr. Ravinder Kumar Kotnala**, Ph.D., Chief Scientist, Multiferroic & Magnetic, National Physical Laboratory, New Delhi, for his important contributions to magnetic studies of a variety of materials.
27. **Prof. Rakesh Kumar Mahajan**, Ph.D., Department of Chemistry, Guru Nanak Dev University, Amritsar, for his extensive contribution in the area of voltametric and potentiometric electrochemical sensors, for the detection of various metals ions, as silver, cesium, mercury, copper, iron, zinc etc.
28. **Prof. Pinaki Majumdar**, Ph.D., Harish-Chandra Research Institute, Allahabad, for his novel approach to correlated quantum systems.
29. **Dr. Ajai Manglik**, Ph.D., Senior Principal Scientist, National Geophysical Research Institute, Hyderabad, for his outstanding contribution in solving Navier Stokes and magnetohydrodynamic equations for generating

numerical simulation of geological and geophysical observations. His magnetotelluric investigations in Sikkim and western Himalaya have been significant to understand Indian geodynamics.

30. **Prof. Prasanta Kumar Mohapatra**, Ph.D., Head, Actinide Chemistry Section, Radiochemistry Division, BARC, Mumbai, for his most significant contribution in the area of chemistry of actinide elements using a host of ligands such as phosphine oxides, amides and diglycolamides. He has developed several actinide specific solvent systems.
31. **Prof. D.S. Nagaraj**, Ph.D., FASc, The Institute of Mathematical Sciences, Chennai, for his contributions in the field of algebraic geometry, more specifically for his work on moduli of curves, vector bundles on curves, parabolic bundles, principal bundles over projective manifolds, etc.
32. **Dr. Shailesh Nayak**, Ph.D., FASc, Secretary to the Govt. of India, Ministry of Earth Sciences, Prithvi Bhavan, New Delhi, for setting up of the state-of-the-art Indian Tsunami Early warning system, now considered to be among the best in the world; identification and communication of potential fishery zones and for pioneering use of space and GIS technologies for coastal/marine processes and hazard mitigation.
33. **Prof. Devendra Kumar Ojha**, Ph.D., Department of Astronomy & Astrophysics, Tata Institute of Fundamental Research, Mumbai, for his important contributions to the understanding of galactic structure, inter stellar medium and star formation.
34. **Prof. Omkar**, Ph.D., Department of Zoology, University of Lucknow, Lucknow, for his ground-breaking work in insect ecology, especially sexual activity, ageing, prey-predator and predator-predator interactions.
35. **Prof. Kanchan Pande**, Ph.D., Department of Earth Sciences, IIT Bombay, Mumbai, for establishing a state-of-the-art Ar-Ar geochronology laboratory and for its effective use; also for his original contributions on the origin of Deccan volcanism, its relation with mantle plumes, mass extinction and on geochemistry and geochronology of Indian carbonatites.
36. **Prof. Amitava Patra**, Ph.D., Department of Materials Science, Indian Association for the Cultivation of Science, Kolkata, for his outstanding contributions in the field of Photophysics of nanomaterials. He has developed a method of preparation of a novel Sol-gel for deposition of electrochromic tungsten oxide thin films.
37. **Prof. Subbayya Sastry Pidaparthi**, Ph.D., FNAE, Chairman, Electrical Engineering Department, Indian Institute of Science, Bangalore, for his outstanding contributions in learning theory and its applications. Applications include Nash equilibria in game theory, memory neuron networks and root cause diagnostics in industry assembly plants.
38. **Prof. Thalappil Pradeep**, Ph.D., FASc, FNAE, Department of Chemistry, Indian Institute of Technology Madras, Chennai, for discovering novel nanoscale materials which have great implications for clean environment, clean water and ultrasensitive devices. He built the very first ultra low energy ion-scattering spectrometer, a new tool in extremely surface sensitive spectroscopy working at cryogenic temperatures.
39. **Dr. A. S. Raghubanshi**, Ph.D., Professor & Director, Institute of Environment & Sustainable Development, Banaras Hindu University, Varanasi, for his significant contributions in understanding the pattern of plant diversity, ecology of invasions, mechanisms of nutrient dynamics, restoration of degraded ecosystems, and ecophysiology of trees in tropical ecosystems.
40. **Dr. Geetanjali Sachdeva**, Ph.D., Scientist E, PB Division, National Institute for Research in Reproductive Health, Mumbai, for her very significant contributions in the niche areas of endometrial biology and steroid signaling in primate model.
41. **Dr. Samir Vishwanath Sawant**, Ph.D., Principal Scientist, CSIR-National Botanical Research Institute, Lucknow, for his excellent contributions to plant biotechnology by designing the first artificial promoter for expression and regulation of genes in plants. He designed a two-element gene system for developing hybrid seeds of crop plants. He also identified several important genes for drought tolerance and fibre quality traits in cotton.
42. **Prof. Gaurisankar Sa**, Ph.D., Division of Molecular Medicine, Bose Institute, Kolkata, for his significant contributions in the area of cancer biology and tumour immunology. He has dissected critical signaling events in cell cycle progression. His studies have also highlighted importance of cancer-induced immune dysregulation.
43. **Dr. Sagar Sengupta**, Ph.D., Staff Scientist VI, National Institute of Immunology, New Delhi, for his notable contribution in understanding the regulation of cell signaling and the protein of recombinational DNA

repair in the damaged DNA molecules. He has also made important contribution to our understanding of the mechanisms of chromosome instability.

44. **Dr. Shantanu Sengupta**, Ph.D., Principal Scientist, CSIR-Institute of Genomics and Integrative Biology, New Delhi, for his major contribution in establishing the correlation between DNA methylation and cardiovascular disease; and for elucidating the translational aspects of homocysteine metabolism with special references to coronary heart disease.
45. **Dr. Yogendra Sharma**, Ph.D., Chief Scientist & Group Leader, Centre for Cellular & Molecular Biology, Hyderabad, for discovering a novel calcium binding motif in lens proteins such as  $\beta\gamma$ -crystallin. The evolutionary significance of recreating these motifs has also been decoded by his group.
46. **Dr. Sneha Lata Singla-Pareek**, Ph.D., Research Scientist, Plant Molecular Biology Group, International Centre for Genetic Engineering & Biotechnology, New Delhi, for her pioneering contributions in understanding the role of 'methylglyoxal-glyoxalase pathway' in cellular detoxification in plants; and raising rice transgenics tolerant to salinity and drought stress.
47. **Prof. Qudsia Tahseen**, Ph.D., FASc, Nematode Research Laboratory, Department of Zoology, Aligarh Muslim University, Aligarh, for her outstanding contributions in the field of Nematology encompassing taxonomy, nematode-pest management and bioindicative role of nematodes in environment quality assessment.
48. **Prof. Indu Shekhar Thakur**, Ph.D., Dean, School of Environmental Sciences, Jawaharlal Nehru University, New Delhi, for his significant contributions in the area of bioremediation, bioconversion and detoxification of natural and organic compounds in several industries and sequestration of carbon dioxide. Bacterial consortium was used for sequestration of CO<sub>2</sub> and production of biofuel, bio-surfactants, bio-insecticides and biomaterials.
49. **Prof. Sachchida Nand Tripathi**, Ph.D., Department of Civil Engineering, IIT Kanpur, Kanpur, for elucidating impact of aerosols on climate, improving predictability of cloud condensation nuclei (CCN); and demonstrating the significance of aerosol charging in the creation of life forming molecules in planetary atmospheres.
50. **Dr. Rajeev Kumar Varshney**, Ph.D., FNA, FNAAS, Director, Center of Excellence in Genomics, International Crops Research Institute for the Semi-Arid Tropics, Patancheru, for his significant contributions for generating genomic resources for 'orphan legume crops' and in developing superior lines for enhanced drought tolerance in chickpea, resistance to *Fusarium* wilt and *Ascochyta* blight in chickpea, and enhanced rust resistance in groundnut.

### **SCIENCE & SOCIETY**

51. **Dr. Rajendra Dobhal**, Ph.D., Director General, Uttarakhand State Council for Science & Technology, Dehradun, for his substantial contributions in promotion of science and technology temper in the stake holders in the state of Uttarakhand. He has spread the scientific temper especially in the youths, located in the remotest areas of Uttarakhand state.
52. **Dr. Narayan G. Hegde**, Ph.D., Trustee and Principle Adviser, BAIF Development Research Foundation, Pune, for his outstanding research and work in the rural areas which has tremendous impact. He has experience of working in very large number and diverse organisations. Under his leadership between 1993-2009, BAIF expanded its Rural Development Programme by 10 folds, ensuring reliable services to over 4.0 million poor rural families in 15 states for sustainable livelihood, while emerging as a professionally managed scientific and farmer-friendly organization of international repute.
53. **Dr. Indumati Rao**, MS (Education), MA (Sociology), D.Litt. (hc), Honorary Coordinator, Multimedia Group, Education Technology Unit, Jawaharlal Nehru Centre for Advanced Scientific Research, Bengaluru, for devoting all her life in the field of education and scientifically contributing to develop new methods of teaching and teaching aids to school children.

## Foreign Fellows Elected for the Year 2015

1. **Dr. Cato Thomas Laurencin**, Ph.D., MD, FTWAS, Director, The Raymond & Beverly Sackler Center for Biomedical, Biological, Physical & Eng.Sci., University of Connecticut, Storrs, Connecticut, USA, for his pioneering work in the field of material sciences. He is a world leader in polymer ceramic composites. His work has been the basis for commercialization of technologies applicable for bone regeneration. His contributions are notable in tissue generation and bioengineering. His scientific accomplishments so far are simply outstanding.
2. **Dr. Gree Rene**, Ph.D., Directeur, Universite de Rennes 1, Institut des Sciences Chimiques de Rennes, France, is an outstanding and renowned organic chemist in France both in academic and industrial collaborations. His noteworthy contributions in the area of sustainable chemistry with a special emphasis on atom economic aldol chemistry and prostaglandins have found wide spread applications. Dr. Gree was very instrumental in building strong relations between France and India through Indo French Centre in Organic Synthesis and Indo French Joint Lab Program for sustainable chemistry. His commitment to build collaborative projects between India and France resulted in over 60 joint publications between both the countries and a strong technology for making complex and industrial prostaglandins, misoprostol which have been launched by AVRA laboratories for the global market.