

Fellows Elected-2009

1. **Hormazad Maneck Antia** (b. 06.11.1955), PhD, Professor, Astrophysics Group, Tata Institute of Fundamental Research, Homi Bhabha Road, Colaba, Mumbai 400 005.

For his contributions to modeling of the solar surface and interior, particularly using the extensive and precise data coming from helioseismology in recent years. His work has thrown light on the solar neutrino problem, rotational and other motions, atomic abundances and opacity, and solar cycle related variations of solar interior parameters through extensive state of the art computation.

2. **Manju Bansal** (b. 01.12.1950), PhD, Professor, Molecular Biophysics Unit, Indian Institute of Science, Bangalore 560 012.

For her contributions to the understanding of structures of both proteins and nucleic acids. Her early work on collagen defined the role of hydroxyproline in its triple helical structure. She was one of the first person to establish the intrinsic sequence dependent variability in DNA structure. In fact, she was part of an international group that set the standards for describing nucleic acid structure. Her work on promoter sequences has shown some common features; lower stability, high curvature and less bendability; even though there are some subtle differences between eukaryotic and prokaryotic promoter sequences. She is one of the most prominent structural and computational biologists in the world.

3. **Joyoti Basu** (b. 17.12.1957), PhD, Professor, Department of Chemistry, Bose Institute, 93/1, Acharya Prafulla Chandra Road, Kolkata 700 009.

Her work has provided understanding of how *Mycobacterium tuberculosis* defeats the host immune system and gains long-term residence in the host. She has unraveled how *M. tuberculosis* produces surface lipo-polysaccharides that modulate the host innate immune system, viz. activation of toll-like receptors (TLRs), and in turn impacts on the adaptive immune system of the host. She has also significantly enriched the understanding of the interactions among essential cell-division proteins, providing leads for therapeutic intervention of tuberculosis.

4. **Parimal Kanti Bharadwaj** (b. 06.09.1951), PhD, Professor, Chemistry Department, Indian Institute of Technology Kanpur, Kanpur 208 016.

For his contributions to encompassing organic, inorganic, and physical chemistry particularly with the design of intelligent molecules and systems.

5. **Archana Bhattacharyya** (b. 01.06.1948), PhD, Director, Indian Institute of Geomagnetism, Kalamboli Highway, New Panvel, Navi Mumbai 410 218.

Archana Bhattacharyya has made contributions to the field of radiowave scattering by plasma irregularities in the ionosphere. Her analogy of plasma bubble development with transmission lines has opened a new area of research. Her proposal of the age of the plasma bubble in scintillations has found useful applications in ionospheric process elucidation.

6. **Ramesh Chandra Budhani** (b. 03.02.1955), PhD, Professor, Department of Physics, Indian Institute of Technology, Kanpur 208 016.

For his work on doped semiconductor films on manganite films and multilayers, and on vortex matter in superconductors. He has set up at IIT Kanpur various fabrication and measurement techniques and has innovated with simultaneous application of electric field, magnetic field and laser excitations.

7. **Sudip Chattopadhyay** (b. 01.08.1960), PhD, Associate Professor (Scientist V), National Institute for Plant Genome Research, Aruna Asaf Ali Marg, New Delhi 110 067.

For his contributions in the area of plant developmental biology, particularly in elucidating the molecular basis of light-mediated seedling development in higher plants which includes isolation and characterization of several novel transcription factors in particular the ZBF1 and ZBF2. Recently he made a milestone discovery of a novel calmodulin as a transcription regulator.

8. **Probal Chaudhuri** (b. 21.11.1963), PhD, Professor, Theoretical Statistics and Mathematics Unit, Indian Statistical Institute, 203, BT Road, Kolkata 700 108.

Chaudhuri's contribution is in nonparametric statistics, in particular fitting curved relations to multidimensional data without strong assumptions. His study of multivariate medians through a geometrical point of view and developing notions of quantiles for multivariate data is considered path breaking. His work exhibits a command of mathematical statistics and also a genuine feel for real data.

9. **Sampa Das** (b. 15.06.1951), PhD, Professor, Plant Molecular and Cellular Genetics, Bose Institute, P-1/12, CIT Scheme, VII-M, Kolkata 700 054.

Dr Sampa Das has made contribution in the characterization of many mannose binding insecticidal lectins. Of particular importance is the work on *Allium sativum* leaf lectin (ASAL) which is very effective in sap sucking insects. The work on mustard aphid 'sym1' receptor for ASAL is very novel. Transgenic mustard, chickpea and rice with phloem specific expression of ASAL, developed in her lab, have turned out to be good example of control against sap-sucking insects and against viruses transmitted by them.

10. **Vishwa Mohan Katoch** (b. 18.02.1953), MD, Director, National JALMA Institute for Leprosy and other Mycobacterial Diseases (ICMR), Dr M Miyazaki Marg, PO Box 1101, Tajganj, Agra 282 001.

For his contributions in the field of Mycobacteriology, especially leprosy and for applying sophisticated molecular techniques in the control of tuberculosis and leprosy in the field, in rural northern India, as a replicable public health measure.

11. **Guruswamy Krishnamoorthy** (b. 10.05.1950), PhD, Professor, Department of Chemical Sciences, Tata Instt. of Fundamental Research, Homi Bhabha Road, Mumbai 400 005.

For his contributions to the understanding of motions of biological systems – membrane dynamics, motions of proteins, DNA dynamics, correlation between transport and motions, etc. He invented a novel technique based on Temperature- Jump that has proved to be immensely valuable for studying the dynamics of biological systems. He has shown the existence of intracellular viscosity gradients and cell type dependence on viscosity. He has demonstrated that there is continuous transition of proteins between their native and unfolded states, a finding that is highly profound and has far-reaching biological implications.

12. **Anil Kumar** (b. 31.12.1955), PhD, Scientist, Physical Chemistry Division, National Chemical Laboratory, Pune 411 008.

For his contributions towards understanding solvent effects on the acceleration of organic reactions in water and other benign media.

13. **Uday Maitra** (b. 08.11.1957), PhD, Professor, Department of Chemistry, Indian Institute of Science, Bangalore 560 012.

For his studies on the molecular recognition properties of bile acids in the broad context of reactivity and selectivity.

14. **Gadadhar Misra** (b. 01.03.1956), PhD, Professor, Department of Mathematics, Indian Institute of Science, Bangalore 560 012.

For his contributions to Cowen–Douglas theory. He initiated and developed a theory of homogeneous operators. His work on Hilbert modules is very significant. The problems he has tackled lie at the interface of operator theory, complex analysis, representation theory and geometry.

15. **Ashwini Nangia** (b. 10.11.1960), PhD, Professor, School of Chemistry, University of Hyderabad, Hyderabad 500 046.

For his contribution to the subject of crystal engineering, especially the synergy of molecular synthesis with supramolecular analysis.

16. **Aniruddha Bhalchandra Pandit** (b. 07.12.1957), PhD, UGC Research Scientist C (Professor's Grade), Chemical Engineering Department, Institute of Chemical Technology, University of Mumbai, Mumbai 400 019.

For his contributions to the fundamentals and applications of sonochemistry. He exploited the phenomenon of micro-cavitation for intensification of physical and chemical processes, such as, crystallization, emulsification, nano-particle synthesis, microbial cell disruption and a variety of chemical reactions.

17. **Pran Nath Pandita** (b. 01.01.1949), PhD, Professor, Department of Physics, North Eastern Hill University, Mawkynroh Umshing, Shillong 793 022.

For his contribution in the area of supersymmetry and Higgs physics. His studies lead to bounds on the mass of the lightest supersymmetric particles and the Higgs boson in supersymmetric models.

18. **Kare Narain Pathak** (b. 30.07.1941), PhD, Professor Emeritus (Life Long) & UGC Emeritus Fellow, Department of Physics, Panjab University, Chandigarh 160 014.

For his extensive contributions sustained over a long period, to the development of a microscopic understanding of the dynamical structure of liquids and the kinetics that follows from it. He is internationally recognized for his work on dynamical correlation and response functions in classical and quantum liquids which has contributed greatly to understanding a variety of experimental observations.

19. **Shyam Sundar Rai** (b. 16.03.1954), PhD, Scientist G, National Geophysical Research Institute, Uppal Road, Hyderabad 500 007.

Shyam Sundar Rai has made contributions to both geoelectromagnetic and seismological research, particularly to elucidating the geodynamic processes that structurized the earliest Indian continental crust as well as the ongoing Himalayan convergence, through tomographic imaging of its deep structure using rigorous experiment design and incisive analysis of painstakingly generated broadband seismic data.

20. **Balakrishnan Siddartha Ramakrishna** (b. 26.10.1952), MD, DM (Gastro), PhD, Professor of Gastroenterology and Head, Clinical Gastroenterology and Hepatology Unit, Department of Gastrointestinal Sciences, Christian Medical College, Vellore 632 004.

For his demonstration of an ion transport defect in the colon in patients the tropical screw for the first time and his three decades of work on intestinal ion transport. Using this information he has developed and successfully completed Phase III field trial of an amylase resistant starch based oral rehydration solution for children with cholera and other acute diarrhoeas.

21. **Anunay Samanta** (b. 16.01.1956), PhD, Professor, School of Chemistry, University of Hyderabad, Hyderabad 500 046.

For his contributions towards understanding solvent dynamics in room temperature ionic liquids.

22. **Mewa Singh** (b. 11.04.1951), PhD, Professor, Department of Psychology, University of Mysore, Manasagangotry, Mysore 570 006.

He is a leading primatologist with an outstanding record of research and conservation efforts in this field. He has contributed to behavioural development, cognitive development and intra-group and inter-group social relations in several species of primates and other mammalian taxa.

23. **Yadvinder Singh** (b. 16.04.1951), PhD, Senior Soil Chemist, Department of Soils, Punjab Agricultural University, Ludhiana 141 004.

Dr Yadvinder Singh's contributions in managing crop residues for nutrient cycling and reducing environmental pollution and integrated nutrient management based on inorganic and organic nutrient sources in rice-wheat cropping system are outstanding. His work on need-based management of nitrogen fertilizer using leaf colour chart has provided a breakthrough in enhancing nitrogen use efficiency.

24. **Somdatta Sinha** (b. 14.10.1951), PhD, Scientist F, Centre for Cellular and Molecular Biology, Uppal Road, Hyderabad 500 007.

Her contributions to science cuts across the fields of mathematics and biology. She has laid down mathematical foundations of modelling morphogen gradients important for development, and systems-level modelling of biological networks. She has also made outstanding contributions to provide interesting, non-intuitive insights into population biology and ecological processes using nonlinear dynamical modelling.

25. **Kumaravel Somaundaram** (b. 08.10.1962), PhD, Associate Professor, Department of Microbiology and Cell Biology, Indian Institute of Science, Bangalore 560 012.

For his contributions in elucidating the pathways of action of tumor suppressor genes and for identifying and patenting diagnostic markers for several tumors.

26. **Ramesh Venkata Sonti** (b. 24.05.1960), PhD, Scientist E-II, Centre for Cellular and Molecular Biology, Uppal Road, Hyderabad 500 007.

Dr Ramesh Sonti has contributed to the understanding of molecular basis of plant bacterial interaction. Through genetic and molecular studies on *Xanthomonas oryzae pv oryzae*, he has characterized a number of bacterial proteins such as adhesin like outer membrane proteins, an iron-uptake protein, a protein promoting phylase utilization and a number of cell wall hydrolysis that turn out to be important pathogenicity determinants. His findings highlights the importance of type 2 and type 3 bacterial protein, secretion system in pathogenesis.

27. **Vasudevan Srinivas** (b. 06.06.1958), PhD, Professor (H), School of Mathematics, Tata Institute of Fundamental Research, Homi Bhabha Road, Colaba, Mumbai 400 005.

Apart from proving important results in many branches of "Commutative Algebra" and "Algebraic Geometry", Srinivas has made outstanding contributions in the area of "Algebraic Cycles" and "Algebraic K-theory" of singular varieties. His results are insightful and involve originality of a high order.

28. **BK Thelma** (b. 13.03.1955), PhD, Professor, Department of Zoology, University of Delhi (South Campus), Delhi 110 021.

She is a well-established cytogeneticist and human molecular geneticist. She had made outstanding contributions to the field of human brain disorder with respect to neuro-degenerative, neuro-psychiatric and neuro-developmental diseases.

29. **Yogendra Pathak Viyogi** (b. 12.10.1948), PhD, Director, Institute of Physics, Sachivalaya Marg, PO-Sainik School, Bhubaneswar 751 005.

For his contribution to the study of projectile fragmentation in inter mediate energy heavy ion collision and to the study of phase transition from hadronic matter to quark-gluon plasma (QGP) using photon multiplicity measurement in relativistic heavy ion collision.