

FELLOWS ELECTED 2023
(Effective from January 1, 2024)

1. Abraham, Priya (b 27.10.1963), PhD, Director and Scientist G, ICMR-National Institute of Virology, Pune.

Dr Abraham is one of India's leading virologists and has made significant contributions to HPV and other viral diseases in India. She has led the NIV team that standardized COVID real-time PCR, confirmed the very first virus cases; guided the nation-wide COVID laboratory network; isolated SARS-CoV-2 in cell-culture under Biosafety Level 4; visualized the coronavirus with electron microscopy; developed the first indigenous COVID KAWACH IgG ELISA; and continued whole genome sequencing and characterization of SARS-CoV-2 variants. Her contributions to the development of the whole virion inactivated vaccine Covaxin™, is of critical importance. She and her team provided virus cultures, conducted pre-clinical investigations in hamsters and macaques, and showed rapid virus clearance from respiratory samples following virus challenge in these animals, collaborating with the Bharat Biotech International Ltd. until the Phase III Clinical Trial was completed.

2. Anand, Ruchi (b 29.06.1975), PhD, Professor, Department of Chemistry, Structural Biochemistry Lab, Indian Institute of Technology Bombay, Mumbai.

Dr. Ruchi Anand has made outstanding contributions in the area of Structural Biology by using a variety of techniques including X-ray crystallography and Cryo-EM. Her work focuses on understanding the mechanistic basis of antibiotic resistance in bacteria as well as enzymatic recognition of aromatic pollutants. Both these works have tremendous implications for combating widespread drug resistance and developing biosensors, respectively.

3. Ateeq, Bushra (b 26.07.1976), PhD, Associate Professor and Joy Gill Chair Professor, Molecular Oncology Lab, Department of Biological Sciences & Bioengineering, Indian Institute of Technology Kanpur, Kanpur.

Dr Bushra Ateeq is a Cancer molecular biologist who has made outstanding contributions in understanding the biology of prostate and other cancers. Her research contributions are in the genetic and epigenetic changes that are important that initiate cancer progression and the molecular events that drive resistance to chemotherapeutic drugs. Noteworthy contribution was on the role of a peptidase inhibitor, SPINK1 in the progression and drug resistance of Cancer"

4. Bal, Chandrasekhar (b 22.10.1960), MBBS, MD, DSc, Professor & Head, Department of Nuclear Medicine, All India Institute of Medical Sciences, New Delhi.

The pioneering research work led by Dr Bal at AIIMS, New Delhi in the field of thyroid cancer lead to the change in clinical practice all over the world. The research outcome saved patients from unnecessary high amount of whole-body radioiodine exposure, and prevented environmental hazard from excess radioactive iodine going to sewerage, and most importantly, patients did not require hospitalization. Dr Bal's research brought the optimal dose of radioiodine to just 30 mCi for remnant thyroid cancer ablation. This work is now accepted in 2015 ATA Guidelines for the management of DTC. Dr Bal's other research work is focused on the alternative to second surgery (completion thyroidectomy) and pediatric thyroid cancer where he has contributed significantly by translating his research to clinical practice. He has significant contribution in the field of neuroendocrine tumor imaging and therapy making India in the forefront of research in this domain.

5. Bandyopadhyay, Bijan (b 23.08.1956), PhD, Professor, Indian Institute of Technology Bombay, Mumbai.

For his significant and outstanding contributions to control systems theory and applications, specifically to discrete time sliding mode control, multi-rate output feedback approach, higher-order sliding mode control and event triggered sliding mode control, as well as significant applications of these advances in power electronics.

6. Barik, Saroj Kanta (b 12.04.1965), PhD, Professor, Department of Botany, North-Eastern Hill University, Shillong.

Has pioneering and trend setting work in disturbance ecology, climate change biology and biodiversity conservation.

7. Bhatia, Sabhyata (b 07.03.1964), PhD, Staff Scientist-VII, National Institute of Plant Genome Research, New Delhi.

Dr. Sabhyata Bhatia has made extensive and novel contributions towards genomics analysis and development of molecular markers in legumes such as chickpea, lentil and minor pulses. She has performed quantitative trait analysis and genome wide association studies to identify genomic loci involved in controlling seed yield (seed size, weight and number) and seed quality (protein content) in chick pea and lentil. Based on these studies, allele specific molecular markers have been developed for application in marker assisted selection for trait improvement.

8. Bhowmik, Santanu Kumar (b 21.04.1966), PhD, Professor, Department of Geology & Geophysics, Indian Institute of Technology Kharagpur, Kharagpur.

Dr. S.K. Bhowmik systematically developed thermo-tectonic modeling using metamorphic rocks of different ages in the Indian Shield as a natural laboratory and explained the evolution of plate tectonics from the Early Earth to the Present. His work demonstrates versatility in integrating mineral transformation processes at varied spatial scales (nano-scale to plate tectonics scale) through a new tool of sequential diffusion, developed in-house. His work now enables detailed elucidation of temporal evolution of complex high-temperature metamorphic systems. This was not possible before his contribution.

9. Biju, Sathyabhama Das (b 09.05.1962), PhD, Senior Professor, Department of Environmental Studies, Department of Environmental Studies, Delhi.

Made seminal contributions to taxonomy, systematics, evolution, biogeography and conservation of amphibians. He described 116 new amphibian taxa.

10. Bisht, Naveen Chandra (b 01.02.1978), PhD, Scientist V, National Institute of Plant Genome Research, New Delhi.

Dr. Bisht has made outstanding contributions to our understanding of the biology of glucosinolates which function as important plant defense compounds and which also affect the quality of Indian mustard. In the process he has identified genes that are involved in the transport of these glucosinolates into seeds and in their regulation. He has used this knowledge to develop mustard lines that have reduced glucosinolate levels in the seed without affecting susceptibility of the rest of the plant to pests and pathogens.

11. David, Justin Raj (b 12.12.1969), PhD, Professor, Centre for High Energy Physics, Indian Institute of Science, Bengaluru.

Prof. David has made significant contributions to the microscopic understanding of black holes in string theory and contributed extensively towards holography in two-dimensional conformal field theories. He has discovered universal corrections to entanglement entropy in these theories, used them to test holography and provided important insights towards understanding the space of three-dimensional conformal field theories.

12. Daya Sagar, Behara Seshadri (b 24.02.1967), PhD, Professor (HAG) and Former Head, System Science and Informatics Unit, Indian Statistical Institute-Bengaluru Centre, Bengaluru.

Professor Daya Sagar has made significant contributions by developing mathematical morphology-based spatial algorithms that address a range of questions of fundamental importance to geosciences, geospatial data sciences, and remote sensing. Integrating ideas from mathematical morphology with the concepts from fractals, geometry, and chaos, he developed path breaking approaches to analyze river basins, networks, terrestrial surfaces, and identifying spatial clusters. Prof Daya Sagar has also significantly contributed to simulating behavioral phases that various geomorphologic systems traverse via interplay between numerics and graphics. He is one of the best-known mathematical earth scientists.

13. De, Swades (b 20.01.1969), PhD, Professor, Department of Electrical Engineering, Indian Institute of Technology-Delhi, New Delhi.

For prolific contributions to cross-layer design, analysis, and resource optimization of wireless and sensor networks and radio frequency energy transfer that have had an impact on green, energy sustainable wireless communications.

14. Deshmukh, Mandar Madhukar (*b* 20.10.1974), PhD, Professor, Department of Condensed Matter Physics and Materials Science, Tata Institute of Fundamental Research, Mumbai.

Prof. Deshmukh has established a vibrant experimental research group at TIFR to probe condensed matter physics of low-dimensional systems. He has made highly original and significant contributions to experimental physics of quantum Berry phases and Hall states, mesoscale electron transport, electron correlations and nanoscale mechanics of low-dimensional systems.

15. Dimri, Ashok Priyadarshan (*b* 14.11.1970), PhD, Director, Indian Institute of Geomagnetism, Navi Mumbai.

Dr. A. P. Dimri has made important contributions towards understanding the dynamics of the Indian winter precipitation system and its linkages with the Himalayan Glaciers and associated water/hydrological budget. He used multi-scale models and observations to elucidate processes that lead to the Western Disturbances, their relationship with topography, along with a physical understanding of associated extreme weather events.

16. Ganguli, Ashok Kumar (*b* 25.01.1961), PhD, Professor & Deputy Director, Department of Chemistry, Indian Institute of Technology-Delhi, New Delhi.

Professor Ashok Kumar Ganguli has made seminal contributions to developing synthetic approaches to design functional nanostructures of specific size, shape and composition with multifarious applications in capacitors, photocatalysis, superconductors, electrocatalysis and efficient field emitters.

17. Ghose, Debasish (*b* 16.05.1960), PhD, Professor (HAG), Department of Aerospace Engineering, Indian Institute of Science, Bengaluru.

For his very significant contributions to guidance and control for aerospace applications which include autonomous systems and algorithms for obstacle/collision avoidance, swarm intelligence, multi-agent systems and load partitioning for distributed computing.

18. Ghosh, Probir Kumar (*b* 13.12.1962), PhD, Founder Director and Vice-Chancellor, ICAR-National Institute of Biotic Stress Management, Raipur, Chhattisgarh.

Dr. PK Ghosh has contributed significantly to understanding carbon sequestration potential and sustainability in cereal based cropping systems. He developed a new methodology for soil quality index for maintaining sustainability in the rice-wheat cropping system. His work on improvement of rice system has had a significant impact in sustaining natural resources. Dr. Ghosh has also played an important role in the development of improved agronomic practices in pulse based cropping system.

19. Guchhait, Prasenjit (b 21.10.1967), PhD, Professor, Regional Centre for Biotechnology, Faridabad.

Dr. Prasenjit Guchhait did excellent work on the human vascular disease, with special focus on the mechanism of thrombosis. His work has identified several biomarkers to develop therapeutics. Many of his studies on synthetic peptides gave an understanding on how these can be used for prevention. His basic works covers crosstalk between platelet and immune cells in hemolytic microenvironment, activation of thrombosis/inflammation in lungs of SARS-CoV-2-infected animals. Based on his findings he has proposed a clinical trial to use dietary α KG as therapeutics against COVID-19 patients.

20. Gupta, Neena (b 24.11.1984), PhD, Professor, Theoretical Statistics and Mathematics Unit, Indian Statistical Institute, Kolkata.

To paraphrase János Kollár regarding “On Zavisikis’ Cancellation Problem...” these are elegant and powerful combination of previous methods with new insights that addresses a major open problem.

21. Krishna, Sandeep (b 01.09.1976), PhD, Professor, TIFR-National Centre for Biological Sciences, Bengaluru.

Prof. Krishna has done pioneering work on the nonlinear dynamics of biological systems, encompassing feedback control in gene networks, synchronization and entrainment in cells, symmetry breaking in ecosystems, and the emergence of life on Earth. His work has enhanced the understanding of the complex behavior of such far-from equilibrium systems.

22. Kumar, Arvind (b 21.09.1966), PhD, Deputy Director General-Research, International Crops Research Institute for Semi-Arid Tropics (ICRISAT), Patancheru.

Dr. Arvind Kumar carries with him more than 30 years’ of experience in crop improvement and trait discovery for drought tolerance, disease insect resistance, etc. He has to his credit more than 65 varieties that have been released and are being cultivated in 10 different countries of Asia and Africa. Dr. Arvind Kumar has identified 7 of the ten known genes for resistance against rice gall midge, QTLs for grain yield under drought, QTLs for grain yield related traits under dry direct seeded situation, QTLs for tolerance to rice root knot nematode and QTLs for high Fe, high Zn. His work has great practical value for Indian farmers.

23. Kumbhar, Pramod Shankar (b 02.06.1964), PhD, President and Chief Technology Officer, Praj Matrix - R&D Center, Praj Industries Ltd, Pune

Dr Kumbhar and his team at Praj, Pune are the architect of the first cellulose biomass to ethanol (2nd Generation Ethanol) plant in India process right from upstream fermentation to downstream separation and basic engineering of the manufacturing plant. Ethanol from biomass is a very strategic technology for India since the Government has already announced a policy of 25 % mix of ethanol in gasoline from 20a5 to reduce India’s dependence on imports of oil. The 2G ethanol technology is critical to India’s self-sufficiency in automotive fuels. In addition, Dr Kumbhar, has contributed to innovative concepts in industrial biorefinery and a host of catalytic processes in chemical industry, some of which are in commercial practice.

24. Kurpad, Anura Viswanath (b 08.05.1959), MBBS, MD, PhD, Professor, Department of Physiology, St John's Medical College, Bengaluru.

Dr. Anura Kurpad has emerged as the leading nutritional scientist in India, investigating the contribution of dietary nutrients to human body composition, nutritional status, and physical performance. Towards this end he has perfected contemporary reference techniques for measurement of protein digestibility, measurement of human amino acid requirements, measurement of lean body mass and fat body mass, and measurement of vitamin B12 absorption. These techniques have optimized currently available techniques to non-invasively assess these variables. In the process, his work has defined protein requirements for Indians, and his laboratory has served as reference laboratory for assessment of several nutritional programs in the community.

25. Lakshminarayan, Arul (b 25.03.1967), PhD, Professor, Department of Physics, Indian Institute of Technology-Madras, Chennai.

Prof. Lakshminarayan has done pioneering works on the interplay between quantum information, random matrix theory, and quantum chaos in few and many-body integrable and nonintegrable quantum systems which is recognized internationally. His research on extreme-value-theory, products of random matrices, elliptic functions, and constructions of absolutely maximally entangled states have had a lasting impact.

26. Luthra, Kalpana (b 27.07.1965), PhD, Professor, Department of Biochemistry, All India Institute of Medical Sciences, New Delhi.

Prof Kalpana Luthra has made seminal contributions in the field of HIV, particularly coevolution of HIV-1 Infection and host immune responses. Her contributions include isolation of a human broadly neutralising antibody which has therapeutic potential and is being taken forward as a potential passive immunotherapeutic agent. She has had a consistently productive high impact work on HIV immune response,

27. Mahapatra, Nitish Ranjan (b 09.01.1971), PhD, Professor, Department of Biotechnology, Indian Institute of Technology Madras, Chennai.

Dr. Mahapatra has studied several molecular pathways in cardiovascular pathological conditions that help in the diagnosis and clinical management. His major works is his significant contribution in the management of cardiometabolic disease states such as hypertension, type 2 diabetes and dyslipidemia. He has also discovered and characterized many functional genetic variations that enhance the risk for cardiometabolic diseases. His studies also provided novel therapeutic candidates for hypertension and atherosclerosis.

28. Mandal, Lolitika (b 15.01.1971), PhD, Professor, Indian Institute of Science Education and Research (IISER) Mohali, Mohali.

Dr. Mandal has made seminal contributions which have been pivotal in understanding stem cell niche during development.

29. Mandal, Prantik (b 02.02.1965), PhD, Chief Scientist and Activity Incharge, Seismological Imaging Group, CSIR-National Geophysical Research Institute, Hyderabad.

Dr. Prantik Mandal has made outstanding contributions towards understanding genesis of earthquakes in India and the structure of Indian lithosphere and stresses. He delineated the three dimensional seismic velocity structure of Kachchh, Gujarat, discovering mafic pluton-induced crustal seismicity. He elucidated salient causes of fluid-triggered seismicity on the Main Himalayan Thrust in Uttarakhand and carried out seismic risk estimation in the Himalayas by mapping out three NNE-SSW trending lithospheric transverse features in the Uttarakhand Himalaya. He also developed a nucleation model for moderate size reservoir triggered earthquakes at Koyna. His work has also shown that the Eastern Indian Cratonic crust primarily formed via vertical tectonics in the Archean.

30. Mandal, Swadhin K (b 15.08.1973), PhD, Professor, Department of Chemical Sciences, Indian Institute of Science Education and Research-Kolkata, Nadia.

Professor Swadhin Mandal has developed several remarkable strategies to accomplish C-C cross coupling reactions with metal-free catalysts enabling the development of key chemical transformations with low cost, non-toxic reagents having a low carbon footprint.

31. Mande, Sharmila Shekhar (b 05.07.1962), PhD, Distinguished Chief Scientist, TCS Research, Delhi.

Dr. Sharmila Mande was of the early big data scientists in India and collaborative efforts are a hallmark of her work. She developed many algorithms and analysis tools, especially for microbiome and metagenomics, compression/archival of genomic data, RNA decoding, and community structure in environmental samples. She has been highly productive including over 60 patents, indicating the practical applicability of much of her work.

32. Mukhopadhyay, Nilay Krishna (b 05.08.1962), PhD, Professor in Physical Metallurgy, Department of Metallurgical Engineering, Indian Institute of Technology (BHU), Varanasi.

For his original scientific contributions to discover Quasicrystalline materials having quasiperiodic or aperiodic structures with lack of translational symmetry and with 5-fold rotational symmetry and to establish inverse Hall-Petch relationship, through his extensive Nanoindentation studies. His recent research on multicomponent high entropy alloys for hydrogen storage has been equally noteworthy.

33. Mukhopadhyay, Samrat (b 14.02.1975), PhD, Professor, Indian Institute of Science Education and Research (IISER) Mohali, Mohali.

Dr Samrat Mukhopadhyay has made important contributions to understanding mechanisms of liquid-liquid phase separation amyloid formation, coacervation and co-aggregation of intrinsically disordered proteins, and its implications for understanding physiological function and disease.

34. Mylavarapu, Sivaram Venkata Satya (b 16.01.1974), PhD, Associate Professor, Laboratory of Cellular Dynamics, Regional Centre for Biotechnology, Faridabad.

Dr. Mylavarapu has made important contributions that shed light on novel molecular mechanism involved in cell division.

35. Pandey, Ashok (b 01.01.1956), PhD, Distinguished Scientist, Centre for Innovation and Translational Research, CSIR- Indian Institute of Toxicology Research, Lucknow.

Contributed significantly to the growth of industrial and environmental biotechnology in India, which includes second generation biofuels and commercially important enzymes.

36. Raghavan, Sathees Chukkurumbal (b 10.05.1970), PhD, Professor, Department of Biochemistry, Indian Institute of Science, Bengaluru.

Dr. Sathees Raghavan has made important contributions in the area of DNA repair, genomic instability, and cancer therapeutics.

37. Raychaudhuri, Pratap (b 13.12.1971), PhD, Senior Professor (I), Department of Condensed Matter Physics and Materials Science, Tata Institute of Fundamental Research, Mumbai.

Prof. Pratap Raychaudhuri has made outstanding contribution in the area of low-dimensional and disordered superconductors. This work elucidated the pseudogap state in disordered conventional superconductors, thus unravelling the hexatic vortex state in very weakly pinned superconducting thin films and identifying the BKT transition in thin superconducting films.

38. Reddy, Dumbala Srinivasa (b 10.04.1971), PhD, Director, CSIR-Indian Institute of Chemical Technology, Hyderabad.

Dr Dumbala Srinivasa Reddy has used his unique skill for the total synthesis of biologically active molecules and their derivatives for the application to the discovery of several drug candidates for a number of diseases with an insight on their structure activity relationship.

39. Reddy, Maddika Subba (b 06.02.1978), PhD, Staff Scientist-VI & Group Leader, Centre for DNA Fingerprinting and Diagnostics, Hyderabad.

Dr. Reddy has made original contributions by investigating multiple cellular processes involved in signaling.

40. Sarkar, Dibyendu (b 01.05.1968), PhD, Chief Scientist, CSIR-Institute of Microbial Technology, Chandigarh.

Dr. Sarkar's laboratory has delineated mechanisms underlying the virulence of Mycobacterium tuberculosis (Mtb), especially the role of phoP-phoR two-protein regulatory system, which is required for multiplication of the bacilli in host cells. His work has uncovered mechanisms governing the functioning of these multicomponent higher-order complexes and identified novel signalling cascades that can be targeted for therapeutic purpose.

41. Saxena, Nitin (b 03.05.1981), PhD, Professor, Indian Institute of Technology-Kanpur, Kanpur.

Dr Saxena has developed novel techniques for understanding algebraic independence over fields of small characteristics; and consistently brought in techniques from several areas to attack the most important problems in algebraic complexity.

42. Shivaprasad, Padubidri V (b 11.07.1974), PhD, Associate Professor and Associate Dean of Faculty, National Centre for Biological Sciences, Tata Institute of Fundamental Research, Bengaluru.

Dr. Shivaprasad has made original contributions towards microRNA biogenesis, the role of micro RNA in crop domestication and plant development and evolution.

43. Tyagi, Avesh Kumar (b 25.06.1964), PhD, Director, Chemistry Group, Bhabha Atomic Research Centre, Mumbai.

Dr Avesh Kumar Tyagi has developed many multifunctional materials and technologies like highly selective and stable inorganic ion-exchangers for the separation of useful radio-isotopes from nuclear waste contributing to structure-function evaluation of solid state materials with a clear understanding of the principles of structure determination, crystallography and functional aspects.

44. Varma, Manik (b 18.12.1976), DPhil, Partner Researcher, Microsoft Research India, Bengaluru.

For being the pioneer of extreme multi-label classification area in Machine Learning and Artificial Intelligence, where any data point must be assigned a label from amongst millions of labels. This has created significant academic interest and high industry impact, with some of his algorithms generating hundreds of millions of dollars in revenue for Microsoft.

45. Vasu, Sheeba (b 17.03.1973), PhD, Associate Professor, Jawaharlal Nehru Centre for Advanced Scientific Research, Bengaluru.

Made important contributions on the evolution and the underlying circuitry of circadian clocks and shown the role of circadian neuropeptide signals to sleep centres through its cognate receptors.