



INFOSYS PRIZE 2014

INFOSYS SCIENCE FOUNDATION

The scientific man does not aim at an immediate result. He does not expect that his advanced ideas will be readily taken up. His work is like that of the planter – for the future. His duty is to lay the foundation for those who are to come, and point the way.

– *Nikola Tesla*



Jayant Ramaswamy Haritsa

*Professor, Supercomputer Education and Research Centre, and
Chair of the Department of Computer Science and Automation,
Indian Institute of Science, Bengaluru, India*

Prof. Jayant Ramaswamy Haritsa is a senior professor at the Supercomputer Education and Research Centre and Chair of the Department of Computer Science and Automation at the Indian Institute of Science (IISc), Bengaluru, India. Haritsa's work lies at the intersection of database systems and data mining, with a focus on query processing across a range of database systems.

A distinguished alumnus of IIT-Madras, Haritsa received his M.S. and Ph.D. in Computer Science from the University of Wisconsin, Madison, USA. He founded the Database Systems Lab at IISc in 1995 that has graduated over 80 post-graduate students.

His work has been recognized with a Best Paper Award at the International Conference on Very Large Data Bases (VLDB) in 1998, and Best Software Demonstration Awards at the VLDB conferences in 2010 and 2014. He received the Shanti Swarup Bhatnagar Award and Distinguished Scientist of ACM award in 2009, and the ACCS CDAC Foundation Award in 2013. He is a Fellow of IEEE, Indian Academy of Sciences, Indian National Academy of Engineering, and National Academy of Sciences, India.

Engineering and Computer Science

The Infosys Prize 2014 in Engineering and Computer Science is awarded to Prof. Jayant R. Haritsa, a pioneer in the design and optimization of database engines that form the core of modern enterprise information systems. His many contributions have found direct use in various types of databases including decision-support, biological and multilingual databases, as well as produced software tools for query optimization and metadata processing.

Scope and impact of work

As the repository of a growing information society, databases store vast hoards of information that must be queried often and efficiently in almost every area of societal information infrastructure, from real-time searching of biometrics in the ambitious Aadhaar identification card program to decision support for medical prognosis. These actions are challenged by concerns of security, privacy, safety, distance, connectivity and natural language.

Popular databases are queried by users for the information they seek, without describing how it is retrieved. The retrieval process often requires evaluating and choosing from among exponentially large sets of alternative execution plan strategies, making query optimization a computationally difficult problem for enterprise-class database systems.

Prof. Haritsa has fundamentally transformed this field and solved long-standing problems identified by the international database community. His work has featured a series of breakthroughs in how query optimizers are represented, algorithmically simplified, designed for robustness, and finally, dynamically achieve these benefits for on-the-fly queries.

Besides advancing the field in database optimization, Haritsa has created a thriving community of leading-edge researchers of databases in India, having produced over 80 post-graduates from his laboratory over the last two decades.

Citation by the jury

Prof. Jayant Ramaswamy Haritsa is recognized for his stellar contributions to both the theory and practice of database query optimization and processing, and for creating a thriving community of researchers and practitioners to advance the emerging information infrastructure in India.

His work has advanced the field of databases by devising algorithmic methods and tools that enable database applications to exploit the full potential of the information stored in a wide range of database engines, from commonly used relational databases to esoteric real-time and emerging multilingual and biological databases.

Prof. Haritsa's contributions span the full breadth from problem definition to software tools such as the Picasso visualization platform and the CODD metadata processor.

His prolific publication record includes a paper that is among the 'top five most cited papers' of *Real-Time Systems – The International Journal of Time-Critical Computing Systems*, as well as a paper and software that were adjudged best paper and best demonstration software in VLDB conferences. His effort in creating a world-class database research group over two decades is especially noted.



Infosys Prize 2014

Shamnad Basheer

Founder and Managing Trustee, Increasing Diversity by Increasing Access, and Founder, SpicyIP, India

Prof. Shamnad Basheer is the founder of SpicyIP, India's premier blog on intellectual property and innovation law and policy. He is also the founder and managing trustee of Increasing Diversity by Increasing Access (IDIA), a non-profit body that aims to empower underprivileged communities through legal education.

Basheer graduated from the National Law School of India University, Bangalore, and joined Anand and Anand, India's leading intellectual property law firm. He went on to head the firm's Technology and Media law division. Basheer did his B.C.L., M.Phil. and D.Phil. from the University of Oxford, where he also edited the *Oxford University Commonwealth Law Journal*.

Basheer was the first Ministry of Human Resource Development Chaired Professor of Intellectual Property Law at the National University of Juridical Sciences, Kolkata, and the Frank H. Marks Visiting Associate Professor of Intellectual Property Law at the George Washington University Law School in Washington DC. He has been a research fellow at the Institute of Intellectual Property, Tokyo, an International Bar Association scholar and an Inter-Pacific Bar Association scholar.

Humanities

The Infosys Prize 2014 in Humanities is awarded to Prof. Shamnad Basheer for his outstanding contributions to a broad range of legal issues and legal education. He has been doing this with remarkable fair-mindedness in assessing opposing positions taken on quintessentially controversial areas, such as intellectual property laws.

Scope and impact of work

Prof. Shamnad Basheer is a legal scholar of great distinction whose work has had an impact on legal policy, particularly intellectual property laws and regulations. Since the cogency and consistency of legal arguments are sometimes sacrificed in legal decisions and swayed, if only implicitly, by the force of immediacy, Basheer's contribution in highlighting a broader policy vision and undertaking comparative analysis with global jurisprudence has been of great theoretical as well as applicational interest. Basheer's demonstration of his ability to rise above immediate passions, without losing sight of the important life-and-death issues that generate those passions, has made him a much sought-after voice of legal illumination. The impact of his suggestions regarding pharmaceutical patents will be particularly interesting to follow.

Basheer's work includes three important contributions. He provides a fuller understanding of debates on Indian patent legislation in different contexts – historical as well as contemporary, and national as well as international. He brings this understanding to bear on discussions of legislative and policy reforms, and reforms in dispute resolution. He has straddled the world of academia and practice, and contributed richly to both a theoretical understanding of law and a more grounded practical evolution of jurisprudence through various interventions in courts.

Basheer has undertaken pioneering work in fostering access to premier legal education in favor of underprivileged communities through his IDIA project.

He has also promoted access to law and knowledge through various efforts on his blog and writings, through court interventions and through a non-profit, Promoting Public Interest Lawyering (P-PIL). Basheer's multifaceted impact on legal thinking, legal learning and legal practice in India has been a powerful and enriching influence that deserves admiration and acclaim.

Citation by the jury

In a country where there have been remarkable figures in the judiciary and in the profession of law, there have recently been very few comparably distinguished contributions in the academic study of law. Prof. Shamnad Basheer stands out as a notable exception. The committee wishes to honor with the Infosys Prize Prof. Basheer's impressive theoretical work, with extensive practical relevance, on a range of legal issues, particularly intellectual property rights and regulations. Prof. Basheer has also done pioneering work in bringing legal education and knowledge within the reach of the common man, paying particular attention to the critical importance of legal knowledge and support for disadvantaged groups, whose predicament relates not merely to the injustice of their current situation, but also to their inadequate understanding of what they can do to resist and redress such injustice.



Infosys Prize 2014

Shubha Tole

Professor, Department of Biological Sciences,
Tata Institute of Fundamental Research, Mumbai, India

Prof. Shubha Tole studied Life Sciences and Biochemistry at St. Xavier's College, Mumbai. After graduation, she went to the California Institute of Technology, USA, where she received her M.S. and Ph.D. degrees. Her doctoral dissertation was entitled *Surface Markers of Regionalization in the Vertebrate Nervous System*. She did her post-doctoral research at the University of Chicago. Her current research uses genetic 'knockout' mice, RNAi, embryonic stem cells, tissue culture, and molecular biology approaches to address questions of development and evolution of the brain. Tole is committed to public outreach, education, and mentorship and has written several blogs aimed at students and young scientists for www.indiabioscience.org.

Tole has received the Shanti Swarup Bhatnagar Award (2010), the Research Award for Innovation in Neurosciences (RAIN award) from the Society for Neuroscience, USA (2008), the National Woman Bioscientist award from the Department of Biotechnology, Government of India (2008), the Swarnajayanti Fellowship from the Department of Science and Technology, Government of India (2005), and the Wellcome Trust Senior International Fellowship (1999).

Life Sciences

The Infosys Prize 2014 in Life Sciences is awarded to Prof. Shubha Tole for her significant contributions to our understanding of how the brain's structure and circuitry are formed in the embryo. Her research uncovers common genetic mechanisms that control the development of the hippocampus, cortex and amygdala.

Scope and impact of work

Prof. Shubha Tole's elegant work on the mammalian nervous system provides deep insights into the complex processes involved in building the brain. Her work reveals genetic mechanisms critical to the formation of the cerebral cortex, hippocampus, and amygdala.

Tole's work provides a solid foundation for future studies aimed at understanding human behavior, cognition and emotions. More importantly, her work also throws light on what exactly happens when things go wrong during the intricate process of building the brain. Disturbances in any of the developmental steps that Tole elucidated are likely to cause neuropsychiatric disorders such as autism and epilepsy.

The lack of insight into how various genetic defects impact the functions of these key brain centers poses a challenge for understanding the disease mechanism and eventually designing effective therapeutics. Therefore, her careful work on the developing nervous system provides a much sought-after framework for understanding these disorders.

Citation by the jury

Prof. Shubha Tole's award-winning research uncovers the genetic mechanisms that shape the development of the hippocampus, cortex and amygdala, which are the centers for learning, cognition and emotion in the brain. She discovered that a master regulator gene controls critical aspects of how these structures develop during their formative stages. Her work also elucidates the interplay of complex signaling pathways that control the formation of these highly specialized structures.

In her much-acclaimed research papers, Prof. Tole has uncovered novel links between the development of the evolutionarily ancient amygdala, and the evolutionarily recent neocortex, suggesting a mechanism for how the neocortex may have arisen in mammals. Her work revealed the mechanisms responsible for creating the 'learning center' of the brain, the hippocampus. She also discovered unexpected dual developmental origins of the mammalian accessory olfactory bulb that governs reproductive behavior and aggression. Prof. Tole is a dedicated mentor of pre-and post-doctoral trainees, an excellent science communicator, and has extended her service to science education as well.



Madhu Sudan

Principal Researcher, Microsoft Research New England, and Adjunct Professor, Electrical Engineering and Computer Science department, and Computer Science and Artificial Intelligence Laboratory, MIT, Cambridge, USA

Prof. Madhu Sudan has been a Principal Researcher at Microsoft Research New England since 2009. He received his B.Tech. in Computer Science and Engineering from IIT-Delhi in 1987 and his Ph.D. from the University of California, Berkeley, in 1992. From 1992 to 1997, he was at the IBM Thomas J. Watson Research Center, after which he moved to MIT as a faculty member in the Electrical Engineering and Computer Science (EECS) department and a member of their Computer Science and Artificial Intelligence Laboratory (CSAIL). Sudan's current research interests lie in the interface of Computation and Communication, and in particular, in the role of errors in this interface. He has made important contributions to theoretical computer science in areas such as probabilistically checkable proofs, non-approximability of optimization problems, list decoding, and error-correcting codes.

During his distinguished career, he has won many awards, including the ACM Distinguished Doctoral Dissertation (1993), the Godel Prize (2001), and the Rolf Nevanlinna Prize (2002). He is a fellow of ACM and the American Mathematical Society.

Mathematical Sciences

The Infosys Prize 2014 in Mathematical Sciences is awarded to Prof. Madhu Sudan for his seminal contributions to theoretical computer science, especially in the areas of Probabilistically Checkable Proofs (PCP) and error-correcting codes.

Scope and impact of work

The central theme of Prof. Madhu Sudan's work is how to efficiently extract useful information from data that has errors. This theme has wide-ranging applications: from theoretical (e.g., how to verify a proof) to practical (e.g., how to recover correct data stored on a CD when it gets scratched).

His contributions have led to the development of a new way of writing proofs, called Probabilistically Checkable Proofs (PCP), whose correctness can be verified with high probability by checking them at very few locations. This result, famously known as the PCP Theorem, has been hailed as one of the most fundamental contributions of theoretical computer science, and is closely tied to proving inapproximability of several NP-hard (Non-deterministic Polynomial-time hard) problems. His subsequent work has had a fundamental impact on our understanding of PCPs.

Sudan's work on list decoding opened up the possibility of correcting a far larger number of errors in data than was previously thought possible. This brought a new vigor to the field of error-correcting codes, and has led to many more advances in this field.

Citation by the jury

Prof. Madhu Sudan has made seminal contributions in the domains of Probabilistically Checkable Proofs (PCP) and error-correcting codes. He was one of the authors of the famous PCP Theorem, proving that any proof can be efficiently converted to a form such that one can conclude with high probability that the proof is correct by looking at only a few locations of the proof. His algorithm for list decoding of Reed-Solomon codes was a major breakthrough that found applications in diverse areas. In a career spanning 25 years, Prof. Sudan has established himself as one of the leaders in theoretical computer science.



Srivari Chandrasekhar

*Chief Scientist and Head, Division of Natural Products Chemistry,
CSIR-Indian Institute of Chemical Technology, Hyderabad, India*

Dr. Srivari Chandrasekhar is Chief Scientist and Head, Division of Natural Products Chemistry at the Indian Institute of Chemical Technology (IICT). He received his B.Sc. (1982), M.Sc. (1985) and Ph.D. (1991) degrees from Osmania University, and pursued post-doctoral research at the UT Southwestern Medical Center, Dallas, USA, with Prof. J. R. Falck. As a Humboldt Fellow at the University of Göttingen, he worked on the synthesis of hybrid natural products with Prof. L. F. Tietze.

Chandrasekhar was instrumental in setting up the state-of-the-art Molbank facility at the IICT for the storage and retrieval of chemical samples for HT screening.

He has over 240 publications in national and international journals. He has mentored a large number of doctoral and post-doctoral students and won several awards, including the INSA medal for Young Scientists, CSIR Young Scientist Award, AVRA Young Scientist Award, and the FAPCCI award.

He and his team won the CSIR Technology Award, 2014 for commercializing the process for misoprostol. He is a Fellow of the Indian Academy of Sciences, Bangalore, the National Academy of Sciences, Allahabad, and the Indian National Science Academy, New Delhi.

Physical Sciences

The Infosys Prize 2014 in Physical Sciences is awarded to Dr. S. Chandrasekhar for his diverse and notable contributions in synthetic organic chemistry with special focus on the synthesis of complex molecules from natural sources. He has devised innovative, practical approaches to pharmaceuticals of current interest to industry.

Scope and impact of work

Dr. S. Chandrasekhar has displayed a flair for identifying and synthesizing molecules of biological relevance, topical synthetic interest and utility to industry. His research efforts, with an impressive degree of innovation and enterprise, have led to the synthesis of complex and scarcely available natural products and new molecular entities for affordable healthcare. His endeavors have provided cost-effective technologies to the chemical industry through the identification of new reagents / solvents for specific transformations.

Chandrasekhar's group has synthesized several classes of complex natural products in optically pure form employing chiral pool precursors and catalytic asymmetric reactions and his syntheses of pladienolide, azumamide and bengazole bear testimony to the efficacy of such approaches.

His passion and commitment to topical health-related problems is evident in his provisioning for better and affordable access to important drugs. This includes his synthesis of bedaquiline, the first drug approved by FDA in over 40 years for the treatment of multidrug-resistant TB. His team at IICT has developed a scalable synthetic route for misoprostol (a hormone-like biologically important synthetic prostaglandin), used to prevent gastric ulcer, induce labor and / or safely terminate unwanted pregnancies, and this has already been commercialized.

Chandrasekhar has developed methodologies and reagents which help in achieving the synthesis of structurally complex bio-actives in lesser number of steps and avoid the use of hazardous solvents. His contribution in this area has been the promotion

of PEG (polyethyleneglycol) as an eco-friendly solvent for processing and recycling expensive metal catalysts based on Palladium, Osmium and Ruthenium in diverse reactions. This work has inspired researchers worldwide to use PEG.

Chandrasekhar has mentored many doctoral and post-doctoral students and is recognized as an inspirational leader among the young generation. His research has drawn the attention of pharma and chemical companies in India and helped enhance their competitiveness.

Citation by the jury

Dr. Chandrasekhar's group has synthesized over 30 complex natural products and developed several processes to provide better and affordable access to important drugs. Among these is bedaquiline, the first drug approved by FDA in over 40 years for the treatment of multidrug-resistant TB, which Dr. Chandrasekhar has synthesized through simpler transformations and higher yields to make it affordable and accessible.

He, along with his team, has developed a scalable synthetic route for misoprostol (a hormone similar to biologically important synthetic prostaglandin). This is used to prevent gastric ulcer, induce labor and / or safely terminate unwanted pregnancies. This has already been commercialized.

Dr. Chandrasekhar has mentored a large number of doctoral and post-doctoral students and is recognized as an inspirational leader among the young generation. His research has drawn the attention of pharma and chemical companies in India and helped many of them enhance their competitiveness.



Esther Duflo

Abdul Latif Jameel Professor of Poverty Alleviation and Development Economics, Department of Economics, MIT, and Founder and Director, Abdul Latif Jameel Poverty Action Lab, Cambridge, USA

Since 2005, Prof. Esther Duflo has been the Abdul Latif Jameel Professor of Poverty Alleviation and Development Economics at the Massachusetts Institute of Technology, and Director of the Abdul Latif Jameel Poverty Action Lab (J-PAL). Her research focuses on economic lives and decisions of the very poor, and the design and evaluation of anti-poverty policies.

Duflo's first degrees were in history and economics from Ecole Normale Supérieure, Paris. She subsequently did her Masters in Economics from DELTA, Paris, and Ph.D. from MIT in 1999, where she has been teaching since.

She received numerous awards, including a MacArthur 'genius' fellowship, the prestigious John Bates Clark Medal in 2010, and the French 'Medaille de l'Innovation' in 2011, and in the same year, became a Fellow of the Econometric Society. She is the founding editor of the *American Economic Journal: Applied Economics*.

Poor Economics: A Radical Rethinking of the Way to Fight Global Poverty, co-authored by Duflo and Abhijit Banerjee, won the *Financial Times* and Goldman Sachs Business Book of the Year Award in 2011.

Social Sciences (Economics)

The Infosys Prize 2014 in Social Sciences (Economics) is awarded to Prof. Esther Duflo in recognition of her pioneering and prodigious contributions to development economics, with important implications for policies pertaining to the delivery of services to the poor.

Scope and impact of work

Prof. Esther Duflo has led a major shift in development economics. Her empirical and experimental research has yielded substantial advances in our understanding of policies and institutions that can improve health and education, and alleviate poverty in India and other developing countries. Her research, using specially designed, randomized trials and instances of natural randomization found in the data, improves our understanding of how incentives, policies and institutions work in developing countries.

Poor Economics, her book with Abhijit Banerjee, has brought this research to a much broader audience. She was one of the founders of J-PAL, the Abdul Latif Jameel Poverty Action Lab at MIT. This institution, together with its South Asia office at the Institute for Financial Management and Research (IFMR) in Chennai, promotes and supports empirical research on the fundamental issues of development.

Duflo's research covers a wide range of topics. For instance, in her paper (with Rohini Pande, in the *Quarterly Journal of Economics*, 2007) on Indian dams and irrigation, an innovative method of identification is used to demonstrate that agricultural production increases insignificantly in the district where a dam is situated but volatility increases more markedly; and also that rural poverty declines in downstream districts but increases in the district where the dam is located.

Another paper on the effect of women's empowerment that she co-authored in the *Science* magazine (2012) has generated a lot of attention. It exploits randomization

that occurred naturally – for example, in the Indian government's choice of villages where gender quotas on village councils were imposed. This work follows her earlier celebrated paper (with Raghavendra Chattopadhyay in *Econometrica*, 2004), which showed that selecting a woman to lead a village *panchayat* improves the provisioning of local public goods, such as water.

Citation by the jury

Prof. Esther Duflo's pioneering and prodigious research has been influential in effecting a major shift in development economics. Her research, using specially-designed randomized trials and instances of natural randomization found in the data, improves our understanding of how incentives, policies and institutions work in developing countries. This is done, in her own words, with the ultimate aim of answering the most basic questions of “what makes poor people tick, what keeps them stuck, and how economic policy can help them”.

Much of her work is in the area of program evaluation and design, emphasizing realistic features of, and limitations on, the client population's decisions and outcomes. Prof. Duflo has been spending large amounts of time in India, and some of her most influential research has important policy implications for the country.

Prof. Duflo has also made contributions to our understanding of micro-finance, savings behavior, social capital, and environmental regulation. Furthermore, she has played an important role in institution building for research in developing countries.

Engineering and Computer Science



Pradeep K. Khosla

Jury Chair

Pradeep K. Khosla is the Chancellor, University of California, San Diego, USA. He has received several awards, including the ASEE George Westinghouse Award for Education (1999), Siliconindia Leadership award for Excellence in Academics and Technology (2000), the W. Wallace McDowell award from IEEE Computer Society (2001), Cyber Education Award from the Business Software Alliance (2007), the ASME Computers in Engineering Lifetime Achievement Award (2009), and the inaugural Pan IIT American Leadership Award for Academic Excellence (2009). He was awarded the Philip and Marsha Dowd Professorship in 1998 at the Carnegie Mellon University, Pittsburgh, USA. He has been elected as Member, National Academy of Engineering, Fellow of the Institute of Electrical and Electronics Engineers (IEEE) and Fellow of the American Association of Artificial Intelligence (AAAI).

Jurors

Rajesh K. Gupta

Professor and Qualcomm Endowed Chair, Department of Computer Science and Engineering, University of California, San Diego, USA

Arun Majumdar

Jay Precourt Provostial Chair Professor, Department of Mechanical Engineering, and Senior Fellow of the Precourt Institute for Energy, Stanford University, USA

R. A. Mashelkar

National Research Professor, President of Global Research Alliance, India

Venkatesh Narayanamurti

Benjamin Pierce Professor of Technology and Public Policy; Professor of Physics, Harvard University, USA

Infosys Prize 2014

Humanities



Amartya Sen

Jury Chair

Amartya Sen is Thomas W. Lamont University Professor, and Professor of Economics and Philosophy, at Harvard University. Until 2004, he was the Master of Trinity College, Cambridge. He has served as President of the Econometric Society, the American Economic Association, the Indian Economic Association, and the International Economic Association.

Amartya Sen's awards include Bharat Ratna (India); Commandeur de la Legion d'Honneur (France); the National Humanities Medal (USA); Ordem do Merito Cientifico (Brazil); Honorary Companion of Honour (UK); Aztec Eagle (Mexico); Edinburgh Medal (UK); the George Marshall Award (USA); the Eisenhower Medal (USA); and the Nobel Prize in Economics.

Jurors

Akeel Bilgrami

Johnsonian Professor of Philosophy, Director of the Southern Asian Institute, and Founding Member of the Committee on Global Thought, Columbia University, USA

Dipesh Chakrabarty

Lawrence A. Kimpton Distinguished Service Professor of History and South Asian Languages and Civilizations, University of Chicago, USA

Leila Seth

Retired Chief Justice of Himachal Pradesh, India

Life Sciences



Inder Verma

Jury Chair

Inder Verma is American Cancer Society Professor (Emeritus) and the first incumbent of the Irwin and Joan Jacobs Chair in Exemplary Life Science, Laboratory of Genetics, Salk Institute for Biological Studies, USA. He is one of the world's leading authorities on the development of viruses for gene therapy vectors. He is a member of the National Academy of Sciences (USA), Institute of Medicine, American Academy for Arts & Sciences, American Philosophical Society, Third World Academy of Sciences, and a foreign associate of the Indian National Academy of Sciences. He has won the NIH Outstanding Investigator Award (1988), the Vilcek Foundation's prize in biomedical science (2008), the Columbia University's Spector Prize (2010), and the 22nd Annual Cancer Research Award of the Pasarow Foundation.

Jurors

Utpal Banerjee

Chair – Molecular, Cell, and Developmental Biology, Department of Molecular Biology, UCLA, USA

Vicki L. Chandler

Chief Program Officer – Science, Gordon and Betty Moore Foundation, USA

Karen Vousden

Director, Cancer Research UK, Beatson Institute, UK

Ian A. Wilson

Hansen Professor of Structural Biology and Chair, Department of Integrative Structural and Computational Biology, The Scripps Research Institute, USA

Huda Y. Zoghbi

Investigator, Howard Hughes Medical Institute, Ralph D. Feigin Endowed Chair and Professor, Baylor College of Medicine, and Director, Jan and Dan Duncan Neurological Research Institute, USA

Mathematical Sciences



Srinivasa S. R. Varadhan

Jury Chair

Srinivasa S. R. Varadhan is Professor of Mathematics and Frank J. Gould Professor of Science at the Courant Institute of Mathematical Sciences, New York University (NYU), New York, USA. His awards and honors include the National Medal of Science (2010) from US President Barack Obama, the highest honor bestowed by the United States government on scientists, engineers and inventors. He is also the winner of the Abel Prize (2007), the Leroy Steele Prize (1996), the Margaret and Herman Sokol Award of the Faculty of Arts and Sciences, New York University (1995) and the Birkhoff Prize (1994). He also has honorary degrees from the Chennai Mathematical Institute (2008), the Indian Statistical Institute in Kolkata, India (2004) and from Université Pierre et Marie Curie in Paris (2003).

Jurors

Manindra Agrawal

Professor and Dean of Faculty Affairs, Department of Computer Science & Engineering, Indian Institute of Technology, Kanpur, India

Haïm Brezis

Professor, Pierre and Marie Curie University, France, and Visiting Distinguished Professor, Rutgers University, USA

Irene Fonseca

Mellon College of Science University Professor of Mathematics, and Director of Center for Nonlinear Analysis, Carnegie Mellon University, USA

Gopal Prasad

Raoul Bott Professor of Mathematics, University of Michigan, USA

Richard Taylor

Professor, School of Mathematics, Institute for Advanced Study, USA

Physical Sciences



Shrinivas Kulkarni

Jury Chair

Shrinivas Kulkarni is the John D. and Catherine T. MacArthur Professor of Astronomy and Planetary Science at the California Institute of Technology (Caltech), Pasadena, USA. His primary interests are the study of compact objects (neutron stars and gamma-ray bursts) and the search for extra-solar planets through interferometric and adaptive techniques. He serves as the Interdisciplinary Scientist for the Space Interferometry Mission (SIM) and is co-Principal Investigator of the Planet Search Key Project (also on SIM). He has been awarded the Alan T. Waterman Prize of the NSF, a fellowship from the David and Lucile Packard Foundation, a Presidential Young Investigator award from the NSF and the Helen B. Warner award of the American Astronomical Society and the Jansky Prize of Associated Universities, Inc. He was also elected a Fellow of the American Academy of Arts and Sciences (1994), Fellow of the Royal Society of London (2001) and Fellow of the National Academy of Sciences (2003).

Jurors

Goverdhan Mehta

National Research Professor and Jubilant-Bhartia Chair Professor, School of Chemistry, University of Hyderabad, India

Ramesh Narayan

Thomas Dudley Cabot Professor of the Natural Sciences, Harvard University, USA

Sriram Ramaswamy

Centre Director, TIFR Centre for Interdisciplinary Sciences, Hyderabad, India

Richard Zare

Marguerite Blake Wilbur Professor in Natural Science, Stanford University, USA

Social Sciences



Kaushik Basu

Jury Chair

Kaushik Basu is the Chief Economist and Senior Vice President, World Bank and Professor of Economics and the C. Marks Professor of International Studies, Cornell University. He is currently the President of the Human Development and Capabilities Association, and has held advisory posts with the ILO, the World Bank, and the Reserve Bank of India. A Fellow of the Econometric Society, he has published widely in the areas of Development Economics, Industrial Organization, Game Theory and Welfare Economics. His books include *Analytical Development Economics* (1997, MIT Press), *Prelude to Political Economy: A Study of the Social and Political Foundations of Economics* (2000, Oxford University Press), *Of People, Of Places: Sketches from an Economist's Notebook* (1994, Oxford University Press), and *Beyond the Invisible Hand: Groundwork for a New Economics* (2011, Princeton University Press and Penguin). In May 2008, he was awarded the Padma Bhushan by the Government of India.

Jurors

Avinash Dixit

John J. F. Sherrerd '52 University Professor of Economics Emeritus, Princeton University, USA

Sunil Khilnani

Avantha Professor and Director, King's India Institute, UK

Arunava Sen

Professor, Economics and Planning Unit, Indian Statistical Institute, New Delhi, India

Nirvikar Singh

Professor of Economics and Sarbjit Singh Aurora Chair of Sikh and Punjabi Studies at University of California, Santa Cruz, USA

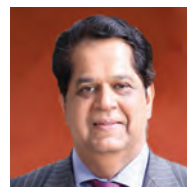
Trustees



Narayana Murthy

*Founder, Infosys Limited and
President of the Board of Trustees, Infosys Science Foundation*

Murthy founded Infosys along with six other software professionals in 1981. He was awarded the Padma Vibhushan by the Government of India, the Légion d'honneur by the Government of France, and the CBE by the British government.



K. V. Kamath

*Non-Executive Chairman of the Board, Infosys Limited and
Trustee, Infosys Science Foundation*

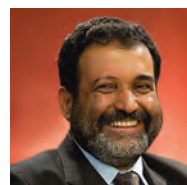
Kamath started his career in 1971 at ICICI, an Indian financial institution that founded the ICICI Bank. After working for the Asian Development Bank for a few years, he rejoined ICICI Bank as its Managing Director and CEO in 1996. He was awarded the Padma Bhushan by the Government of India in 2008.



V. Balakrishnan

Trustee, Infosys Science Foundation

Balakrishnan joined Infosys in 1991 and served in various capacities till 2013. He was the Company Secretary and Senior Vice President – Finance, and also served as Head of BPO, Finacle and the India Business Unit. He was the Chief Financial Officer from 2006–2012.



T. V. Mohandas Pai

Trustee, Infosys Science Foundation

Pai joined Infosys in 1994 and served as a Member of the Board from 2000–2011. He was the Chief Financial Officer of Infosys from 1994–2006. He led efforts in the areas of Human Resources and Education and Research from 2006–2011 and is passionate about education reform.



Srinath Batni

Trustee, Infosys Science Foundation

Batni was member of the Infosys Board from 2000–2014. He was also the Director of Infosys China and Infosys Australia and was the Head of Delivery Excellence. From 1996–2000, he served as the Senior Vice President and Head, Retail and Telecommunications.



S. D. Shibulal

*Co-founder, Infosys Limited and
Trustee, Infosys Science Foundation*

A co-founder of Infosys, Shibulal served as the Chief Executive Officer and Managing Director of Infosys from 2011–2014. Prior to this, Shibulal served as Chief Operating Officer from 2007–2011.



K. Dinesh

*Co-founder, Infosys Limited and
Trustee, Infosys Science Foundation*

A co-founder of Infosys, Dinesh served as the Member of the Board from 1981–2011. He retired in 2011 as the Head of Quality, Information Systems and the Communication Design Group.



Dr. Vishal Sikka

*Chief Executive Officer and Managing Director, Infosys Limited and
Trustee, Infosys Science Foundation*

Prior to joining Infosys, Sikka was a member of the Executive Board of SAP AG. He has a B.S. in Computer Science from Syracuse University and Ph.D. in Computer Science from Stanford University, USA, and his interests include artificial intelligence, intelligent systems, programming languages and models, and information management.



S. Gopalakrishnan

*Co-founder, Infosys Limited and
Trustee, Infosys Science Foundation*

A co-founder of Infosys, Gopalakrishnan served as the Vice Chairman of Infosys from 2011–2014, and as its Chief Executive Officer and Managing Director from 2007–2011. He has received several awards including the Padma Bhushan from the Government of India.



Bhavna Mehra

General Manager, Infosys Science Foundation

Mehra manages the ISF, focusing on expanding the inspirational and aspirational value of the Infosys Prize, and organizing the Infosys Science Foundation Lectures. She formerly managed strategic initiatives for Infosys, including its relationship with the World Economic Forum.

THE INFOSYS SCIENCE FOUNDATION

Securing India's scientific future

The Infosys Science Foundation is a not-for-profit trust set up in 2009. It confers the Infosys Prize to honor outstanding achievements across six categories of research: Engineering and Computer Science, Humanities, Life Sciences, Mathematical Sciences, Physical Sciences and Social Sciences. A jury comprising eminent leaders in each of these fields evaluates the achievements of the nominees against the standards of international research, placing the winners on par with the finest researchers in the world. The prize consists of a gold medal, a citation and a purse of ₹55 lakh.

In keeping with its mission of spreading the culture of science, the Foundation has instituted the Infosys Science Foundation Lectures – a series of public talks, mostly by jurors and laureates of the Infosys Prize. These talks and interactions aim to inspire young researchers and students by igniting a spark of curiosity and opening up a world of possibilities. In 2014, the Foundation also piloted *Gnanadeepa*, a training program for school teachers from rural Karnataka, to improve the delivery of concepts in science and mathematics.

Art of Science Contest 2014

The Infosys Science Foundation had invited Infoscions from all over the world to send in artwork made by their children, or those of their relatives and friends, between the ages of four and sixteen. The children were asked to choose any of the following themes for their art: Science – Up in the sky, deep in the sea, on the earth; In your garden, in your room, at school; On your plate; and Of the Future.

Here are the top four winning entries from the Art of Science contest:



First place

Trisanu Bhar (13 years)

Concept explanation: Trisanu's vision of the advances in science and inter-planetary communication in the future, when crises like population explosion and depletion of resources will find extraterrestrial solutions.



Second place

Siddharth G. (9 years)

Concept explanation: Siddharth's solution for space junk is a space-cleaning machine that sucks all waste and recycles it efficiently. There is also a space station where the space-cleaner will get re-fueled.



Second place

Siddharth Viswanathan (10 years)

Concept explanation: Siddharth envisions a future with flying cars, camp vans and submarine cars that will provide interesting commuting options. Underwater cities will solve the problem of urban overcrowding.



Third place

N. Vijay Sathappan (6 years)

Concept explanation: Vijay was inspired by ISRO's successful launch of the Mangalyaan mission. He envisions life beyond earth for which Mangalyaan is just the precursor.

INFOSYS SCIENCE FOUNDATION

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