

75
Azadi Ka
Amrit Mahotsav

VIGYAN VIDUSHI

75 WOMEN TRAILBLAZERS OF SCIENCE



विज्ञान प्रसार
VIGYAN PRASAR

An autonomous organisation of
Department of Science & Technology, Govt. of India



Future Hopes

Young women in science are leaving no stone unturned in carrying forward the legacy of our “Vidushis” and are striving high in their respective fields. Be it Biotechnology, Astrophysics, Life Sciences, Mathematics, Chemical Sciences, Food Technology, Bioinformatics, or any emerging stream like Artificial Intelligence, young women scientists are contributing in every field and are setting new milestones with each passing day. As the nation rests its hope on the strong and young shoulders, we all must take pride in reading about what these “Young Vidushis” are doing, their achievements, and what more they tend to achieve in the future for they are the ones, who will shape the course of science in India and would help to formulate or shape its policy. This book covers a list of a few of young Vidushis besides the 75 women stalwarts in science.

Future Hopes



Dr ABHA MISRA
Nano Micro Systems

She is working as Associate Professor at the Department of Instrumentation and Applied Physics, Indian Institute of Science, Bangalore. She is elected fellow of INSA and Indian Academy of Sciences. She has also patented technology on a "Nanocomposite Sensor for the Detection of Natural Gas". Her group works on various aspects of nano and microsystems to study interfaces between different physical phenomena at the nanoscale. Her research areas include Nanoscience and Nanotechnology; Graphene & CNT-based NEMS/MEMS, Sensors and Hybrid Fuel Cells & Batteries.



Dr ANINDITA BHADRA
Animal Behaviour

She is working as an Associate Professor in the Department of Biological Sciences at the IISER Kolkata. Her work focusses on the behavioural ecology of the Indian free-ranging dogs. She uses dogs as a model system to address various questions in behavioural ecology pertaining to aggression, mating, parental care, foraging and social organization. She is the recipient of many prestigious awards like the Janaki Ammal National Women Bioscientist Award from DBT (2021), INSA Young Scientist award 2009, SERB Women Excellence award 2013, IAP Young Scientist 2015 and many more. She is also a Young Scientist Delegate from the Royal Society, UK and DST, India.



Dr BEENA R PILLAI
Neural Gene Regulation

She is Senior Principal Scientists at CSIR-IGIB, Delhi. Her team is interested in understanding the interplay of non-coding RNAs and transcription factors in establishing gene expression patterns that drive neuronal development and function. Her lab has identified affected long non-coding RNAs, microRNAs and the gene regulatory networks neurodegeneration. She received the CSIR Young Scientist Award in 2008 and then selected for the 2009 INSA Young Scientist Medal. The Department of Biotechnology awarded her the National Bioscience Award for her contributions to biosciences, in 2017-18.



Dr DEBASHREE GHOSH
Quantum Chemistry

She is Associate Professor at School of Chemical Science of IACS, Kolkata. Her research team has developed and accurately applied quantum chemical methods to understand the interaction between light and coupled biochromophores. She has also developed a software package Q-Chem. She is the recipient of Annual Medal of the International Academy of Quantum Molecular Science (2021), Fulbright-Nehru Academic and Professional Excellence Fellowship (2020), Humboldt Research Fellowship for Experienced Researchers (2017-18), Burg Postdoctoral Teaching Award 2011 and so on.



Dr DEEPSHIKHA CHAKRAVORTY
Microbiology and Cell Biology

She is a Professor at the Department of Microbiology and Cell Biology at the Indian Institute of Science. Known for her studies on Salmonella and antibacterial resistance, Chakravorty is an elected fellow of the National Academy of Sciences, the Indian Academy of Sciences, DAE SRC Fellow, Humboldt Fellow and the Indian National Science Academy. The Department of Biotechnology, GoI awarded her the National Bioscience Award for her contributions to biosciences, in 2010. She is also Astra Chair Professor, recently awarded with the prestigious Yogmaya Devi Award in Biological/Medical Sciences, in 2021.



Dr DEVAPRIYA CHATTOPADHYAY

Earth and Climate Science

She is an eminent Geologist and Associate Professor and Chair, Earth and Climate Science at IISER, Pune. She tries to understand how marine organisms respond to their physical and biological environment in the ecological and evolutionary time scales. She uses shelled molluscs as a model system because of its impressive fossil record, ubiquitous presence and carbonate shells. In addition, the members of her research group also work on modern organisms using underwater observations. Dr Devapriya received Staff Exchange Award, UKIERI, British Council in 2012, Ernst Mach Scholar, University of Vienna, Austria (2011, 2014).



Dr DHANASHREE ASHOK PARANJPE

Animal Behaviour

She is DBT Ramalingaswami Fellow and Dept of Biodiversity, Abasaheb Garware College, Pune. Her area of research is Animal Behavior, Ecology and Evolution. Currently she is studying the impact of human vicinity on Indian Peafowl (*Pavo cristatus*) populations in terms of feeding habits, reproductive behaviors, communication and demographics across India. She obtained her doctorate in Circadian Biology and life history evolution from Jawaharlal Nehru Center for Advanced Scientific Research, Bangalore. She received NSF Post-doctoral Research Fellowship at the University of California (2010).



Dr FARAH ISHTIAQ

Vector Ecology and Genomics Surveillance

She is a Principal Scientist at Tata Institute of Genetics and Society, Bengaluru. At TIGS she studies the field ecology and population genomics of mosquito species involved in malaria, dengue and Wastewater-based Epidemiology of SARS-CoV-2. She had also studied critically endangered and threatened birds and used genetic markers and their applications to address scientific questions of interest. She has many honours to her credit, such as Wellcome Trust/DBT India Alliance Intermediate Fellowship (2013), International Marie Curie Fellowship (2006), Leica Award by the Oriental Bird Club, UK (2000) and many more.



Dr GITANJALI YADAV

Genomics and Structural Bioinformatics

She is a Scientist at the CSIR-National Institute of Plant Genome Research and is the recipient of many prestigious awards like the Hamied Fellowship Award (2019) by the University of Cambridge, UK, SERB 'Women Excellence Award' (2013), INSA Medal for Young Scientists (2011), Young Scientist Platinum Jubilee Award (2009) by NASI, Innovative Young Biotechnologist Award (2005) and many more. She is a specialist in genomics and structural bioinformatics, with specific applications in food security and ecosystem conservation. Her work involves data science at the interface of Botany, Chemistry and Geography.



Dr LIPIKA SAHOO

Intellectual Property Rights

She is a Founder & CEO, Lifeintellect Consultancy Pvt Ltd, a Bangalore-based technology and intellectual property consulting firm. She is a registered Indian Patent and Trademarks Agent with rich experience in academia and industry in the areas of technology, innovation & intellectual property. She holds a PhD from Indian Institute of Science, Bangalore. She has expertise in patent drafting, IP office actions, IP analytics, training and developing teams, project development/management. Associated as a reviewer/expert/mentor with many well-known Startup ecosystems and innovation programs. She is the recipient of Great Companies women entrepreneur of the year award 2020.

Future Hopes



**Dr LOLITIKA
MANDAL**

Immunobiology

She is an Assistant Professor at the Indian Institute of Science Education and Research (IISER) Mohali. Her research has contributed to a global understanding of how blood cells develop. She and her team established fruit fly as a model organism to study not only the formation of blood stem cells, but also their migration and their roles in immunity, wound healing, ageing, and so on. She is the recipient of the Fellowship from Wellcome Trust DBT Indian Alliance. She has published various research papers in the field of Developmental Genetics.



Dr MAHAK SHARMA
**Microbiology and
Cell Biology**

She is working as Associate Professor in Biological Sciences at IISER Mohali and has been awarded the NASI-Young Scientist Platinum Jubilee Award in 2018, SERB-Women Excellence Award (2017) and also the INSA Medal for Young Scientist in the same year. She was awarded the prestigious "Wellcome Trust/DBT India Alliance Intermediate Fellowship" in April 2012. She has also been selected as a member of the Indian National Young Academy of Science (INAYAS) in 2018. Her major research interests include Molecular Mechanisms Regulating Membrane Trafficking towards Lysosomes.



**Dr MAHALAKSHMI
RADHAKRISHNAN**
Molecular Biophysics

She is Professor of Biological Sciences at IISER Bhopal. With the aid of biophysical tools, spectroscopic techniques, and single-molecule ensemble studies, she characterised the role of human membrane proteins. Her research aims to develop feasible translational strategies targeting cancer, neurodegeneration, and bacterial infections using membrane proteins. She elected as NASI fellow (2021). She is the recipient of many prestigious awards such as DBT - Wellcome Trust India Alliance Senior Fellowship (2020), SwarnaJayanti Fellowship (2020), SERB Women Excellence Award (2017), DBT-IYBA (2009) and so on.



**Dr MANITHA
B. NAIR**
Tissue Engineering

She is Associate Professor at Amrita Vishwa Vidyapeetham. Her research focuses on the development and clinical translation of biomimetic nanomaterials toward musculoskeletal (bone, cartilage, ligament) and intervertebral disc regeneration. In addition, her research also involves the study of the release kinetics of antimicrobial agents for osteomyelitis treatment. She has several International journal publications to her credit. She has received many prestigious awards that includes DBT-IYBA (2012), Young Scientist fellowship of DST (2012); Young Scientist Award (2007); ZEISS Best Photomicrograph Award (2006).



**Dr NEELANJANA
SENGUPTA**
**Computational
Biology**

She is currently serving the Department of Biological Sciences at IISER Kolkata as a 'Computational Biophysicist'. Her research aims to understand and predict the behaviour of biological systems at the molecular level using 'bottoms up' approaches. At her lab, advanced molecular simulations, combined with tools based on the principles of equilibrium and non-equilibrium statistical mechanics, used to resolve the mysteries of molecular origin of neurodegenerative diseases, membrane-protein interactions etc. Before joining IISER, she served as Scientist at National Chemical Laboratory, Pune. She receives Raman Research Fellowship at University of Cambridge (2015).



Dr NEELDHARA MISRA

Theoretical Computer Science

She is Smt. Amba and Sri. V.S. Sastry Chair Assistant Professor of Computer Science and Engineering and the Associate Dean for External Communications at the IIT Gandhinagar. Her research interests include the interplay of structural graph theory and graph algorithms; tools and techniques in parameterized complexity; computational perspectives on combinatorial games; voting mechanisms, with a special focus on strategic behaviour; fair allocations of resources. She is keen on understanding means of bringing computational thinking to school education, and using visual tools and narratives for exposition in general.



Dr NITI KUMAR

Immunology and Microbiology

She is a Senior Scientist from Division of Molecular Parasitology and Immunology, CSIR-CDRI, Lucknow. She is interested to understand the protein quality control processes adopted by a cell during stress and infection. She is using different biological systems to decipher the cross-talk between components of protein folding, degradation and ribosomal machinery which regulates cellular homeostasis. Dr Niti has many awards and recognitions in her credit including, SERB Women Excellence Award-2020, DBT Innovative Young Biotechnologist Award 2015, INSA Medal for Young Scientist 2010, Ramalingaswami Fellowship (2013-2018), Alexander von Humboldt Fellow (2010) and many more.



Dr NUTAN LIMAYE

Theoretical Computer Science

She is an Associate Professor in the Department of Computer Science and Engineering, IIT Bombay. She is an Associate Editor for ACM Transactions on Computation Theory (TOCT) and also for STOC 2021 Special Issue. She received the IRCC IIT Bombay Research Publication Award 2019. She is a member of the Theory CS Group at IIT Bombay. She is interested in theoretical aspects of Computer Science, specifically Algorithms and Complexity Theory. She is the reviewer for various research journals like SiComp, TOCT, TOCS, Transactions on Networking, etc. She is also a member of the Gender Cell at IIT Bombay.



Dr PINKY AGARWAL

Molecular Studies on Seed Development

She is Staff Scientist at National Institute of Plant Genome Research. Her research study focuses on the molecular studies on rice grain to increase yield and protein content of rice grain. In her lab, genes involved in seed development has been characterized, especially ones responsible for size increment or seed storage protein synthesis can be used for rice crop improvement. Her work is acknowledged through various awards and recognitions such as SERB 'Women Excellence Award' (2013), INSA Young Scientist's Award (2012). She was also selected for the 1st EMBO research leadership course in India (2018).



Dr POOJA DEVI

Materials Science and Sensor Applications

She is a Principal Scientist at CSIR-Central Scientific Instruments Organisation, Chandigarh. She is working in applied material science, with a focus on developing materials/methods for energy and environmental application. She has also filed 03 patents, 1 copyright, 1 trade-marks, and developed 4 technologies, 2 of which are transferred to the industries. She is also a recipient of several prestigious awards and fellowships, including the INAE Young Engineer Award (2021), SERB Women Excellence Award (2020), Young Scientist Award (2019) from Indian Science Congress Association, etc. She is also a young associate/member of the national academies, including INAE, IASc, and NASI.

Future Hopes



Dr ROHINI GARG **Plant Molecular Biology**

She is Associate Professor at Department of Life Sciences, of Shiv Nadar University. Her research study focuses on identifying the role of DNA Secondary structure in gene regulation in plant. She is the recipient of many prestigious awards such as SERB Women Excellence Award, 2017; Associate of Indian Academy of Sciences (2016-2019); Young Scientist Platinum Jubilee Award (2014) from the National Academy of Sciences India (NASI); INSA medal for Young Scientist (2014); INSPIRE Faculty Fellowship 2011, INSA Fellow 2014, Innovative Young Biotechnologist Award, 2012 to name few.



RUCHI SANGHVI **Computer Science**

She is Vice President of Operations at Dropbox, responsible for communications, marketing and other functions. She joined Facebook in 2005 and became the first female engineer there. She was instrumental in implementing the first versions of key features such as News Feed and led product management and strategy for Facebook Platform and Facebook Connect. Ruchi obtained her bachelor's and master's degrees in electrical computer engineering from Carnegie Mellon University. She received Best Engineering Leadership Award in 2011. In 2016, Sanghvi established South Park Commons, a residential and professional tech space that functions similarly to a hackerspace.



Dr SANGITA BOSE **Experimental Condensed Matter Physics and Nanoscience**

She is working as Associate Professor at School of Physical Sciences, UM-DAE Centre for Excellence in Basic Sciences (CEBS), University of Mumbai, Mumbai. She is the recipient of INSA Young Scientist medal, 2008, DAE-Young Achievers Award-2015, INSA Fellow and many more. Her research interests and expertise include experimental condensed matter physics and nanoscience, Mesoscopic superconductivity, Thin Films, Low-temperature Physics, Transport based spectroscopy, Organic electronic device fabrication and characterization, etc.



Dr SAVITA AYYAR **Research Management**

She is the founder of Jaquaranda Tree, an independent consultancy service for supporting organizations in research management needs. She is also leading the development of the India Research Management Initiative (IRMI) on behalf of the DBT/Wellcome Trust India Alliance. She initiated her career as a grant advisor for the Wellcome Trust in London. She then returned to India in 2010 as the head of the Research Development at the National Center for Biological Sciences (NCBS). Under her leadership, the Research Development Office worked towards communication, outreach and fundraising from government and philanthropic sources.



Dr SHALINI ARYA **Food Technology**

She is Assistant Professor in the Department of Food Engineering and Technology at Institute of Chemical Technology, Mumbai. She is also a member of Global Young Academy, Germany, Society of Chemical Industry (SCI), London, International Society of Food Engineering (ISFE), USA, Biotechnology Research Society of India (BRSI) and many other prestigious societies in India and abroad. Her research interests include Indian traditional foods, preservation of foods, product development and processing, cereals and cereal products, starch chemistry and technology and newer technologies in the preservation of traditional foods.



Dr SHARMISTHA SINHA

Nanotechnology

She is Associate Professor, Scientist-E at Institute of Nano Science and Technology, Punjab. She explores the molecular confinement and self-assembly of biomaterials to understand the structure-assembly relationship in bacterial microcompartments. These studies will help the design and bioengineering of novel smart hybrid nano-bioreactors. Her team is also involved in understanding the protein and small-molecule assembly principles in cancer progression and management. She is the recipient of Har Govind Khorana-Innovative Young Biotechnologist Award 2019, SERB Women Excellence Award 2017, INSA Medal for Young Scientist 2008.



Dr SRABANTI CHAUDHURY

Theoretical Biophysics

She is Associate Professor in Department of Chemistry at IISER Pune. She employed the concepts of statistical mechanics to develop theoretical models to investigate stochastic fluctuations in chemical physics, biology and soft condensed matter. Analytical techniques as well as computer simulations are used as tools. She obtained her PhD in Theoretical Physical Chemistry from IISc, Bengaluru. She was a postdoctoral fellow at Rice University, The University of Texas and the Los Alamos National Laboratory before joining IISER Pune. She is recipient of Chemical Research Society of India Bronze Medal (2022) and Young Scientist Award Chemical Frontiers, Goa (2019).



Dr SRUBABATI GOSWAMI

Neutrino Physics

She is currently a senior professor in the Physical Research Laboratory, Ahmedabad. Her topic of research is neutrino physics and physics beyond the Standard Model of particle physics. She is a member of the India-based Neutrino Observatory collaboration. She has received several awards including the Humboldt fellowship from Alexander-von-Humboldt Foundation, the P. Sheel Memorial Lecture Award of NASI, the CV Raman Mahila Vijnana Puraskara from Swadeshi Vijnana Andolana, and the J C Bose National Fellowship of SERB. She is an elected fellow of all the three science academies in India. She is also elected as a TWAS fellow (2021).



Dr SUHITA NADKARNI

Computational Neurobiology

She is an Assistant Professor and Wellcome Trust - DBT Fellow at Division of Biology, IISER Pune. She earned her PhD in 2005 from Ohio State University physics department, where she introduced to theoretical and computational neuroscience. She was involved in developing computational models of communication between star-shaped cells called astrocytes and neurons. She worked in two labs in the US for her postdoctoral research- Terry Sejnowski's lab at the Salk Institute and Herbert Levine's lab at University of California at San Diego. She then moved back to India to set up her lab at IISER Pune, where she also set up the high performance computing cluster (HPC).



Dr SUREKHA KATIYAR-AGARWAL

Plant Molecular Biology

She is Professor at South Campus of Delhi University. Her research study focuses on understanding the molecular basis of stress responses and senescence in plants. She is involved in unravelling the gene reprogramming changes that occur in flag leaf senescence and coleoptile senescence in rice. Similarly, her team is also involved in genome-wide discovery of small RNAs, a crucial regulator of development and stress responses, in economically important crops such as wheat, mustard, potato, chickpea and rice. She is bestowed with Innovative Young Biotechnologist Award (IYBA-2012) by Department of Biotechnology, India.

Future Hopes



Dr UPASANA RAY **Infectious Diseases and Immunology**

She is Senior Scientist & Deputy Head for Infectious Diseases and Immunology, CSIR-Indian Institute of Chemical Biology, Kolkata. She is an INSA Fellows 2015, Member of the Royal Society of Biology (MRSB) (2018-present), Ramalingaswamy Fellow (2017-present), INSA Young Scientist, Ramanujan fellow, etc. She got full membership of OWSD (Organization for women in science in the developing world) in the year 2016. She is also the recipient of the SERB - Women Excellence Award in the year 2019. She is currently exploring virus-mediated horizontal gene transfer and its possible implications and also studying the viral entry process and viral tropism.



Dr URBASI SINHA **Quantum Information and Computing**

She heads the Quantum Information and Computing (QuIC) laboratory at RRI Bengaluru, which is the first lab in India dedicated to working on photonic quantum science and technologies, including quantum computing and secure quantum communications. She is also an affiliate member at the Institute for Quantum Computing, Waterloo, Canada as well as the Centre for Quantum Information and Quantum Computing at the University of Toronto. Also, she has been a Homi Bhabha fellow from the year 2017 to 2019 and a Simon's Emmy Noether Fellow at the Perimeter Institute, Canada from 2020 onwards.



Dr URMI BAJPAYEE **Microbiology**

She is Associate Professor at Department of Biomedical Science of Acharya Narendra Dev College, DU. Her research focuses on discovery of new TB drugs with Mur enzymes involved in the cell wall biosynthesis pathway of *Mycobacterium tuberculosis* as the drug targets. She is also involved in exploring the potential of mycobacteriophages and their lytic enzymes (Lysins) as anti-bacterial agents. She was awarded with the Delhi Government's meritorious teacher's Award in 2014. She is also a National coordinator for TATA CSIR-OSDD Fellowship Programme. She is the pioneer of the Undergraduate Research Program in the college.



Dr YAMUNA DEVI PAILA **Immunology and Microbiology**

She is Professor at Department of Genetics and Molecular Biology, CSIR - Indian Institute of Chemical Biology (CSIR-IICB), Kolkata. She has authored and co-authored several national and international publications and also working as a reviewer for reputed professional journals. Dr Yamuna Devi Paila is having an active association with different societies and academies around the world. She made his mark in the scientific community with her contributions and wide recognition from honorable subject experts around the world. She has received several awards for her contributions to the scientific community.



Dr YAMUNA KRISHNAN **Biochemistry and Biophysics**

She is a professor at the Department of Chemistry, University of Chicago and was earlier a Reader in National Centre for Biological Sciences, Tata Institute of Fundamental Research, Bangalore, India. She won the Shanti Swarup Bhatnagar Prize for science and technology in the year 2013 in Chemical Science category. Krishnan was a recipient of the Wellcome Trust -DBT Alliance Senior Research Fellowship in 2010, the Indian National Science Academy Young Scientist Medal in 2007, Innovative Young Biotechnologist Award from the DBT in 2006 and the Infosys Prize 2017 in the Physical Sciences category.

