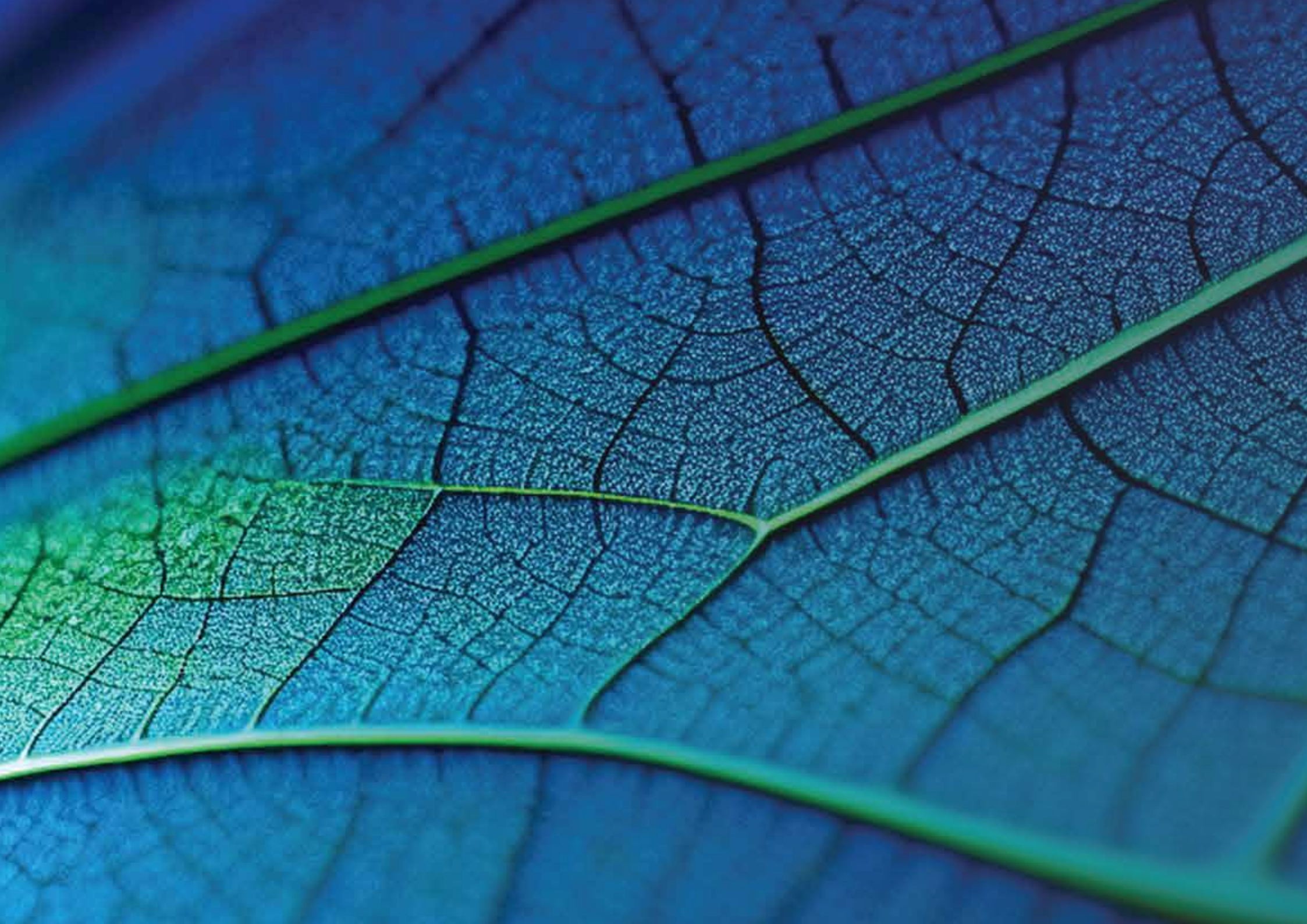

ignite
Life Science Foundation
ANNUAL
REPORT
2023-2024
#MakingScienceWorkForIndia



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EXECUTIVE MESSAGES

Pankaj Chandra
Vice Chancellor, Ahmedabad University
Chairperson, Ignite Life Science Foundation

Message from the BOARD

The Purpose of Ignite Life Science Foundation

Science is fast becoming the new theory of development. Nations leapfrog development cycles when science becomes deep and when it solves problems of the larger society and beyond. From agriculture to climate, from water to health, from oceans to mountains, research in life sciences has the potential to change lives on our planet. The purpose of Ignite Life Science Foundation (Ignite) is to accelerate this development for India.

Powering societies through scientific endeavour

India's scientific activity, however, is characterised by low investments in R&D, low investment in researchers, and low rate of translation of scientific discoveries. Science has powered societies when the relationship between academic researchers who grow the science and those who support science as a force of social good has flourished. Building such an ecosystem requires establishing processes that focus on all the three challenges. But also, on a fourth one managing the process of scientific discovery and its translation to improve the probabilities of success. Enlarging the pool of funding brings new stakeholders in the scientific process who want scientists to explain natural phenomena better and use science to solve problems which would make our lives better. The power of enlarging the scientific community ensures that innovative thinking grows in multiple ways – growing the attractiveness for supporting innovative research but more so, finding the right support and mentoring superstructure to make scientific research more efficient and effective. And above all, develop an ability to bring different knowledge systems to come together to solve humanity's problems of today and tomorrow.

The India Story – beyond the cities

Since 1947, perhaps for the first time, we see a more scientifically confident India, and foundations of this confidence have to go back to the scientists of the 1930s, the technology vision of the 1950s, and the growth of information technology in the 21st century. Today, its beauty lies in the small labs in large institutions and corporations and small enterprises and most importantly, in the minds of bright young people coming out of non-elite institutions in our country though we rarely recognise their contribution. Let me share one such example. Few years ago, I was visiting the Space Application Centre, Ahmedabad and a young lady of maybe a couple of years of experience was showing me the evolution of payloads over the years – different cameras with improving resolutions that had been built there over

time. She showed me the most recent one which was at the cutting edge and with pride mentioned that she was involved with building that highest resolution one. Instinctively, as an academic, I asked her where she had studied (half expecting her to be from one of India's most talked about institutions) – she replied Women's Polytechnic, Cuttack. That is India's story about too – young people from small towns, unknown colleges with dedicated teachers, who are inspiring large and small organisations, both in research and in industry. Indian science and scientists, when nurtured, deliver pathbreaking solutions.

Using funding as a strategic tool

We face a serious challenge in protecting our citizens from the depredations of disease and environmental deterioration. This is the century of biology and solutions for many such challenges will come from life sciences. The pandemic has shown that we, in India, will have to solve our own challenges. Funding for such research is clearly insufficient. However, funding alone is not a sufficient condition to create meaningful research outcomes.

We also have to improve the quality of research by using funding as a strategic tool to increase research productivity and impact. This can include everything from making the funding process agile and responsive, to carefully curating research ideas and closely working with scientists who will execute these projects by providing them access to a systematic review by some of the best science and technology minds globally. Scientists must be supported through the lifecycle of project execution through targeted mentoring for them to achieve the best outcomes from their work. These actions will drive lasting changes in the research ecosystem of India to favour behaviours and architectures that extract the most out of the funding we deploy. This is Ignite's mission!

A group of leading academics, scientists, innovators, entrepreneurs, and business persons came together to create Ignite Life Science Foundation as a not-for-profit organization that is committed to deploying philanthropic capital for solving deep challenges in life sciences by providing mentoring to some of the brightest researchers in the country. Our mandate is to grow the highest quality life science ecosystem in the country. In that, we see a critical enabling and a transformative role for private initiatives to bring about rapid improvements in the quality of research and its impact.

Ignite aims to expand the resource base for Indian life scientists by bringing private capital into funding meaningful science. We work with philanthropists and private organisations to identify challenging problems in the society. We identify the most talented researchers in India who have the potential to engage, both, in short and long-term research around those challenges. We provide a global platform for mentoring chosen researchers on the problem to enhance their chances of success, and we support the translation of research into meaningful products and services. Our vision of building deep expertise in life science research in India is executed along with the highest quality partners who fund research in India's academic institutions as well as those talented scientists who undertake such research.

We invite you, individuals and organisations and both government and private, to partner with Ignite to ensure that your grant works best in solving problems of India and the world.

Ramaswamy Subramanian
Director, Bindley Bioscience Center, Purdue University
Chairperson, Ignite's Scientific Advisory Board

Message from the Scientific Advisory Board

The issue of evaluating the impact of fundamental scientific research is frequently raised. To illustrate, I often cite the space program as an example. The program produced weather satellites, communication technologies, and Teflon, which were not initially predicted. However, it is more challenging to identify such outcomes in the life sciences field. The public's perception of the funding for the human genome project remains mixed. I am frequently asked why, despite having knowledge of the human genome sequence for many years, can we not still cannot cure cancer.

Choosing Verticals to Fund

How do we determine the verticals that Ignite Life Science Foundation (Ignite) should support, and how do we convince donors that these verticals are important without a direct relationship to tangible outcomes? Ideally, in the unpredictable nature of science, the answer is simple - let's fund the generation of new knowledge without any preconceived outcomes, and we would see disruptive solutions to problems emerge. However, we do not live in an ideal world. At Ignite, we understand the value of funding science, so we had to find the right balance.

The India Story – beyond the cities

We approached the problem from a different angle. We asked ourselves what are the major challenges for which we currently have no solutions. Are the solutions not available due to a lack of technology integration, or are there gaps in technology that require new scientific discoveries? We decided that Ignite should fund scientific research to fill the gaps in technology, which can then lead to solutions. However, as a newly established organization, we cannot fund all the life sciences projects out there. Therefore, we had to narrow down the list and focus only on the most relevant projects for India. We considered the areas where Indian science has strengths and identified some quick wins that can demonstrate the capability of Indian science. We also asked ourselves the most important question: what are the issues that will touch a donor's heart? After all, we want to make an impact and inspire people to also make it their cause.

The activities and verticals we chose were based on the above considerations. The COVID-19 pandemic exposed a significant gap in India's technological capabilities. Although we could manufacture mRNA vaccines, we were unable to design them from scratch. Therefore, we decided to invest in developing platform technologies

and capabilities. We successfully raised funds for a program that aimed to design, develop, and test mRNA vaccines on animals. This initiative has been a resounding success.

Science for India is science for the world

We learned that major problems cannot be solved by individuals alone. So, we built a vertical on community building (research cooperatives), and challenges and opportunities began to emerge. We realized that Anti-Microbial Resistance (AMR) was a major challenge, while early-stage drug discovery presented an opportunity. Although India is one of the largest manufacturers of generics and biosimilars, identifying new targets and developing leads remained a weak link. To overcome this, we created verticals on AMR and early-stage drug discovery - CAN-DO ETR (Early Translational Research) grants, thanks to the generous support of our donors.

The Haber-Bosch process—the availability of organic nitrogen—is a major challenge at the intersection of climate change, fossil fuel import, and agriculture. Replacing the energy-intensive Haber-Bosch process with a sustainable low-energy process would be a breakthrough. Incremental solutions are valuable. That is why our funding vertical in AgriScience includes strategies to help plants uptake and utilize organic nitrogen more efficiently, nitrogen-fixing symbionts to work on new hosts, ways to reduce leaching, and discoveries that can contribute to a reduction in the use of nitrogen fertilizers.

One cannot talk about climate change, agriculture, and health without discussing biodiversity – increasing urban biodiversity is a vertical that has just begun. We have some verticals that are initiated by donors who come up with good ideas. Likewise, a program on neurodegeneration was seeded by a donor, and we aim to expand it.

Sustainability Initiatives

I recall a conversation where one of our donors pointed out that exposure to the world outside is a must and is often the biggest challenge for many people to dream big. To help overcome this challenge, we have a vertical that funds PhD students to attend international meetings. This helps them broaden their horizons and encourages them to dream bigger and take on greater challenges. We are proud to be associated with the Eklavya Education Foundation in this endeavor.

Finding the right balance

Throughout our journey, we have dedicated our efforts to funding fundamental scientific research that is essential for solving problems and not just for creating new products. Although there are numerous problems to solve in different areas, we need to strike a balance between funding science to solve problems and funding science in general.

The goal is to generate knowledge that may have translation value and impact in unexpected ways. Ignite's goal is to create a smooth transition between discovery and translation by connecting scientists with those with experience in commercialization. To achieve this, we listen to academia, industry, and, most importantly, those who are not trained in science but understand its value.

Building networks & collaboration

As the Scientific Advisory Board, we understand that enabling science is not just about funding; it is about mentorship, building networks, facilities (instrumentation and resources), communication, and encouragement. We recognize that scientists are at the center of science – resources (money, instruments, environment) are all necessary tools, but people do the science. We need more scientists; we need them in more places – not just in our elite institutions. While our review process is thorough and unbiased, we also need to find ways to build scientific capabilities in lesser-known institutions.

On becoming 'discipline less'

A major revolution is happening in how we do science. The advent of large language models and machine learning is providing new tools to collate and interpret large amounts of data. The ability to create relationships between data generated from seemingly different disciplines will have a dramatic impact. Scientific research will transcend disciplines – in other words, become "discipline less". It is imperative that we invest in the intersection of Life Science, Data, and Engineering – it is this intersection that is going to shape the future of the food we eat, the way we live, and how we live.

OUR WORK IN REVIEW

Swami Subramaniam
CEO - Ignite Life Science Foundation

Three years is a good time for a startup to pause and take stock. When we started 3 years ago we were clear on one thing: there is a need for more reliable funding if India is to succeed as a science power. To this end, we have contributed modestly, by funding about Rs.12 crore worth of projects. But what we have learnt and the impact we have created is a story that is not reflected in that modest figure.

A key learning for us is that doing more science through increased funding has incremental value. It is not sufficient to make us competitive as a science power. The Organisation for Economic Co-operation and Development (OECD) countries and China can afford to pour vastly greater amounts into science. To be in the reckoning we have to do science “better”. For us funding science is a means to achieve this goal.

CURATING SCIENCE

Over the past three years, we have experimented with a variety of approaches that have the potential to germinate “better” science. We have engaged closely with the scientists we fund and have provided them with the benefits of mentoring and advice through our network of experienced science reviewers. We have tested the field by giving out smaller amounts of funding in the early stages and graduating those who do well to the next level of funding.

We have also selected areas to fund that have the potential to create the greatest impact in India while also keeping in mind the interests of our Donors.

FOCUS AREAS

01 | PLATFORM TECHNOLOGIES

One of the key funding verticals is support for the replication in the development and availability of platform technologies that have a vital role in public health and/or play a key enabling role in doing cutting edge science for India. One of our flagship projects of this variety is funding for the development and validation of mRNA vaccine technologies at IISc, Bengaluru (Dr Raghavan Varadarajan and team), an urgent need that became apparent at the onset of the COVID pandemic. This 3-year project has reached a point where candidate vaccines are now moving to the next stage of animal testing at THSTI, Faridabad (Dr Amit Awasthi and team).

As a follow-on we are funding development of a Nipah virus vaccine by the same IISc, Bengaluru group while also working on a workshop like format to disseminate the learnings to other laboratories across India wanting to do mRNA work. Since mRNA technologies have a wide range of applications as therapeutics in areas like cancer, we believe this can spark widespread development of new products of this kind in India in the public sector that will also help make such inventions affordable. Over the next few years we will identify and fund other similar enabling and platform technologies where India needs to catch up with other countries.

PROJECT

Towards an mRNA vaccine platform

Investigators

Raghavan Varadarajan and Team
IISc, Bengaluru

- Mrinmoy De – IISc, Bengaluru
- Siddharth Jhunjhunwala – IISc, Bengaluru
- Amit Awasthi – Translational Health Science and Technology Institute, Delhi

02 | ANTIMICROBIAL RESISTANCE (AMR)

Resistance of disease causing microbes to antibiotics is a modern plague. If nothing is done it is estimated that 10 million people will die of AMR each year, by 2050 - many of them will be in India. This needs to be tackled as a health emergency. One aspect of this fight is to develop new antibiotics - an area deserted by most pharma companies as antibiotics are not profitable. As a major problem nation in AMR we have a responsibility to generate new solutions. To this end we have funded early stage projects in a range of laboratories across the country that can help us understand and design new solutions that can block this epidemic. We have funded projects ranging from studying host cell mechanical forces that can rupture intracellular bacterial membranes to the mechanisms bacteria use to lie in stealth before growing explosively when the conditions are just right, including ways to overcome that latter.

PROJECT 01

SERS - based rapid identification of fungal isolates

Investigators

- Dalip Singh Mehta - IIT Delhi
- Anuradha Chowdhary - V. P Chest Institute, Delhi
- Arijit Pal - Kusuma School of Biological Sciences, IIT Delhi

Vivekanandan Perumal
IIT Delhi

PROJECT 02

Targeting non-replicating drug tolerant M. tuberculosis through a pro-drug strategy

Investigators

- Harinath Chakrapani – IISER, Pune

Amit Singh
IISc, Bengaluru

PROJECT 03

Unraveling the Regulatory Mechanism that Connects Ribosome Biogenesis and Stringent Response with Bacterial Cell Growth

Investigator

B. Anand
IIT Guwahati

PROJECT 04

Developing a candidate mRNA vaccine against the Nipah virus

Investigators

- Siddharth Jhunjhunwala - IISc, Bengaluru
- Mrinmoy De - IISc, Bengaluru
- Amit Awasthi - THSTI, Faridabad

Raghavan Varadarajan - IISc, Bengaluru

PROJECT 05

In vivo potency of the recombinant expressed marine bacteria BAL in the lung infection and diabetic wound healing model

Investigators

- Dr Ratnasekhar CH - CSIR-Central Institute of Medicinal Aromatic Plants (CSIR-CIMAP)

Dr. Mukesh Pasupuleti - CSIR- Central Drug Research Institute, Lucknow

PROJECT 06

Targeting type III toxin-antitoxin RNP complex assembly as a potential antibacterial strategy

Investigator

Mahavir Singh - Indian Institute of Science, Bengaluru

PROJECT 07

Towards Elimination of Mycobacterial Persisters through a Prodrug Approach

Investigators

- Harinath Chakrapani - IISER, Pune

Amit Singh
IISc, Bengaluru

PROJECT 08

Metabolic intoxication as a novel strategy for adjuvant therapy to eliminate Mycobacterium tuberculosis

Investigators

- Dr. Kiran Kumar Pulukuri - IISER Tirupati.

Dr. Raju Mukherjee - IISER Tirupati

PROJECT 09

Unraveling the regulatory mechanism that connects ribosome biogenesis and stringent response with bacterial cell growth

Investigator

B. Anand
IIT Guwahati

PROJECT 10

Preclinical evaluation and development of FDA-approved antipsychotic phenothiazine as a drug reposition candidate against Japanese Encephalitis (Phase 1)

Investigator

Manjula Kalia
(RCB, Faridabad)

PROJECT 11

Intracellular Delivery of the Antimicrobial Peptides for Drug-Resistant Bacterial Infections

Investigators

- Rajendra Kurapati - IISER, Thiruvananthapuram

Sandhya Ganesan -
IISER,
Thiruvananthapuram

03 | NEURODEGENERATION

Even though we have a young population, the absolute numbers of our elderly is much larger in comparison to many demographically older populations. This means that there has been a significant increase in the incidence of neurodegenerative diseases like Alzheimer's and Parkinson's disease. We are still at the leading edge of the anticipated growth in these diseases as the population ages. Also, some of the characteristics of these diseases are influenced by the local gene pool and environment. After a recently held meeting on the topic of Neurodegeneration organized as part of our SpARC - Special Academic Research Cooperatives*, we were presented with a bouquet of exciting opportunities to fund that will deepen our understanding of neurodegeneration. This includes everything from looking at protein modifications that trigger neurodegeneration to the use of a fruit fly model to study genetic influences at scale.

PROJECT 01

A novel strategy for identification of modifiers and drugs to halt age-dependent trans-cellular propagation of pathogenic tau aggregates and associated impairments

Investigator

Surajit Sarkar
University of Delhi South Campus, New Delhi

PROJECT 02

Prevention of Ferroptosis by Artificial GPX4: A Novel Strategy for the Treatment of Hemorrhagic stroke

Investigator

G. Mugesh
IISc, Bengaluru

PROJECT 03

Transforming Nanoscale Molecular Landscape to Delay the onset of Alzheimer's Disease

Investigators

Deepak Nair
IISc, Bengaluru

- Akkattu T. Biju
  IISc, Bengaluru

PROJECT 04

Exploring the role of innate immune cells in Parkinson's disease

Investigator

Dipyaman Ganguly
IICB, Kolkata

PROJECT 04

Mechanistic interrogation of the spinal mechanisms underlying chemotherapy induced neuropathic pain

Investigators

Anupama Sathyamurthy
IISc, Bengaluru

- Arnab Barik
  IISc, Bangalore

04 | NITROGEN USE EFFICIENCY (AGRICULTURAL SCIENCE)

Our ambit as a science philanthropy funding life science also includes Agricultural Science. We have taken up the issue of improving nitrogen utilization by plants using natural means, so as to reduce the environmental impact and cost of using synthetic nitrogenous fertilizers. A number of avenues are being explored both at a genetic level (improving nitrogen uptake) to co-culturing plants with bacteria (hosted by yeast) that help fix the nitrogen for use by the plant - in this case rice.

PROJECT 01

Role of Rhodotorula mucilaginosa JGTA-S1in the release of its endosymbiotic microbes to modulate rice microbiota and improve nitrogen nutrition by bacterial-fungal-plant three kingdom interaction

Investigator

Anindita Seal
University of Calcutta

PROJECT 02

Improving rice genetics and its ecosystem through genome engineering and bioagents to reduce dependency on chemical N2 fertilizer

Investigators

Kutubuddin Molla
ICAR-NRRI, Cuttack

- M.J. Baig – ICAR-NRRI, Cuttack
- Arup Mukherjee – ICAR-NRRI, Cuttack
- Totan Adak – ICAR-NRRI, Cuttack
- Jitendriya Meher – ICAR-NRRI, Cuttack

PROJECT 03

Increasing nitrogen use efficiency via modulation of Phytoglobins

Investigator

Jagadis Gupta Kapuganti
National Institute of Plant Genome Research, New Delhi

PROJECT 04

Engineering rice plant capable of synthesizing its own nitrogen fertilizer via integrating the genetic networks to accommodate N2-fixing rhizobial symbiosis

Investigator

Pallavolu M. Reddy
The Energy and Resources Institute (TERI), New Delhi

05 | TRANSLATIONAL RESEARCH

One of the major gaps in Indian science is the lack of an ecosystem with the components that can promote translation of research findings to application. The Government promotes applied research, but the findings lie fallow because of the absence of structures and mechanisms to push these research findings forward into development. We have taken a conscious approach through our Early Translational Research (ETR) grants to identify such research fundings and promote their progression both through funding as well as mentoring through our network of industry experienced scientific advisory board members. Later in the year we will also conduct a workshop to train investigators in the science of “push” translation (i.e. science that pushes an invention towards innovation).

DRUG DISCOVERY

PROJECT 01

Targeting Morf4l2 alternative splicing to prevent cardiac cachexia

Investigators

- Kinshuk Raj Srivastava - CDRI, Lucknow

Shashi Kumar Gupta
CDRI, Lucknow

PROJECT 02

Discovery and development of a novel Hv1 channel inhibitor to alleviate chronic pain

Investigators

- Prem Yadav - CDRI, Lucknow
- Atul Goel - CDRI, Lucknow

Arvind Kshatri
CDRI, Lucknow

06 | BIODIVERSITY

The United Nations declared 2021- 30 as the 'Decade on Ecosystem Restoration'. India has pledged to play its part. Cities and urban areas are seen as places where nature is in retreat, but we need to change this paradigm. Given the rapid rate of urbanization and growth of urban infrastructure, it is important that conservation and ecological restoration planning is adopted by all urban infrastructural sites. Our project will design and facilitate evidence- based pilot restoration of designated sites within warehouses and inform biodiversity friendly transformation of ware-house sites. The restoration plan itself will be based on knowledge from performance of an existing Miyawaki mini forest as well as a plan for restoring a miniature version of the diverse native ecosystems and habitats of the area including open natural habitats rather than a carbon- centric and high-density tree centric approach of Miyawaki.

PROJECT 01

Planning for adaptive ecological restoration and nature-based solutions in peri-urban and rural warehouse sites

Investigator

Jagdish Krishnaswamy – Indian Institutes for Human Settlement (IIHS), Bengaluru

*SPARCS - SPECIAL ACADEMIC RESEARCH COOPERATIVES

Generating new ideas in the cutting edge of science requires interdisciplinary brainstorming and effort. In order to promote this in a systematic way, we have assembled groups of scientists with overlapping interests to form what we call **"academic research cooperatives"** as a means to connect silos of knowledge and generate new ideas at the interfaces.

Sr. No.	Description	Partner	Date	Audience	Outcome
1	Redox Biology	IISER, Pune	7-8 April 2023	About 30 attendees	Several collaboration opportunities identified; we are funding one project and are looking at a second translational opportunity for funding
2	RNA Biology	IISc- Bengaluru	21 Sep 2023	About 30 attendees, including industry participants and one overseas SME presenter	Several collaboration opportunities identified; one shared equipment for processing the mRNA delivery system has been funded for use by the local community; a second meeting is planned later this year
3	Neurodegeneration	Dr. Reddy's Institute for Life Sciences (DRILS), Hyderabad	28-29 July 2023	About 35 attendees; anchored by Professor Vijayaraghavan	About 35 attendees; anchored by Professor Vijayaraghavan
4	Computational Systems Biology	IIT Madras	11-12 July 2024	Expecting about 30 attendees, Including industry participants from TCS and Vantage Research	TBD
5	Drug Delivery Science	INSTEM/NCBS	TBD	Expecting about 30-35 attendees with strong industry participation	TBD
6	RNA Biology	NCBS/IISc, Bengaluru	TBD	Expecting about 30-35 attendees	TBD

CREATING IMPACT

It took two decades for laboratory breakthroughs in mRNA vaccines to translate into an effective vaccine. Three years is probably too short a time to get a comprehensive impact assessment of the science we promote. However, we have implemented Impact Metrics that give us an early indicator of whether we are in the right direction. This includes anonymous feedback solicited from stakeholders - the feedback from the investigators we have funded can be seen in table below. The feedback is encouragingly positive, especially for the elements of our execution that differentiate us from other funding organizations. Anecdotally heartwarming is the fact that two of the investigators we have funded were sufficiently convinced by our Mission for them to turn around and become donors to Ignite.

PROCESS METRICS

We ran an anonymous survey amongst our investigators asking them ‘Is Ignite ‘Making Science Work for India’ - which is our tagline. This is the tabulation of the results.

How Ignite is "Making Science Work for India"	Number of Responses
Regular review and mentoring	12
Timely fund release	9
Excellent choice of project	7
Flexibility in budget head/project operation	5
Open meetings with grantees and reviewers	6
Translational potential of project	3

Areas where Ignite can improve	Number of Responses
Longer project duration (minimum 3 years) and longer period between review meetings (6 months/12 months)	3
Disclose the quantum of funds raised on the Ignite website	2
More flexibility in fund reallocation	1
Too much focus on translational potential	1
Too much focus on short term benefits	1

OTHER PROCESS METRICS

01 Turnaround Time

Announcement to selection: 1 month, Selection to fund disbursal: 1 week (maybe a little longer due to execution formalities at the host institution)

02 Innovation

Deep engagement: Every project is tagged to a primary reviewer and a secondary reviewer. Reviews happen every quarter and more frequently, if needed.

Support for success: The reviews are intended to help the investigator succeed. Therefore, all assistance, whether knowledge, or access to equipment is given to the investigator.

Kill early, Kiss fast: Our fast grants are given for shorter periods of time. If we find by the first review that the project is not viable, it is shut down

In the long run, the impact of Science has to be in the benefits it brings to the larger community that supports it. We see evidence of green shoots of innovation sprouting from projects we have funded. Professor Mugesh at IISc, Bengaluru has developed a small molecule version of an enzyme that reverses the oxidation of cell membrane fats. Such oxidation is a key pathological event in many diseases, including neurodegeneration. A small molecule drug that can reverse this process could be effective in many diseases for which current treatments are unsatisfactory. Other projects have similar translational potential. For example, in AgriScience, Professor Anindita at Calcutta University has discovered bacteria that grow in yeast that can help plants use nitrogen present in the environment (nitrogen fixation). If this works on the farm it will reduce dependence on nitrogenous fertilizers, saving both costs and the environment. It will take several years to see either of these innovations becoming marketable solutions. And the hurdles to reaching that stage are many. But if we could find promising opportunities after funding only 25 projects over three years, then there is potential for finding many more if we could scale up funding.

OUTCOME METRICS

PATENTS IN PROCESS

PROJECT 01

Investigator

- **Dr. G. Mugesh**, IISc Bengaluru

Title of the Project

- Prevention of Ferroptosis by Artificial GPX4: A Novel Strategy for the Treatment of Hemorrhagic stroke

PROJECT 02

Investigator

- **Dr. Harinath Chakrapani,** IISER Pune

Title of the Project

- Targeting Non-replicating drug tolerant M.tuberculosis through a Pro-drug strategy

With both the above projects molecules are developed that are being patented.

AWARDS

PROJECT 01

Investigator

- **Professor Anirban Banerjee –** IIT, Bombay
- **Professor B. Anand –** IIT, Delhi

Title of the Project

- Selected for the S. Ramachandran National Bioscience Award for Career Development by the Department of Biotechnology (DBT). This award is given in recognition of outstanding contributions of scientists below 45 years of age in the broad area of biotechnology.

PUBLICATIONS

PROJECT 01

Investigator

- **Dr. Amit Singh & team,** IISc - Bengaluru

Title of the Project

- Their paper “Biosensor-integrated transposon mutagenesis reveals rv0158 as a coordinator of redox homeostasis in Mycobacterium tuberculosishas” was published by eLife Sciences Publications, Ltd.

PROJECT 02

Investigator

- **Dr. Shashi Kumar Gupta,** CDRI (Central Drugs Research Institute, Lucknow).

Title of the Project

- The first peer reviewed publication from his team. The article published in Basic Research in Cardiology (2023) 118:46;

https://lnkd.in/d2vrnUzq
bears the title: Musashi-2 causes cardiac hypertrophy and heart failure by inducing mitochondrial dysfunction through destabilizing Cluh and Smyd1 mRNA.

PROJECT 03

Investigator

- **Raghavan Varadarajan,** IISc, Bengaluru & his colleagues

Title of the Project

- Development of a heat tolerant antigen vaccine that is said to be effective against all current strains of SARS-CoV-2 besides having the potential to be adopted for future variants as well

https://www.currentscience.ac.in/Volumes/125/11/1168.pdf
Citation: Manish Nag and Raghavan Varadarajan, The 2023 Nobel Prize in Physiology or Medicine, Current Science, Volume 125, Issue 11, 10 December, 2023 p. 1168.

MAKING SCIENCE WORK FOR INDIA

Opportunities such as the examples above may abound in Indian academia but lie fallow because academic scientists are not trained in doing the translational work needed to give the final push to their discoveries. We are addressing this by commissioning a series of “push translation” workshops that will train academics in the elements of early-stage development (technology readiness levels 3 and 4) that are needed to round off their discoveries for ready consumption by commercial entities.

SUSTAINABILITY INITIATIVES

The scale of our funding at the present moment is relatively small. But like a drop of water that falls into a bucket of water that triggers waves of ripples, we also believe that our small efforts can ripple through the community and propagate the change to the larger community. Our research cooperatives help to propagate desirable change in this fashion. We also have initiatives planned that will increase connectivity among disparate scientific groups and make knowledge of their efforts known to people who want to know. Apart from the connectivity within the Indian science community, we are also taking up initiatives that will connect Indian science to corporates from India as well as multinational global capability centers situated in India.

An initiative in the works to enable this is to create an online platform to showcase marketable Indian IP to the world. We will also work with our US affiliate to connect the Indian science community to the science community in North America. We already recruit subject matter experts from the global science community to help with project reviews. This effort has to expand and grow in the days to come in the form of transnational research collaborations.

Also, the **EKALAVYA-IGNITE TRAVEL GRANT** is for travel by young scientists to high quality international meetings to present their work to their peers from the global science community. This exposure at an early stage in their careers is meant to help them network with international scientists in their area of research and also build the soft skills and global perspectives that they will need to thrive in their scientific careers.

IGNITE-EKLAVYA TRAVEL GRANTEES

Ankita Sharma
IISER, Pune

Topic:

Wnt-dependent regulation of cell proliferation by SP1ß- catenin complex in colorectal cancer at The National Institute of Basic Biology (NIBB) Okazaki & Osaka University, Osakaof age in the broad area of biotechnology.

Dipika Gupta
University of Hyderabad

Topic:

Protein SUMOylation in pathogenic fungi: A potential target for therapeutic intervention at the EMBO Conference, Srebreno-Dubrovnik, Croatia

Gauri Binayak
IISER, Pune

Topic:

Converting Smell to Color: Odor Imaging of Congeneric Hostplants Reveals Differential Olfactory Perceptions by their Congeneric Beetle Herbivores at the Gordon Research Seminar (GRS) and Gordon Research Conference (GRC) on Plant-Herbivore Interaction, Ventura, California, USA

Joyeeta Chakraborty
IISER, Pune

Topic:

Structural basis of kinetic polarity of bacterial cytoskeletal protein – FtsZ at Ben Gurion University of the Negev, Ein Gedi, Israel

Maryam Khursheed
IIT, Delhi

Topic:

Engineering Virus like Particles (VLPs) for therapeutic purposes at the Physical Virology Gordon Research Conference, Renaissance Tuscany Il Ciocco in Lucca (Barga), Lucca, Italy

Roshmi Biswas
University of Burdwan, West Bengal

Topic:

Hidden diversity? – The unsolved riddle of Indian monozoic tapeworm (Cestoda: Caryophyllidea) at the X International Workshop on Cestode Systematics and Phylogeny, Warsaw, Poland

Saravanan SP
KIIT, Bhubaneshwar, Orissa

Topic:

Panel of CD-34, CD-105 & Vimentin in immunohistochemical & histomorphometric analysis for prognostic evaluation of oral potentially malignant lesions at the American Association for Cancer Research Meeting, Orlanda, Florida USA

Devendra Singh
HNB Garhwal University, Srinagar Garhwal, Uttarakhand

Topic:

Diversity of Bats from Urban and Non-Urban Regions of Uttarakhand Himalaya at the Student Conference on Conservation Science - New York 2023 (SCCS-NY), USA

Pallavi Chatterjee
Saha Institute of Nuclear Physics, Kolkata

Topic:

Expressions of several sets of microRNAs get perturbed when differentiated astrocytoma are exposed to NMOSD patient sera with different seropositivity – a functional analysis at the 8th Edition of International Conference on Neurology and Brain Disorders 2023, Massachusetts, USA

Rahul Kumar Verma
IISER, Pune

Topic:

Interaction of mitochondrial fusion with electron transport chain function in the differentiation of Drosophila neural stem cells at the European Drosophila Research Conference (EDRC), Lyon, France

Shivangi Verma
NCBS, Bengaluru

Topic:

Developmental fine-tuning of cerebellar network and function in larval zebrafish at Society for Neuroscience Meeting, Washington DC, USA

Dincy Mariyam
Centre for Wildlife Studies, Bengaluru

Topic:

Education raises an appreciation of non-market forest values but lowers landowners' preference for living close to the forest at the Student Conference for Conservation Science, Cambridge, UK

Rahul P.V.
IISER, Bhopal

Topic:

A B-Box protein suppresses photoperiodic flowering and promotes photomorphogenesis in Arabidopsis at the EMBO-International Symposium on Plant Photobiology 2024, NISER Bhubaneswar, Odisha, India

Safirul Islam
Presidency University, Kolkata

Topic:

Identifying novel cytoplasmic mRNA capping enzyme-targeted, hypoxia-responsive RNAs in hypoxic osteosarcoma cellular model: A plausible therapeutic approach at DISCOVER BMB 2024: Annual meeting of the American Society for Biochemistry and Molecular Biology, San Antonio, Texas, USA

Soumyajit Dutta
IISER, Pune

Topic:

An amphipathic helix in Mycoplasma FtsZ can bind to membrane in-vitro at EMBO Workshop-Archaeal and bacterial cell division: Beyond the Z-ring, Alcobaça, Portugal

Divya Pidishetty
L.V.Prasad Eye Institute, Hyderabad

Topic:

Retinal Degeneration and Visual Function Defects in Stargardt Disease Model of Zebrafish at The Association for Research in Vision and Ophthalmology, Seattle, USA

Sandhya Singh
CSIR- Central Drug Research Institute, Lucknow

Topic:

Musashi-2 induces cardiac hypertrophy and heart failure by inducing mitochondrial dysfunction through destabilizing Cluh and Smyd1 mRNA at Frontiers in CardioVascular Biomedicine (FCVB) 2024, Amsterdam, Netherlands

Sreya Das
IISER, Kolkata

Topic:

PIF4-mediated negative autoregulation of its own gene expression is key to optimise growth and fitness in Arabidopsis thaliana at Photosensory Receptors and Signal Transduct, ion Gordon Research Conference, Lucca, Italy

Bhavna Pydah
National Centre for Cell Science, Pune

Topic:

Neural expression of Toll pathway regulates lipid metabolism in Drosophila at Toll 2024 Conference, Rotterdam, Netherlands

OPPORTUNITY PIPELINE

When we connect with Donors we also like to present them with a pipeline of diverse and fundable opportunities that allows them to choose the opportunities best aligned with their internal mission and funding appetite. Below we list a few of the opportunities that we have identified as worthy of support.

India Lifescience Investigators Directory & Network

Description

Create an online connectivity platform that provides online directory, fora, communities, and marketplace, for the Indian Life Science Research Community

Mission

"Finding and connecting and synergizing the best of Indian life science"

India Drug Delivery Science Consortium

Description

Create a consortium of academic drug delivery science and translational assets that can speed the development and deployment of novel drug delivery solutions

Mission

"Jump-starting Drug Delivery Science to catalyze speciality pharma innovation"

Propagating The Iisc Mrna Technology Platform

Description

Use the mRNA vaccine technology demonstrator project at IISc as a jumping off point to create multiple academic centers specializing in the development of RNA based vaccines and therapies

Mission

"Building distributed capabilities for RNA based product innovation adapted to Indian needs"

National Cell & Gene Therapy Centres Of Excellence

Description

Leverage nascent and emerging capabilities to create a critical mass of regional centers of excellence in cell and gene therapies that are affordable and accessible.

Mission

"Making cell and gene therapy products accessible to the Indian population"

India Lifescience Models Consortium

Description

Well validated models are key enablers in life science innovation. Finding, validating and scaling the screening capabilities of the model systems created and employed in Indian laboratories can be a boon for academic-academic collaboration and also for industry-academic collaborations

Mission

"Making validated models widely available will accelerate innovation in life science"

National Shared Sophisticated Instrumentation Facility Network

Description

Access to high-tech instrumentation can be a limiting barrier to research. Making access easy will allow many more investigators to conduct research at the cutting edge. Shared facilities will optimize usage and increase the RoI on investments in sophisticated instruments

Mission

"Democratizing research by making sophisticated instruments available to everyone who needs it under a shared facility model"

A Systems Approach To Understanding And Managing Disease

Description

India has strengths in mathematics and computational model building that can be combined with the wealth of clinical data from Indian patients to build robust digital twins of disease states that can inform clinical management as well as research on improved diagnostic and therapeutic interventions

Mission

Creating a "research cooperative" to drive the use of clinical data to build digital twins of disease states that inform treatment choice and prognosis.

"Push" Translation Workshops

Description

India has made substantial investments in applied science. The outcome of these efforts are not carried forward across the "valley of death" into real world application since most investigators are not familiar with the processes or methods needed for translation,

Mission

Run periodic workshops where translation subject matter experts (e.g. those from innovative pharma companies) share the practices and methods of translation with academicians who already carried out the inventive step but have not been able to take the invention to the next stage.

FINALLY

Ignite is just getting started. Our aim is not to simply replicate existing models of funding and executing science but to come up with new models that can powerfully and sustainably catalyse positive change in the ecosystem. In the process of trying out new things, we also learn what works well and what does not. Whenever something works well we will scale it up using the resources available to us. At the present moment, we are not limited by imagination. By partnering with our donors we hope to bring about significant changes in the ecosystem of science within the country. The green shoots of innovation we plant will become blooming and fruiting trees of innovation in the days to come.

THEMATIC COMMENTARY

A Window on science in India

When asked to write this, several thoughts came to mind – both philosophical and pragmatic. Who is a good researcher? What is the culture of science? Why is evidence important to policymaking and are we doing enough of that? What are our big challenges today? How can we begin to address those? And many more.

In my view, a good researcher is curious, suspicious, and objective. Without curiosity we will not explore anything new. It is the engine that powers us to go into unchartered territory and dream beyond the realms of today. That is essential for new discoveries. As Einstein famously said, “Logic will take you from A to B. Imagination will take you everywhere”. Doubt is critical to science. Unlike religion, which is based on a culture of trust, science is based on a culture of doubt, a system of asking questions, and believing nothing without evidence. Objectivity is how we view and analyse evidence, without personal bias, emotions and beliefs. It also recognises the uncertainty associated with scientific conclusions, which is not intuitively apparent to society. Science never absolutely proves anything. This uncertainty is also a part of that culture of doubt, and is important for society. The famed physicist Richard Feynman observed that democracy itself rests on uncertainty; it is authoritarianism that is always so certain. Democracy is the acceptance that we don’t really know how to run a country or society, and that’s why we change leaders every few years.

If I am allowed one more attribute, its patience. The common perception is that scientists do exciting things and frequently have ‘eureka’ moments. Actually, scientific enquiry can be quite boring as you repeat the same things over and over again. But that makes science robust. And it requires patience – lots of it. The eureka moment can also pass unless the mind is trained to recognise it. A good researcher is always in training, which also requires patience and perseverance.

Even the most confident scientists are repeatedly humbled by the mysteries of Nature, which is reason enough for everyone to be exposed to a bit of science –

Shahid Jameel
Fellow, OCIS and Green Templeton College,
University of Oxford, UK Board Member,
Ignite Life Science Foundation, India

not necessarily the laws or theories of science, but the scientific attitude. Politicians especially need some brush with Nature to moderate their misplaced sense of knowledge and certainty. They make rules to govern society and it is crucial that a scientific attitude is used for that.

The Scientific Method is typically a 5-step iterative process – observe, develop a hypothesis, predict, test, analyse results – then revise the hypothesis and start again. The Scientific Attitude is to put aside prior beliefs and ideology when developing ways to test or gather the evidence and especially when analysing the results. Without that attitude, the method would not be scientific at all. The culture of science is that it cares about evidence and is willing to change its theories based on the evidence. This attitude helps in understanding, defending and growing science, especially in this post-truth world driven by social media and increasingly threatened by deep-fake technologies.

Collaborations are essential to science. They bring fresh thinking, not to mention the complementary expertise necessary to solve key societal challenges. Take antimicrobial resistance (AMR) – the development of resistance to antibiotics in disease-causing microorganisms, which makes it very difficult to treat even common infections. Many experts consider AMR to be the next pandemic and one that has already begun. A WHO 2022 Global Report cites median AMR rates in 76 countries of 42% for third-generation cephalosporin-resistant E. coli and 35% for methicillin-resistant Staphylococcus aureus. For India these rates are 78% and 56%, respectively. Can microbiologists alone solve this problem? They cannot, because resistance is a natural evolutionary response of microorganisms when humans use antibiotics inappropriately on themselves, on their livestock and poultry. A One Health approach is needed, which integrates how we treat infections, produce food, and dispose domestic, hospital and industrial waste. It is as much a social and behavioral science problem as it is a problem of microbiology, biomedical science or sanitation. Collaboration across sectors is essential.

The problems tackled by science often transcend national boundaries and so should scientific culture and cooperation. Let's take air pollution. Air quality remains a critical determinant of public health in South Asia, which is home to 18 of the world's 20 most polluted cities. The Lancet Commission on Pollution and Health says that in 2019 air pollution contributed to over 1.6 million premature deaths in India. Sustained exposure to particulate pollution is reducing the life spans of South Asians by an average of 5.1 years. The toll is even greater in the most polluted megacities – air pollution reportedly shortens lives by an average of 11.9 years in the Delhi National Capital Region, 8.1 years in Dhaka, and 7.5 years in Lahore. The average potential gain in life expectancy is expected to be over 6 years in the region encompassing Punjab in the west and Bengal in the east, which cuts across Pakistan, India, and Bangladesh. This is clearly a public health crisis that transcends national boundaries and has common causes that include rapid urbanization, construction, vehicular pollution, coal-fuelled power plants, crop burning, and the operation of brick kilns. Should we not combine the power of science and transboundary partnerships and rise above regional politics to address this?

The power of science lies in preparing us for what is to come. Covid was devastating, but science stepped in to produce novel vaccines within a year, technology mass produced those vaccines, and public health systems got them into people. This was the first ever pandemic in human history to be controlled with a vaccine. It is estimated that vaccinations prevented 14 to 20 million deaths globally during just the first year of their use in the pandemic.

Could this have happened overnight?

Of course not. Scientists had worked on fundamental sciences and on developing other vaccines and platforms for years, and all that knowledge was rapidly adapted to making Covid vaccines. Without that fundamental science there would be no innovation.

And that is why it's important to fund and support science.

The long view: investing in science is investing in the future

Fifty years before Indian independence, an audacious industrialist envisioned a time when Indian scientists working in Indian laboratories would have the ability to set their own course to investigate the nature of the universe, discover new knowledge in the sciences and engineering, contribute to the public good, respond to the needs of a society long suppressed by colonial rule, educate the next generation of researchers, and support the aspirations of independent India. At the helm of a highly influential and well-regarded business house, he mobilized his considerable resources and set his dream into action. The turbulent 20th century was marked by both great human cruelty and transcendent human achievement. In 2021, it emerged that not only had this Indian given his country its preeminent institutes of basic and applied science, but was also the largest philanthropic donor of the 20th century, globally.

Even with that prescient vision, it seems unlikely that Jamsetji Tata would have imagined that fifty years after Independence, another audacious individual would help to ignite a biotech revolution in India. The circumstances in which Kiran Mazumdar- Shaw took her early steps could not have been more different than those in which Jamsetji made his investments in the future of India. As a young person, she helped create the platform from which she aimed her arrows to the future. Since its foundation in 1978, as a small startup, in a sparsely seeded ecosystem compared to the current buzzing biotechnology space, Biocon has consistently exceeded expectations, creating history as the second Indian company to cross the USD 1 billion mark on its first day of listing. What characteristics does Kiran share with Jamsetji? Vision, conviction, willingness to challenge the status quo, acceptance of risk.

In the long and non-linear trajectory between these two historical timeframes, amidst the diverse public debates of how a country like India can meet its myriad

Jyotsna Dhawan
Emeritus Scientist - CCMB, Hyderabad
Director - Ignite Life Science Foundation

challenges, the involvement of private philanthropy in complementing government funding for scientists to pursue innovative research has not made an equivalent impact. The government clearly has a preeminent role in ensuring national competitiveness in scientific research and its applications. Although recent trends show that some private foundations have made considerable efforts, a substantial gap remains in mechanisms to fund risky, innovative responsive research in basic life science and its translation to human health.

In January 2020, the Nobel laureate Venki Ramakrishnan came to Bangalore to support the launch of Ignite Life Science Foundation (Ignite), whose founders are entrepreneurs, management professionals, academics and life scientists who believe that it is time to build a non-government organization to help the public to participate in supporting the development of ideas and entities that benefit humanity. Ignite was launched with a vibrant public discussion of issues facing life sciences in India, and the expectation was that activities would soon start. But a virus waited in the wings...

In adversity, an opportunity

At the global level, the scale of human suffering caused by a snippet of viral RNA, some intermediate hosts that unwittingly promoted transmission, and a series of undetermined once-in-lifetime events caused by the cumulative effects of human intervention on the planet, is as yet unmeasured and may take a generation to absorb and assess. A historical view of pandemics reveals their impact not only on scientific knowledge and sociological structures, but in a philosophical understanding of what it means to be human. As the Covid-19 pandemic waxed and waned, Ignite used the unexpected hiatus to plan how to structure efforts to enhance the life science ecosystem in the country.

Viruses are almost insignificant and yet, they can incapacitate species whose genomic and physical size dwarfs the invader. Because of their ability to subvert cellular processes, viruses are windows into the inner workings of human cells. By studying viral invasions we know how DNA replicates and transmits its messages to control production of all the proteins that build a cell. Much of the framework of our current understanding of how cells divide, and signal to each other, has been arrived at using viruses to inform us about their hosts.

And so it is with SARS-Cov2. As the pandemic unfolded, genome sequencing reached outputs of thousands of viral genomes per month, structural biology mapped mutations as they appeared, revealing the changes that increase infection. The understanding of distinctions between cells lining the respiratory tract intensified, and is sure to give us a better understanding of normal lung function when not under attack. Inflammation and the immune response too have been intensely studied revealing new information. Integrative studies and modeling on levels from molecular to host level have been needed to create frameworks that inform public health decisions. All these elements need not be just inspired by and supported by institutions, and individual scientists with great ideas, but by an informed and responsive funding ecosystem that complements public investment and helps scientists collaborate. This is where Ignite brings the collective experience of its members in science, business, education and philanthropy to bear, and to invite investment in our shared future.

How do we bring the philanthropist into the realm of supporting impactful science? Collectively reflecting on the pandemic, Ignite worked to conceive a program that responded to the urgent need for mitigation of this and for future unknown pandemics. Equally important, was to not neglect the diseases that are endemic and continue to affect far more people than oscillating outbreaks. It may come as no surprise that the anchor donor who cleared the path for Ignite to move from a “wannabe” funding agency to a new enabler for life science was Kiran Mazumdar-Shaw. Other funders have joined to support specific programs in neuroscience, nanotechnology and agribiotech.

Tragic events have unexpected positive impacts too. Of the global top 10 biotech companies today, 2 would not have been household names had it not been for the pandemic: Moderna and BioNTech. So, what was the vision and commitment of people who invested in them before there was a “need”, what were the characteristics of deep science investors with an eye on the unknown? Disruptive, decisive, futuristic, risk-accepting.

Join us in our mission to enable a sustainable ecosystem for Indian life science: by increasing philanthropic participation we will support the discovery of practical solutions to better health, as well as new paths to uncover the unknown.

Trends and Challenges for Health Care in 2024

In the aftermath of the Covid-19 pandemic, there is a greater appreciation about the drivers and determinants of our health. For example, we know that people with underlying cardiac, respiratory or metabolic diseases suffered more severe disease and complications of SARS-COV2 infection. We also understand that the risk of zoonotic spillovers increases with the loss of biodiversity, urbanization, closer animal-human interactions as well as illegal trade of wildlife. We appreciate the importance of a strong health system, with an efficient supply chain ensuring access and availability of essential drugs, diagnostics, vaccines and other health products. We also understand the importance of innovation in ensuring that our public health needs are met through development of affordable and indigenous products.

Further, it is important to note that about 70 to 80% of our state of health is determined by our environment – the quality of air, food, water, sanitation and housing, availability of green spaces, road safety etc. Health care delivery becomes relevant usually after people get sick, while attention to these other determinants of health can promote health and prevent disease.
The Global Burden of Disease Study informs us that the top risk factors for health in India include malnutrition and poor diet, indoor and outdoor air pollution, high blood pressure and high blood sugar. Notably, the burden of dietary risks has increased between 1990 and 2019, indicating that a healthy and nutritious diet is a prerequisite for good health. With climate change impacting all aspects of our lives, from air to water to food quality, it has become imperative to pay attention to these factors.

Over the past few years, we have seen astonishing advances in technology – the use of Artificial Intelligence and other digital tools to improve health outcomes, genomic techniques that can be used both for diagnosis and treatment of diseases, cell and gene based therapies, the use of remote sensing and modeling to predict acute weather events that have huge impacts on human lives and biotechnological

Dr Soumya Swaminathan
Chairperson, MS Swaminathan Research Foundation

tools to address challenges in agriculture, health and energy.

To achieve the SDG goals of Health and Wellbeing for All by 2030, we need to focus on the following three areas of opportunity to make a big difference. Action is needed not only by medical professionals or the health ministry, but by other sectors whose impacts are felt on the health of citizens. First, addressing the two top risk factors for health – nutrition and air pollution. Both will require multisectoral action. Air pollution can be addressed if a good analysis is done of the 'airshed' and what contributes to PM emissions in different regions of the country, followed by specific actions to reduce those pollutants. To eliminate indoor air pollution due to biomass burning, schemes like Ujjwala need to be strengthened and expanded. Similarly, ensuring that every Indian gets his or her daily requirements of nutrients (calories, quality protein, fat and micronutrients), requires concerted action by the Departments of Agriculture, Civil Supplies, WCD, School Education and Health. These are achievable goals but will need prioritization, convergence and collaboration between the concerned ministries and departments, with NGO and civil society support.

Secondly, to invest in Research and Development focused on solving India's big public health problems. An example is the need for a TB vaccine – India is in a good position to lead the global mission to develop a better TB vaccine. This will prevent the loss of millions of lives annually across the world. Further, our innovation ecosystem is robust and with some additional support, could develop new diagnostics, vaccines and other health products that are needed for universal health coverage. Both the quantity and quality of research funding needs to improve, and young scientists with bright ideas are encouraged. The regulatory agencies also need to be strengthened and pathways established specifically to support indigenous innovation – this would be especially relevant for new classes of products.

Finally, we need to explore the optimal use of digital tools, including AI, in our health care delivery system, in order to improve health outcomes. Examples are the use of AI algorithms to read chest X Rays for TB, retinal photos for diabetic retinopathy and screening for cervical cancer. Such deployment will reduce the need for specialists (who will only need to confirm the reading) and increase the speed of diagnosis. Similarly, decision support tools and other aids on mobile phones can help health care workers to do their job better. Real time analysis of data (collected from the field or from surveillance sites) and feedback can also improve quality of care. Introduction of these new technologies must be accompanied by monitoring of efficacy and safety, as the ultimate goal is to improve health outcomes.

I hope that globally, and in India, money spent on health will be seen as an investment and not a cost. Only if human beings are healthy, can we hope to have a bright and prosperous future.

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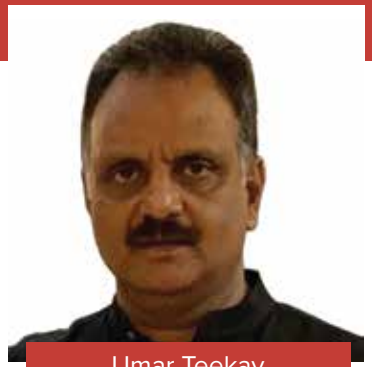

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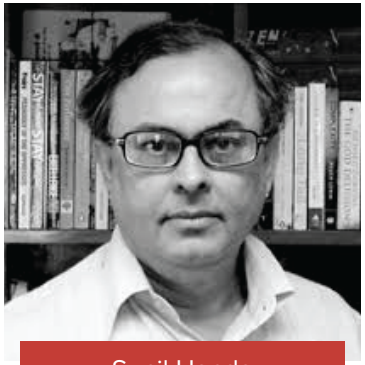

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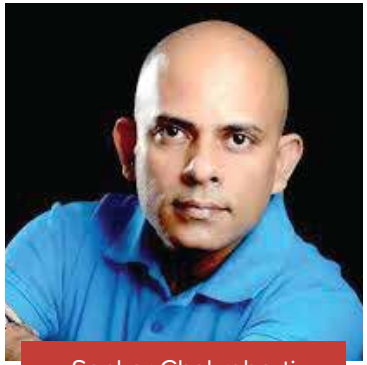

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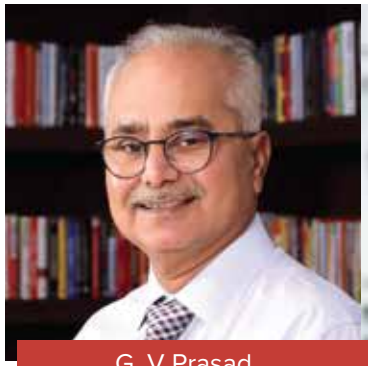

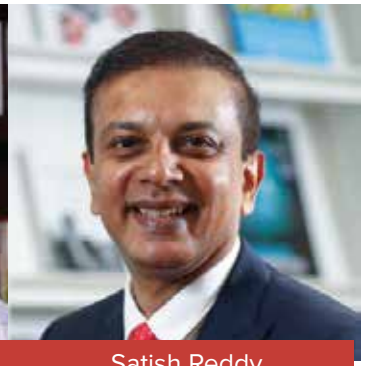

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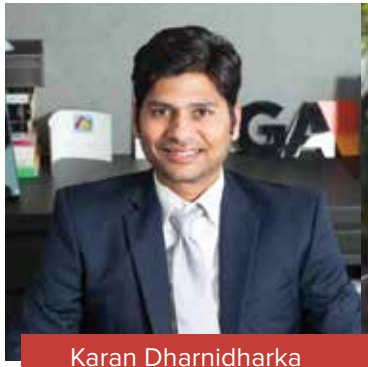

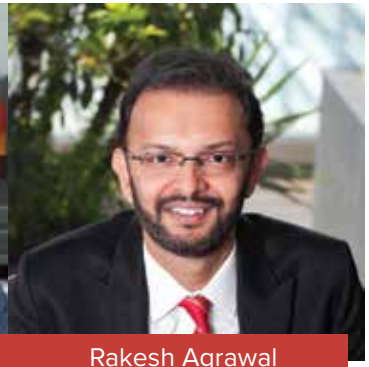

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COMMUNITY FEEDBACK

"I met wonderful and highly motivated PhD students and post-doctoral researchers from all over the world. I got a great opportunity to discuss my work with professors and learn from them. This meeting was an excellent platform for me to develop networks with the community, which will definitely help me build my academic career."

— Suraj Jagtap, IISc Bengaluru
Travel Grantee

"At the NAITO meeting I was able to get some critical feedback from the experts regarding my current research work and suggestions that will strengthen it. Interactions with scientists and PhD students gave me an outlook on academia across the globe and will help me decide my future steps."

— Shivani Yadav, IISER, Pune
Travel Grantee

“Neuroscience 2023 was an enriching scientific experience for me. I got an opportunity to share my PhD research work with the global neuroscience community. Discussions during the meeting have offered outstanding feedback and fresh perspectives. I would like to thank the Ignite Foundation for their invaluable support”.

— Shivangi Verma, NCBS, Bengaluru
Travel Grantee

"Very experienced, committed, and competent scientific leadership. Rapid review and decision, flexible funding. Once grant is initiated, helpful oversight to overcome hurdles and most importantly timely release of sanctioned funds."

— Raghavan Varadarajan, IISc, Bengaluru
Investigator

"Ignite is a new experiment – funded by donors and run by practicing scientists – in the funding ecosystem in India. This is a much-needed impetus for scientists who are looking for a generous, less bureaucratic, and visionary funding model to support their cutting-edge research. As a grantee of Ignite, I must say that our experience of working with Ignite is truly fantastic. Funds were released on time – something that I have never experienced with a public funded model – and we received constructive feedback on our work throughout the life cycle of the grant. I cherish the intense review meetings that many times opened up new avenues for our scientific exploration. It is my earnest hope that Ignite as an idea, should take deep root, grow and spread its wings across all facets of life sciences for nurturing top rated science in the country. I offer my best wishes for Ignite as they march ahead in making science work for India. "

— B. Anand, IIT, Guwahati
Investigator

“I definitely benefited from my association with Ignite and told it so many forums. The freedom Ignite provided to explore something unorthodox is key. Typically, we are restricted by fears of failure and its long-term implications. Ignite freed me from those thoughts and allowed me to pursue something I dreamt. The periodic meetings have been an eye opener and a boon due to the challenges it posed and criticism/appreciation I received. Further, there was timely disbursement of funds without the need for filling up unnecessary documents. It has been an absolute pleasure to work with Ignite. I just wish the project duration and quantum of funding both could have been a little higher”.

— Anirban Banerjee, IIT, Bombay
Investigator

“It provided an excellent platform to build relationships with other researchers and opportunities for collaboration. For e.g. I met a senior researcher from Cambridge University who also works on Drosophila neuroblasts and I will be working with him for some of my experiments. The exchange inspired me to new ways of thinking and innovative approaches. Learning new techniques in cellular events in large movies through machine learning, Nanobodies etc. The conference showcased new software tools that I can use in my work”.

— Rahul Kumar Verma, IISER, Pune
Travel Grantee

“I gained tremendous insights into genomics, cell culture, molecular diagnostic methods, special histopathological techniques, animal research, new drugs available for various types of cancer, artificial intelligence for health care and extremely newer techniques like liquid biopsy and organoid culture models. The ideas and cell culture protocols which I had learnt can lead to breakthrough research for the benefit of Indian patients suffering from head and neck cancers. All in all, it was a great experience which has enhanced my understanding of cancer biology / research and enabled me to achieve more extreme knowledge at par with international students around the globe”.

— Saravanan SP, KIIT, Bhubaneshwar,Orissa
Travel Grantee

"Ignite’s approach to focus on local problems (e.g., AMR, nutrition) and coming up with innovative solutions to support science is quite exciting. The format of the grant application is also straightforward and to the point. The review process is very professional, and the feedback provided is stimulating and done to improve the overall quality of the science. Coupled with the fast release of funds within a week and the flexible nature of funding makes it different from conventional funding agencies."

— Amit Singh, IISc, Bengaluru
Investigator

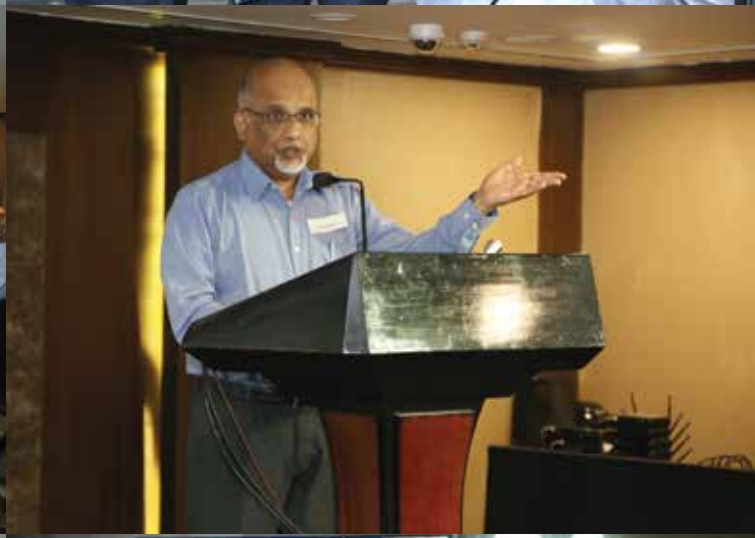

Vignettes from the Annual Ignite Meet 2023







A tweezer like nanomachine



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Contact Us

ramona@ignitelsf.in | 9823226900

S 15, #14, Bhattrahalli, Old Madras Road, K. R. Puram, Bengaluru, KA 560049

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