

# VITALIZING THE ENTREPRENEURIAL ECOSYSTEM









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Leader's Message

birac i3 No.4 Vol. 5 Newslette



Dr. Renu Swarup Secretary DBT & Chairperson BIRAC

# **Vitalizing the Entrepreneurial Ecosystem**

#### Wishing you a very happy and a prosperous new year!

India recognises the growth potential of biotechnology and ability of Indian innovators to bring differentiated products to address unmet needs in health care, pharma, food, energy and allied sectors. The Government aims to scale-up the number of start-ups in biotechnology sector to 2000 over next two years, envisaging India with a successful Start-up Ecosystem. The estimated value of biotechnology sector was USD 44.47 billion in 2017 with a recorded growth of 6.8% from 2016. The projected target for the government is to reach the market size value of USD 100 billion by 2025. DBT and BIRAC are poised to develop a favourable entrepreneurial and Biotech Innovation Ecosystem for SMEs, Industry and Academia.

BIRAC has established/ supported 35 Bio-incubators through BioNEST scheme with an incubation space of 3,91,849 sq. ft. till date. 1st Clean Energy International Incubator has been set up under Mission Innovation by DBT & BIRAC. A new regional centre, BIRAC Regional Bio-innovation Centre (BRBC) was established at Venture Centre, Pune. BRBC is mandated to be a high quality national resource centre to support and promote Entrepreneurship in Life Sciences. SAEN (Secondary Agriculture Entrepreneurial Network) was launched in 2018 aiming at promoting new enterprises and to support existing industry in the secondary agriculture sector.

FIRST (Facilitation of Innovation and Regulations for Start-ups and Innovators) HUB has been created to solve the queries of Start-ups, Entrepreneurs, Researchers, Academicians, Incubation Centres, SMEs etc. having the representations from CDSCO, ICMR, DBT, BIS, NIB and BIRAC along with KIHT. With an aim to promote Make in India, BIRAC & KIHT (Kalam Institute of Health Technology), in partnership will facilitate start-ups, entrepreneurs, researchers, academicians, incubation centres & SMEs in Testing & Standardization of Medical Devices. These initiatives of BIRAC prove the diligent efforts made to encourage entrepreneurial ecosystem across the country.

An excellent foundation, improved infrastructure, expanding regional markets, receptivity to home-grown innovation in biotechnology products and services, a supportive national policy mandate, and public administration have started getting reflected in many successful end eavours made by BIRAC and DBT.

BIRAC's contribution to the Government's national programs such as "Make in India" (MII) and "Start-up India" has also grown. The MII Facilitation Cell within BIRAC continues to interact with other agencies to frame policies and track achievements of our commitment to the MII and Startup India plans.

BIRAC continues to establish deeper engagement with several national & international partners to foster the entrepreneurial ecosystem for the Biotech entrepreneurs of India. Organisations such as TDB (Technology Development Board, Department of Science & Technology), ALEAP (Association of Lady Entrepreneurs of India), TiE (The Indus Entrepreneur) Delhi-NCR, WISH Foundation, Bill & Melinda Gates Foundation (BMGF), Wellcome Trust, Nesta, Business Finland, World Bank, BioCuba Farma and Vinnova have partnered with BIRAC for the same objective.

As we move forward, we continue to build new capacities in Biotech Innovation Ecosystem. We intend to amplify our engagement with the community, understand the gaps that still exist and design new paradigms for impact. BIRAC is poised to catalyse the transformation of the country through infusing energy in innovation, through our rigour and our commitment to excellence.





Dr. Mohd. Aslam Advisor (Scientist 'G'), DBT & MD BIRAC

# Vitalizing the entrepreneurial ecosystem

Wishing you a very happy and a prosperous new year!

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One of BIRAC's core aim is to support good and scientifically robust ideas, from wherever they come. A remarkable idea may come from a young graduate, just starting their career, or their professor, or a mid-career academic, who all have one thing in common, an entrepreneurial spirit. One that is not only interested in the science to develop the product or technology, but also interested in ensuring that the product reaches the market for the benefit of society.

Encouraging entrepreneurship unlocks the potential of not just the younger generation of scientists and innovators, but also supports mid-career academics and several others to work on those ideas, that may change our lives.

Vitalizing the entrepreneurial ecosystem is the one of the key roles that BIRAC plays in the bioinnovation ecosystem of India today. All our programs such as BIG, SPARSH, BIPP and others, either directly or indirectly support entrepreneurship and provide mentorship in the entire chain as do our partnerships with organisations such as TiE. BIRAC also supports women in entrepreneurship and in 2019 will once again support the BIRAC-TiE Women in Entrepreneurial Research Award, after the success of the award last year.

Today BIRAC has supported over 1000 start-ups, entrepreneurs and SMEs across the country and we look forward to working with and supporting many more.









## **Cover Story**

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# The Journey of Forus in developing the product and solving one of the challenges in healthcare



K. Chandra Sekhar Founder and CEO of Forus Health

Founded in 2010 by a group of technocrats, Forus Health is a healthcare technology company with a philosophical mission – to eradicate preventable blindness. Forus Health developed a compact, portable and easy-to-use fundus camera to screen for common ocular diseases manifesting in human eyes. The low cost, portability and telemedicine features made it possible for primary health centres and general physicians to have access to eye care, in addition to general ophthalmologists thus enabling early detection of eye conditions at the first contact during a primary health check-up. We believe affordable access to eye care, early detection and timely intervention are key to solving the problem of preventable blindness. Our technology solutions are a consequence of solving a problem.

Retinopathy of Prematurity (ROP) is one of the leading causes of blindness in newborns, an upcoming blindness epidemic in India due to the increase in survival rates of premature babies owing to effective neonatal care centres. Less than 20% of neonatal care units in India have an effective ROP screening program, and among the 1500 odd retina specialists, only about 150 actively work in the field of ROP. Early detection is critical, and timely intervention can totally reverse the condition. The screening method involved a doctor to physically examine the baby with an indirect ophthalmoscope and the alternate technology was an expensive wide-field imaging system that costed more than one and half crores. Both were not going to solve the problem of effectively screening the 3.5 million premature babies born in India and cared across more than 6000 NICUs. Hence Forus Health took up the national responsibility to reimagine the way ROP screening were conducted in NICUs.

The development of 3nethra neo started four years ago and new multi-functional team were put together to develop an affordable and effective solution to scale ROP screening. Broadly the idea was to develop an affordable imaging system than can capture multiple wide-field images of the babies' retina enabling photo-documentation, the system should be mobile, and has to be easy-to-use such that a NICU nurse or optometrist can be trained to operate the camera, thus eliminating the need of an eye doctor at the site of screening. The images shared on the cloud platform can be remotely accessed by specialists who will do the diagnosis and recommend appropriate treatment. The engineering challenges for team were threefold - the device should have a wide-field angle at 120 degree so that it can capture the extreme periphery of the retina were early detachment occurs, it had to be designed in such a way that it can be held firmly on the eye to prevent the scattering of light and finally it had to have the uniform bright illumination to capture quality images.

3nethra neo is a mydriatic, hand-held fundus camera with an advanced wide field digital imaging system that assists clinicians in identifying paediatric ocular diseases in new-born infants. The contact device can be easily operated by qualified clinicians and trained technicians to capture retinal images of infants This device addresses the major challenges for screening the new born infant to identify the presence of any ocular conditions. This allows multiple stakeholders which covers the possible places where the new premature baby is taken care off such as mother and child hospitals, NICUS, sick new born care unit and public hospitals.

The design of the system has reduced the weight of the assembly unit which is convenient to deploy at hospitals, operating rooms and Neonatal Intensive Care Unit (NICU). The compact built of the device also allows easy transportation from one centre making mobile screening a reality. Due to innovative design thinking Forus Health has also been able to reduce the overall cost the device – both acquisition and maintenance. The system has a unique built-in compact warm white LED-based illumination system, and a liquid lens based focusing system that enables noiseless operation, and this has resulted in low production cost, compact design and robustness.

Forus Health collaborated with Narayana Nethralaya for initial development and clinical validation of 3nethra neo. The partnership has helped in field testing and validation, and they were our clinical partner under the





Department of Biotechnology grant. They also conducted a multi-centre trial in rural and semi-urban Neo natal intensive care units (NICU) across the state and the results were overwhelming.

ROP is a global problem with an estimated 15 million premature babies born annually, and due to ineffective screening programs. To effectively combat this situation: wide field imaging, photo documentation and access of records from remote location shall provide clinically meaningful data to effectively monitor and manage paediatric retina patients. However, the current practices are not effective as they are capital intensive, lack robustness and cumbersome to transport. 3nethra neo is designed to address the caveats in the existing methodologies of screening and monitoring various stages of Retinopathy of Prematurity (ROP). Through its salient features and cost effectiveness, 3nethra neo would be the ideal screening device for mass implementation in NICU's, Hospitals etc.

How BIRAC Grants will provide a support in growing business?

Forus Health is honoured to receive one of the most prestigious awards (BIRAC) for the Shishunethra" project which promotes the development of low-cost imaging technology to screen for ocular health in newborn infants. This recognition from BIRAC has helped Forus Health develop key features in the product that would increase its efficiency as a diagnostic tool. In addition the Grant received from BIRAC will help the company to focus on developing the capabilities to extend the product reach in the larger market both domestic and international.





**BIRAC Feature** 

# **7th BIRAC Innovators Conclave**

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Lamp lighting ceremony



<u>Dr. Mohd. Aslam, Dr. Anuradha Acharya.</u> Dr. Renu Swarup & Dr. Anand Anand Kurnar Releasing BIRAC Publications

The 7th Innovator's Conclave of BIRAC was held at Heritage Village, Manesar on 19th-20th September 2018. The theme for this event was 'VIGYAN SE VIKAS'. The Innovator's Conclave witnessed the confluence of around 300 Scientists, Entrepreneurs, Academicians, and Industry Experts. The event was inaugurated by Dr. Renu Swarup, Secretary DBT, Ministry of Science & Technology and Chairperson BIRAC; Dr Mohd Aslam, MD BIRAC & Advisor Scientist 'G', DBT; Dr. Anand Anandakumar, Co-Founder and CEO, Bugworks Research; and Dr. Anuradha Acharya, Founder & CEO Mapmygenome.

The inaugural session also witnessed the announcement of the BIRAC Innovators Awards:

- 1. Best Innovation in Healthcare (Devices & Diagnostics) was awarded to Forus Health Private Limited, Bengaluru in collaboration with Healthcare Technology Innovation Center, Chennai and Narayana Nethralaya Foundation, Bengaluru for their significant contribution to innovative research "Shishunethra Preventing blindness in Infants"
- 2. Best Innovation in Agriculture was awarded to Jiva Science Private Limited, Bengaluru for their significant contribution to innovative research "Development of Microfluidic Laser Based Sperm Sorting (MLBSS) chip for Bovine sperm sorting"
- 3. Best Innovation in Healthcare (Therapeutics) was awarded to Regrow Biosciences Private Limited, Mumbai for their significant contribution to innovative research "A Prospective, Open-label, Multi-centric Study to Assess the Safety and Efficacy of Autologous Adult Live Cultured Buccal Epithelial Cells Uregrow® in Subjects with Urethral Stricture"
- 4. Best Innovation in Industrial Biotechnology was awarded to String Bio Private Limited, Bengaluru for their significant contribution to innovative research "Nanobubble technology for economical gas fermentation"
- 5. Best Innovation in Healthcare (Devices & Diagnostics) was awarded to PathShodh Healthcare Private Limited, Bengaluru for their significant contribution to innovative research "Diabetes Management Device and Test Strips: Scale up, Quality Control and Deployment"

The Poster session was inaugurated by Dr. Mohd Aslam, MD, BIRAC & Advisor Scientist 'G', DBT. The session was facilitated by Dr. PKS Sarma, GM & Head Technical BIRAC. A total of 47 posters were displayed.



BIRAC Innovator Awardees







**Glimpses from Poster Session** 

The posters were categorised into four categories:Therapeutics, Device and Diagnostics, Agriculture and Industrial biotechnology. The posters were evaluated as per the criteria of Presentation, Methodology, Data, Poster integrity and the Presenter. The awards were given in the form of monetary reward during the Valedictory Session.

Dr. Mohd. Aslam distributed the awards to the below mentioned Winners of the Poster Session and gave his closing remarks.

1st Prize- BmNPV Resistant Transgenic Silkworm (APSSRDI& CDFD)

2nd Prize-USENSE (Module Innovations Pvt Ltd)

3rd Prize- Refining of Biogas (DCM Shriram Daurala Sugar Works)

4th Prize- Cocoons to Tissue (Biolmed Innovations Pvt Ltd)

5thPrize- Orthoscrew, Osteoanchor, PromaTack (Orthocrafts)





Winners of Poster Session

#### **Panel Discussions**

The Innovators Conclave provided a podium for knowledgeable and thoughtful discussions on possible strategies and implementation plans. Panel 1: Investors–Innovators Interaction

Dr. Manish Diwan, DGM & Head Strategic Partnerships and Entrepreneurship Development, BIRAC & Dr. Taslimarif Saiyed, CEO & Director, C-CAMP, Bangalore were facilitators for this session. The speakers for this session were Ms. Padmaja Ruparel, Indian Angel Network; Mr. Rakesh Rewari, Ex SIDBI; Dr. Ramesh Byrapaneni, Endiya Partners; Mr. Ashwin Raghuraman, Bharat Innovation Fund; Dr. Harish Iyer, Bill & Melinda Gates Foundation; Ms. Rema Subramanian, Ankur Capital and Mr. Arun Venkatesan, Villgro.









Panelists of Session 1- Investors-Innovators Interaction

- The salient outcomes and points for discussion that were concluded from the session were:
- Investors acknowledge that Biotech is a High Risk-High Reward Sector
- · For developing nations, entrepreneurs should focus on "Need to have products" instead of "Nice to have products"
- · India has great scientists, who need to be mentored to become Great Entrepreneurs
- Entrepreneurs largely focus on developing cheaper options, which is not always preferred by the investors
- Entrepreneurs should focus on quick entry to market
- · Co-investment by two or more angel investors or VCs is in trend for biotech investments
- Entrepreneurs feel that raising Series A funding is thebiggest challenge
- Investors advised entrepreneurs to think global right from beginning and network with more and more people.

### Day 2:

BIRAC Plenary Lecture was given by Prof. G Padmanabhan, Former Director, IISC. He spoke about Biotech Innovation Ecosystem-Beyond 2025. One to One Business Mentoring Clinics were also conducted on 20th September, where the innovator's got an opportunity to discuss their challenges with mentors.

Panel 2: Global perspective on Innovations

The session was moderated by Ms. Deepanwita Chattopadhyay MD & CEO, IKP Knowledge Park and Dr. Shirshendu Mukherjee, Mission Director PMU-BIRAC. Speakers of this session were Dr. Janet White, Bill & Melinda Gates Foundation; Dr. Hardik Makkar, Ignite fellow; Mr. Adarsh Natarajan, Ignite fellow; Mr. Karthik Raghunandan, Slush fellow; Mr. Nachiket Deval, Slush fellow; Ms. Preetha Rajaraman, US Embassy; Ms. Sarah Mooney, UK Embassy; Ms. Maria Lunander, Embassy of Sweden; Ms. Mousumi Mondal, DNDi and Ms. Laura Marquez Lopez, Embassy of Spain.



Panelists of Session 2 - Global perspective on Innovations

The salient points for this discussion were:

- ✓ Collaborate
  - Collaborations and partnerships through each stage of product development are the key to innovation ecosystems
  - Industries should partner in scale-up and commercialization





- ✓ Indian Innovation ecosystem
  - India has unique ecosystem; more movement is required in innovation ecosystem
  - Strengthening of regulatory system
  - · Public funding should enable access to new technologies
- Think global
  - Think and focus on being global since start, build trust
  - · Put global standards as the benchmark during product development
- Understanding the market
  - Understand the landscape and target market well
  - · Globally, India is seen as a big market for partnership, collaboration and commercialization of new technologies
- Panel 3: "Vigyan se Vikas" Science Impacting Society

The session was moderated by Dr. Manish Diwan, DGM & Head Strategic Partnerships and Entrepreneurship Development, BIRAC. The speakers were Ms. Bincy Baby, Eram Scientific Solutions; Mr. Kabir Udeshi, Flycatcher Technologies; Dr. Vishal Uchila Shishir Rao, Innaumation Medical; Dr. Nusrat J M Sanghamitra, Cyca Oncosolutions; Dr. Arun Chandru, Pandorum Technologies and Dr. R.M. Kathiresan, Annamalai University.

- Flycatcher Technologies The Rhino Digester System converts food waste into immediately usable fuel gas and organic fertilizer. It is a Compact, easy to use, odor and pest free.
- Annamalai University The innovative design by Annamalai involves a perfect integration of all three components, with fish helping pest and weed control in rice, poultry complimenting rice with slow paced addition of nutrient rich organic matter up to 8.5 tonne per hectare in every crop season and weed control by acidic nature of the litter as well as allelomediatory principle.
- Innaumation Medical Dr. Vishal Rao and his team have developed this unique device for throat cancer patients who undergo laryngectomy and are unable to speak after surgery due to removal of voice box.



Panelists of Session 3 - "Vigyan se Vikas" - Science Impacting Society

- Eram Scientific Solutions eToilet, developed by Eram Scientific, is a modular, prefabricated toilet made of steel enclosure, integrated with electronic systems to ensure cleanliness & hygiene for every user. eToilets have auto flushing system & floor washing mechanisms, remote monitoring capabilities, robust and strong structure
- Cyca Oncosolutions They have developed a proprietary molecular nanomachine as a high speed, high precision drug delivery device. Our
  device works like a molecular drilling machine and carries drugs (small molecules, proteins, genes) across the cell membrane as you
  carry your luggage through automatic doors and delivers precisely at its cellular target site with 1/10th dose. This would reduce the dose
  and side effects of cancer drugs and improve the quality of life of cancer patients.
- Pandorum Technologies
   — With a distinct synergy of life science, engineering and clinical competencies, Pandorum designs & manufactures functional 3-D living human tissues; intended for medical research and therapeutic applications. Pandorum's 3D human liver tissues are structurally and functionally similar to native human liver tissue. At present, these bioengineered human liver tissues can support preclinical drug discovery and development.



**BIRAC TEAM** 



Participants of 7th BIRAC Innovator's Conclave



## **BIRAC Feature**

Winners of the Poster Session held during 7th BIRAC Innovators Conclave

		- An Emerging Teo	chnology
Contraction of the second	P. J. Raju, K. Ibraheem	Basha, C.V. E. Rajendra*	
Andhra	a Pradesh State Sericulture Research a "Centre For DNA Fingerprinting and D	nd Development (APSSRDI), Hindupur Diagnostics (CDFD), Hyderabad	
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birac i3 No.4 Vol. 5 Newsletter  **BIRAC Feature** 

# Winners of the Poster Session held during 7th BIRAC Innovators Conclave

## PROBLEM

so million people suffer from Urinary Tract Infections Globally

Rurat Lack of facilities Travel to cities Economic loss No electricity

Urban Culture takes a days: No-Trained manpower Symptomatic medication leads to AMR Delayed medication. Rapid results are meeded High costs

## Rapid & low cost Credit Card size device USENSe for detecting uropathogen causing UTI

### HIGHLIGHTS



Mala la to No

biro

Winners of Longitude Prize, Discovery Awards Winners of Design Impact Awards by TATA Trusts. Usense proudly sits In Science Museum London, UK.

### **TECHNOLOGY & STAGE**

USP: Detects a main Uropathogens in single test Readout: Colorimetric (blue to red) Sensifivity: 3044 Efurmi and above Ideal for UTI Time: 30-60 minutes

"Platform Technology" Prototypes being validated at \$A5500N Hospital, Pune Patent : "WOzo18111053A1"

## MODULE NNOVATIONS

U-SENSE

VENTURE

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**BIRAC Feature** 

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Winners of the Poster Session held during 7th BIRAC Innovators Conclave



SIRAC Innovation Meet September 17 -19, 20165







## **BIRAC Feature**

Winners of the Poster Session held during 7th BIRAC Innovators Conclave



 International Union of Food Science and Technology (IUFoST) Navi Mumbai, India from October 23-27, 2018

The International Union of Food Science and Technology (IUFoST), the global voice of food science and technology, in association with Indian National Science Academy (INSA) organised a prestigious global event in Navi Mumbai, India from October 23-27, 2018.

The five-day event brought together researchers, academicians, professionals, policy makers and industry leaders from across the globe to showcase innovation, exchange breakthrough ideas and drive policy issues. IUFoST 2018 provided insight on key concepts on recent advances in food sciences, food processing and agriculture technologies.

IUFoST 2018 provided opportunity for the delegates from Universities and R&D Institutes to interact with the world class Scientists. The Conference offered an impressive roster of Keynote speakers, quality attendees and compelling content and topics such as Nutritionals, Nutraceuticals and Functional Foods, Food Engineering, Food Chain Logistics and Food Packaging, Food Analysis, Food Quality and Safety, Food Composition, Nutrition, Health and Wellness, Sustainable Food Security, Prevention of Food Losses & Wastes and Future Foods, Capacity Building & Leadership, Training, Informatics and Networking and many more.

BIRAC showcased its various programs and initiatives. Many Academics and Industries showed keen interest in the area of Food Bio processing and explored the plethora of areas which BIRAC could fund. BIRAC also participated in the business conclave session and Dr. P. K. S. Sarma, General Manager (GM) & Head – Technical, BIRAC gave an elaborate presentation on the impact BIRAC has created since its inception. The audiences appreciated the information. One of BIRAC supported companies "S4S Technologies" showcased its product which is Solar powered- electricity free- dehydrator that uses conduction – convection – radiation – all modes of heat transfer to deliver the world's highest drying efficiency. Machine has been used by 1,200 farmer cooperatives across 8 countries at farm level.

## **International Women Entrepreneurs Summit-2018**

The International Women Entrepreneurs Summit-2018, was organized by the South Asian Women Development Forum (SAWDF), a SAARC Recognized body, from 3rd–5th September 2018. The event was attended by delegates from over 27 countries. The representation comprised of leaders and professionals from various sectors supporting women entrepreneurship, who gathered in Kathmandu, Nepal, for the annual summit. The theme of the summit was "Equality begins with Economic Empowerment" and aimed at addressing challenges associated with gender parity in the economic sphere and advancement of gender responsive trade facilitation policies.

The summit was inaugurated by Rt. Honorable Vice President of the Federal Democratic Republic of Nepal, Nanda Bahadur Punand involved discussion on IT, agriculture, e-trade, tourism, trade and gender.

A meeting was held between Dr. Yubak Dhoj G.C., Secretary, Ministry of Agriculture and Livestock Development, Government of Nepal, Dr. Manish Diwan, Head-Strategic Partnership & Entrepreneurship Development, BIRAC, Dr. Shilpi Gupta, Senior Manager-Technical, BIRAC, Ms. Pramila Acharya Rijal President, SAWDF and representatives from Federation of Women Entrepreneurs Associations of Nepal (FWEAN). The group discussed on the possible role of BIRAC in being a strategic knowledge partner for Nepal in Agri-biotechnology and food processing.

A MoU was signed between BIRAC and Association of Lady Entrepreneurs of India (ALEAP), Hyderabad with an aim to promote women entrepreneurship in the area of life sciences and to extend support and outreach to integrate efforts in India with a possible extension of activities in SAARC nations.

Dr. Manish Diwan participated in a panel discussion on "Importance of Including Businesses Women in Value Chains" and elaborated on the role of BIRAC for promoting entrepreneurship in Biotechnology sector in India and that BIRAC would be happy to support Biotech start-up ecosystem in SAARC/ASEAN/MENA regions.



# 4th India International Science Festival 2018 (IISF 2018)

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The 4th India International Science Festival 2018 (IISF 2018) was held in Lucknow, Uttar Pradesh from 5th to 8th October, 2018. It was organized by Department of Biotechnology in association with Vijnana Bharati at Indira Gandhi Pratishthan. It was inaugurated by Hon. President of India, Shri. Ram Nath Kovind. The theme of this year edition of science festival is "Science of Transformation (Vigyan hai to Vikas hai)". There were 23 allied special events.

It was the biggest platform in India which brought together students, researchers, scientist and general public to celebrate nation's achievement in science and technology. It serves as a medium to encourage young minds towards the propagation of the science. The event was attended by around 10,000 delegates, including 5,000 students, 550 teachers and 200 students from north-east region, besides 20 international delegates and 200 start-ups.

The Global Indian Science & Technology Stakeholders Meet (GIST), Industry Academia Meet and Science & Technology for Harnessing Innovations (SATHI), a national start-up entrepreneurship summit, Student Science Village and Mega Science and Industry Expo were some of the special events.

SATHI provided a common platform for various stakeholders—students, innovators, researchers and policymakers. Innovative technologies from all the States of India were being showcased at the exhibition. The special focus of SATHI was given to those which could be diffused socially and generate employment. SATHI exhibition at the IISF exposed the visitors and others to the pervasive culture of creativity and innovation at grassroot level.

SATHI covered various facets of entrepreneurship development in the area of application of science and technology. The panel discussions during SATHI had the leaders from Government, Industry, Academia and Start-ups who enlightened the audience on challenges and opportunities existing in S&T based entrepreneurship.

The Mega Science and Industry Expo showcased the outstanding contributions of India in the field of science, technology, and industry. Demos and models on India's achievements in the field of space, defence, atomic energy, agriculture, medicine, as well as achievements by several ministries, departments and industries were on display for four days for students and general public to interact and learn about.

BIRAC along with Department of Biotechnology hosted a stall to show case the recent achievements of the organization. Three BIRAC officers attended the Mega & Science Expo. BIRAC stall showcased the supported technologies & Achievements. Some of the products displayed were:

- Post Mastectomy Breast Prosthetics (Poorthi),
- 3D Printed below Knee Prosthetics (PSRP 3D Tech),
- Scintiglo Urine Protein Analyzer (Cutting Edge Medical Devices),
- SYNC Integrated Glucometers (Biosense),
- ToucHb-Non-invasive Heamoglobin monitoring device (Biosesnse)
- MultiAnalyte Reader for diabetes and Kidney dysfunction (PathSodh Healthcare Pvt Ltd)
- Membrane based- Oxygen Enrichment Unit (Genrich Membranes Pvt. Ltd)
- RDT kits for detection of infectious diseases (Malaria & Syphilis) (Genomix & Dhiti Life Sciences Pvt. Ltd)

Visitors in the stall were impressed with the efforts towards make in India in Biotechnology and applauded and appreciated government's efforts to bring healthcare to every door step even in rural India.

Thus, events like IISF can usher in a pivotal role for developing scientific temper among the masses. The ambitious efforts like Digital India, Make in India, Start-up India and less cash economy can truly materialize only when science reaches the last mile.







# **BIRAC** Activities

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## **BIRAC Report**

#### Hindi Maha

This year BIRAC observed Hindi Maha from 14th September to 14th October 2018 to promote and propagate the use of our national language.During this period, competitions like Hindi Varnmala, Hindi Lekhan Pratiyogita and Hindi Shabdkosh were organized in BIRAC, where all employees participated with zeal.

#### Swachhata Hi Seva Campaign

BIRAC carried out various activities under Swachhata Hi Seva - 2018 campaign during 15thSeptember 2018 to 02 October 2018 as a part of the 150th Birth year Celebration of Mahatma Gandhi. A cleanliness activity to clean the area near by electrical installations, stairs and glass doors was organized at the office premises. During the programme, the BIRAC team performed "Shramdaan" and carried out a cleanliness drive by cleaning a terrace in the office building and collected the waste material for onward disposal.

#### Vigilance Awareness

Vigilance Awareness week was observed in BIRAC from 29th October to 3rd November, 2018. The observance of the Vigilance Awareness Week commenced with the Integrity Pledge taken by all employees of BIRAC. An Expert Talk on Vigilance Awareness was organized.

#### National Unity Day

BIRAC celebrated Rashtriya Ekta Diwas by administering a pledge as part of Birth Anniversary Celebration of Sardar Valabhbhai Patel on 31st October 2018.

#### Training & Development

An in-house training on Emotional Intelligence has been organised on 12th October 2018 by All India Management Association (AIMA) for personality development and emotional well-being of employees.

All India Management Association (AIMA) was also invited to talk on various certificate courses being offered by them to cater the growth and development needs of employees and to ensure that employees have the opportunity to grow their career.

A Finance Resource Person from Securities Exchange Board of India (SEBI) was also invited to deliver lecture on Systematic Investment Plan (SIP). The mission of this lecture was spreading financial literacy and awareness among employees. The session was beneficial for employees to take their financial decisions in more prudent and meaningful manner.

Various domain specific individual trainings are imparted to the employees which help them perform their duties with their maximum potential and work towards the development of the organisation.



Hindi Lekhan Pratiyogita during Hindi Maha 2018-19



Cleanliness Drive during Swachhata Hi Seva



Pledge for National Unity Day



SEBI Resource person delivering a lecture on SIP



**BIRAC Initiatives** 

FIRST (Facilitation of Innovation and Regulations for Start-ups and Innovators) HUB

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FIRST HUB was created to solve the queries of Start –ups, Entrepreneurs, Researchers, Academicians, Incubation Centres, SMEs etc.FIRST HUB provides the platform wherein problems and queries linked to various governmental organisations can be discussed. The FIRST HUB has representation from CDSCO, ICMR, DBT, BIS, NIB and BIRAC along with KIHT. The participants are encouraged to book their slots in advance to avoid any delay. The queries can be submitted through FIRST HUB portal available at BIRAC website. Queries are solved on the FIRST CUM FIRST SERVE basis.

Till now, three monthly meetings have been conducted and around 60 queries have been attended to which are related to various domains of Regulatory pathways, testing and standardisation, funding opportunities and Intellectual Property.

BIRAC is committed to develop the start-up ecosystem in India and facilitate the innovators in their product development journey.

# **Product Commercialization Unit**

BIRAC is promoting product/technology development in different fields of biotechnology through various funding schemes such as BIG, BIPP, SBIRI, PACE, IIPME and SPARSH. On successful project completion, the technologies developed with BIRAC support attain certain level of maturity, which is measured on a TRL (Technology Readiness Level) scale of 1 to 9. When the technology/product has been successfully validated (TRL 7 and above) and is moving towards commercialization, then besides technical and funding support, the start-ups also requires guidance and support on various other issues such as IP, regulatory, business plan, market conditions, networking, etc. in a concerted manner which are not covered under the existing funding programmes. To deal with the situation, BIRAC has launched the Product Commercialization Unit (PCU).

BIRAC PCU has conducted two regional one-to-one meetings so far in this year to understand the major challenges faced by Indian start-ups, belonging to different biotech sectors, in commercializing and market establishment of BIRAC-supported products/technologies. The first meeting was held on 14th April 2018, at SINE Incubator, IIT-Bombay where an empowered committee led by Dr. Shirshendu Mukherjee, MD, PMU-BMGF and Dr. Manish Diwan, DGM & Head-SPED, BIRAC, along with domain experts, interacted with 8 start-ups in the Mumbai-Pune region to understand the pressing challenges. The second one-one meeting was held at C-CAMP, Bengaluru on 4th July, 2018 where 10 start-ups from Bengaluru region were heard by the same committee along with few business and domain experts. Both these meetings concluded with a session with Dr. Renu Swarup, Secretary, Dept. of Biotechnology & Chairperson, BIRAC, where in Dr. Swarup directly addressed the most pressing challenges faced by each of the participating start-ups, providing valuable suggestions to the Start-ups and BIRAC-PCU on how to meet the challenges.

A common problem raised by the start-ups in these meetings was the time taken for regulatory clearances, which is currently being fast-tracked through Startup-Regulator interactions facilitated through BIRAC First-Hub. LEAP funding requirements of few of the start-ups are also addressed currently through Product Commercialization Fund



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**Partnerships** 

# Grand Challenges Annual Meeting Berlin 2018



The 2018 Grand Challenges Annual Meeting was held from October 14 to 18, at Estrel Congress Center, Berlin, Germany. The meeting was hosted by Bill & Melinda Gates Foundation in collaboration with Wellcome, German Federal Ministry of Health, and German Federal Ministry of Education & Research.

The meeting had representation from Global Grand Challenges (GC) Network Partners; Government units/councils; prominent academic institutes; research organisations; and development innovation organization that are corroborating breakthrough research and innovation.

Secretary DBT represented the Government of India and was accompanied by Shri. Sundeep Sarin, Advisor DBT. Grand Challenges India was represented by Dr. Shirshendu Mukherjee, Dr. Richa Vashishtha and Anjana Seshadri.

The Grand Challenges meeting each year is an opportunity for all the

country partners of Grand Challenges across the world to come together with grantees, subject matter experts and other and interact and learn from each other. It also provides an opportunity to explore new partnerships and expand old ones to take forward the idea of addressing the grand challenges that the world is facing in public health.

#### Funders Forum

The Funders Forum is an invite-only closed-door meeting of the some of the world's biggest funders in health and development. This meeting provides an opportunity for these funders to share their experiences, and more importantly their new areas for work and the opportunity to explore and expand new and old partnerships.

This year, Dr. Shirshendu Mukherjee was part of a Grand Challenges panel, with partner GC countries to discuss the GC model of innovation and how it has benefitted the innovation ecosystem in each country. The panel discussed the new and old mandates for the GC country partners and how the GC model has brought about significant impact. He spoke of the various ways that GCI has leveraged the expertise the Government and foundation have brought together in this space.

A roundtable session was held with participants having chosen a table with a theme that was important to them. GCI hosted the roundtable at the Sanitation and Wash table that was led by Dr. Richa Vashishtha and Ms. Anjana Seshadri. The table discussed the importance of sanitation issues and the links to public health and also discussed some of the innovations that were being carried out by members at the table. An important point of discussion was also the behaviour change and the importance of linking that with advancements in WASH.

There were 9 scientific tracks this year, on crop science research, antimicrobial resistance, Innovation to Impact, growth and resilience, health system strengthening and health crisis prevention, drug discovery and translation, a track on adolescents, vaccines and next-generation sequencing.

Opening plenary: Celebrating German Leadership in Global health and Development

The plenary focused on the role and leadership of Germany in global health and development with opening remarks and a panel session on Germany: A Health & Development Hub.

The Opening remarks were delivered by Dr. Trevor Mundel, President of Global Health, at the Gates Foundation, and from Anja Karliczek, Federal Minister for Education and Research.

This was followed by a panel discussion, moderated by Dr. Ilona Kickbusch, Director of Global Health Centre of the Graduate Institute of Geneva. The panellists were Dr. Chris Elias, President of Global Development at the Foundation, Dr. Jeremy Farrar, Director of the Wellcome Trust, Dr. Anna Holzscheiter, Freie University of Berlin and Dr. Matshidiso Rebecca Moeti, Regional Director, WHO Africa.







WHS Panel Discussion: Innovation for Impact: The Grand Challenges Model

Dr. Shirshendu participated in a panel discussion with Steve Buchsbaum, Raquel Coelho, Tom Kariuki and Karlee Silver on the Grand Challenges Model for innovation.

#### Joint Plenary Session with the World Health Summit

The joint plenary with the World Health Summit: Innovation to address global health and development: Achieving the sustainable development goals, began with keynote addresses from Bill Gates, Tedros Adhonam Gheybreyesus, Angela Merkel, Erna Solberg followed by a Spotlight Talk by Ugur Sahin from BioNTech, Germany's largest biotech company.

This was followed by a moderated discussion with Bill Gates, Tedros Ghebreyesus and Frederique Vidal, Minister for Higher Education, Research and Innovation, France, moderated by Emily Wilson, Editor New Scientist on the most pressing challenges of today. The closing remarks were provided by Dr. Detlev Ganten, President, World Health Summit.

#### Innovate in India - Roundtable

This Round Table, held for the first time at the Annual Grand Challenges Meeting, provided a unique platform for Grand Challenges India (GCI), PMU-BIRAC and BIRAC to showcase their current achievements and future vision and the opportunities that they present to innovate in India. The session provided an interactive platform to GCI partners for sharing the need of this partnership, the impact of this joint collaboration and its future. The meeting had representation from Global Grand Challenges (GC) Network Partners and prominent development innovation organizations.

Dr. Mukherjee, Mission Director PMU-BIRAC, welcomed all the participants to the session and provided a brief describing BIRAC's journey as an interface agency to strengthen and empower the emerging Biotech enterprise to undertake strategic research and innovation by identifying opportunities to initiate and promote scientific and technological research in the country. He provided a brief overview of the Grand Challenges India initiatives. Dr. Jeremy Farrar, Director Wellcome, highlighted the importance of the Wellcome partnership with GCl platform and its role in supporting innovation. He stated that no global health targets could be achieved without focussing on health issues in India. Dr. Steven Buchsbaum, Deputy Director, Discovery and Translational Sciences, Global Health, Bill & Melinda Gates Foundation, spoke about how the engagement of the Foundation with BIRAC through the PMU-BIRAC has aided in designing and implementing successful GC programs, by incorporating best practices. Dr. Bhan, Chairman Scientific Advisory Committee, Grand Challenges India, pointed out how BIRAC has been a catalyst fostering the culture of innovation in India. The GCl platform has been successful in leveraging not just funding but international expertise to address challenges in India that can then be taken to the rest of the world.

Dr. Renu Swarup, Secretary Department of Biotechnology, Government of India, enumerated how Grand Challenges India started in 2012 with 2 programs and the expansion that has followed since. Each call launched has been on distinct thematic area that is important to India. The investment made from Government and private players into the BIRAC and GCI platform has been a game changer, ripening beautiful results. She pointed out that GCI model has been successful in identifying key gaps, boost cross-sectional learning and encourage innovations that caters to the specific requisite of the country. She ended with a hope that the collaboration and discussions started in this meeting, will go long way and will be pertinent in shaping the new challenges.

The session was followed by a question and answer session with active participation from the audience many of whom appreciated the support that BIRAC and Grand Challenges India had provided since its inception. They also appreciated that BIRAC and GCI's support is not just in the form of funding, but also handholding and providing support to entrepreneurs and innovators through the pipeline.

Joint plenary session with Keystone Symposium on Innovation in drug discovery

A joint Plenary session with the Keystone symposium on Innovation in drug discovery included a Keynote from Ken Duncan from the Bill & Melinda Gates Foundation and a Spotlight talk from Dr. Kelly Chibale, Founder & Director, Drug Discovery & Development Center, University of Cape Town.



The Innovate in India roundtable panel, Dr. Jeremy Farrar, Director,Wellcome Trust, Dr. Renu Swarup, Secretary DBT& Chairperson BIRAC, Dr.Shirshendu Mukherjee, Mission Director, PMU-BIRAC, Dr. Steven Buchsbaum, Deputy Director, Discovery& Translational Sciences, Bill & Melinda Gates Foundation, Dr. M.K. Bhan, Chair, Scientific Advisory Committee Grand Challenges India.





This was followed by a panel discussion on Combatting Antimicrobial Resistance through drug discovery and innovation. Prof. Sally Davies, Professor and Chief Medical Officer for England was the moderator for the panel and the panellists were Prof. Stephen Baker, Professor of Microbiology, University of Oxford, Dr. Elmar Nimmesgern, Secretariat Lead, Global AMR R&D Hub, Dr. Renu Swarup, Secretary, Department of Biotechnology, India.

The panel discussed the importance of drug discovery for antimicrobial resistance but also touched upon the importance public funds as a catalyst for high-risk research and the importance of behavioural economics to tackle AMR. Dr. Swarup also discussed the challenges in India for AMR and the role of the NAP plan in bringing together the relevant ministries to work together. She also briefed that there would be collaborations with the Global AMR hub as well as Carb-X keeping in mind national interests.

The closing reflection was given by Dr. Lynda Stuart, from the Bill & Melinda Gates Foundation. The closing keynote was given by a representative of the German Federal Ministry of Education and Research.

The meeting ended with a closing reception.

#### International Knowledge Millennium Conference 2018

The IKP Knowledge Park annual conference, International Knowledge Millennium Conference (IKMC) 2018 was held from October 28 to 29, at Hyderabad International Convention Center (HICC), Hyderabad. The theme for this year's conference was "Ecosystems in Times of Disruptive Change".

The Inaugural Plenary: Realizing the vision of an Innovative India session described the IKP Knowledge park mission statement that was established to foster knowledge led cutting edge innovation in the country. In its journey to 12th edition of IKMC, IKP has networked with several innovation scouting organisations across the globe including Biotechnology Industry Research Assistance Council (BIRAC), Department of Biotechnology (DBT), Bill & Melinda Gates Foundation (BMGF), USAID, DFID and NSTEDB among others.

The session also deliberated the approach of Association of Biotechnology Led Enterprises (ABLE) and Biotechnology Industry in India that are focused on achieving the \$100 billion BioEconomy target by 2025. As major chunk of this growth will be achieved from biopharmaceuticals sector, it was pointed out that active engagement with BIRAC and collaboration between other aligned organization is imperative. The session also displayed that few additional drivers that need to be considered for bioeconomy growth are climate change and sustainability.

The session shared the experience how Goggle Mapmaker and other revolutionary Indian start-up has empowered people. As country is facing the obvious challenge of transformation of technology at very fast pace, the need of integration/ combination of life science with automation for novel innovations was emphasized.

In the second Plenary Session titled Nurturing Innovation: Assuring Roots and Wing, Secretary DBT pointed out that the theme of IKMC 2018 is highly appropriate, since disruptive changes are occurring everywhere currently. India has made notable contribution in developing the innovation ecosystem. BIRAC has been critical in fostering innovation ecosystem by bridging the gap between academia and industry through identification of challenges and leveraging collaborations. With pipeline of innovations, there is need of disruptive thinking to sustain and scale these additions.

The need of creating more BIRAC like connecting institutes for leveraging innovations by different ministries was highlighted. It was pointed out that working towards SDGs, is good way to achieve overall/wholesome progress. The need of better tools/technology to prevent, detect and respond to global epidemic outbreak was highlighted. The need of prioritising novel vaccines research was also recommended. It was pointed out that India's should ideate, map and articulate for niche needs and developing new platform for innovations.

The plenary session 2 was followed by panel discussion on "Leveraging Innovation" which focused on mechanism of levering and sustaining innovation. The need of systematic reform by reviewing the governance of science and innovation and change in education design system was highlighted. The convergence of different technologies and big data analysis was mandated to encourage innovation ecosystem if the country. The need of understanding pulse of innovation lingo existing in Bangalore was highlighted. As excellent work is being conducted in silos, the need of more collaboration was highlighted.

The plenary session was followed by evaluation of science exhibition evaluation by jury members. The Jury selected the most promising innovation in different spheres ranging from pharma, diagnostics, medical devices, healthcare, agriculture, food and nutrition, industrial biotech, cleantech, environment, robotics, automation and IoT on the basis of short interaction with the innovators team. For compelling cases a category of "special mention" was also made.



## **Partnerships**

The Innovating for the Future session discussed the innovation architecture that has led to evolvement of healthcare. The session discussed the small linear change in industries that leads to disruptive innovations. The need to focus on societal problems and building public technology platform was highlighted.

Opportunity to use strong pipeline of data for innovation was also pointed out. The innovations occurring in artificial intelligence (AI), future trends in medical device technologies and drug discovery were deliberated. It was highlighted that mantra for successful innovation is amalgamation of clinical, technological and business angle.

As India spends a large amount of its GDP on fuels, the session also discussed the need of better fuels and being energy independent. It was pointed out that although the country has done well in nutritional front and food safety standards, however, calorifically, the nation is still starved and there is room for innovation in this area. The role of validating products that may replace meat, insect proteins and probiotics to enhance food chain security was highlighted.

At the Round Table on Addressing Grand Challenges through Global Partnerships, Dr. Mukherjee updated about the several BIRAC and Grand challenges India program that support innovation from ideation to proof of concept, up to product validation and scale-up. He informed how BIRAC and GCI through different programmes have been successful in farming and hunting innovation with societal/public impact. The role of BIRAC's IP and regulatory cells in facilitating challenges faced by the innovators was also highlighted. The mentoring provided to innovators on exit strategy and business plan for commercialization were also emphasized.

The session deliberated on amazing innovative technologies coming from small countries of the world. India has outstanding scientist, however, their working in silos has hampered innovation ecosystem. The need to collaborate is the key to foster innovation. BIRAC was applauded for its phenomenal role in identifying and supporting innovation.

The challenges in scaling up the pipeline of innovation were deliberated. The need of creating post-doc institutes and biobanks for fostering and speeding innovation was highlighted. Increased engagement of government and big players, who could buy or endorse these innovations was pitched. Having public polls to identify pertinent areas for innovation or key knowledge gaps was recommended.

The success of TB grand challenges due to adoption/ partnership with national program highlighted the importance of roping in government early in program. The knowledge exchange taking place through swiss challenge was also detailed. To identify and support better innovation, the need to improve reviewing process was deliberated. The need for synergy between groups working on similar problems and making interdisciplinary collaboration was recommended.

#### 'ki' Data Challenge for Maternal and Child Health - Data Science Approaches to Improve Maternal and Child Health in India

*The knowledge integration (ki)* Data Challenge, is the sixth call under GCI which was launched on 3rd July, 2018 for 45 days with a goal to foster new approaches in data-driven decisions designed to answer critical scientific questions related to maternal and child health and development outcomes, using innovative data analytics and modelling approaches applied to Healthy Birth Growth and Development (HBGDki) India Consortia or to other relevant data sets that applicants can access.

The grant envisaged to fund around 9 projects for a period of 12-18 months with a maximum of \$ 100,000 for each project. Robust outreach was done through various digital, social and print mediums. Roadshows in key institutions in five cities and one to one interactions were done with domain scientists working in Public health and data science space.

Total 119 applications had been fully submitted at the time the call closed on 17th August, 2018 at 2.00 p.m. IST. The applications were reviewed in three tier process:

#### Consultation on Severe Acute Malnutrition- supported by KnIT

The Knowledge Integration and Translational (KnIT) is a unique platform that has been launched to provide evidence and experience-based guidance to accelerate progress, equity and input for development of health system/design in India. Recognising the relevance of nutrition and reproductive and child health in India, currently, KnIT platform is focusing on two pertinent tracks of maternal and child health (MCH) and nutrition. The two Domains Centres working on the MCH and nutrition tracks are International AIDS Vaccine Initiative (IAVI)-India and Society of Applied Studies (SAS), New Delhi respectively.

The Nutrition track (SAS, New Delhi) is currently working on four areas, where important questions needs to be addressed, low-birth weight (LBW) babies, anaemia, complementary feeding (CF) and diarrhoea. Besides summarising the existing evidence and knowledge integration for policy implications on all aforementioned issues, the platform is also organizing National level consultation workshops/ consultative meetings to accelerate progress on these issues.



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Considering that Severe Acute Malnutrition (SAM) in early postnatal life and up to 6 months of age is not receiving adequate attention from prevention, timely detection and care perspective, SAS, New Delhi organized the consultation on "Early Growth Failure and SAM in infancy" on 23rd and 24th October 2018 in New Delhi. in collaboration with Biotechnology Industry Research Assistance Council (BIRAC), the Indian Academy of Paediatrics (IAP), (Paediatric Nutrition Chapter) and other academic partners.

This consultation involved eminent scientist, researchers, paediatrician, neonatologists and academicians of national and international repute working in this area. The topics of interest were framework for growth failure and SAM in early infancy, prevalence and burden of SAM in early



The 'Early Growth Failure and SAM in Infancy' Consultation group

infancy; defining growth failure and SAM in early infancy; nutritional requirements and its rationale for optimal growth and neurodevelopment of preterm/SGA and LBW babies; criteria for hospital-based admission of complicated and uncomplicated cases of growth failure and SAM; SAM and breastfeeding; and management of SAM in nutrition rehabilitation canters. Beside this the consultation also reviewed current World Health Organization/Government of India /IAP Guidelines on growth failure and SAM in early infancy. It is envisaged that the output of this meeting may be published in a peer reviewed journal for dissemination and sharing the learnings with all the stake holders. The consultation has also aided in identifying the existing knowledge gaps in epidemiology of growth failure and SAM in early infancy.

#### Inauguration of GCI supported Eram Scientific eToilets in Sundial Park, New Delhi

"Reinvent the Toilet Challenge - India," a program directed at addressing the problems in sanitation and targeted explicitly towards Indian innovation and creativity. One of the funded project Eram Scientific Solution's Pvt. Ltd. and University of South Florida's collaborative project titled 'Field testing of off-grid, self sustained, modular, electronic toilet for slums, with solar energy for Indian weather and integrated with mixed waste processing unit, with water, energy/ fertilizer recovery' developed Newgen Technology along with Toilets. The research focus is to revolutionize Urban sanitation through decentralized human waste harvesting and recycling to nutrients, energy, and water.

E-Toilet is an innovatively designed sanitation model that involves the uncrewed and continual operation of the toilets, automated operations; sensor enabled water minimization, auto flush and floor wash mechanisms and remote monitoring capabilities which will ensure the user the next level of sanitation experience. Integration of NEWgenerator will allow the recovery of nutrients, energy, and water at the point of disposal. The complete system is working in off-grid with the help of solar energy and water recycling, i.e., there is no need for external electricity and water for the functioning of the toilet except for personal cleaning.

Two Eram Scientific Pvt. Ltd. toilets supported by DBT-BIRAC and the Bill and Melinda Gates Foundation have been installed near Barapullah Drain Sun Dial Park and the technology validated for its NewGen technology on site. These toilets inaugurated by Hon'ble Minister S&T, Environment, Forest & Climate Change, and Earth Sciences Dr. Harsh Vardhan to the public on September 18, 2018. The Sun Dial Park is popular with people from this area, and these toilets will be a boon to the public. This is an attempt to meet the goals set by the Swacch Bharat Abhiyaan and the contribution of the Department of Biotechnology, the Ministry of Science and Technology to "Swachta hi Seva hai" programme.





The Honorable Minister for Science & Technology, Environment, Forests & Climate Change, & Earth Sciences, Dr. Harshvardhan, inaugurating the e-toilets in Sundial Park for public use.









The



## BIRAC invites proposals from Private Funds registered with Securities and Exchange Board of India (SEBI)

Biotechnology Innovation Fund - AcE is an equity "Fund of Funds" created exclusively to partner with SEBI registered private funds to invest equity in Biotech start-ups for providing the risk capital to undertake innovation, research and product development.

Details available on www.birac.nic.in

Applications may be submitted latest by 20<sup>th</sup> January, 2019 (5:30 pm)

Biotechnology Industry Research Assistance Council (BIRAC) (A Govt. of India Enterprise) E-mail: sped.birac@gov.in & sped3.birac@nic.in



#### SITARE (Student Innovations for Advancement of Research Explorations)

**BIRAC SRISTI GYTIAWARDS:** Aimed at supporting the innovations and creativity at grass root level among the university students, including individual innovators.

#### eYUVA (Encouraging Youth for Undertaking Innovative Research through Vibrant Acceleration)

- University Innovation Clusters (UIC): UIC initiative seeks to create an entrepreneurial culture in the Universities and help students to take their novel ideas to proof of concept.
- SIIP (Social Innovation Immersion Fellowship): A fellowship programme that builds the next generation of social entrepreneurs by helping them 'immerse' and interface with communities to identify gaps and then work on bridging the gaps through an innovative product or service offering.

#### Discovery, Early and Late Stage Funding

- **BIG (Biotechnology Ignition Grant):** Biotechnology ignition Grant (BIG) is available to scientists, entrepreneurs from research institutes, academia and start-ups, to stimulate commercialization of research discoveries by providing very early stage grants to help bridge the gap between discovery and invention.
- SPARSH (Social Innovation Programme for Products Affordable & Relevant to Societal Health): SPARSH
  combines social innovation and biotechnology for the well-being of the society by helping, identify and support cutting
  edge innovations towards affordable product development with potentially significant social impact. SPARSH
  provides support in the form of impact funding and fellowships.
- **SBIRI (Small Business Innovation Research Initiative):** It is the early stage, innovation focussed PPP initiative to support incremental R&D in the area of Biotechnology to facilitate innovation and risk taking by SMEs
- **BIPP (Biotechnology Industry Partnership Programme):** BIPP seeks to provide support for early to late stage high risk biotech R&D by industry and/or accelerate commercialization of new indigenous technologies.
- **PACE (Promoting Academic Research Conversion to Enterprise)** : PACE scheme encourages/supports academia to develop technology/product (up to Proof-of-concept stage) of societal/national importance and its subsequent validation by an industrial partner

#### BIRAC BioNEST (BIRAC – Bioincubation: Nurturing Entrepreneurs for Scaling up Technology)

• BIRAC's Flagship programme which has created 31world-class bio-incubators to provide incubation space, mentor networks, instrumentation facilities, IP and technology management support.

#### **Collaborative Funding**

- Indo-French Centre for the Promotion of Advanced Research (CEFIPRA): Support high quality bilateral research, encourage and enable Indo-French collaboration between public, private research groups, industry, clinicians and end-users in the domain of red biotechnology.
- *Wellcome Trust, UK:* Support innovations in translational medicine in the domain of diagnostics for infectious diseases.
- Grand Challenges India (GCI): A consortium of DBT, Bill & Melinda Gates Foundation, Wellcome Trust, USAID, and BIRAC, focussing on supporting innovations in the areas of maternal and child health, agriculture and nutrition, sanitation and infectious diseases.
- **USAID and IKP Knowledge Park:** Support for new diagnostic tools for TB, with funding commitment of INR 5 crores for 3 years.
- **NESTA, UK:** BIRAC partnership with Nesta, a charity organization in UK, is aimed at supporting Discovery Awards Programme for innovators working for innovative diagnostics for anti-microbial resistance (AMR).
- Industry Innovation programme on Medical Electronics (IIPME): BIRAC in partnership with DeitY (Department of Electronics and Information technology) launched IIPME for supporting innovations in medical electronics and med devices sector.

#### **Equity Funding**

- **SEED (Sustaining Enterprise and Entrepreneurship Development) Fund:** Financial equity based support to start ups and enterprises through bio-incubators for scaling enterprises.
- AcE (Accelerating Enterprises) Fund: A Fund of Funds to scale-up R&D and innovation in biotechnology domains of sectors such as healthcare, pharma, medical devices, agriculture, sanitation and many more.

For further information please contact: **Biotechnology Industry Research Assistance Council (BIRAC)** 1st Floor, MTNL Building, 9, CGO Complex, Lodhi Road, New Delhi-110003, INDIA Tel: + 91-11-24389600 I Fax: + 91-11-24389611 E-mail: birac.dbt@nic.in I Web: www.birac.nic.in Follow us on : ♥ BIRAC\_2012