



birac@5 Impacting
the Biotech
Innovation
Ecosystem



**Biotechnology Industry Research
Assistance Council (BIRAC)**

About BIRAC

A not-for-profit Section 8, Schedule B, Public Sector Enterprise, set up by Department of Biotechnology (DBT), Government of India as an interface agency to strengthen and empower the emerging Biotech enterprise to undertake strategic research and innovation, addressing nationally relevant product development needs

Vision



To stimulate, foster and enhance the strategic research and innovation capabilities of the Indian biotech industry, particularly startups and SMEs, for creation of affordable products addressing the needs of the largest section of society



Key strategies

- ❖ Foster innovation and entrepreneurship
- ❖ Promote affordable innovation in key social sectors
- ❖ Empowerment of startups & small and medium enterprises
- ❖ Contribute through partners for capability enhancement and diffusion of innovation
- ❖ Enable commercialization of discovery
- ❖ Ensure global competitiveness of Indian enterprises

BIRAC's aim is to play a transformative and catalytic role in building a US\$ 100 billion Indian bioeconomy. We believe that the agents of change for building the Indian bioeconomy would be biotech startups & SMEs and hence our focus is on raising their capabilities, connecting them to global and local stakeholders such that they achieve global excellence

BIRAC's Role & Activities

Supporting early and late stage innovation research



- ❖ Ignite new Ideas - **Biotechnology Ignition Grant (BIG)**
- ❖ Support early stage research for proof-of-concept validation - **Small Business Innovation Research Initiative (SBIRI)**
- ❖ Partnership with industry for high risk discovery led innovation - **Biotechnology Industry Partnership Programme (BIPP)**
- ❖ Facilitating technology validation and development - **Contract Research Scheme (CRS)**



Product innovation and commercialization for addressing Grand Challenges of national relevance

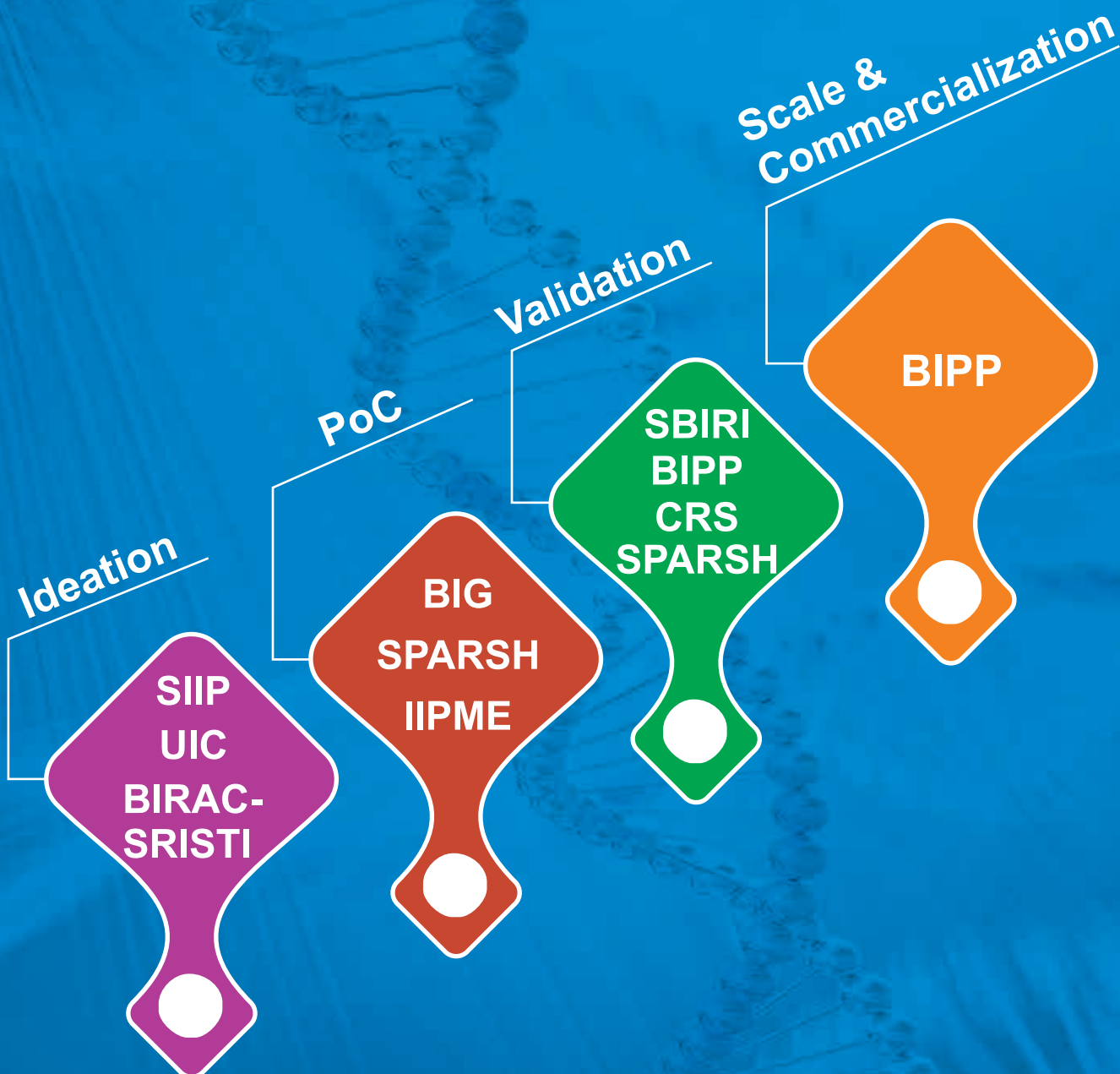
- ❖ Through National and International Strategic Partnerships
- ❖ BIRAC-DBT-BMGF
- ❖ Grand Challenges India
- ❖ SPARSH – Social Innovation
- ❖ Research Alliance for Product Innovation and Development (RAPID)



Enabling services for promoting the innovation ecosystem

- ❖ IP Management
- ❖ Technology Transfer & Acquisition
- ❖ Access to Research Resources
- ❖ Mentoring and Capacity Building

Driving Product Development



Empowering the Enterprise

Incubation Space:
*2,00,000 sq.ft. of incubation
space for more than 200 startups,
access to high-end instrumentation*



Access to Research Resources:
*Several facilities have been established
such as for protein characterisation
and cGMP compliant bioprocessing*



IP & Technology Management:
*Services ranging from IP protection, evaluation,
valuation to technology licencing and acquisition
like Banana Biofortification from QUT, Australia*



Mentoring:
*More than 20 workshops and meetings per year
organised and facilitated partners provide one-on-one
mentorship. Access to 600 domain experts*



Transforming the Indian Biotech Startup Ecosystem

Biotechnology Ignition Grant (BIG) : *Spurring the Startups*



- BIG is the flagship startup funding programme of BIRAC, which provides the right admixture of fuel and support to young startups and entrepreneurial individuals
- Funding grant of upto INR 5 Million to best in class innovative ideas to build and refine idea to proof-of-concept
- Support to over 200 ideas in 9 Calls (biannual call announcement: January & July)
- Encourages all forms of entrepreneurship - academic (faculty, postgraduates, PhDs and postdoctoral scholars), first time entrepreneurs, young biotech startups
- Focused mentorship and management by 5 BIG partners
- Access to national & global experts, mentors and accelerators
- Opportunity for BIG grantees to attend, connect and network at the flagship IGNITE bootcamp of the University of Cambridge's Judge Business School, UK
- Community of BIG alumni and access to platforms such as BIG Conclave, BIRAC Innovators Meet, Healthcare Summits and hands on training workshops



65

Individual applicants incorporated startups during BIG support

The BIG Impact

- Total no. of proposals received : 2005
- Total no. of projects supported : 216
- 2 BIG Conclaves held
- Facilitated creation of 65 new biotech startups
- Employment generated : More than 600
- 71 IPs generated
- Women Entrepreneurs : 50
- About 30 products are in the later stages of validation
- 46 BIG grantees have secured follow-on funding from public and private agencies
- Enabled 52 Entrepreneurs to reach at Technologies Readiness Level (TRL) 6, 7, 8 and 9



Isite Ocular Lens for spectacle free vision



VAP Care



flexiOH- Cast immobilization for fractured bone



Poorti Kit with breast prosthesis



Scinglow: a portable urine protein analyzer device



Plant Vaccines against Bacterial blight of pomegranate

Development of Products under BIG

Transforming the Indian Biotech Startup Ecosystem



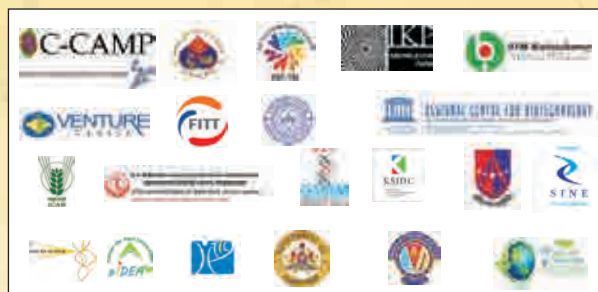
BIRAC–Bioincubation Nurturing Entrepreneurs for Scaling Technologies: *Nesting grounds for big take-offs*

BIRAC through its flagship programme BioNEST has created 20 world-class bio-incubators that provide multitude of support from office space to access to top end instrumentation & mentor networks

- 20 bio-incubators with incubation space of 2,00,000 sq. ft that provide office space, wet lab facilities as well as tinkering labs
- Bio-incubators located at Biotech Parks, IITs, Academic Institutes, Bio Clusters
- More than 200 startups/ entrepreneurial individuals have received support and are strategizing for global impact
- High-tech instrumentation includes NMR, LCMS, Next Generation Sequencing, Chromatography, 3D Printers, Confocal microscopy, CNC machines, Cell culture labs, amongst several other top end scientific instruments
- The first BioNEST Conclave was held in January 2017 involving stakeholders such as 20 bioincubators, experts from NITI Aayog, Karolinska Institutet, funding agencies & venture capitalists

BIRAC SEED Fund (Sustaining Enterprise and Entrepreneurship Development)

- In 2016, BIRAC launched an equity fund scheme to support to startups and enterprises through bio-incubators for scaling enterprises
- Stimulates partnerships with Accelerators, Angels and Venture Capitalists
- Incubators to be provided INR 100-200 Lakh for investing in enterprises against equity
- Investment in enterprise to the tune of INR 20-30 Lakh
- 3 Incubators have been selected for BIRAC SEED Fund
 - ❖ Venture Center, Pune
 - ❖ C-CAMP, Bangalore
 - ❖ IKP, Hyderabad



Germinating Ideas of Innovation

Students Innovations for Advancement of Research Explorations (SITARE)

BIRAC-SRISTI Gandhian Young Technology Innovators

- An initiative launched by BIRAC in collaboration with Society for Research and Initiatives for Sustainable Technologies and Institutions (SRISTI), a voluntary organization at IIM Ahmedabad – aiming at supporting the innovations and creativity at grassroots level among the university students, including individual innovators
- 2 categories of awards – BIRAC-SRISTI GYTl Awards (Mini-seed funds of INR 15 Lakh to 15 ideas to carry out R&D) and BIRAC-SRISTI Appreciation Awards (INR 1 lakh each to 100 nascent ideas)
- A total of 35 innovators have been awarded the BIRAC-SRISTI GYTl Awards



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

University Innovation Clusters (UIC)

- The UIC initiative was launched by BIRAC in 2013 to create the culture of innovation and entrepreneurship within the universities
- BIRAC innovation fellowships for 2 postdoctoral and 4 post M.Sc. fellows in addition to innovation grant to conduct R & D
- Industry participation for training, mentoring, sponsored research, networking opportunities and IP & Technology Management
- Currently, 15 fellows are pursuing translational R&D under UIC programme

Five UICs have been initiated at:



TNAU,
Coimbatore



UAS
Dharwad



University of Rajasthan,
Jaipur



University of Punjab,
Chandigarh



Anna University,
Chennai

BIRAC Hackathon : Tinkering with Innovative Ideas

- BIRAC with its partner IKP knowledge Park conducted a Hackathon in June 2016, aiming at ideating & hacking innovative solutions for improved point of care device for screening, detecting, monitoring for Non-Communicable Diseases & Assistive Devices
- On the spot business advice & access to BIRAC's platform meeting, BIG Conclave
- Awards to top 3 winners

Transformation through Social Innovation



**Social Innovation Programme for Products
Affordable & Relevant to Societal Health**



BIRAC launched SPARSH in 2013 with an aim to promote the development of innovative solutions to society's most pressing social problems.

- 5 calls launched till date to solve different social issues with innovative ideas. The first 2 calls focused on Maternal & Child Health. The third call sought technology solutions for Sanitation, Waste to value and allied problems. The fourth & fifth calls focused on Ageing & Health and Innovative Diagnostic tools for Soil & Plant Health respectively
- The range of projects include micro-fluidic based on chip Real Time PCR for Neonatal & Maternal Health to a POC device for detection of antibiotic sensitivity of uropathogens in human urine, while others look into nutrition and probiotics
- 5 projects supported under SPARSH scheme have successfully completed

Social Innovation Immersion Fellowship (SIIP)

SIIP is a 18 months immersion fellowship scheme under SPARSH which intends to create a pool of social innovators in the biotech arena who can identify specific needs & gaps in the healthcare

- SIIP is implemented by SIIP Partners. SIIP partners for Maternal & Child Health are Venture Center, Pune; THSTI, Faridabad; KIIT, Bhubaneswar; and Villgro, Chennai
- 15 social innovators supported under SIIP who are trying to develop solutions for most pressing problems in the field of Maternal and Child Health (MCH)
- 3 SIIP fellows have received follow-on funding from either BIRAC or other agencies

**No. of
beneficiaries : 25
15 social innovators
supported**

Development of products under SPARSH



Noninvasive Electrical Device for
Transcutaneous Iron Replenishment



RightBiotic: Fastest
Antibiotic Finder



Electricity Free
Baby Incubator



Invigorating Industrial R&D through Innovation: SBIRI & BIPP

SBIRI: Taking Startups & SMEs to the next level of funding support

- SBIRI, inspired by the US SBIR, is India's first biotech focused PPP funding scheme that took shape in 2007
- SBIRI aims at funding high risk innovative R&D beyond the proof-of-concept
- Support to 211 companies in multitudes of innovative projects covering all areas of cutting edge biotechnology
- Exciting new technologies developed over the years. 8 new technologies and products were developed last year such as battery operated device for the diagnosis of Retinopathy of Prematurity (ROP) in premature infants and palm sized, single lead ECG display device

The Impact of SBIRI

Total no. of
beneficiaries: 211

59 collaborative
projects involving
Industry & Academia

Employment
generated in
FY 2016-17 : 175

20 products and
technologies
developed,
14 IPs generated



Fibroheal for
burn wound management



miRHYTHM-an ECG system



Scale-up technology
for production of recombinant lipase



PoC Diagnostic- disease detection system
developed for Malaria, Dengue and Typhoid

Invigorating Industrial R&D through Innovation: SBIRI & BIPP

BIPP: *Harnessing innovations through Industry Partnership*

- Help derisk innovative projects through a PPP model- cost shared between industry and BIRAC. This fosters industry's inclination for high end innovation
- 175 projects supported that are striving to bring new products into market thus boosting 'Make in India'
- Fostering emergence of new products and technologies such as development of HPV vaccine, clinical trials of Galnobox™ for treatment of diabetic foot ulcers to development of novel cocktail of cellulolytic enzymes for deconstruction of lignocellulosic feedstocks



India's first 2G or cellulosic ethanol plant at India Glycols Ltd.



AINA- for measuring blood glucose, lipids and haemoglobin



Balloon catheter manufacturing facility



Photo Dynamic Therapy (PDT) laser system for cancer treatment



First indigenous & 2nd generation vaccine against JE

The Impact of BIPP

Total no. of beneficiaries: 175

19 products and technologies developed

30 IPs generated

46 collaborative projects involving Industry & Academia

Employment generated in FY 2016-17 : 216

6 facilities developed for research resources

Aligning Academia & Industry for Product Development: Contract Research Scheme (CRS)

- Provides an enabling platform for academia and industry to collaborate
- Support provided to academia for validation of novel leads and translation while industry joins in as a validation partner
- IP rights stay with academia
- 22 projects ranging from discovery of genome-wide SNPs and its use in developing a reference linkage map and association analysis in castor to pre-clinical toxicology studies and Phase-1 clinical trial with PvDBP11, a novel recombinant vaccine candidate for *Plasmodium vivax malari*

Impact of CRS

- Total projects supported : 22
- No. of academia/research institutes : 21
 - No. of industries : 20

Deepening Discovery Innovations: Early Translation Accelerators (ETA)

BIRAC strategized to build Early Translation Accelerators (ETAs) to focus on catalysing transformation of nascent academic discoveries (publications/patents) with possible commercial and societal impact into economically viable enterprise and technologies. Each ETA is envisaged to collaborate with academic investigators, engage industry and leverage international translation ecosystems. While commercialization of early stage technologies is a difficult task, creating a translational component to establish proof-of-concept/validation is a significant step towards attracting industry to take these validated technologies towards further development.

The first ETA in the area of healthcare was set up at C-CAMP and other ETAs are being setup.

Industry Innovation Programme on Medical Electronics (IIPME) in partnership with Ministry of Electronics & Information Technology, Government of India



IIPME is a BIRAC Initiative in partnership with Ministry of Electronics and Information Technology, Government of India with a mandate:

- To address the challenges of R&D in Medical Electronics and develop the conducive ecosystem
- To support cutting edge technologies in multi-disciplinary areas of Medical Electronics
- To foster and promote the research in Medical Electronics to make it available, accessible and affordable

19 projects supported in the areas such as imaging and navigation, technologies for chronic diseases, convergence of medical device and bioinformatics and increasing the outreach through medical electronics

Product development under IIPME



Wireless dry sensors & mobile based ECG and cloud based remote consultancy platform



Tabplan 3D - Cloud-based software for orthopaedic surgeons to perform surgery planning in 3D



An electro-larynx for voice restoration



Non-invasive device for measurement of glucose

BIRAC Regional Centres: *Connecting & Mapping the Local Ecosystem*

BIRAC is committed to establishing 5 Regional Centres & two have already been setup viz. BRIC & BREC

BIRAC Regional Innovation Centre (BRIC)



- BIRAC established a regional centre at IKP Knowledge Park, Hyderabad for an extensive Regional Innovation System (RIS) mapping in South India where more than 70% of biotechnology firms are located
- BRIC extended multitude of support to startups for mentoring, IP and technology transfer related activities and numerous workshops for knowledge transfer and networking opportunities were also organised
- Phase-1 of BRIC completed successfully and a report on "Mapping Regional Innovation Ecosystem: A study of 4 life sciences clusters in Southern India" launched in Oct 2016 at IKMC Hyderabad. The report focused on the research capabilities in pharma, bio-pharma, medical technology and healthcare
- Phase-II of BRIC, Regional Innovation Mapping and other IP and technology transfer related activities for other regions of India namely Ahmedabad, Mumbai, Pune, Bhopal-Indore, Bhubaneshwar and Vizag have been initiated

BIRAC Regional Entrepreneurship Centre (BREC)

The first BREC is set up at C-CAMP, Bangalore with an aim to:



- Foster and facilitate bio-entrepreneurship including imparting necessary knowledge and skills for transforming innovative biotech ideas into successful & sustainable ventures which create national and global impact
- Create and inculcate a spirit of bio-entrepreneurship
- Facilitate and catalyse the journey of biotech ideas of bio-entrepreneurs towards commercialisation
- Enable and empower bio-entrepreneurs through business and technology advice and mentorship covering all aspects of business- financial, legal, IP, business model & planning, market understanding

The kick-start meeting was held on 23 Feb, 2017 at BIRAC

Training, Outreach & Networking Platforms

Road shows & Workshops

BIRAC organized a series of workshops on grant writing, bio-entrepreneurship and IP management at IIIM Jammu, IIT (BHU) Varanasi, ICGEB Delhi and SINE, IIT Bombay in 2016 to enhance its outreach. These workshops helped to create awareness and apprise potential innovators and entrepreneurs about grant writing skills and importance of securing and exploiting intellectual property

IGNITE

Each year BIRAC supports 5 BIG Grantees to attend an intensive, two week intensive entrepreneurial boot-camp programme "Ignite" at Judge Business School at University of Cambridge. From 2013 to 2016, twenty BIG grantees have participated in the intensive training



programme, providing the bio-entrepreneurs, opportunities to transform their innovative ideas into a business project and leverage the networking platform of Cambridge entrepreneurial ecosystem

TiE Global Summit

In collaboration with TiE, 3 BIRAC supported Innovators participated in the event "TiE Global Summit 2016" at Taj Hotel, Delhi which provided a platform to showcase their innovative technology/product

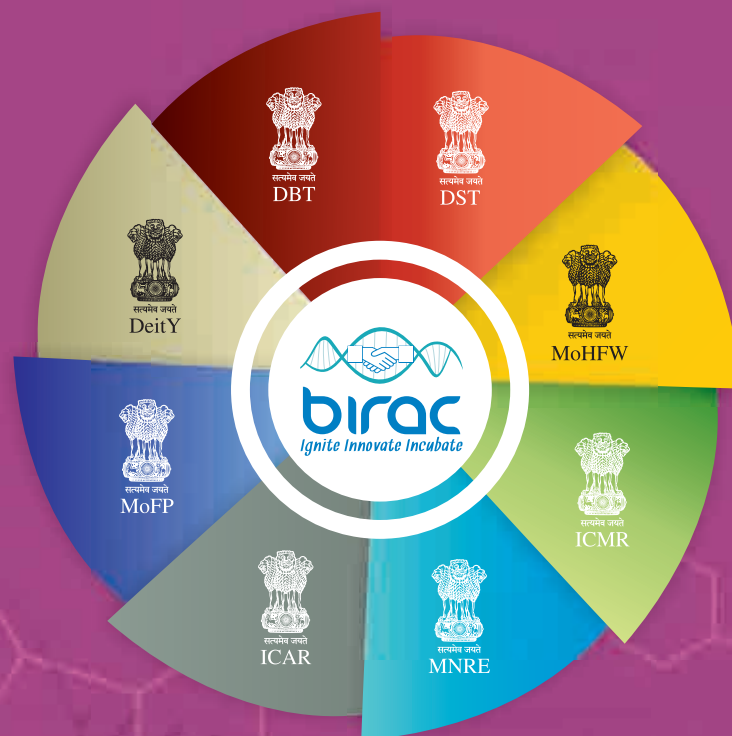
SLUSH

SLUSH is one of the largest startup conferences in Europe. In 2016, BIRAC provided a platform to 3 innovators to showcase their tech-talent in SLUSH through its partner Tekes, Finland



Aligning Partnerships for Global Impact

BIRAC partners with a range of allied organisations. Different models of partnerships have been established such as Co-Funding Partnerships & Partnerships for Networks, Platforms and Market Access.



Co-Funding Partnerships



BILL & MELINDA
GATES foundation

DBT-BIRAC-Bill & Melinda Gates Foundation *Seeding Grand Challenges in India*

The Program Management Unit housed at BIRAC (PMU-BIRAC), has been created and co-funded in collaboration by DBT and BMGF to jointly administer the Grand Challenges India framework. PMU-BIRAC works closely with strategic partners to identify and support scientific and technological opportunities with clearly articulated governance & implementation principles. The unit is also supported by USAID & Wellcome Trust. The first Grand Challenges India meeting is to be held in New Delhi from 21-25 March, 2017

Achieving Healthy Growth through Agriculture & Nutrition (AGN)

This call was launched in August 2013 and projects are nearing completion. Projects under this programme were targeted towards understanding the relationship between agriculture, nutrition and health to leverage health through better nutrition

All Children Thriving (ACT)

Launched in October 2014, this programme aims at ensuring that all children not only survive but are also placed on a trajectory to lead healthy and productive lives. 7 supported projects are currently underway

Grand Challenges Explorations – India (GCE-India)

Launched with DBT & BMGF as funding partners and BIRAC & IKP as implementation partners to encourage and nurture innovation in areas that impact global health. GCE-India Round 1 was announced in May, 2016 & 2 projects are supported

Reinvent the Toilet Challenge (RTTC)

Launched in 2013 with the aim of developing innovative & sustainable solutions to improve sanitation facilities & development of next generation toilets.

Knowledge Integration and Translational Platform (KnIT)

Launched in 2016, is an initiative that aims to provide evidence and experience based guidance to accelerate progress, equity and input in the development of health systems in India

Healthy Birth, Growth and Development Knowledge Integration (HBGDki - India)

This is a unique platform promoted by the foundation globally where the foundation is partnering with major countries in Asia, Africa, and South America to improve maternal and child health through development of interventions

wellcometrust

BIRAC-Wellcome Trust, UK:

Catching Infectious Diseases Early

BIRAC has collaborated with Wellcome Trust, a global charity organization of UK, to scout and support innovations in translational medicine in the domain of diagnostics for infectious diseases.

2 proposals supported in the first call. The proposal on 'High Sensitivity Multiplex point-of-care assay systems for the detection of blood borne infections in emergency setting' is being pursued by THSTI-Designinnova-University of Turku-Kaviogen whereas the 2nd proposal on – 'A Benchside molecular assay for detection of carbapenem resistant gram negative bacteria' by Vitas Pharma





bpifrance

**SERVIR
L'AVENIR**



CEFIPRA & French Embassy :

Detection of Chronic Health Conditions

BIRAC has joined hands with CEFIPRA to support high quality bilateral research, encourage and enable Indo-French collaboration between public, private research groups, industry, clinicians and end-users. Under this initiative, BIRAC has implemented 2 partnership programmes with French continent: one with French Embassy (2014-2015) and another with Bpifrancefinancement (2015-2016)

- Launched 2 calls for proposals in Red Biotechnology area especially in bridging common healthcare challenges that both France & India face. The call is implemented by CEFIPRA
- Seeking solutions in specific arena of molecular diagnostics for prediction of cardiac diseases, alzheimer's disease and/or dementia, cerebral palsy and generation of new assistive technologies for mobility of the physically challenged
- Each partner organization has contributed €100,000 (INR 80 Lakh) for 2 years



USAID



**BILL & MELINDA
GATES foundation**

USAID and IKP:

Joint Partnership in Rapid Diagnostics for TB

BIRAC is supporting new diagnostics for TB collaboration with IKP Knowledge Park and USAID. The joint call, launched in December 2015, for proposals aimed at supporting new and improved diagnostics for TB. The duration of the programme is for 3 years,

with a funding commitment of INA 5 Crores, spread over two phases. 6 proposals were supported in the first phase of the programme

Out of 6, 3 promising projects with demonstrated proof-of-concept selected for second phase in 2016-17. The proposals range from filter paper based method of MTB sample collection to detection of MTB infection by X-ray scattering of hair and nail

Nesta...

BIRAC-NESTA , UK: Targetting Antimicrobial Resistance

BIRAC and Nesta, a charity organization in UK, have initiated the collaborative measures to populate the innovators' pipeline for competing in the coveted Longitude Prize - a challenge programme having a prize fund of 10 million pound, to help solve the problem of global antibiotic resistance. BIRAC has committed an amount of £100,000 for the Discovery Awards to support the teams working in the AMR domain and this could eventually lead to their participation in the Longitude Prize. 5 projects have been selected under the Discovery Awards Programme help progress their ideas for the Longitude Prize



Partnerships for Networks, Platforms & Market Access



WISH – BIRAC-Lords Education and Health Society (LEHS), through its WISH Initiative : *Scaling the Innovations*

- BIRAC and LEHS have joined hands to scale up the BIRAC supported innovations through the SCALE initiative of LEHS which aims to scale up the innovations in primary healthcare sector through the route of State Governments
- BIRAC presented 17 innovative products having application at the Primary Health Centers. Out of 17 innovations, WISH has shortlisted 10 innovations for HTA Assessment and then the selected technologies will be presented to State Governments for inclusion in the State Procurement List



BIRAC-TiE (The Indus Entrepreneurs) : *A platform for Global Networking*

BIRAC and TiE-Delhi NCR has partnered to create platforms to showcase startups and connect them with other companies and relevant organisations, and opportunities to explore markets and facilitate a focused interaction with venture funds. Three BIRAC supported innovators participated in the TiE Global Summit 2016 which provided a platform to showcase their innovative technology/product



BIRAC- Indian Council of Medical Research (ICMR)

BIRAC-ICMR have partnered to establish a collaborative framework under which combined efforts will be made to enhance competitiveness of Biotech startups. The partnership will give platforms through various events for promoting bio-entrepreneurship ecosystem.



BIRAC-Tekes : *Enhancing Competitiveness*

BIRAC has signed a letter of intent with Tekes-Finnish Funding Agency for Innovation, to explore opportunities for improving competitiveness of Indian and Finnish industries through promoting collaboration in different phases of knowledge innovation chain. 3 BIRAC supported Innovators participated in the Global Startup Event called Slush, which provided a platform for Indian companies to find investors, form collaborations, and learn from the advanced ecosystem



BIRAC-TISS : *Mentoring Innovators and Assessing Impact*

BIRAC and Tata Institute of Social Sciences (TISS) have come together to mentor the social innovators supported by BIRAC, so as to help them evolve in the social entrepreneurship arena

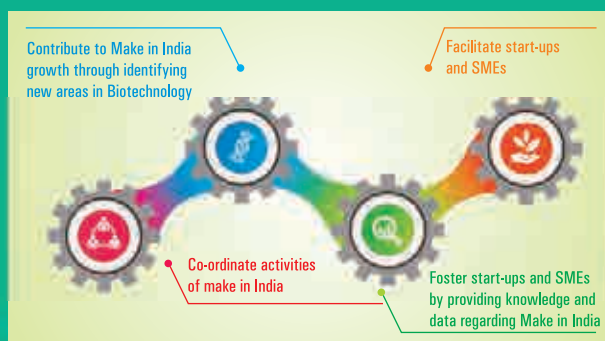
- TISS will also support BIRAC in assessing the impact of its social innovation initiatives and strengthen the impact of the same

Contributing to National Programmes

Make in India Facilitation Cell

'Make in India' initiative was launched on September 25, 2014 by the Government of India with an aim to facilitate investment, foster innovation, protect intellectual property, and build best-in-class manufacturing infrastructure

Considering the importance of Biotechnology's contribution to the Make in India initiative DBT established a Make in India Facilitation Cell at BIRAC with the responsibility of creating an enabling ecosystem in the country for promoting manufacturing capabilities of the Indian biotech sector. The cell is responsible for:



The Cell ensures wider dissemination of the Government programmes and other information relevant to the establishment and growth of startups. A dedicated website has been developed for the information dissemination and handholding startups < <http://birac.nic.in/mii/index.php> > .

BIRAC published a detailed report on Make in India highlighting opportunities for Indian Biotechnology Industry.



Startup India

Startup India is a flagship initiative of the Government of India, intended to build a strong eco-system for nurturing innovation and startups in the country that will drive sustainable economic growth and generate large scale employment opportunities. The Government through this initiative aims to empower startups to grow through innovation and design. The Prime Minister of India formerly launched the initiative on January 16, 2016.

The Action Plan for startup India has been formulated and Biotechnology sector has been highlighted in Point no.17. The main features of the action point are as follows:

Through this initiative DBT endeavours to scale up the number of startups in the sector by nurturing approximately 300-500 new Start-ups each year to have around 2,000 startups by 2020. Under this initiative, DBT and BIRAC aims to establish 50 bio-Incubators, launch an equity funding for start-ups and shall set up 5 Regional centres in the next 5 years



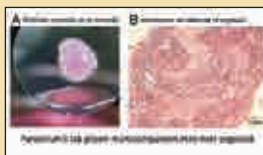
The BIRAC Impact



Cutting Edge Products & Technologies



ACIX 100-Microfluidics based point of care diagnostics



The 3D Mini-liver tissue/ organoid



anuPATH-multi-analyte point of care



PoC Diagnostic- disease detection system developed for Malaria, Dengue and Typhoid



Fetal electrocardiogram



Cloud-based pre-surgical planning platform



Isite ocular lens for spectacle free vision



Agrogain-agricultural biostimulant



Osteoconductive bone graft substitutes



Fibroheal for burn wound management



flexiOH- cast immobilization for fractured bone



Immunodiagnostic kit for detection of autoimmune diseases.



miRYTHM-an ECG system



Computer numerical controlled microscope for malaria diagnosis



Fundus on phone-eye imaging device



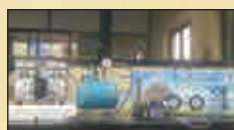
Orchid hybrids



First indigenous follicle stimulating hormone



FYVES1 basetablet for networked critical care monitoring



Hollow fibre membrane based low-cost oxygen concentrator



First indigenous & 2nd generation vaccine against JE



Plant vaccines against Bacterial blight of pomegranate



Rasburicase-recombinant uricase to control hyperuricemia in cancer patients



Scinglow-a portable urine protein analyzer device



Sohum- hearing screener



Balloon catheter manufacturing facility



Nitrifying bioreactor for clean aquaculture



Photo Dynamic Therapy (PDT) laser system for cancer treatment



Scale-up technology for production of recombinant lipase



Hand cranked Defibrillator-emergency care device for cardiac patients



BioUrja-anaerobic digester



MAXIO device for tumor ablation



Autochem-chemical Analyser for early diagnosis



Nanosniff - for rapid detection of acute myocardial infarction by sensing cardiac markers



AINA-for measuring blood glucose, lipids and haemoglobin



Diagnostic kit for qualitative detection of malaria parasite in human whole blood.



Cardio pulmonary resuscitation mannequin



ROTAVAC® - India's first indigenously developed oral Rotavirus vaccine

The Future Roadmap



- *Amplify and deepen entrepreneurial activities to seed multitudes of innovative biotech startup ideas for impact in healthcare, food & nutrition, energy and environment. Aim to foster 2000 startups by 2020 and implement stated policy goals in Start up India*
- *Support and Strengthen world class incubation infrastructure for biotech startups and innovators to leverage. Align incubator policy with the National Biotechnology Development Strategy 2015-2020 to support 50 biotech incubators and 150 TTOs*
- *Expand activities of the recently launched BIRAC Regional Entrepreneurship Centre (BREC) and through BIRAC Regional Innovation Centre map innovation ecosystems of Western, Central and Eastern India*
- *Grow and create new platforms for biotech startups to connect and leverage with national and global stakeholders. Catalyse and connect biotech startups to bridging organisation for accessing validation test beds*
- *Deepen and densify industry-academia linkages through multiple modes including creating new pathways for early discoveries and its validation and translation in a collaborative mode between the two stakeholders*
- *Explore new partnerships to strengthen Indian biotech sector and address national and global challenges affecting human development*



Biotechnology Industry Research Assistance Council (BIRAC)

(A Govt. of India Enterprise)

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