

8th Annual Report

2019-20



8th ANNUAL REPORT

2019-20



Biotechnology Industry Research Assistance Council
(A Government of India Enterprise)



About BIRAC



CORE VALUES

- Integrity
- Transparency
- Team work
- Excellence
- Commitment

KEY STRATEGIES

- Foster innovation and entrepreneurship in all places of research
- Promote affordable innovation in key social sectors
- Higher focus on start-ups & small and medium enterprises
- Contribute through partners for capacity enhancement
- Encourage diffusion of innovation through partners
- Enable commercialisation of discovery
- Ensure global competitiveness of Indian enterprises

BOARD OF DIRECTORS

Year 2019-20

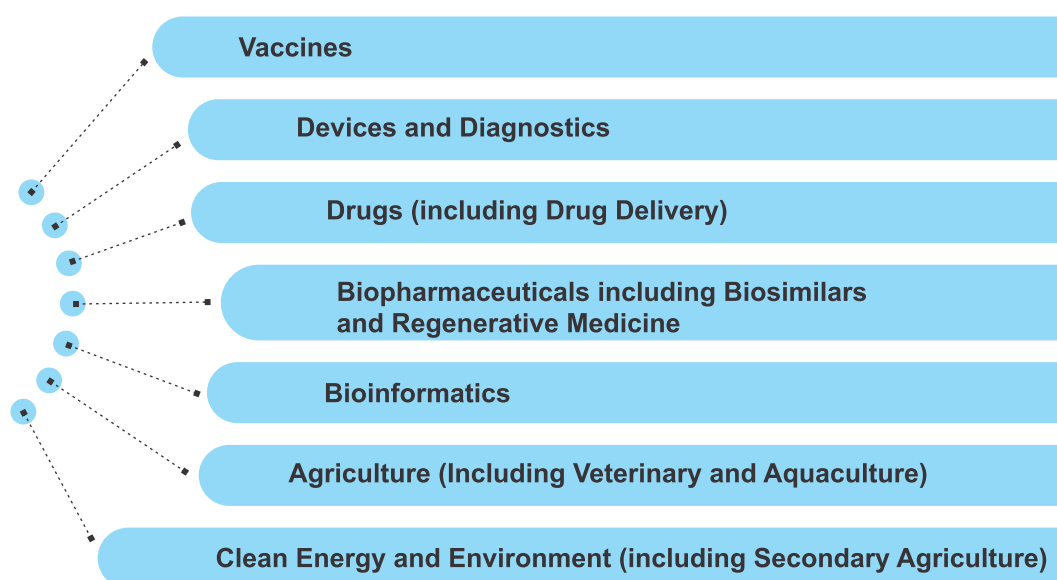


*L to R : Dr. Mohd. Aslam, Shri Naresh Dayal, Prof. Pankaj Chandra, Dr. Renu Swarup,
Prof. Akhilesh Tyagi and Prof. Ashok Jhunijhunwala*

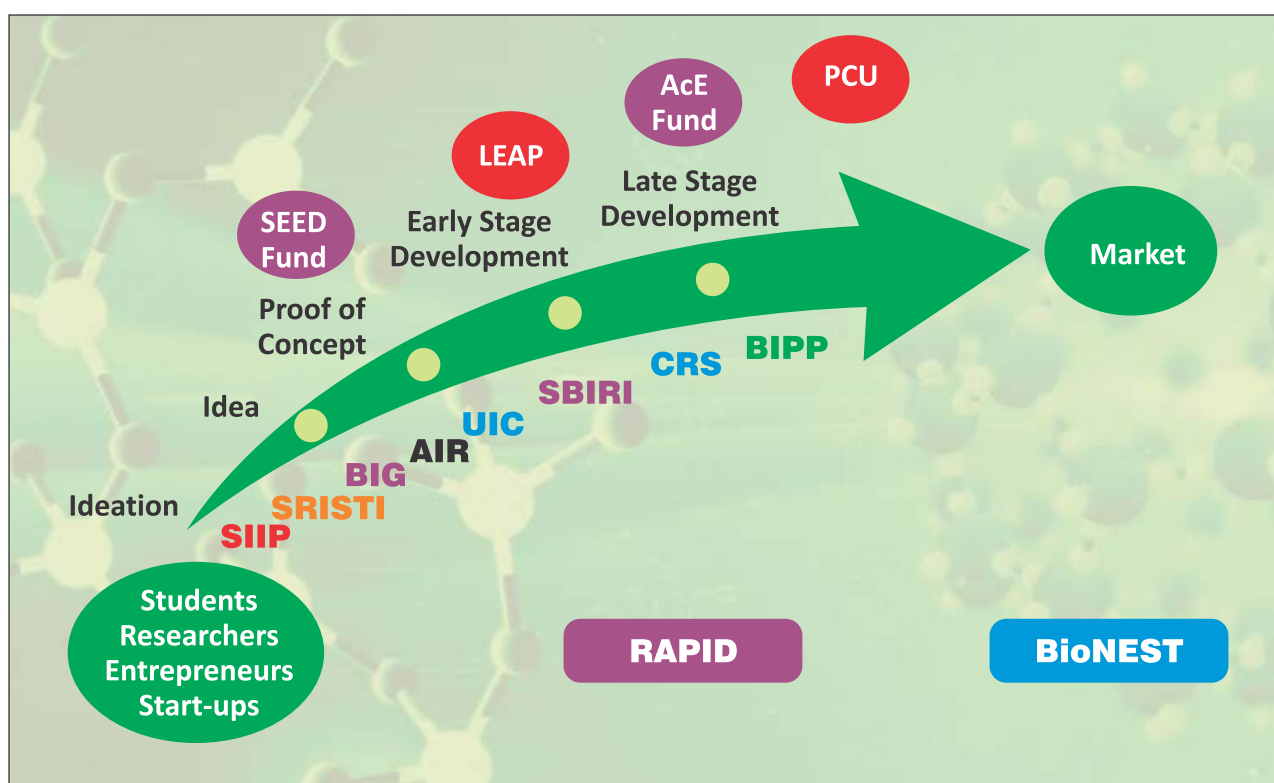


EXECUTIVE SUMMARY

BIRAC aims to 'Stimulate, foster and enhance the strategic research and innovation capabilities of the Indian biotech industry, particularly start-ups and SMEs, for creation of affordable products addressing the needs of the largest section of society'. Since the last 8 years, BIRAC's focus has been to act as a 'Development Agency' promoting the biotech ecosystem in the country. The support provided by BIRAC extends across all themes of biotechnology

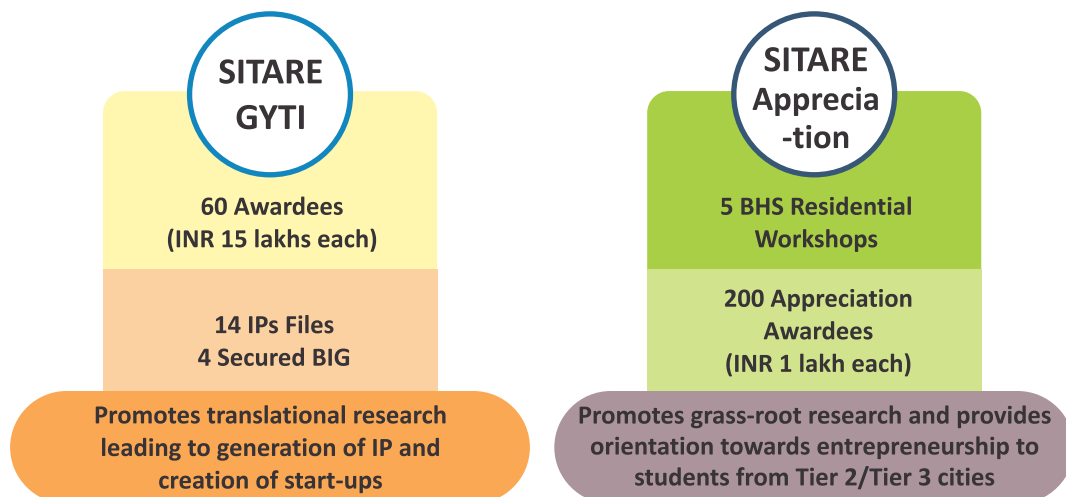


Covering the entire span of biotech arena right from pre-proof of concept till commercialization, BIRAC has been supporting innovations through its pioneering schemes.



SITARE (Students Innovations for Translation & Advancement of Research Explorations)

SITARE scheme is aimed at supporting innovative student projects in the area of biotechnology. The scheme has two components-SITARE GYTI and SITARE-Appecciation. The scheme is implemented in partnership with SRISTI, Ahmedabad



E-YUVA (Encouraging Youth for Undertaking Innovative Research through Vibrant Acceleration) scheme (earlier UIC)

EYUVA is mandated to promote a culture of applied research and need-oriented (societal or industry) entrepreneurial innovation among young students and researchers. The scheme provides funding support (through fellowship and research grant), technical and business mentoring, exposure to bioincubation model, orientation to entrepreneurial culture etc. to students at various levels including undergraduates, post-graduates and post-doctoral. The scheme is implemented through E-YUVA Centres (EYCs) housed within the University/ Institute set up and mentored by a BIRAC BioNEST supported bio-incubator (EYUVA Knowledge Partner).

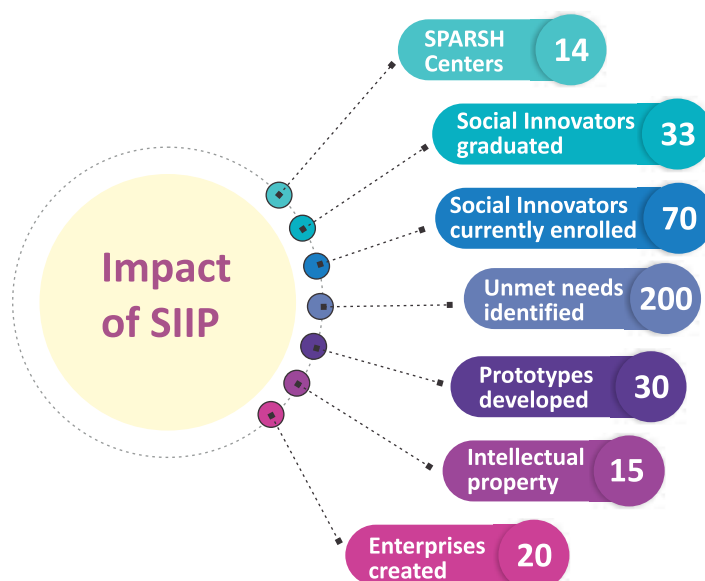
There are 5 E-YUVA Centres and new centres are being inducted.

30 Innovation Fellows	8 Start Ups	14 BIG Applications (5 Successful)	9 IPs
TN Bioeconomy Cluster	Panjab University BioNEST Bioincubator	Rajasthan & Dharwad-State Support	Other EYCs trying to mature to BioNEST

SIIP (Social Innovation Immersion Program)

SIIP Provides Fellowships to “Social Innovators” for identifying and addressing gaps in social sector and promote social entrepreneurship

The SIIP fellows are mentored by SPARSH Centres. The programme has already developed clusters across the nation on six thematic areas “Maternal and Child Health” “Ageing and Health” “Food and Nutrition” “Agri-Tech” “Combating Environmental Pollution” and “Waste to Value”. These clusters are spread across 14 SPARSH centres across 9 states in India.



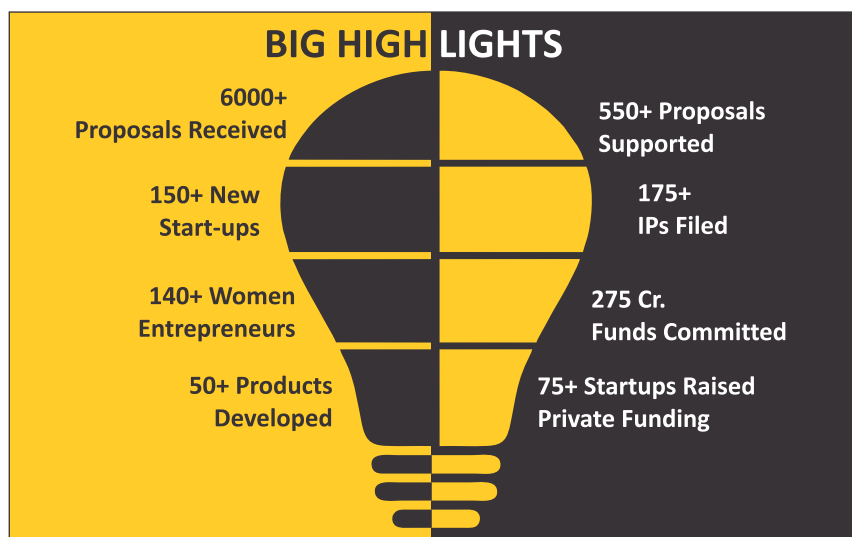
For promoting the development and commercialisation of cutting edge and affordable biotech products BIRAC has launched several transformational programs

Biotechnology Ignition Grant (BIG)

BIRAC's flagship funding scheme that provides the right admixture of fuel and mentoring support to young start-ups and entrepreneurial individuals to establish proof-of-concept for ideas with translational potential.

Funding support of up to INR 50 lakhs (as grant-in-aid)

The scheme is implemented through 8 BIG Partners selected out of BIRAC's 50 BioNEST incubators. BIG Partners provide an end to end handholding to applicants/ grantees and are also responsible for outreach and evangelization

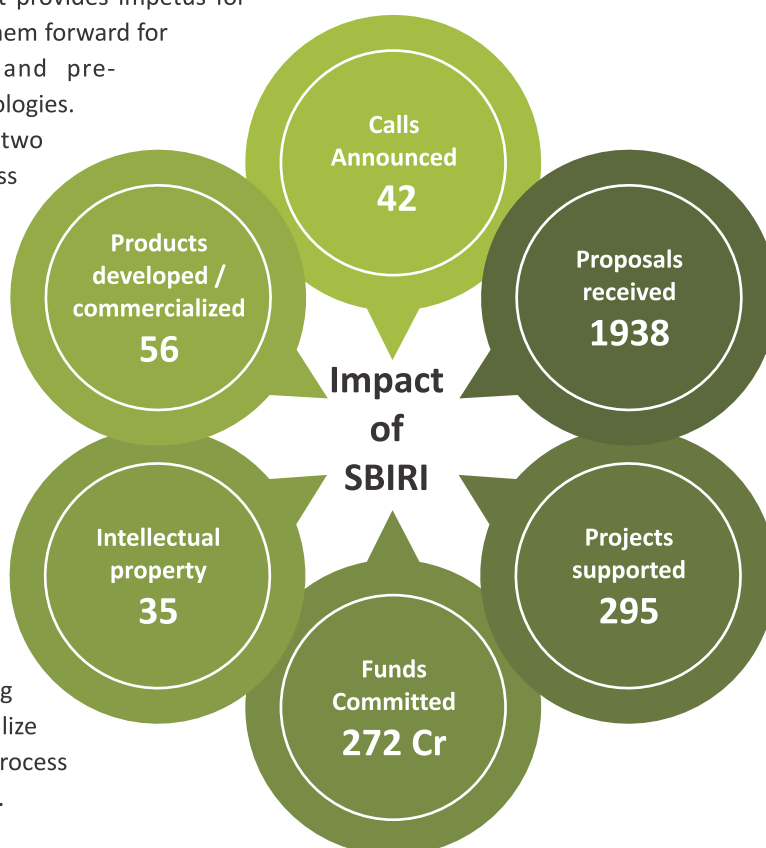
**i4 program (Intensifying the Impact of Industrial Innovation)**

The i4 program of BIRAC supports biotechnological product/technology development by strengthening the R&D capabilities of start-ups/companies/LLPs. It provides impetus for pulling the translational ideas and taking them forward for validation, scale-up, demonstration and pre-commercialization of products and technologies.

The programme is operated through two schemes based on the Technology Readiness Level (TRL):

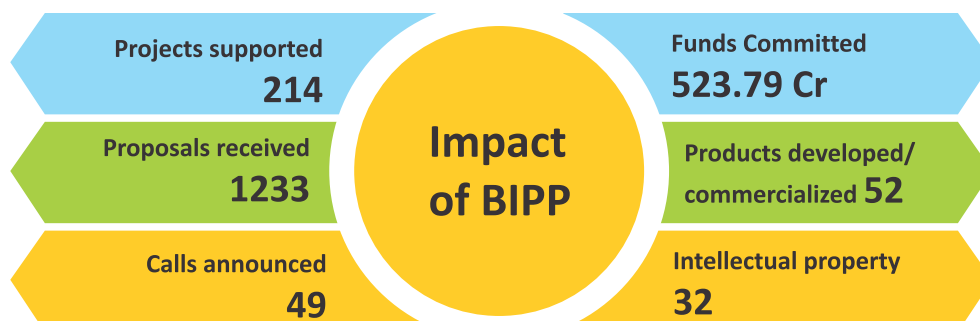
Small Business Innovation Research Initiative (SBIRI): The end point of the research study is TRL 6 and below

Launched in 2005, the SBIRI scheme was first of its kind early stage, innovation focused effort to boost Public-Private Partnership (PPP) efforts in the country. SBIRI has consistently prioritized early stage funding for high risk innovative research for development of products and processes which have high societal relevance. Over the years, SBIRI has worked as an enabling platform for the target organizations to realize their potential in terms of product and process development and taking them to the market.



Biotechnology Industry Partnership Programme (BIPP) – The end point of the research study is TRL 7 and above

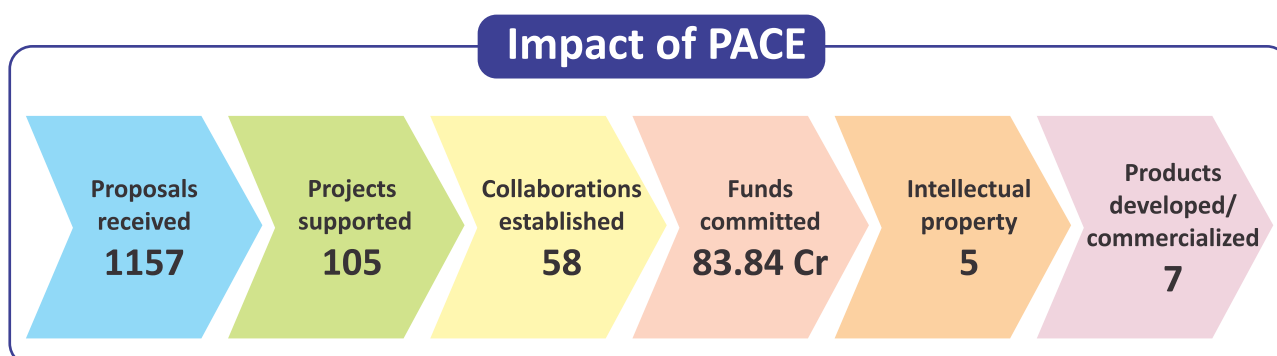
Under the umbrella of i4, BIPP is BIRAC's Flagship "Late Stage Funding" scheme. The Scheme was launched in January, 2009 and serves for scaling and commercializing high risk innovations through cost sharing between BIRAC and the industry. No incremental development is supported under BIPP.



PACE (Promoting Academic Research Conversion to Enterprise) Scheme

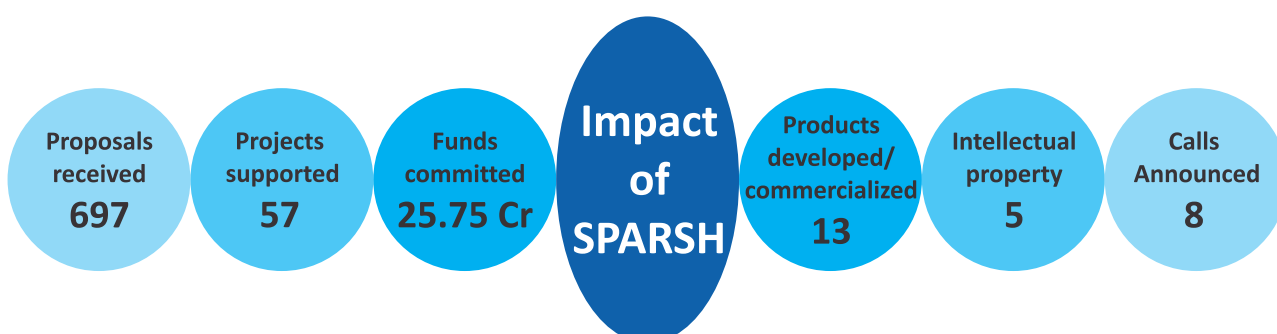
To encourage/support academia to develop technology/product (up to PoC stage) and its subsequent validation by an industrial partner, BIRAC operates the PACE scheme. The Scheme has two components:

- **Academic Innovation Research (AIR):** Promotes development of Proof-of-concept (PoC) for a process/product by academia with or without the involvement of industry
- **Contract Research Scheme (CRS):** Enables validation of a process or prototype (developed by the academia) by the industry partner.



SPARSH (Social Innovation program for Products: Affordable & Relevant to Societal Health)

SPARSH is aimed at promoting the development of innovative solutions to society's most pressing social problems through biotechnological approaches. SPARSH provides support for development of products, processes and technologies with well-established Proof of Concept (PoC) that can be commercialized



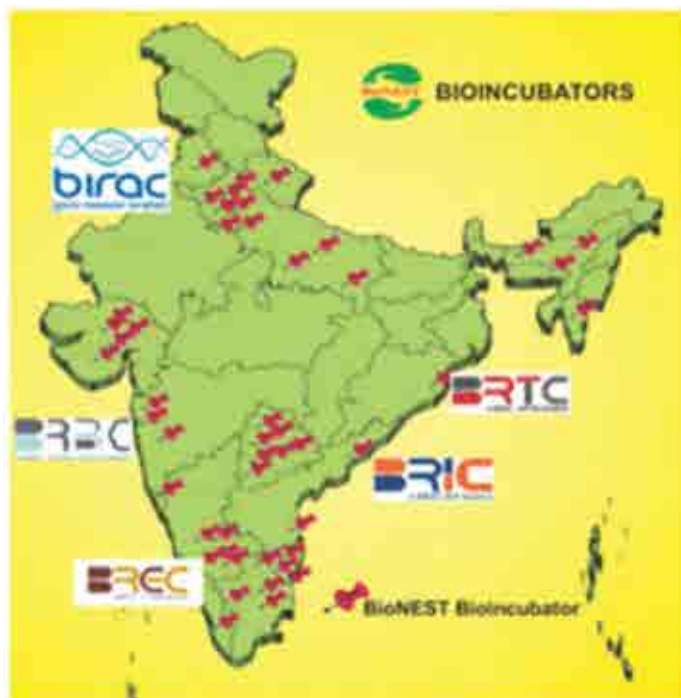
BIRAC launched **Product Commercialization Program Fund (PCP Fund)** under the Product Commercialization Program to hasten the product commercialization process by providing support to product technologies, which are at or above TRL-7 stage, developed by Indian Start-ups through funding programs of BIRAC or through support from other sources. Three Start-ups provided support under PCP Fund for product commercialization so far.

Promoting Incubation, Translation and Scaling

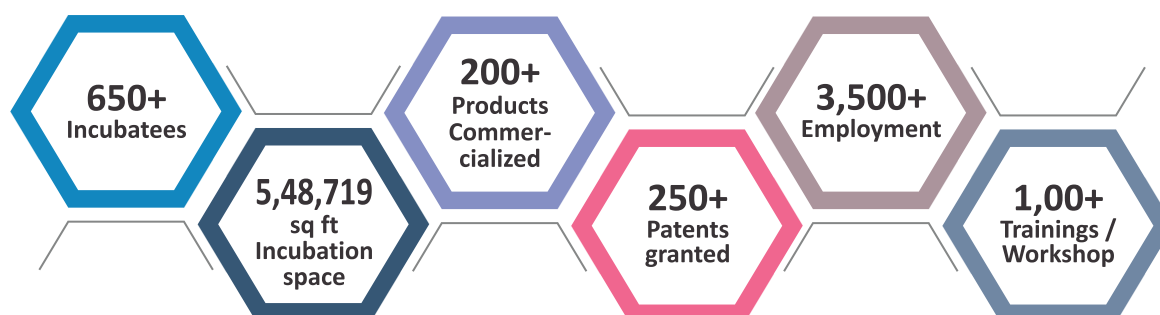
BioNEST (Bioincubators Nurturing Entrepreneurship for Scaling Technologies)

BioNEST scheme, earlier known as BISS (Bioincubators supporting Scheme), is a dedicated scheme to create globally competent bioincubation facilities across the country. BioNEST bioincubators are mandated to provide incubation space to entrepreneurs and Start-ups along with access to high end infrastructure, specialized and advanced equipment, business mentorship, IP, legal and regulatory guidance and networking opportunities to start-ups.

BIRAC has established 50 BioNEST bioincubators across the nation with the cumulative area of 5,48,719 sq. ft. Amongst these, 31 new incubators were established during the last 3 financial years and support provided to the rest. These dedicated biotech incubators are placed either within academic/research Institutes, medical hospitals, Biotech clusters or as stand-alone incubators that are supported through private, Central or State Governments.



50 BioNEST Incubators



Equity Funding Schemes

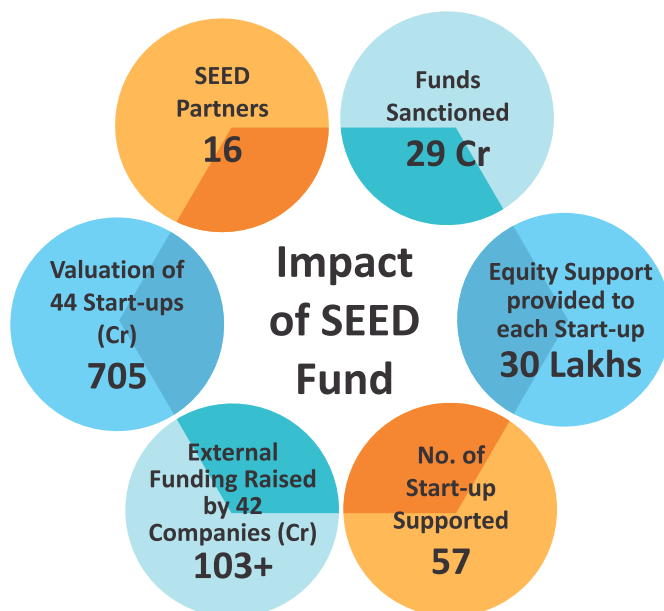
While the Bioincubators are able to support the "Space, Services and Knowledge" requirements of start-ups, a wide gap exists in financial support required by a technology driven start up in the initial phase. Equity schemes of BIRAC offers supports for the early stage start-ups which has potential for differential growth. It also helps the entities to attract investment opportunity from prospective investors.

- **SEED (Sustainable Entrepreneurship and Enterprise Development) Fund**
- **LEAP (Launching Entrepreneurial Driven Affordable Products) Fund**
- **Biotechnology Innovation (AcE – Accelerating Entrepreneurs) Fund of Funds**

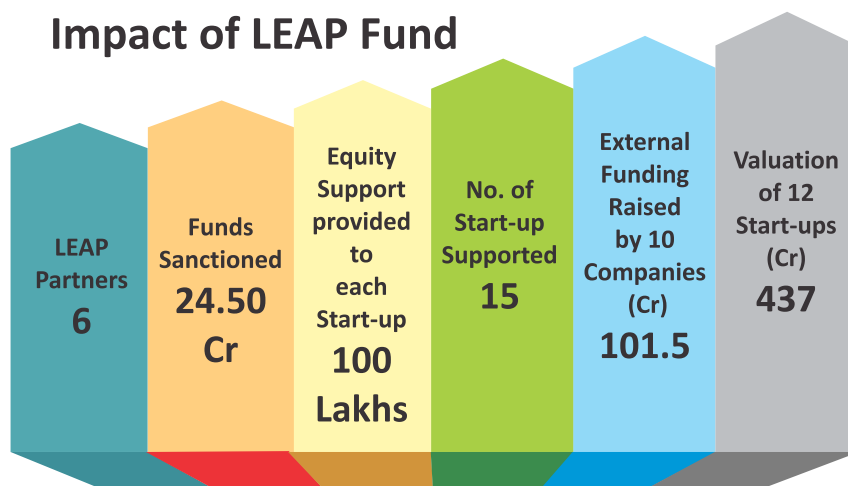
SEED Fund is the first equity exposure of up to INR 30 lakhs for a selected Start-up that has reached PoC stage with potential for commercialization. SEED support is positioned to act as a bridge between promoters' investment and Venture/Angel investment.

LEAP Fund is providing funding support to potential start-ups to pilot/ commercialize their products/ technologies. LEAP provides funding support up to INR 100 lakhs/ Start-up that have reached the pre-commercialization stage to reduce their gestation period.

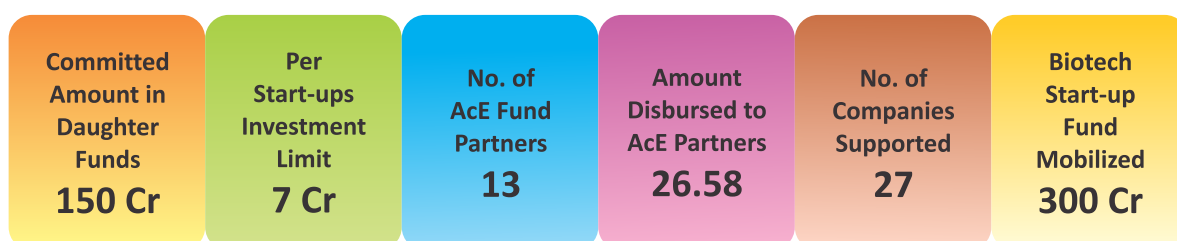
These schemes are implemented through selected BioNEST Incubators who as SEED/ LEAP partners manage the equity.



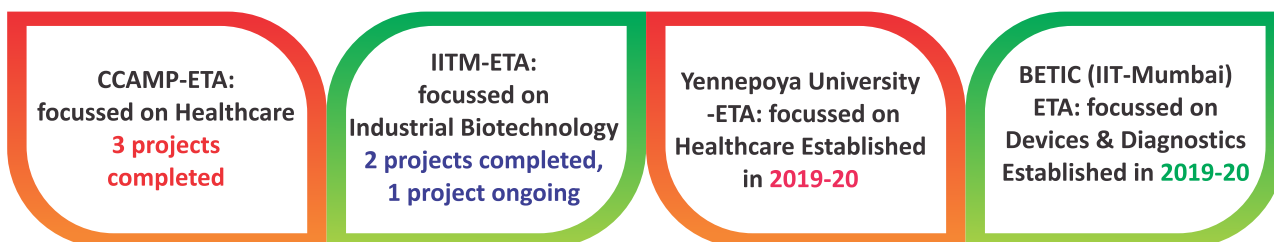
Impact of LEAP Fund



BIRAC AcE (Accelerating Entrepreneurs) Fund: AcE Fund is “Fund of Funds” which aims to foster R&D and innovation in Biotechnology domains by plugging the gap of the “Valley of Death” encountered by the Biotech start-ups during their ‘product development cycle’ and ‘growth phase’. AcE Fund invests and partners with SEBI- registered AIFs (i.e. Venture Funds and Angel Funds), which are professionally managed and desirous of investing in biotech & related sectors. The Daughter Funds are committed to invest 2x of BIRAC’s investment amount from fund corpus in Biotech start-ups. The AcE Fund has been able to infuse INR 300 Cr private equity commitment into the Biotech ecosystem using AcE fund as a catalyst.



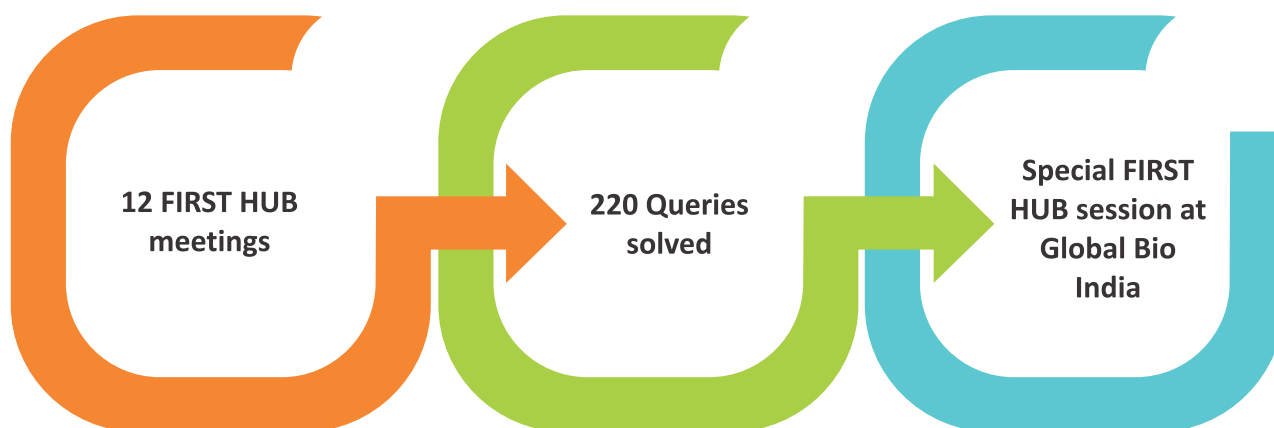
BIRAC has set up **Early Translation Accelerators (ETAs)** to realize academic discoveries into products by providing translational support.



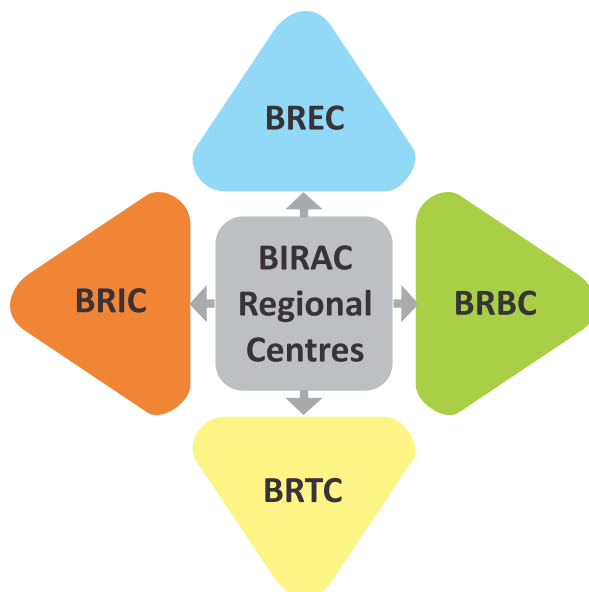
BIRAC operates **PATH (Patenting and Technology Transfer for Harnessing Innovations)** that extends support to protect the intellectual property which emerges out from the innovative projects and facilitate technology transfer.



FIRST (Facilitation of Innovation and Regulations for Start-ups and Innovators) HUB is created at BIRAC to address the queries of Start-ups, Entrepreneurs, Researchers, Academicians, Incubation Centres, SMEs etc. The FIRST HUB has representation from CDSCO, ICMR, DBT, BIS, NIB, GeM and BIRAC along with KIHT. It brings stakeholders at a single F2F platform.



Engaging with Regional Communities to map innovations and support entrepreneurs



BIRAC Regional Innovation Centre (BRIC)

Mandate of BIRAC

- Mapping of regional innovation ecosystem
- Mapping on IP& Technology Management to start-ups and innovators
- Promote Entrepreneurship development

BIRAC Impact (2013-2020)

- Pan India Clusters Covered
- 800+ innovators engaged
- 250+ Key Opinion Leaders (KOLs) Connected
- 65+ workshops, idea expositions and network meetings on IP, funding opportunities, regulatory guidance and capacity building through Incubation in Tier II and III cities



BIRAC Regional Entrepreneurship Centre (BREC)

Mandate of BIRAC

- National Life Science Entrepreneurship Awareness Programme
- Entrepreneurship development workshops
- Meet the investors series
- National Bio- Entrepreneurship Boot Camp (NBEC)
- National Bio- Entrepreneurship Competition

BREC Impact (2017-2020)

- 1900+ students inspired for Biotech Entrepreneurship as a career
- 6000+ registration for NBEC from across 32 states, cash prizes and investment opportunities worth INR 6 Cr mobilized
- 175+ start-ups and Entrepreneurs mentored through intense training
- 500+ One-on-One meetings between investors & start-ups
- 600+ Entrepreneurs/Start-ups provided specialized domain knowledge





BIRAC Regional Bio-Innovation Centre (BRBC)

Mandate of BIRAC



- Venture Mentoring Services
- Venture Base camps
- Regulatory Information and facilitation centre
- Bioincubation Practice School for western region

BRBC Impact (2018-2020)

- 250+ Entrepreneurs connected with mentors
- 100+ One to one follow-up meetings
- 160+ Participants provided domain knowledge through base camps
- 35+ Incubation managers trained
- 250+ students/entrepreneurs provided insights into essentials of scientific entrepreneurship
- 130+ start-ups assisted for solving regulatory issues



BIRAC Regional Techno-Entrepreneurship Centre



East and North East Region (BRTC-E & NE)

Mining and assessment of Techno-commercial resource pool in East & North East Region	Roadshows on Essentials of Techno-Entrepreneurship	Capacity building training programs	Training programs for rural women entrepreneurs
North East immersion program	North East showcase Event	Design Workshop	Incubation Practice School

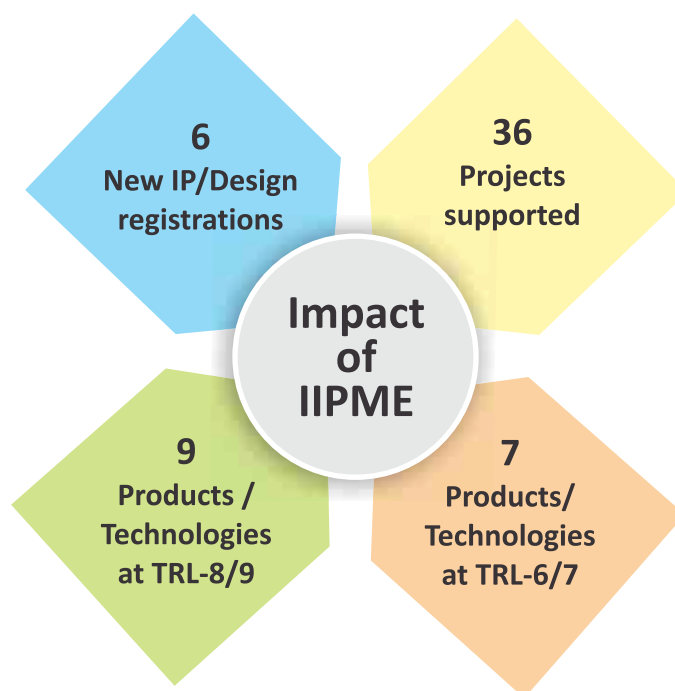
BRBC Impact (2019-2020)

- 900+ Innovators evangelized through awareness programmes
- Forged collaborations with 7 institutes from East and North East for promoting entrepreneurship and technology development
- Amplified biotech entrepreneurial ecosystems in Shillong, Agartala, Assam, Chhattisgarh, Kolkata, Manipur, Bihar and Jharkhand
- 30+ innovators were provided one-on-one mentoring sessions for idea development and raising funding through 2 days extensive training workshop
- 50+ students registered as BRTC volunteers to promote innovation and entrepreneurship ecosystem

Spreading wings through National & International Partnerships

- ❖ Partnerships with Indo-French agency CEFIPRA, BPI France and Wellcome Trust continuing and planning to explore future areas
- ❖ BIRAC has collaborated with NESTA a UK based innovation foundation, for creating a pipeline of innovators for the Longitude Prize, in the area of Anti-microbial Resistance (AMR). BIRAC has supported 9 teams with **BIRAC- Discovery Award Fund (DAF)** in the range of £15,000-20,000 each during FY 16-17 and 17-18. To further enhance the chances of Indian teams winning Longitude Prize, BIRAC announced Boost Grant of up to INR 90,00,000 during the FY 18-19. Three teams were awarded BIRAC Boost Grant Award and projects are ongoing in FY 19-20.
- ❖ BIRAC in partnership with **USAID** and **Indian Council for Agriculture (ICAR)** had initiated a five year long project in 2017 for development of high-yielding, heat-tolerant wheat cultivars appropriate for the Indo-Gangetic Plains. Field trials are on in the relevant Indian institutes to identify the markers and release the heat tolerant varieties.

- ❖ BIRAC has supported a technology development and transfer program for bio fortified and disease resistance banana from Queensland University of Technology (QUT), Australia with an overall aim to address food and nutritional security through bio-fortification. Promising results have been obtained on high provitamin A content and high iron contents along with few traits for resistance towards fungal attacks in the banana varieties.
- ❖ Ministry of Electronics and Information Technology, Government of India (MeitY) - **Industry Innovation Programme on Medical Electronics (IIPME)**
 - A collaborative project between the Ministry of Electronics and Information Technology, Government of India and BIRAC
 - Initiated in February 2015 to help address the challenges of the medical electronics fraternity



- ❖ **BIRAC-TiE WinER Awards:** BIRAC has a partnership TiE-Delhi NCR under which a woman specific award has been constituted, named as WinER Award (Women In Entrepreneurial Research). 3rd Edition of WinER was launched during the year 2019-20 and 15 women entrepreneurs were selected for an award of INR 5 lakhs each. These awardees would now undergo an intensive one week long accelerator programme and 3 out of these 15 would receive further funding of INR 25 lakhs each.
- ❖ **SoCH:** BIRAC in association with knowledge partner Social Alpha and BIRAC's Bio-NEST Incubator partner Clean Energy International Incubation Centre (CEIIC) launched the 2nd call of the **BIRAC-Innovation Challenge award-SoCH (Solution for Community Health) 2020-21** focused for the theme **"Innovative, Efficient and Affordable Solutions for Clean Cooking in Rural and Community Settings"**.
- ❖ BIRAC in partnership with Social Alpha launched **BIRAC-Social Alpha Quest for Assistive Technologies—supported by Mphasis** in June 2019 to foster an ecosystem to develop, support, and scale Assistive Technologies (AT) solutions from Start-ups. Top 14 Indian start-ups were selected as the winners working for the AT solutions in the areas including speech and hearing impairment, locomotor disability, visual impairment, and intellectual disability for children and adults. The winners were awarded grant prizes up to INR 50 lakh each and an opportunity to get enrolled in a three months accelerator program.
- ❖ BIRAC has partnered with **WISH (Wadhwani Initiative for Sustainable Healthcare) Foundation** (a Non-Profit Organization involved in taking innovation to the end users) for leveraging the network and engage the SCALE programme of WISH to validate the innovations in Primary Healthcare Centres (PHCs) through state governments. Under this Partnership, BIRAC supported Start-up products/technologies are validated by WISH at different PHCs and so far three products have been validated under the Partnership. As an outcome of the studies, 3 White papers along with recommendations of the studies were handed over to the innovators. Five more innovations are underway for field validation.

❖ University of Cambridge Entrepreneurship Education Programme – IGNITE: BIRAC has partnered with Judge Business School (JBS) at University of Cambridge in 2013 for the Ignite Programme that provides BIG innovators international mentoring opportunity. It enables early stage start-ups to develop international entrepreneurial flair and skills needed to understand the opportunities for successful translation and commercialisation of innovations. Every year, 5 BIG start-ups are selected and supported to attend the week-long boot-camp, IGNITE at JBS, Cambridge, UK. So far, 34 BIRAC supported start-ups have benefitted from the programme.

❖ Make in India facilitation cell:

- Make in India is the flagship program of Govt. of India launched in 2014 to encourage companies to manufacture their products in India, for India and for the world.
- The Make in India cell for Biotechnology was established at BIRAC in 2015. BIRAC along with Department of Biotechnology (DBT) is playing a crucial role in the implementation of these flagship programs of Gol, 'Make in India' and 'Start-up India'.
- It maps various activities for Start-up India (number of Start-ups, Incubators, Incubatees, Products, etc), Make In India (Gap analysis, FDI inflow, Strategic Stakeholders connect, Industry Consultations, Key policy/Fiscal recommendations for Budget/ cabinet matters, Investments, Regulatory support, Bio-Economy mapping, Globalization of India's Innovation ecosystem, Fund of Funds) and others.
- The cell connects States, Large Industries, guides the investors, Start-ups and entrepreneurs onto the gamut of business related issues in biotechnology such as regulatory landscape in the country, entry options and procedures, investment opportunities and routes, FDI/ EXIM/ Industrial policies.

❖ Secondary Agriculture Entrepreneurial Network in Punjab

- In partnership with Punjab State Biotech Corporation (PSBC), Center of Innovative and Applied Bioprocessing (CIAB), National Agri-Food Biotechnology Institute (NABI) and Bio-NEST-Punjab University (BioNEST-PU to support Industry and Promote Start-ups in Agri-Food Sector in Punjab.



Engagement with stakeholders

- ❖ The 8th Foundation Day was celebrated on 20th March 2020 through virtual participation of BIRAC Stakeholders. The theme of the event was “Scaling Biotech Innovations for Global Impact”.
- Two new partnerships, viz. BIRAC - NASSCOM and BIRAC - Innovate-UK were signed on the 8th Foundation Day.
- ❖ During the year 2019-20, BIRAC participated actively in events including BIO US, Emerging North East Event, BioAsia and Bengaluru Tech Summit

❖ Global Bio-India 2019

Department of Biotechnology and BIRAC organized Global Bio-India 2019 from 21st – 23rd November 2019 at Aerocity, Delhi in partnership with Confederation of Indian Industry (CII), Association of Biotechnology Led Enterprises (ABLE) and Invest India. From BIRAC, Make in India Cell led this activity. This event is a testimony of growing prowess of Biotech sector in the country and showcase to International community. The three-day long event witnessed a rich technical program of 40 sessions, CEO roundtables, workshops, product launches, new initiative launches, etc. It attracted 3000+ delegates, 190 exhibitors, 25+ countries, 300+ start-ups, 50+ incubators, 60+ Research Institutes, 800+ business meetings scheduling and representation from 10+ states. There were over 60 government, research and educational institutions that took part in the event.

❖ Trainings and workshops

Regulatory Workshops

Series of National workshop on regulatory compliance for accelerating innovations-

- a) C-CAMP Bangalore (89 participants)
- b) NIPER, Hyderabad (108 participants)
- c) NIPER, Guwahati (149 participants)
- d) The Maharaja Sayajirao University of Baroda, Vadodara (106 participants)

IP and Technology Management Workshops

- Organized at VIT, Vellore (45 participants)
- Organized at IIT, Indore (50 participants)
- Organized at BITS, Goa (50 participants)

Niche areas being nurtured



❖ **Grand Challenges India (GCI)**

GCI was born out of a partnership of the Department of Biotechnology (DBT), Government of India and the Bill & Melinda Gates Foundation in 2012 with the aim to encourage Indian innovation and research to develop affordable and sustainable solutions to improve health and well-being in India, and across the globe. In 2016, Wellcome Trust also joined the partnership. GCI works across a range of health and developmental priorities ranging from agriculture, nutrition, sanitation, maternal and child health to infectious diseases. Presently, GCI supports a range of research and development activities from basic research, translational research, intervention trials, clinical trials, data integration and analysis, product and technology development.

❖ **National Biopharma Mission**

NBM was approved by the Cabinet in May 2017 at a total cost of US\$250 million for five years with 50% funding through World Bank loan. The loan agreement between the World Bank and Department of Economic Affairs for flexible financing arrangements for this Mission of DBT was executed on April 24, 2018. A dedicated Project Management Unit (PMU) has been established at BIRAC for implementation of this mission.

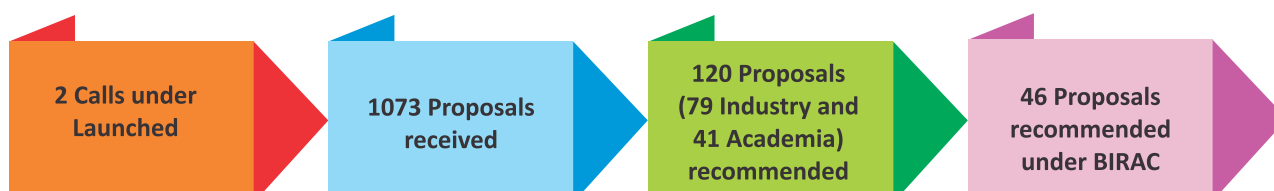
PMU NBM published about 15 Requests for proposals in this year to solicit Pan-India applications from academia and industry across different thematic areas like Vaccines, Biotherapeutics, Indigenous Development of Technologies for Affordable Bio-manufacturing, Medical Devices and Diagnostics, Translational Research Consortia Malaria for Hep E and RSV, Clinical Trial Network and the COVID-19 Research Consortium.



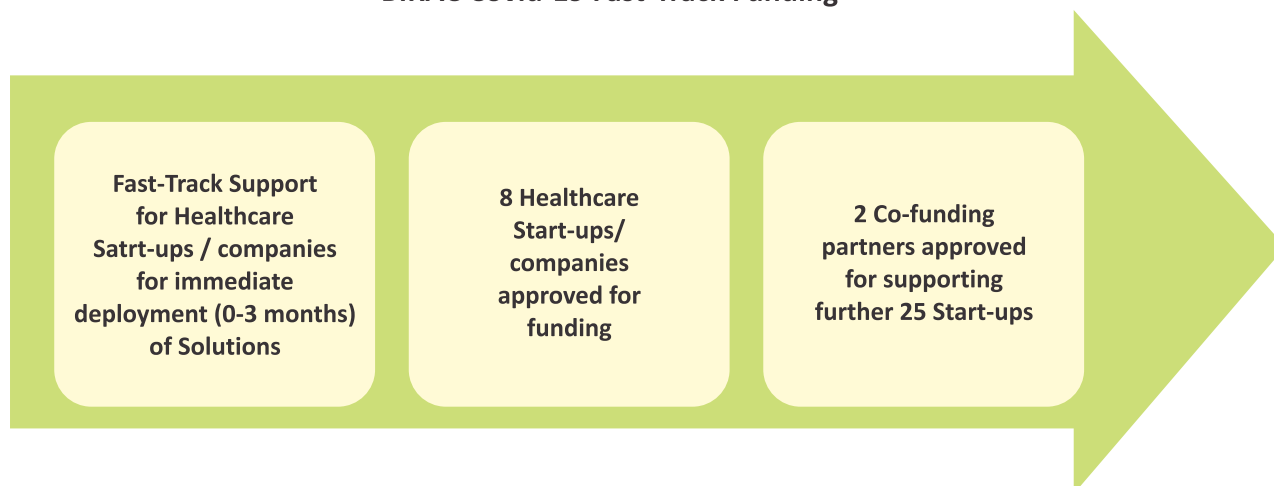
To strengthen the technology transfer capacity in the country, five (05) Technology Transfer Offices were established with NBM support. About 19 trainings programmes and workshops were conducted in this year under the Mission's skill-development domain where 1022 candidates were trained including 357 women candidates. The Mission also engaged in two consultancy assignments: CDSA, Faridabad was engaged for Clinical Trial Regulatory Advisory & Data Safety Consultancy and Sathguru Management Consultants for Technology Transfer Offices.

❖ **Response to Covid-19 Pandemic**

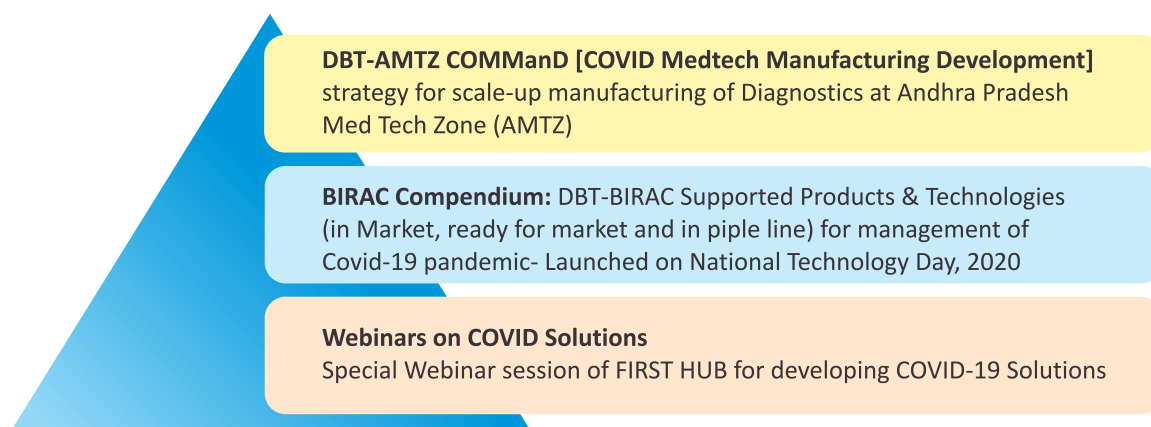
BIRAC has also responded to the new requirements posed by the Covid-19 Pandemic since February 2020 by offering fast track funding opportunities under Covid Research Consortium, enhanced mentoring and networking support, regulatory facilitation through frequent FIRST Hub Meetings etc. Fast Track initiative supported product commercialization including Diagnostic Kits, Preventive, Monitoring and Assistive solutions.

DBT-BIRAC Covid-19 Consortium Call

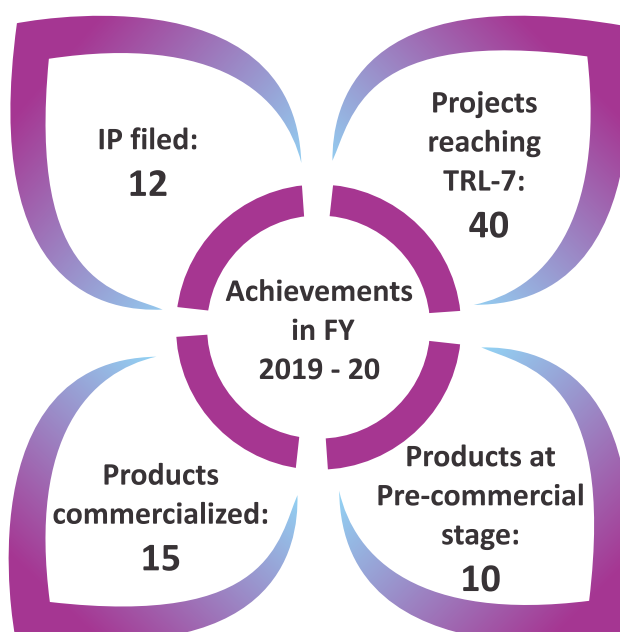
BIRAC Covid-19 Fast-Track Funding



Other Covid-19 activities



Achievements:





AWARDS



BIRAC received "IPR Leadership Award" for excellent contribution in the field of Patents during the event organized by Social Talks with Niti Aayog on 1 February, 2020.



"BIRAC received the "IP Excellence in India 2019" award during Questel IP Executive Summit 2019 at Gurgaon."



BIRAC received the prestigious SKOCH AWARD for BIRAC 3i portal at Skoch Summit, New Delhi on 28-29th August, 2019.



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Auditor General Account (C&AG)

Biotechnology Industry Research Assistance Council

CIN: U73100DL2012NPL233152

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Website: www.birac.nic.in | Email: birac.dbt@nic.in | Tel: 011-24389600 | Fax: 011-24389611

NOTICE

Notice is hereby given that the Eight Annual General Meeting of the Company will be held on:

Day and Date: **Friday, 18th December, 2020**

Time: 5:45 p.m

through Video Conferencing ('VC') / Other Audio Visual Means ('OAVM'), for transacting the following business:

Ordinary Business:

1. To receive, consider and adopt the Audited Financial Statement of the Company as on March 31, 2020 together with the Reports of the Directors and Auditor thereon and comments of the Comptroller & Auditor General of India in terms of Section 143(6)(b) of the Companies Act, 2013;
2. To fix the remuneration, of the Statutory Auditor for the financial year 2020-21, in terms of provisions of Section 139(5) read with Section 142 of the Companies Act, 2013.

NOTES:

1. In view of the continuing COVID-19 pandemic, social distancing norm to be followed and the continuing restriction on movement of persons at several places in the country and pursuant to General Circular Nos. 14/2020, 17/2020 and 20/2020 dated April 08, 2020, April 13, 2020 and May 05, 2020, respectively, issued by the Ministry of Corporate Affairs ("MCA Circulars"), the 8th Annual General Meeting ('AGM') of the Company is being conducted through VC/OAVM Facility, which does not require physical presence of members at a common venue. The deemed venue for the 8th AGM shall be the Registered Office of the Company.
2. MEMBERS ENTITLED TO ATTEND AND VOTE MAY APPOINT ONE OR MORE PROXIES TO ATTEND AND VOTE INSTEAD OF THEMSELVES. PROXIES TO BE VALID MUST BE RECEIVED AT THE REGISTERED OFFICE OF THE COMPANY NOT LESS THAN FORTY-EIGHT HOURS BEFORE THE APPOINTED TIME OF THE MEETING. Pursuant to MCA Circular No. 14/2020 dated April 8, 2020, since this AGM is being held through VC/OAVM, physical attendance of Members has been dispensed with. Accordingly, the facility for appointment of proxies by the Members will not be available for the AGM and hence the Proxy Form and Attendance Slip are not annexed to this Notice.
3. The link for joining the meeting shall be shared with the members before the meeting mentioning the login details and instruction for joining the meeting.
4. The facility for joining the VC/OAVM shall be kept open for the Members from 05.40 p.m. and may be closed at 05:50 p.m. (IST).
5. The Members are further informed that they can cast their votes either during the VC/OAVM meeting by show of hands or they can ask for a poll during the AGM wherein they can provide their assent or dissent via email at the registered email address i.e. cs@birac.nic.in to the Company during the time of the AGM. In case any member requires any assistance regarding the procedure of the attending of the AGM, they may contact the following person:

Name and designation: **Ms. Kavita Anandani**, Dy. General Manager & CS
Phone no.: 011-24389600
Email: cs@birac.nic.in



6. Only bonafide members of the Company whose names appear in the Register of Members in possession of valid attendance slips duly filed and signed will be permitted to attend the meeting. The Company reserves its right to take all steps as may be deemed necessary to restrict non-members from attending the meeting.
7. In accordance with the MCA General Circular No. 20/2020 dated May 5, 2020, in view of the prevailing situation and owing to the difficulties involved in dispatching physical copies of the financial statements (including Board's Report, Auditor's Report or other documents required to be attached therewith) for the Financial Year ended March 31, 2020 pursuant to Section 136 of the Act and Notice calling the Annual General Meeting pursuant to section 101 of the Act read with the Rules framed thereunder, such statements including the Notice of AGM are being sent only in electronic mode to those Members whose e-mail addresses are registered with the Company.
8. This meeting is being called at shorter notice with the consent of requisite number of shareholders as prescribed under Companies Act, 2013.

By Order of the Board

Sd/-

Kavita Anandani
Company Secretary

Registered Office:

1st floor, MTNL Building,
9, CGO Complex, Lodhi Road,
New Delhi – 110 003,

Date: 14th December, 2020



Dr. Renu Swarup
Secretary DBT &
Chairperson, BIRAC

OUR CHAIRPERSON'S MESSAGE

It gives me immense pleasure to reflect upon BIRAC's progress over the past year and I take this opportunity to thank the BIRAC board, the BIRAC team, our experts, partners and grantees for their commitment towards our shared vision of strengthening and energizing the biotech ecosystem in the country.

Our mission is to strengthen and empower the emerging biotech enterprise to undertake strategic research and innovation, addressing nationally relevant product development needs. Over the past eight years we have strived to bridge the existing gaps in the industry-academia Innovation research and facilitate novel, high quality affordable products development through cutting edge technologies.

BIRAC delivers the salient features of its mandate through its various schemes, networks, platforms, partnerships and collaborations. But largely, its two major activities are to support innovators and entrepreneurs in the biotech space by providing strategic funding to absorb some of the risk that innovators and entrepreneurs face along their development pipeline and the second is handholding and mentoring of our innovators, to help them navigate the path from bench to the market. 550 beneficiaries were supported by BIRAC under its various schemes during 2019-20.

During this year BIRAC supported projects in all major areas of biotech sector i.e. Healthcare, Agriculture, Industrial biotechnology, Bioinformatics and Infrastructure for promoting affordable innovation in key social sectors. Over the last year, about 60% of the total projects identified for achieving Technology Readiness Level; TRL-7 could achieve the desired TRL and there was a pipeline for product commercialization. Additionally, 15 new products / technologies have been market launched/commercialized with support from BIRAC in 2019-20.

The Product Commercialization Program Fund (PCP Fund) initiated in the previous year for funding start-ups with matured products/technologies for meeting the challenges towards large scale commercialization has provided support to three start-ups in the year 2019-20. Likewise, the Early Translation Accelerator (ETA) established by BIRAC, to pull academic discoveries towards translation supported two new ETA's in the areas of Healthcare and Devices & Diagnostics in 2019-20.

LEAP (Launching Entrepreneurial Driven Affordable Products) an equity linked funding scheme newly launched in 2019-20 is aimed at enabling potential biotech start-ups to pilot/commercialize their products/technologies. It is positioned to act as a catalyst in bringing technologies/products forward towards piloting/ commercialization and reducing their gestation to commercialization. Under the LEAP fund programme, 6 BioNEST incubators were supported under the program in this year.

BIRAC through its BioNEST scheme supported 9 new Bioincubators this year. With this, BIRAC has achieved its target of setting up 50 Bioincubators as per Start up India Action Plan announced by the Hon'ble PM in Jan 2016.

The FIRST Hub program is a first of its kind platform created by BIRAC where innovators and regulators are brought together to discuss the regulatory challenges that innovators are facing in their product development. The program completed 1 year of successful operations with support from DBT, CDSCO, ICMR, NIB & BIS. FIRST Hub and addressed 220 queries during 2019-20. A special FIRST HUB session was conducted during the Global Bio India event.

BIRAC remains committed to supporting and encouraging women entrepreneurship. After the success of the first and second edition, BIRAC launched the third edition of the BIRAC-TiE Women in Entrepreneurial Research (WiNER) Award during 19-20. 15 women entrepreneurs were



selected and awarded with 5 lakhs each on the BIRAC's 8th Foundation Day. The awardees would now receive access to a residential accelerator programme for regulatory, IP, licensing, fund raising, mentoring; and a chance to win final award of INR 25 lakhs each for top 3 women entrepreneurs.

BIRAC's contribution to the Government's national programs such as "Make in India (MII)" and "Start-up India" is an important aspect of the organisation's work. 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 Start-up India plans.

BIRAC's collaborations, both national and international have been an important vertical of our work. Our partnerships with the Bill & Melinda Gates and Wellcome Trust as well as the World Bank have been strengthened through the Grand Challenges India program and the National Biopharma Mission. Our partnerships with CEPIFRA, Tekes, TiE, the Indian Council of Medical Research, Indian Angel Network, WISH and USAID remain critical in delivering important programs. These partnerships allow both partners to leveraging the core competencies each other which helps us align and achieve the target of developing India's innovation ecosystem. In this year, BIRAC partnered with National Health Authority & Start-up India for Start-up Grand Challenge under Ayushman Bharat.

The last year also witnessed the first of its kind mega biotech event; The Global Bio-India 2019 organized by Department of Biotechnology (DBT), and Biotechnology Industry Research Assistance Council (BIRAC) from 21st-23rd Nov 2019 at Aerocity, Delhi. The event attracted over 2500 delegates, from more than 25 countries. There were over 60 government, research and educational institutions that took part in the event. The event showcased India's potential in the biotech sector both within the country and to the world and charted out an actionable roadmap to leapfrog the industry into the next phase.

As this year progressed further, we found ourselves in the midst of a global public health crisis in the form of COVID. To support the preparedness, readiness and response for COVID-19, the DBT-BIRAC COVID Research Consortium call was announced in Mar 2020, soliciting project proposals for developing Diagnostics, Vaccines, Novel Therapeutics, Repurposing of Drugs or any other intervention for control of COVID-19 by Industry/Academia/ Industry-Academia participation. The competencies and the ecosystem that we had created over the years, helped us respond to this crisis in a much more systematic way and major efforts were made under the National Biopharma Mission.

During this year BIRAC received the prestigious SKOCH Award for its 3i portal and IPR Leadership Award for excellent contribution in the field of patents. BIRAC along with DBT initiated the "Leadership Dialogue Series" in July 2019 with an aim to bring together leaders from various domains across the world to share their experiences. 3 editions of this series were successfully completed in 2019-20. BIRAC has received an 'Excellent' rating on compliance with the Guidelines on Corporate Governance Guidelines for CPSEs for the year 2019-20, as announced by the Department of Public Enterprises (DPE).

BIRAC's last financial year saw many positive outcomes. Our cumulative strategy is to take the Indian biotech industry to become a global innovation destination in R&D and manufacturing for development of cutting-edge products that can bring positive social impact to communities and help India achieve her goal of being a US\$100Billion economy by 2025.

Dr. Renu Swarup
Secretary DBT & Chairperson, BIRAC



Dr. Mohd Aslam
Managing Director,
BIRAC (2019-20)

MANAGING DIRECTOR'S MESSAGE

The annual report is rightfully a good opportunity to pause, review the past year and evaluate our achievements. Biotechnology Industry Research Assistance Council (BIRAC) 8th Annual Report presents activities and initiatives undertaken in the last year against its mandate to empower and enable the Biotech Innovation Ecosystem to foster and nurture innovation research in Start-ups and SMEs.

India is in the midst of an innovation drive and is working towards transformation in the areas of innovation, whether it is science, technology, health and other related sectors. It is an important and exciting time for the industry where the challenges are as great as the opportunities.

Since inception, BIRAC's mission has been to create an innovation ecosystem that fosters the needs of young entrepreneurs and start-ups. In the last year, BIRAC has supported innovations in varied areas of biotechnology and has worked aggressively on building new pathways for entrepreneurial journeys through early-stage funding, incubation, product commercialization support and equity funding. Product Commercialization Program Fund has provided support to three start-ups and the Early Translation Accelerator to pull academic discoveries towards translation supported two new ETA's in the areas of Healthcare and Devices & Diagnostics in 2019-20.

Several BIRAC supported Start-ups and SMEs have received recognition from other national and international agencies for their products and technology development. 550 beneficiaries were supported by BIRAC under its various schemes during 2019-20.

BIRAC also been actively promoting the "Make in India", "Start-Up India" and invested in devices and diagnostics through 401 projects under its various flagship schemes BIG, SBIRI, BIPP, PACE, IIPME and SPARSH. A strong wave of innovations in the devices and diagnostics has been witnessed over the last year.

Till now BIRAC has extended funding support through the Flagship BioNEST scheme to 50 bio incubators across the country. More than 600 incubates have been supported by these Incubation centres and 1000+ Jobs have been created through the start-ups and innovators incubated at these Incubators.

One of the major collaborations done last year was the partnership with Nesta UK to enable start-ups to compete for longitude prize for developing solutions for Anti-Microbial Resistance.

Another noteworthy achievement was the establishment of Scientific Sub-Committee of National Technical Board on Nutrition (SSC-NTBN) at BIRAC to provide technical recommendations to National Technical Board on Nutrition on policy-related issues.

Over the past eight years, BIRAC has been able to cultivate and expand the country's biotech ecosystem through a holistic strategy involving tools such as product development support, advising and mentoring start-ups in a variety of technological, IP and business issues, developing and operationalizing information-sharing networks and establishing successful partnerships.

BIRAC is committed to develop the start-up ecosystem in India and facilitate the innovators in their product development journey. Through the FIRST Hub initiative, more than 200 queries have been addressed.



One of the major events of last year was the Global Bio India- 2019- India's first biotechnology stakeholders' conglomerate. The 3-day Department of Biotechnology (DBT)-BIRAC event was a representation of entire biotechnology stakeholders to the national and international community

The end of the year 2019 has been a tough time across the world. We are in the clutches of global pandemic and BIRAC has been working relentlessly to address the COVID-19 global health crisis. Support to Start-ups, Research efforts, Workshops, Research Consortium Call and lot may other efforts have been taken up to address COVID-19 challenges.

Having completed a successful 8-year journey, we are constantly striving to understand the current and future needs of bio-enterprises and bring about transformative change through supporting and sustaining cutting-edge technologies to ensure the vision of Atma Nirbhar Bharat and further positioning India as a Global Biotech Innovation Hub.

Dr. Mohd Aslam
Managing Director,
BIRAC (2019-20)



Ms. Anju Bhalla
Current Managing Director,
BIRAC

OUR CURRENT MDs MESSAGE

It has indeed been my pleasure to be a part of the BIRAC family. It gives me immense pleasure to share my message for this 8th Annual Report and focus on the activities carried out by BIRAC to foster and nurture the innovation eco-system.

The Biotechnology Industry Research Assistance Council (BIRAC) a Section-8 Central Public Sector Undertaking under the aegis of Department of Biotechnology (DBT) is a first of its kind organization set up in the country with the mandate to promote innovation research for affordable product development. BIRAC within 8 years of its existence has engaged and connected with a vast number of stakeholders, Industry, Academia, National and International organizations and other ministries. Several initiatives have been carried out on expanding the programs and projects that are funded across the various themes.

The world in the year 2020 has been reeling under unprecedented challenges due to the Coronavirus pandemic. BIRAC along with the Department of Biotechnology has been at the forefront to address the challenges posed by the global health crisis. Many new initiatives have been launched to tackle this global pandemic. From announcing the DBT-BIRAC COVID Research Consortia to identifying potential COVID-19 Solutions for immediate deployment; to special sessions on COVID-19 to extend regulatory facilitation to start-ups; to establishing a fast track review for funding solutions with immediate deployability potential to implementing DBTs Mission COVID Suraksha for vaccine development, BIRAC has been the nodal agency working towards creating a collaborative innovation ecosystem between the government, corporations, academic and research institutions to benefit for the masses at large. The National Biopharma Mission and IND-CEPI have been working towards accelerating vaccine development and building capabilities for the same.

The BioNEST incubators of BIRAC have also initiated local/ regional/ national COVID solution challenges. 130+ COVID-19 related solutions have been developed by the start-ups supported through the BioNEST incubators. To further strengthen and support the ecosystem, more than 300+ virtual events have been conducted since March 2020 till date by BioNEST incubators and 25,000+ participants have been benefited from the same.

A lot of work has been done towards nurturing and empowering the start-up community in India through its various innovative funding schemes, that further aligns with the national goals of Start-up India, Make in India, Vocal for Local products and Atmanirbhar Bharat. BIRAC has planned to begin "IP & Tech Management Law Clinic Connect" to assist Start-ups, Institutes & Companies on IPR filing, Licensing & Commercialization from January 2021 onwards.

Grand Challenges India, the flagship program of the partnership between DBT and the Bill & Melinda Gates Foundation, housed in BIRAC, co-hosted the Grand Challenges Annual Meeting 2020 (GCAM 2020) which was held from 19th -21st October, 2020. GCAM 2020 brought together scientific leaders, researchers and policymakers from more than 70 countries



around the world to impact and create transformational solutions to address global health and development problems. Hon'ble Prime Minister Shri Narendra Modi, inaugurated the GCAM 2020 and delivered the keynote address. The Hon'ble PM praised the Grand Challenges program and stressed on the efforts taken against the COVID-19 pandemic through global collaborations and focused on India's vaccine manufacturing capabilities.

BIRAC has been instrumental in the fight against this pandemic and has dealt the situation with the spirit of self-reliance, wherein the innovators have come up with path-breaking innovations. I am confident that as we strategize for the future, BIRAC supported "Make in India" innovations will have a big responsibility in building a self-reliant nation of tomorrow whose impact would not only be pan-India but global.

Ms. Anju Bhalla
Joint Secretary DST and MD
BIRAC

BOARD OF DIRECTORS

Dr. Renu Swarup	:	Chairperson
*Ms. Anju Bhalla	:	Managing Director
**Non-Executive Independent Directors		
Prof. Ashok Jhunjhunwala	:	Director
Prof. Akhilesh Tyagi	:	Director
Shri. Naresh Dayal	:	Director
Prof. Pankaj Chandra	:	Director
Government Nominee Director		
#Dr. Mohd. Aslam	:	Government Nominee Director\$
* Was appointed as Managing Director on additional charge w.e.f. April 10, 2020		
# Also held the position of Managing Director on additional charge till April 9, 2020		
\$Held position of Government Nominee Director till November 30, 2020		
**Held position as Independent Directors till March 15, 2020		

CHAIRPERSON



Dr. Renu Swarup

Dr Renu Swarup is presently Secretary, Department of Biotechnology (DBT), Government of India. Having served in Department of Biotechnology for over 29 years, she also holds the position of Chairperson, Biotechnology Industry Research Assistance Council (BIRAC), a Public Sector Company incorporated by the Government to nurture and promote innovation research in the Biotech Enterprise with special focus on Start ups and SMEs.

A PhD in Genetics and Plant Breeding, Dr.Renu Swarup completed her Post Doctoral at The John Innes Centre, Norwich UK, under Commonwealth Scholarship and returned to India to take up the assignment of a Science Manager in the Department of Biotechnology, Ministry of Science and Technology, Gol, in 1989. As a Science Manager issues related to policy planning and implementation were a part of her assignment. She was actively engaged as the convenor in formulation of National Biotechnology Vision and Strategy in 2001, 2007 and 2015.

She has been closely involved in Programmes related to Bioresource development and utilization, Energy Sciences and Women & Science. She was also a member of the Task Force on Women in Science constituted by the Scientific Advisory Committee to the Prime Minister. Dr. Renu Swarup has been instrumental in the planning and implementation of some major National programmes such as Spatial Characterization of Biodiversity, Second Generation Bioethanol, Drugs from Microbes, National Biopharma Mission.

A Fellow of the National Academy of Sciences (NASI) India, A Life Member of Trust for Advancement of Agricultural Sciences (TAAS) and a Member of the Organization for Women in Science for the Developing World (OWSD), she was awarded the “BioSpectrum Person of the Year Award” in 2012. “National Entrepreneurship Awards 2017”, TiE WomENABLER Award 2018, “Dr. P. Sheel Memorial Lecture Award” 2018 by NASI and the TWAS Regional Office Prize on Science Diplomacy in 2018. She has been awarded the Agriculture Research Leadership Award 2019.

CURRENT MANAGING DIRECTOR



Ms. Anju Bhalla

Mrs. Anju Bhalla is a Post Graduate from St. Stephens College, Delhi University. She joined the Central Secretariat Service, Government of India in 1990 and has varied experience from her work in the Ministries of Commerce, Industry, Culture, Women & Child Development and Power.

She is currently Joint Secretary in the Department of Science & Technology, Government of India, and holding additional charge as Managing Director of BIRAC, a Section 8 Not for Profit Public Sector Enterprise under the Department of Biotechnology, Government of India

Her first assignment in Ministry of Commerce involved promotion of Indian investment in joint ventures and subsidiaries abroad, through gradual de-regulation of the sector. Policy and programme interventions for empowerment of women, and development and safety of children in WCD, international cooperation and climate change initiatives in the power sector, have been some of the areas of work she was engaged with.

GOVERNMENT NOMINEE DIRECTOR



Dr. Mohd. Aslam

Dr. Mohd. Aslam, Advisor (Scientist 'G') in the Department of Biotechnology (DBT) held additional charge as Managing Director, BIRAC till April 9, 2020. He has held the position of Government Nominee Director of BIRAC till 30th November, 2020. He was involved in planning, coordination and monitoring of various R&D programmes in plant biotechnology and allied areas. He was handling major programmes of DBT such as Centres of Excellence in Biotechnology, Translational Research in Products and Processed from Medicinal & Aromatic Plants and Technology Development in Silk. Dr. Aslam was the Member Secretary of the Technical Advisory Committee of Centres of Excellence in Biotechnology and DBT's Expert Groups on Translational Research in Products and Processed from Medicinal & Aromatic Plants and Technology Development in Silk. He was also working as the nodal officer in DBT for three autonomous institutions – National Institute of Immunology (NII), New Delhi; Institute of Bioresources and Sustainable Development (IBSD), Imphal, Manipur; and International Centre for Genetic Engineering and Biotechnology (ICGEB), New Delhi and also for Biotechnology Industry Research Assistance Council (BIRAC), New Delhi.

PROFILE OF NON OFFICIAL INDEPENDENT DIRECTORS



Prof. Ashok Jhunjhunwala

Ashok Jhunjhunwala is an Institute Professor at Indian Institute of Technology, Madras at Chennai, India. He did B.Tech from IITK, MS and Ph.D. from the University of Maine and was a faculty at Washington State University from 1979 to 1981, before joining IIT Madras in 1981. Dr. Jhunjhunwala is considered the pioneer in nurturing Industry - Academia interaction in India towards R & D, Innovation and Product Development. His group (TENET) at IIT Madras has innovated, designed, developed and commercialized a large number of technologies in the area of Telecom, IT, Banking and Energy sectors, especially in solar rooftop and electric vehicles. He conceived and built the first Research Park (IIT Madras Research Park) in India which houses over 90 R & D companies and 200 incubated companies. He has set-up and currently drives technology innovation and entrepreneurship through IITM Incubator. Dr. Jhunjhunwala has been Chairman and member of various government committees and has been on boards of several education institutions in the country. At the same time, he has been on the boards of a number of public and private companies and has driven comprehensive changes, especially in the area of technology, in the companies. He was a Director on the board of State Bank of India, Bharat Electronics, HTL, NRDC, IDRB, VSNL and BSNL. He has also been a board member in Tata Communications, Mahindra Rewa, Sasken, Tejas Networks, TTML, Intellect and Exicom. He is currently also on the board of BIRAC and Chairman of Technology Advisory Group of SEBI. Dr. Jhunjhunwala was conferred Padma Shri in 2002, Shanti - Swarup Bhatnagar award, Vikram Sarabhai Research award, H. K. Firodia award, Silicon India Leadership award, Millenium Medal at Indian Science Congress, UGC Hari Om Ashram award, IETE's Ram Lala Wadhwa Gold Medal, JC Bose fellowship and Bernard Low Humanitarian award. TiE conferred on him the title of "Dronacharya" for his contributions to the cause of entrepreneurship. He is fellow of IEEE, INSA, NAS, IAS, INAE and WWRF. He has also been conferred Honorary Doctorate by University of Maine and Blekinge Institute of Technology, Sweden.

From November 2016 to August 2018, he took leave from IITM and worked with Government of India as Principal Advisor to Shri Piyush Goyal, Minister of Power and MNRE and Railways, Delhi. He is now back at IIT Madras.



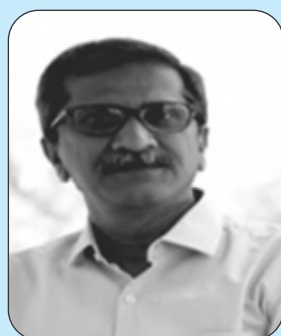
Prof. Akhilesh Tyagi

Working in the area of Plant Genomics and Biotechnology, Professor Tyagi led first successful Indian initiatives on genome-wide sequencing in rice, tomato and desi chickpea. This has heralded the era of high throughput genomics in India. Pioneering contributions were made to the area of neo- and sub-functionalization of regulatory gene families in plants during evolution. A transcriptome atlas of water-deficit response and grain development in rice has been generated. Novel genes/alleles were characterized with a view to gain and protect yield. Over-all, >250 publications of international repute have been generated. This research is largely an outcome of investigations of national/international collaborators and >120 Post-Doctoral, Doctoral, Master, Fellow and Trainee researchers, carried out under the auspices of several projects executed in his leadership. He has delivered over 300 invited lectures and chaired over 50 sessions in national (~50 cities) and international (~15 countries) meetings. In addition, he is serving on Editorial Boards of Transgenic Research, Molecular Genetics & Genomics, Rice, and others.

At the University of Delhi, Professor Tyagi has served as Head, Department of Plant Molecular Biology, Chairman, Board of Interdisciplinary and Applied Sciences and Director, Interdisciplinary Centre for Plant Genomics. Professor Tyagi has also provided leadership to the National Institute of Plant Genome Research as Director. In his leadership as President, the National Academy of Sciences, India and its chapters reached about 20000 people, including children, women and those from rural areas, under its science and society program during 2015-16. He served as Chairman of DBT-UGC Task Force on Human Resource Development and Program Advisory Committee on Plant Sciences, DST, Government of India, and on Governing Boards of more than ten institutions. He has been given JC Bose National Fellowship Award, National Bioscience Award, NASI-Reliance Industries Platinum Jubilee Award in Biological Sciences, Bhasin Award for Science and Technology, Birbal Sahni Medal of IBS, BP Pal Memorial Award of ISCA, and FC Steward Lecture Award of PTCA(I), among others. He is Fellow of the National Academy of Sciences, India, the Indian National Science Academy, the Indian Academy of Sciences, the National Academy of Agricultural Sciences and The World Academy of Sciences.

**Shri. Naresh Dayal**

Shri. Naresh Dayal, IAS, has worked with the Government of India for 37 years in various positions at the state and national levels. As Secretary, Ministry of Health and Family Welfare, He has been responsible, among other things, for all policies and programs in Public Health, supervising National Health Authorities, assessing and devising the policies for the country's manpower requirements in health. He holds a Masters degree in Arts from University of Delhi and also in Professional Studies, Agriculture, from University of Cornell, USA. Shri Naresh Dayal is also the Chairman of the Expert Appraisal Committee for Coastal Regulation Zone and Infrastructure Projects for Environment and CRZ clearances by the Ministry of Environment, Government of India. He was a Director of State Trading Corporation of India Limited. He has been Non-Executive -Director at Balrampur Chini Mills Limited since November 15, 2016. He has been an Independent Director of GlaxoSmithKline Consumer Healthcare Limited since April 23, 2010. He served as an Independent Director of The State Trading Corporation of India Ltd. from July 10, 2011 to July 9, 2014.

**Prof. Pankaj Chandra**

Professor Pankaj Chandra is the Vice Chancellor of Ahmedabad University. He was the Director of the Indian Institute of Management Bangalore (2007-2013) and Professor of Operations & Technology Management at IIM Ahmedabad and IIM Bangalore before joining Ahmedabad University. He has also held tenured appointment at McGill University in Montreal and has been a Visiting Professor at the University of Geneva, International University of Japan, Cornell University, and Renmin University, Beijing. He was the Chairperson of the Doctoral Programme at IIM Ahmedabad and the first Associate Dean (Academic) at ISB, Hyderabad. He was part of the founding team at the Centre for Innovation, Incubation and Entrepreneurship at IIMA and its first Chairperson. He holds a Bachelor of Technology degree from Banaras Hindu University and a PhD from The Wharton School, University of Pennsylvania.

Professor Chandra was a member of the Government of India Committee on Rejuvenation of Higher Education (Yashpal Committee) that relooked at the Indian Higher Education system as well as the Committee on the Autonomy of Central Institutions. He has been a member of the Telecom Regulatory Authority of India (TRAI).

Professor Chandra's research and teaching interests include manufacturing management, supply chain coordination, building technological capabilities, higher education policy, and hi-tech entrepreneurship. His recent book titled 'Building Universities that Matter' studies issues of Governance, Change & Institution Building in Indian Universities. He serves on boards of several firms and institutions and has been involved with start-ups.

*The Tenure of Non-Official Independent Directors ended on 15th March 2020

CORPORATE INFORMATION

REGISTERED OFFICE	: 1st floor, MTNL Building, 9, CGO Complex, Lodhi Road, New Delhi – 110 003 CIN: U73100DL2012NPL233152 Website: www.birac.nic.in Email: birac.dbt@nic.in Tel: +91-11-24389600 Fax: +91-11-24389611 Twitter handle: @BIRAC_2012
STATUTORY AUDITORS	: RMA & ASSOCIATES LLP Chartered Accountants First Floor, 95, National Park, Lajpat Nagar IV, New Delhi-110024 Tel: 011-49097836 Email: carahulv@gmail.com Website: www.rma-ca.com
BANKERS	: Union Bank of India, (formerly Corporation Bank Limited) Block 11, CGO Complex Lodi Road, New Delhi -110003 : State Bank of India Core 6, SCOPE Complex, Lodi Road, New Delhi -110003.
COMPANY SECRETARY	: Ms. Kavita Anandani



DIRECTORS' REPORT

DIRECTORS' REPORT

To the Members,

1. ABOUT BIRAC

Biotechnology Industry Research Assistance Council (BIRAC) is a not-for-profit Section 8 company incorporated under the Companies Act, 2013 and a Schedule B, Public Sector Enterprise, set up by Department of Biotechnology (DBT), Ministry of Science & Technology, 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.

BIRAC is an industry-academia interface and implements its mandate through a wide range of impact initiatives, be it providing access to risk capital through targeted funding, technology transfer, IP management and handholding schemes that help bring innovation excellence to the biotech firms and make them globally competitive. In its eight years of existence, BIRAC has initiated several schemes, networks and platforms that help to bridge the existing gaps in the industry-academia innovation research and facilitate novel, high quality affordable products development through cutting edge technologies. BIRAC has initiated partnerships with several national and global partners to collaborate and deliver the salient features of its mandate.

2. OUR PHILOSOPHY & ACHIEVEMENTS

BIRAC's vision aims to 'Stimulate, foster and enhance the strategic research and innovation capabilities of the Indian biotech industry, particularly start-ups and SMEs, for creation of affordable, globally competitive products addressing the unmet need. BIRAC's philosophy is rooted in its mission to 'trigger, transform and tend biotech start-ups to translate research in public & private sector into viable and competitive products and enterprises'.

Since its inception in 2012, BIRAC has acted as a 'Development Agency' to lay the foundation of a biotech ecosystem in the country. The vision of the organisation clearly defines its core philosophy to create societal impact through cutting edge products that are affordable to facilitate technology adoption for masses. Biotechnology sector has been recognized as a sunshine sector that can potentially steer India to grow to become a knowledge driven economy and Innovation Hub for the world.

Over the last 8 years, BIRAC has been instrumental in creating and expanding the Biotech Start-up ecosystem in the country. This growing ecosystem requires customized handholding, access to opportunities based on constant need identification to expedite the growth. BIRAC known for its agility and strategic initiatives, has revised existing schemes, operationalized few new schemes and expanded the partnership network to bring new value added opportunities for Biotech Start-ups, Entrepreneurs. This includes advanced stage funding under Biotechnology Innovation Fund – AcE Fund of Funds, Product Commercialization Program, LEAP (Launching Entrepreneurial Driven Affordable Products); expansion of incubator base under BioNEST to 50 and creation of 7 geographical clusters; expansion of BIG footprint taking total beneficiaries count to 500+; several new partnerships including Estonia Latitude59, NASSCOM, Innovate-UK, State Connect, BioConnect, United Nations Health Tech India Accelerator, BioAngels, and 3rd Edition of BIRAC-TiE WINER Awards – Women Entrepreneurship, among others. BIRAC continues to stay engaged with the whole community of Biotech Start-ups, Entrepreneurs and aspirants through Social Media. Our twitter followership base has crossed 21,000+ mark.

Evangelization and pipeline creation: Students, Entrepreneurs and Start-ups: Building New Pathways for 'Entrepreneurial Journeys' through early stage funding, incubation and equity funding

It is essential to recognise that to build and transform an industry, one has to begin at triggering positive changes at the foundation level. BIRAC's programmes under the umbrella of SITARE and EYUVA are stimulating a forward change in the biotechnology entrepreneurial drive by inculcating an entrepreneurial culture by igniting the young minds. These programmes capture the entrepreneurial energies of students and nudge them towards greater creativity and innovation. For example, BIRAC-SRISTI GYTI awards provide INR 15 lakhs each to student teams in academic institutions to take forward their research ideas under the guidance of an academic mentor (64 such ideas have so far been awarded). Additionally, more than 200 students have been facilitated with INR 1 lakh each award to pursue validation of grass-root ideas. BIRAC & SRISTI also organize 3-4 weeks long residential workshops for UG/PG students in the area of grass-root innovations.



EYUVA focuses on deepening the engagement with universities pro-actively wherein BIRAC has supported 5 universities across the country through Innovation Fellowships and Pre-Incubation space. Thirty Innovation fellows have been benefitted through different EYUVA Centres across the country. The scheme has been revised and expanded at national level to engage with students at undergraduate level through challenge programs. Induction of more EYUVA Centres is also underway.

Social innovation is gaining traction as innovators try to find novel solutions to societal challenges such as public health, ageing, maternal & child health and sanitation. The SPARSH programme, launched in 2013, has focused on building the social innovation potential in India through biotech tools and products. Within SPARSH, BIRAC has designed an immersion programme called SIIP that allows young fellows to immerse in various communities and hospitals and identify gaps that can be bridged by innovative solutions. Twenty SIIP fellows are currently working diligently to identify societal needs in the area of Ageing and Health and Waste to value. Noticeably, many of the SIIP fellows have been able to transition into enterprise mode with follow on funding under BIG and other non-BIRAC schemes.

BIRAC's Biotechnology Ignition Grant (BIG as it is popularly known) is a pioneering early stage idea to proof-of-concept programme and it is India's largest early stage program in the biotech space. Through BIG, BIRAC has supported 500+ entrepreneurial ideas which have successfully translated into 50+ market deployed products/technologies while another 30 are in validation stages. In 2019-20, 15th and 16th BIG calls were announced. In addition, a special call for North East Region was also announced. More than 1700 proposals were received under these three calls indicating an exponential rise in the interest for creating Biotech Start-ups. It is interesting to note that BIG has catalysed setting up of more than 135 new start-ups wherein individual BIG grantees have incorporated their Biotech Enterprises. These start-ups also create intellectual wealth for their cutting edge technologies as indicated by 180+ IP filed by BIG grantees.

Biotech start-ups face an uphill task for commercialisation, as access to infrastructure remains a critical hurdle. BIRAC in 2012 initiated the Biotech Incubator Support Scheme (BISS) which is now appropriately called as BioNEST. Through BioNEST program, BIRAC has been able to establish 50 bio-incubators across the country. These bio-incubators for biotech entrepreneurs and start-ups provide more than 5,40,000 sq. ft. of incubation space, access to common instrument facilities besides office space for nascent start-ups to grow. BioNEST provided incubation support to more than 500 biotech start-ups and entrepreneurs during FY 19-20.

BIRAC's Initiative Sustainable Entrepreneurship and Enterprises Development Fund (SEED Fund) provides financial equity based support to the start-ups and enterprises through bio incubators for scaling enterprises. A total support of INR 29 Crores has been provided to 16 BioNEST Incubators SEED fund partners for investing up to INR 30 lakh per start up against equity. So far, 57 start-ups have received SEED support that has catalyzed INR 103+ Cr follow on funds raised by 42 start-ups through external sources. Cumulative valuation for these start-ups have increased to INR 700+ Cr.

LEAP (Launching Entrepreneurial Driven Affordable Products) is also an equity linked funding scheme newly launched in 2018-19 for advanced start-ups. LEAP fund is aimed at enabling potential biotech start-ups to pilot/commercialize their products/technologies. Under this, a start-up can be provided up to INR 1 Crore. BIRAC has deployed this funding opportunity through 6 BioNEST incubators recognizing those as LEAP fund partners and sanctioned INR 24.50 Crores. So far, 15 Start-ups have been supported by LEAP fund. This has led to raising of additional follow on funding of INR 101.5 Cr by 10 start-ups, and a cumulative valuation of INR 435+ Cr.

Biotechnology Innovation Fund - Accelerating Entrepreneurs (AcE) is Fund of Funds managed professionally by AIF Fund Managers. AcE daughter Funds are SEBI registered private funds to invest equity in start-ups of up to INR 7 Cr/ Start-up for providing the risk capital to undertake innovation, research and product development AcE fund partner are mandated to invest minimum 2X of BIRAC total committed amount into Biotech start-ups. This has been able to successfully mobilize INR 300 Cr commitment for investment in the Biotech Start-ups. Five AcE Daughter Funds are operational and additional AcE partners are under expansion.

Engagement at SME level for Product Development: Catalysing Commercialisation of cutting edge and affordable biotech products for the nation and the world through transformational PPP models, industry-academia partnerships and focused approaches through Early Translation Accelerators

Supporting translation of ideas into tangible products/ technologies and its commercialisation is one of the core mandates of BIRAC. In this regard many of our flagship programmes such as SBIRI and BIPP provide impetus for pulling the idea past POC stage for taking it further along the innovation chain especially validation and scale. A wide gamut of cutting edge projects were supported via the two programmes covering areas such as drugs, bio-similars, stem cells, agriculture, industrial biotechnology and device and diagnostics.

Under the umbrella of i4, SBIRI and BIPP are the pioneering industry focused programs which were initiated by the Department of Biotechnology (DBT) in 2006 and 2009, respectively. These programs over the years have helped several products reach the market and impact people's lives positively.

SBIRI supports development and initial validation of products/technologies (up to TRL-6). Over the years, SBIRI has supported 295 projects that have resulted in development of 56 product/technologies. In 2018-19, three calls for proposals were announced which supported projects in various areas of Biotechnology.

BIPP is a flagship Late stage funding Scheme and supports validation, demonstration and pre-commercialization of products/technologies (up to TRL-7 and above). Over the years, BIPP has supported 214 projects. 52 products and technologies have so far been developed through BIPP and 32 IPs have been generated.

A concerted effort by BIRAC to bring together academia and industry and collaborate is through **Academic Innovation Research (AIR)** and the **Contract Research Scheme (CRS)**. Through CRS, academic leads could be tested via an industry partner. So far 105 projects have been supported under this program.

SPARSH is Social Innovation program for Products: Affordable & Relevant to Societal Health aimed at promoting the development of innovative solutions to society's most pressing social problems through biotechnological approaches.

Similarly, BIRAC has set up **Early Translation Accelerators (ETAs)** to realize academic discoveries into products by providing translational support. In the FY 2019-20 two new ETAs in the area of Healthcare and Devices & Diagnostics at Yennepoya University and BETIC (IIT-Mumbai), respectively have been established. C-CAMP; the first ETA has successfully completed the first set of three projects. Three projects are ongoing and one project completed at IIT-Madras Industrial Biotechnology ETA.

A **Product Commercialization Program** has been launched in the 2017-18 to hasten the product commercialization process by providing support to projects that have completed early stage validation. A Product Commercialization Program Fund (PCP Fund) was initiated in 2018-19 for funding start-ups with matured products/technologies for meeting the challenges towards large scale commercialization. In 2019-2020 three start-ups were provided support under PCP fund and first instalment of funding towards business plan, scale-up and commercialization activities was released. From January 2020, based on the amended guidelines, PCP Fund call is open throughout the year, proposals are submitted online and evaluation done once in every quarter. Any Indian Biotech Start-up with products which are nationally relevant and are above TRL-7 stage are eligible for funding through this scheme.

BIRAC Regional Centres: Engaging with Regional Communities to map innovations and support entrepreneurs

BIRAC now has 4 regional centres: BRIC at IKP, Hyderabad; BREC at CCAMP, Bangalore, BRBC at Venture Centre, Pune and BRTC (for East & North East) at KIIT-TBI.

BIRAC Regional Innovation Centre (BRIC) under Phase 3, mapping of 12 clusters is undergoing. BRIC has conducted 10 idea expositions, 15 networking meetings, 15 workshops and networking meetings on IP, funding opportunities, regulatory guidance and capacity building requirements in Tier II & Tier III cities engaging innovators and connected 1500 innovators, 150+ entrepreneurs in academia, industry, research institutions and incubators.

BIRAC Regional Entrepreneurship Centre (BREC) conducted various awareness events, workshops, national level entrepreneurial challenges, boot camps etc. with a view to boost entrepreneurship in the Indian biotech sector. In three years of existence, BREC reached out to 1900+ students, mentored 600+ start-ups, facilitated more than 500 one-on-one meetings between start-ups and investors and mobilized 6000+ registrations for NBEC.

BIRAC Regional Bio-innovation Centre (BRBC) provided training to 20 incubation managers and assisted 80+ start-ups for regulatory queries, provided mentor match service to 130+ entrepreneurs, facilitated 200+ one on one meetings with specialized experts. Camps on specialized topics were also organized.

BIRAC Regional Techno-Entrepreneurship Centre for East & North East (BRTC-E&NE) at KIIT-TBI conducted various regional events and reached out to 900+ innovators in the east and north east region. These dedicated efforts are aimed to facilitate ecosystem biotech innovation ecosystem in the region which is weak at present.



BIRAC working towards fulfilment of the goals of the National Mission Programs: Make in India & Start-up India

The Make in India (MII) Cell at BIRAC ensures wider dissemination of the Government programmes and other information relevant to the establishment and growth of start-ups, SMEs and Companies. After the successful completion of Make in India 1.0, the facilitation cell at BIRAC under the guidance of DBT has formulated the Make in India Action Plan 2.0. The progress of MII 2.0 action plan is reviewed by DPITT.

MII cell also contributes under the Start-up India action plan integrating through BIRAC's mandate by facilitating funding and incubation support to start-ups. BIRAC's commitment to Start-up India to build 50 biotech incubators, 5 regional centres and supporting 2000 start-ups by 2020 is mapped by this cell. Policy level suggestions, initiatives, India's Bio-economy mapping, sectoral reports, identifying and creating opportunities at national and international forums are facilitated by this cell. Global Bio-India 2019 was spear headed through secretariat at Make In India Cell.

Industry-Academia Collaborative Mission for Accelerating Discovery Research to Early Development for Biopharmaceuticals - "Innovate in India for Inclusiveness (i3)"

The program named Innovate in India (i3) is an industry- academia collaborative mission of Department of Biotechnology (DBT) in collaboration with World Bank for accelerating discovery research to early development of Biopharmaceuticals and will be implemented by BIRAC. The program was approved by the Cabinet for implementation in May 2017 with a total cost US\$ 250 million which is 50% co-funded by World Bank.

National & International Partnerships to Amplify our Mandate

BIRAC is cognisant of the fact that transformation of an idea to product would need joint efforts and engagement of various stakeholders. It is with this aim, BIRAC has expanded its partnerships and alliances with both Indian and international agencies. Some of the partnerships provide funding while others open networks and knowledge for India's start-up and SME community.

Our partnership with **Ministry of Electronics and IT (MeitY)** in the area of medical electronics (Industry Innovation Programme on Medical Electronics) focuses on boosting innovation capabilities in electronics, software, algorithms and hardware in a range of areas such as imaging and navigation to technologies for chronic. A total of 36 projects were funded in three rounds of selection during 2016-18. Most of the funded projects have successfully completed and few remaining projects are nearing completion in next six months. Four of the funded product has reached commercialization stage. There are seven more products/technologies which are at pre-commercialization phase.

Our partnership with **Bill & Melinda Gates Foundation** has gained strength through launch and implementation of Grand Challenges India where BIRAC is a project management partner in the tripartite collaboration between DBT, BMGF and BIRAC. In 2019-20, GCI continued its work in the areas of Agriculture and Nutrition, Sanitation and hygiene, Data analysis, knowledge integration and dissemination, maternal and child health, and encouraging ideation. A new theme 'Immunizations and Infectious Diseases' was also added to the portfolio of the partnership.

NESTA UK has launched a global Longitude Prize aiming to find several solutions to AMR. BIRAC's partnership with NESTA is aimed at supporting innovators working for innovative diagnostics for anti-microbial resistance (AMR). This year, BIRAC and NESTA organized a 3 days residential accelerator programme for the discovery award winners and awarded BOOST GRANT support of up to GBP 100,000 each to three winners after the accelerator programme. The Boost Grant will further help these innovators compete for the Longitude Prize.

Access to primary and secondary care healthcare facilities remains a challenge for many of our start-ups who are developing cutting edge med-tech products. Our partnerships with **WISH Foundation** attempts to provide access to these facilities such that the products being developed can be validated in 'field settings'. Four technologies/year are being validated through field testing in PHCs, low resource setting or tertiary care centres under this partnership. So far three technologies/products have been validated and white papers along with recommendations of the studies have been produced. Validation studies for 5 more technologies are under way.

Our continuing partnership with the Judge Business School, **University of Cambridge, UK** is engaged in connecting our BIG innovators with the deep innovation ecosystem of Cambridge and beyond. In 2019-20 we sent **five BIG grantees** to Cambridge to train in business and technical aspects of their enterprises in the flagship Ignite workshop. The partnership with Business Finland is for connecting Finnish innovation ecosystem with India. In December 2019, three BIRAC supported start-ups participated in the Global start-ups event SLUSH, to leverage a global platform to interact with international investors, participate in various talks, interviews, panels and pitches.

We have also joined hands with **Tata Institute Social Sciences (TISS), Mumbai** to help our social innovators.

BIRAC has partnered with **TiE-Delhi NCR** for mentoring biotech start-ups and providing continuous platform for BIRAC supported start-ups to interface with funders and investors. Third edition of BIRAC-TiE WInER Award (Women In Entrepreneurial Research) was launched this year and 15 women entrepreneurs awarded. Six awareness workshops for university/college students were also conducted in tier 2 cities under BIRAC-TiE partnership umbrella.

BIRAC has also signed a MoU with **Indian Angel Network (IAN)**, to bring the biotechnology start-ups closer to angel investors. Mentoring from an Investor's perspective to technology driven founders of Biotech Start-ups prepares them for refining Go to market strategy, fund raising. Bio-Angel network – a new initiative to bring on-board Angels, HNIs and early stage VCs to invest in Biotech Start-ups was announced at the Global Bio-India 2019. This will be implemented using IAN platform.

On the 8th Foundation Day, BIRAC brought up more opportunities for the ecosystem growth and expansion namely, forged 2 new partnerships-NASSCOM and Innovate-UK/ UKRI; Launch of 8 new products by start-ups, announcement of 2nd edition of SoCH, release of sectoral reports on Indian Bio-economy and felicitation of WInER awardees.

Platforms: Bringing the evolving Community together for Collaborations

BIRAC pro-actively nurtures emerging start-ups and SMEs through seminars, workshops and other platforms. In 2019-20 several Roadshows, Grant writing, IP, regulatory and hands-on training, business mentoring workshops were organised. Several seminars and workshops were also conducted through our Partners. In addition, a mega event Global Bio India 2019 was also conducted during 19-20. This was first of its kind event organized with a view to showcase the strengths of Indian Biotech Ecosystem to the outside world. The three-day long event witnessed a rich technical program of 40 sessions, CEO roundtables, workshops, product launches, new initiative launches, etc. It attracted 3000+ delegates, 190 exhibitors, 25+ countries, 300+ start-ups, 50+ incubators, 60+ Research Institutes, 800+ business meetings scheduling and representation from 10+ states.

We have created platforms such as **Innovators Meet** (conducted as part of Global Bio- India), **Foundation Day** (8th Foundation Day was organised in March 2020) for networking/collaborations and providing a national level outreach platform for Start-ups and Entrepreneurs. The flagship platform for BIG start-ups, the 5th annual BIG Conclave was organised in July 2019 with the intention of bringing together biotech start-ups to one platform. Together, these platforms have allowed innovators to meet, share information and best practices, catalyse partnerships and networking. BIRAC representation also actively participated in BIO-Asia 2019. BIRAC sponsored panel discussion on Collaborative R&D and 5 Start-up Stage awards were supported at BIO-Asia 2019.

3i Portal

3i Portal has been providing a user friendly and convenient solution for effective management of various funding schemes of BIRAC. New features are added to the portal on regular basis in order to enhance the ease of use for all types of users. The portal is now being expanded to manage loan recoveries under BIPP and SBIRI. In addition, data mining and analysis has been made easier through number of newly added reports. The portal has assisted in conducting surveys and generating reports based on the same. New features to be implemented in near future include advanced search options such as single click view of all information related to a project.

In addition, it is also envisaged to develop a networking portal as a platform to connect the biotech community (at national level as the first step and subsequently at global level). The networking portal shall provide information about products and services offered by various companies, key areas of active research being undertaken by companies/academic institutes/entrepreneurs, technologies available for licensing/sale etc.

A **dedicated e-portal www.biotech-solutions.com** was launched on the Global Bio-India 2019 to showcase commercialized products from BIRAC supported start-ups. More than 100 products and technologies are showcased here.

Recognition for BIRAC Start-ups & SMEs

Several BIRAC supported start-ups and SMEs have received recognition from other national and international agencies for their products and technology development.

1. YOSTRA Labs Pvt Ltd received NASSCOM Desing4India Award (2018)
2. Janitri Innovations Pvt Ltd was Silver Winner at Medicall in July 2019
3. Kbcolls: KBcols sciences won the green chemistry innovation award (start-up category) at SERB-IGCW awards 2019.
4. Arjuna Natural Extracts Pvt Ltd. Joint MD Dr. Benny Antony has been conferred with the National Intellectual Property Award for the year 2019 in the category of Top Individual for Patents and Commercialization



5. Rope Production Centre was conferred with Cavinkare Innovation Award for introducing break through changes by innovating Rope Production machines such as Banana pseudostem rope cutting machine, automatic rope making machine, power rope machine and power rope winding machine
6. String Bio nabbed itself a US\$100,000 grant at the inaugural Future Food Asia Award (FFAA). Dr. Ezhil Subbaine received Women Transforming India award by Niti Aayog
7. Dozee Health Pvt Ltd has been recognized as Tech Start-up of 2019 at ASSOCHAM's Emerging Digital Technology Summit & Awards 2019
8. Aspartika Biotech Pvt Ltd conferred with National Entrepreneurship Award 2019 (Ministry of Skill Development and Entrepreneurship) in the Renewable Energy and Waste Management under A1 category of the Enterprise Award Track
9. Sensivision Pvt Ltd got selected for Karnataka Govt Start-up Elevate100 in 2019 also selected to be mentored by PATH - Tata Trust "Quest" program specifically focused on Clinical Trial/Validation.
10. Cutting Edge Medical devices INVENT MP - an investment of Rs. 35,00,000/- on convertible notes a program by CIIE - IIMA, Tata Trust, Rajasthan Industries Corporation - RICO and Start-up Oasis.
11. Cutting Edge Medical devices 3rd Prize: Pitch Day - Leaders in Innovation Fellowship Program by Royal Academy of Engineering, London, UK among more than 60 participants across 5 countries. details of the program attached herewith
12. Dr. Shaon Ray Chaudhury: The technology won the Visitor's award in Technology Category in 2019 (Waste to weather Innovative technologies)
13. Miraqules med solutions Pvt Ltd: Won the Mass Challenge Platinum Winner Title (2019) Won the Dare to Dream contest organized by DRDO
14. Vidcare Solutions: Winner of the prestigious India Innovation Growth Program 2.0 (2019), by Lockheed Martin, DST, Tata Trusts, FICCI, etc.
15. Cyca Oncosolutions: She loves tech India 2019, Winner of the prestigious India Innovation Growth Program 2.0 (2019), by Lockheed Martin, DST, Tata Trusts, FICCI, etc.
16. Coeo Labs Pvt Ltd won the Commonwealth Secretary-General's Innovation for Sustainable Development Award, 2019
17. Pandorum Technologies Pvt Ltd. Won 1st place at the 2019 Entrepreneurship World Cup (India),
18. Sea6 Energy Pvt Ltd was among five start-ups recognised by NABARD for their innovative agri-focused ventures (July 2019)
19. Prantae Solutions Pvt Ltd. Was among Top 10 start-up of Odisha by Silicon India, 2019 and was recognized as Pride of Odisha in Make in Odisha Conclave 2018, by Govt of Odisha
20. Eyestem Pvt Ltd. Was Selected by Niti Aayog to represent India's start-up ecosystem at the India Singapore summit
21. Empathy Design Labs won IOT NEXT Award Top 2 Country finalist, 2019,
22. Nesa Medtech Pvt Ltd. Winner at Medtech Innovator Singapore Pitch Event (2019)
23. Muse Diagnostics Pvt Ltd. Winner of 2019 ASME Innovation Showcase (ISHOW)
24. Aumeesh Tech Pvt. Ltd. Won following awards:
 - Winner of event "Upstart pioneer" Organized in IIT-Kanpur at Techkriti.
 - Winner of 10th NCPEDP-MPHASIS Universal Design Award in 2019
25. Aodh Lifesciences Private Limited won Best Innovation Award from All India Achiever's Foundation and Best Innovation Award in Micro Industry Category From Telangana
26. Evelabs Technologies Pvt Ltd was the first Indian start-up to get selected to IMEC.iSTART program conducted by imec in Belgium and best Innovation in CAHO tech 2019 BRINC Indian program
27. Mr. Rupa Manoj: Global Forum for Innovations in Agriculture (Sustainable farming) – 2019 winner - Best Innovation Crop protection Crop Protection
28. Biodesign Innovation Labs: received XPOMET Medicinale Start-up Sponsored Germany visit for start-up segment and Qualcomm design India challenge 10 top start-up award

29. Startoon Labs Private Limited won following awards:

- Won Gold Award in Medical Made in India Innovation Award 2019
- Won “Most Innovative Idea – P&S Track” award at BMC Competition 2019 organized by IIT Kharagpur
- Won CAHOTTECH 2019 start-up award

30. Turtle Shell Technologies Private Limited: Top 5 Innovations in Medical Made in India 2019

31. NEMOCARE WELLNESS PRIVATE LIMITED won following awards:

- Winner of Asia Hardware Battle 2019, China hosted by Technode China
- Part of GSBI in residence social accelerator program at Miller Center for Social Entrepreneurship, Santa Clara University, USA

Key achievements

During the year BIRAC supported projects in all major areas of biotechnology sector i.e. Healthcare, Agriculture, Clean Energy & Environment, Bioinformatics and Infrastructure as part of meeting its objective of promoting affordable innovation in key social sectors. Healthcare covers the areas of Drugs (including drug delivery), Biopharmaceuticals (including Bio-similars and regenerative medicine), Vaccines/Clinical trials & Devices/diagnostics, Bioinformatics covering Artificial intelligence, Big Data Analysis, IoT's & software development, whereas Agriculture covers Marker assisted selection (MAS), RNAi, Transgenics & soil health management and Veterinary & Aquaculture and Clean Energy & Environment includes secondary agriculture.

The average decision making time to support a project for funding was **139 days** during the financial year 2019-20.

During the year, **27** BIRAC supported grantees got funding from agencies other than DBT which is a reflection of the quality of innovation/ enterprise which has been created with BIRAC's support.

During the year, 40 projects out of the identified 65 projects achieved Technology Readiness Level -7 (TRL-7) amounting to **60%** of the total number of projects which had been identified for achieving TRL-7. The projects which have reached TRL-7 are ready to move into demonstration/ late stage validation and would be a pipeline for the product commercialization. In addition, **15** new products/ technologies have been market launched/ Commercialized (TRL-9) and **10** product/technologies have completed all essential requirements for market launch (TRL-8) with support from BIRAC in 2019-20.

550 beneficiaries were supported by BIRAC under its various schemes during 2019-20. Four regulatory workshops, apart from trainings provided by BIRAC incubators, were conducted during the year, benefitting 452 participants. **530 incubatees** have been incubated in the bio-incubation system of BIRAC during the year 2019-20.

The online appraisal process for the financial year 2018-19 was completed and ratings were declared to the employees. The vigilance clearance reports of the eligible employees were submitted to the concerned vigilance officer for approval and onward submission. The updation in the succession plan has been approved by the Board of Directors and implemented across the organization and an integrated, systematic approach has been adopted for identifying, developing, and retaining capable and skilled employees in line with current and projected organizational objectives. The Departmental Promotional Committee (DPC) meeting is held twice in a financial year i.e. in the month of June and December. The DPC met on June 26, 2019 and on December 26, 2019 for contract renewal as well as promotion of employees. In F.Y. 2019-20, 14% of the employees were imparted training in Center of Excellence Institutes. The Human Resources Management System (HRMS) integrated with finance is regularly updated for improving process efficiency, managing organizational hierarchy and simplifying financial transactions of all types.

The total amount mobilized from sources other than the Department of Biotechnology (DBT), which is the Administrative Ministry was **30%** of the annual allocation from DBT. During the financial year 2019-20, the increase in revenue generated as a % of the administrative and office expenses over the previous year was **92%**.

During the year, National Biopharma Mission has supported development of **10** Biopharma products which over the next **2** years will move closer to the market. For Supporting product development of Bio-therapeutics and Medical devices **11** shared facilities were identified for funding. These facilities on becoming functional will provide services for analytical characterization of bio-therapeutics, pilot scale manufacturing, prototyping and EMI/ EMC testing of medical devices. **2** Translational Research Consortia (TRC) were established under the National Biopharma Mission. **01** TRC for Dengue with **3** clinical sites and **5** premier institutes across the country led by ICGEB, Delhi and **01** TRC for Chikungunya with **4** hospitals and **3** premier research institutes across the county, led by Manipal Academy of Higher



Education. To support Technology transfer from Academia to Industry and also promote sponsored research in Institutes 5 Technology Transfer Offices have been identified and supported and are operational. During this year, the Mission supported 4 thematic workshops in the areas of clinical research, regulatory compliances, technology transfer and Product development (Biopharmaceuticals and medical devices). About 1022 candidates were trained including 357 female candidates. 11 professionals supported under the Mission's Technology Transfer and Commercialization Trainings have been recognized as Registered Technology Transfer Professionals by ATTP.

Over the 8 years, BIRAC has been able to nurture and grow the biotech ecosystem in the country through a combinatorial approach that involves instruments such as funding for product development, advice and mentor start-ups in a range of technical, IP and business issues, create and operationalise networks for knowledge sharing as well as build effective partnerships. The cumulative strategy is to take the Indian biotech industry to become a global innovation destination in R&D and manufacturing such that our academia, translational centres, incubators and industry become hubs for ideation and development of cutting edge products that can bring positive social impact to communities and help India achieve her goal of being a US\$100Billion economy by 2025.

3. AUDIT COMMITTEE

BIRAC is a Schedule B CPSE under the Department of Biotechnology, Ministry of Science and Technology registered as a Section 8 Not-for-profit Company under the Companies Act, 2013. The constitution of the Audit Committee is a requirement under the Corporate Governance Guidelines issued by the Department of Public Enterprises (DPE). The Audit Committee had four directors, three of them being non-official Independent Directors viz. Prof. Akhilesh Tyagi as Chairman and Prof. Ashok Jhunjhunwala, Prof. Pankaj Chandra and Dr. Mohd. Aslam as members. The term of office of the Independent Directors was up to March 15, 2020. The appointment of new non-official directors is under process with the Department of Public Enterprises (DPE)

4. FINANCIAL STATEMENT

The financial statement is made on accrual method of accounting under the historical cost convention, in accordance with the accounting standards issued by the Institute of Chartered Accountants of India.

5. EXTRACT OF THE ANNUAL RETURN

In accordance with Section 134(3)(a) of the Companies Act, 2013, an extract of the Annual Return in the prescribed format is appended as Annexure 1 to the Directors' Report and also available on www.birac.nic.in (web link of BIRAC website).

6. NUMBER OF MEETINGS OF THE BOARD

The Board met 4 times during the financial year, the details of which are given in the Corporate Governance Report, which forms a part of the Annual Report. The intervening gap between any two meetings was as prescribed under the Companies Act, 2013.

7. PARTICULARS OF CONTRACTS OR ARRANGEMENTS MADE WITH RELATED PARTIES

BIRAC has not entered into any contracts or arrangements with related parties as per the provisions of Section 188(1) of the Companies Act, 2013.

8. RTI

BIRAC follows all the necessary procedures and processes in accordance with the Right to Information Act, 2005, as amended from time to time and Government Guidelines. It has appointed a Central Public Information Officer (CPIO) and an Appellate Authority. The details are available on its website (www.birac.nic.in)

9. RISK MANAGEMENT POLICY

BIRAC has a Risk Management Policy in place approved by the Board. The mandate of BIRAC is to nurture innovation by mentoring and funding high risk, highly innovative projects by itself or with multiple partners throughout the innovation value chain, namely, early stage innovation research, product development, product validation and commercialization. BIRAC, being a Government organization, the need for Risk Management is reflected in its commitment to ensure transparency and public accountability of its partnerships, activities and schemes. The schemes, activities, workshops and partnerships are monitored by Standard applications, formats, MoUs and funding agreement which have inbuilt controls and accountability mechanisms at every stage.

There is a proper technical evaluation of projects by a Committee of experts and an in-house legal drafting and vetting process, financial due diligence and screening of projects is undertaken, internal controls and audit protocols are in place with the Comptroller & Auditor General of India (C&AG) conducting supplementary audit.

Risk Management monitoring process in the organization is based on compliance reporting in the Risk calendar which is circulated to all the Department Heads with comprehensive parameters drawn from the Risk Register for managing schemes, activities and providing funding support. The Board ensures the integration and alignment of the risk management system with the corporate and operational objectives and also ascertains that risk management is undertaken as a part of normal business practice and not as a separate task at set times.

10. DISCLOSURE UNDER THE SEXUAL HARASSMENT OF WOMEN AT WORKPLACE (PREVENTION, PROHIBITION AND REDRESSAL) ACT, 2013

BIRAC has in place an Internal Complaints Committee under the Prevention of Sexual Harassment of Women at the Workplace (Prevention, Prohibition and Redressal) Act, 2013 and the rules notified thereunder with the terms of reference as required under the CSS (Conduct) Rules and the Guidelines laid down by the Hon'ble Supreme Court in Vishaka and others vs. State of Rajasthan. The mandate of the Internal Complaints Committee is to redress the complaints, if any, received regarding sexual harassment as defined in the said Act.

All employees of BIRAC including regular employees, contractual, part time, daily wage earners, either employed directly or through an agent or contractor, whether for remuneration or not, trainees, apprentices, those working on a voluntary basis, directors and experts on various committee are covered under this policy.

The organisation has not received any grievances under this Act, during the financial year 2019-20. During the year 2019-20, a workshop was conducted on 'Gender Sensitization & Sexual Harassment at Workplace' to sensitise the employees on Gender issues and educate them on the various aspects of the Act.

11. MEMORANDUM OF UNDERSTANDING (MOU)

BIRAC had entered into the sixth Memorandum of Understanding (MoU) for the financial year 2019-20 with the Administrative Ministry, the Department of Biotechnology (DBT), Ministry of Science and Technology on May 24, 2019, as per the Guidelines issued by the Department of Public Enterprises.

BIRAC was also awarded 'Excellent' grading for its achievements against the targets set out in the MoU for the year 2018-19 by the Department of Public Enterprises (DPE).

12. PROCUREMENT FROM MICRO AND SMALL ENTERPRISES (MSEs)

The total annual procurement for the financial year 2019-20 was Rs. 1.42 Crore, out of which the procurement from MSEs was Rs. 0.97 Crore amounting to 68% of the total procurement and the procurement from MSEs owned by women was Rs. 0.06 Crore amounting to 6% of the total procurement from MSEs. The expected annual procurement from MSEs for the financial year 2020-21 is Rs. 2, 57,05,000.

13. DIRECTOR'S RESPONSIBILITY STATEMENT

In accordance with the provisions of Section 134(5) of the Companies Act, 2013, the Directors' state that:

- in the preparation of the annual accounts, the applicable accounting standards had been followed along with proper explanation relating to material departures;
- the directors had selected such accounting policies and applied them consistently and made judgements and estimates that are reasonable and prudent so as to give a true and fair view of the state of affairs of the company at the end of the financial year and of the profit and loss of the company for that period;
- the directors had taken proper and sufficient care for the maintenance of adequate accounting records in accordance with the provisions of this Act or safeguarding the assets of the Company and for preventing and detecting fraud and other irregularities;
- the directors has prepared the annual accounts on a going concern basis; and
- the directors had devised proper systems to ensure compliance with the provisions of all applicable laws and that such systems were adequate and operating effectively.

14. CORPORATE GOVERNANCE

A separate report on Corporate Governance is annexed with this report.

15. AUDITORS' REPORT

M/s. RMA & Associates, Chartered Accountants are the Statutory Auditors of the Company appointed by the Comptroller and Auditor General of India for the period under review (Financial year 2019-20). The Auditors' report and CAG report are appended to the financial statements and are self-explanatory and suitably explained in the various Notes to the accounts.

16. BANKERS

The Bankers of the organisation are:



- Union Bank of India (formerly Corporation Bank Limited), Block 11, CGO Complex, Lodhi Road, New Delhi – 110003.
- State Bank of India, Core 6, SCOPE Complex, Lodhi Road, New Delhi – 110003.

17. ABOUT DIRECTORS

BIRAC is guided by a Board comprising of senior professionals, academicians, policy makers and eminent professionals from the industry. Dr. Renu Swarup, Secretary, DBT is the Chairperson of BIRAC. Ms. Anju Bhalla, Joint Secretary, DST has been given additional charge as Managing Director, BIRAC from April 10, 2020. The tenure of Dr. Mohd. Aslam, as Managing Director, BIRAC ended on April 09, 2020. Dr. Aslam, however, continued to be the Government Nominee Director on the Board of BIRAC till November 30, 2020.

In addition to Dr. Renu Swarup, Secretary DBT and Chairperson, BIRAC, Ms. Anju Bhalla, Joint Secretary, DST and is current Managing Director, BIRAC on additional Charge. Dr. Mohd. Aslam, Scientist 'G', Department of Biotechnology held additional Charge of Managing Director till 9th April 2020 and Government Nominee Director till 30th November 2020. The Board also comprised of four independent director i.e. Prof. Ashok Jhunjhunwala, Professor, IIT Chennai, Prof. Akhilesh Tyagi, Professor of Plant Molecular Biology, South Campus, Delhi University, Prof. Pankaj Chandra, Vice Chancellor and Chairman, Board of Management of Ahmedabad University and Shri. Naresh Dayal, IAS and Retd. Secretary, Ministry of Health and Family Welfare. The term of these independent directors ended on March 15, 2020.

18. CONSERVATION OF ENERGY, TECHNOLOGY ABSORPTION AND FOREIGN EXCHANGE EARNINGS AND OUTGO

The information pertaining to conservation of energy, technology absorption, foreign exchange earnings and outgo as required under Section 134(3)(m) of the Companies Act, 2013 read with Rule 8(3) of the Companies (Accounts) Rules, 2014 is as follows:

A. Conservation of Energy

Disclosure regarding conservation of energy is not applicable to our Company.

B. Technology Absorption, Adoption and Innovation

Particulars required under Rule 8(3)(B) of the Companies (Accounts) Rules, 2014 have not been given since the company has no direct Research and Development activity. However, the main function of BIRAC is to facilitate and provide financial support for generation and translation of innovative ideas into biotech products/technologies, foster innovation in all places of research and to encourage diffusion of innovation through partners. The details are provided in the Management Discussion and Analysis Report.

C. Foreign Exchange Earnings & Outgo

The foreign exchange earnings and outgo during the year are given below:

Grant received in foreign exchange to the extent utilized (in Rs.)	15,59,58,464
Foreign Exchange outflow (in Rs.)	
A. Technology Transfer	4,58,339
B. Books, Journal and Database Subscriptions	46,18,556
C. Entrepreneurship Development	24,60,077
A. Advertisement/Publicity/Publication	12,73,625
B. Foreign Travel and Meetings	5,46,055
CIF Value of Import	Nil

19. Particulars of loans, guarantees or investments under section 186:

The details of Loans and investments as covered under the provisions of Section 186 of the Companies Act, 2013 are given in notes no. 7 and 8 of notes forming part of Balance Sheet as on March 31, 2020.

ACKNOWLEDGMENT

The Directors wish to place on record their appreciation for the valuable guidance and co-operation extended by the Auditors, Banks and various Government agencies. The Directors also wish to place on record their appreciation for the sincere efforts put in by the executives and staff of the Company.

For and on behalf of Board
Sd/-

Dr. Renu Swarup
Chairperson

Date: 18.12.2020
Place: New Delhi

EXTRACT OF ANNUAL RETURN
as on the financial year ended on March 31, 2020

[Pursuant to section 92(3) of the Companies Act, 2013 and rule 12(1) of the Companies (Management and Administration) Rules, 2014]

I. REGISTRATION AND OTHER DETAILS:

- i) CIN: **U73100DL2012NPL233152**
- ii) Registration Date: **March 20, 2012**
- iii) Name of the Company: **Biotechnology Industry Research Assistance Council**
- iv) Category / Sub-Category of the Company: Section 8 Private Limited Company limited by shares (Government Company)
- v) Address of the Registered office and contact details:
1st floor, MTNL Building, 9, CGO Complex, New Delhi – 110 003.
Website: **www.birac.nic.in** Email: **birac.dbt@nic.in** Tel: +91-11-24389600
- vi) Whether listed company Yes / No: No
- vii) Name, Address and Contact details of Registrar and Transfer Agent, if any:
Skykine Financial Services Pvt. Ltd., D-153 A, 1st Floor, Okhla Industrial Area, Phase - I, New Delhi – 110 020
Contact Person: Shri Virender Rana

II. PRINCIPAL BUSINESS ACTIVITIES OF THE COMPANY

All the business activities contributing 10% or more of the total turnover of the company shall be stated:-

Sl. No.	Name and Description of main products / services	NIC Code of the Product/service	% to total turnover of the company
1	Research and experimental development on natural sciences and engineering (NSE)	72100	100%

III. PARTICULARS OF HOLDING, SUBSIDIARY AND ASSOCIATE COMPANIES -

S.NO	NAME AND ADDRESS OF THE COMPANY	CIN/GLN	HOLDING/ SUBSIDIARY /ASSOCIATE	% of shares held	Applicable Section
1	N.A.	N.A.	N. A	N. A	N.A

IV. SHARE HOLDING PATTERN (Equity Share Capital Breakup as percentage of Total Equity)



i) Category-wise Share Holding

Category of Shareholders	No. of Shares held at the beginning of the year				No. of Shares held at the end of the year				% Change during the year
	Demat	Physical	Total	% of Total Shares	Demat	Physical	Total	% of Total Shares	
A. Promoters									
(1) Indian									
i) Individual/ HUF	-	-	-	-	-	-	-	-	-
ii) Central Govt	NA	10000	10000	100	NA	10000	10000	100	NIL
iii) State Govt (s)	-	-	-	-	-	-	-	-	-
iv) Bodies Corp.	-	-	-	-	-	-	-	-	-
v) Banks/FI	-	-	-	-	-	-	-	-	-
vi) Any Other	-	-	-	-	-	-	-	-	-
Sub-total (A) (1):-	NA	10000	10000	100	NA	10000	10000	100	NIL
(2) Foreign									
a) NRIs - Individuals	-	-	-	-	-	-	-	-	-
b) Other - Individuals	-	-	-	-	-	-	-	-	-
c) Bodies Corp.	-	-	-	-	-	-	-	-	-
d) Banks / FI	-	-	-	-	-	-	-	-	-
e) Any Other....	-	-	-	-	-	-	-	-	-
Sub-total (A) (2):-	-	-	-	-	-	-	-	-	-
Total shareholding of Promoter (A) = (A) (1)+(A) (2)	NA	10000	10000	100	NA	10000	10000	100	NIL
B. Public Shareholding									
1. Institutions									
a) Mutual Funds	-	-	-	-	-	-	-	-	-
b) Banks/FI	-	-	-	-	-	-	-	-	-
c) Central Govt	-	-	-	-	-	-	-	-	-
d) State Govt(s)	-	-	-	-	-	-	-	-	-
e) Venture Capital Funds	-	-	-	-	-	-	-	-	-
f) Insurance Companies	-	-	-	-	-	-	-	-	-
g) FIIs	-	-	-	-	-	-	-	-	-
h) Foreign Venture Capital Funds	-	-	-	-	-	-	-	-	-
i) Others (specify)	-	-	-	-	-	-	-	-	-
Sub-total (B)(1):-	-	-	-	-	-	-	-	-	-
2. Non-Institutions									
a) Bodies Corp.									
i) Indian	-	-	-	-	-	-	-	-	-
ii) Overseas	-	-	-	-	-	-	-	-	-
b) Individuals									

i) Individual shareholders holding nominal share capital upto Rs. 1 lakh	-	-	-	-	-	-	-	-	-
ii) Individual shareholders holding nominal share capital in excess of Rs 1 lakh	-	-	-	-	-	-	-	-	-
c) Others (specify)	-	-	-	-	-	-	-	-	-
Sub-total (B)(2):-	-	-	-	-	-	-	-	-	-
Total Public Shareholding (B) = (B)(1) + (B)(2)	-	-	-	-	-	-	-	-	-
C. Shares held by Custodian for GDRs & ADRs	-	-	-	-	-	-	-	-	-
Grand Total (A+B+C)	NA	10000	10000	100	NA	10000	10000	100	NIL

(ii) Shareholding of Promoters

Sl. No.	Shareholder's Name	Shareholding at the beginning of the year			Shareholding at the end of the year			
		No. of Shares	% of total Shares of the company	% of Shares Pledged/encumbered to total shares	No. of Shares	% of total Shares of the company	% of Shares Pledged/encumbered to total shares	% change in Share holding during the year
1	President of India	9000	90%	Nil	9000	90%	Nil	Nil
2	Dr. Renu Swarup, Secretary, DBT and Chairperson, BIRAC (on behalf of the President of India)	900	9%	Nil	900	9%	Nil	Nil
3	Dr. Mohd. Aslam, MD, BIRAC (on behalf of the President of India)	100	1%	Nil	100	1%	Nil	Nil
	Total	10000	100%	Nil	10000	100%	Nil	Nil

(iii) Change in Promoters' Shareholding (please specify, if there is no change)

Sl. No.		Shareholding at the beginning of the year		Cumulative Shareholding during the year	
		No. of Shares	% of total Shares of the company	No. of Shares	% of total Shares of the company
	At the beginning of the year	NIL	NIL	NIL	NIL
	Date wise Increase/ Decrease in Promoters Shareholding during the year specifying the reasons for increase/decrease (e.g. allotment/ transfer/bonus/ sweat equity etc):	NIL	NIL	NIL	NIL
	At the End of the year	NIL	NIL	NIL	NIL

(iv) Shareholding Pattern of top ten Shareholders (other than Directors, Promoters and Holders of GDRs and ADRs):

Sl. No.	For Each of the Top 10 Shareholders	Shareholding at the beginning of the year		Cumulative Shareholding during the year	
		No. of Shares	% of total Shares of the company	No. of Shares	% of total Shares of the company
	At the beginning of the year	NIL	Nil	Nil	Nil
	Date wise Increase/Decrease in Shareholding during the year specifying the reasons for increase/decrease (e.g. allotment/ transfer/ bonus/sweat equity etc.)	NIL	Nil	Nil	Nil
	At the End of the year (or on the date of separation, if separated during the year)	NIL	Nil	Nil	Nil

(v) Shareholding of Directors and Key Managerial Personnel

(A) Dr. Renu Swarup, Chairperson (on behalf of the President of India)

Sl. No.	For Each of the Directors and KMP	Shareholding at the beginning of the year		Cumulative Shareholding during the year	
		No. of Shares	% of total Shares of the company	No. of Shares	% of total Shares of the company
	At the beginning of the year	900	9	900	9
	Date wise Increase / Decrease in Shareholding during the year specifying the reasons for increase / decrease (e.g. allotment / transfer / bonus/ sweat equity etc.)	NIL	Nil	Nil	Nil
	At the End of the year	900	9	900	9

(B) Dr Mohd. Aslam, Managing Director (on behalf of the President of India)

Sl. No.	For Each of the Directors and KMP	Shareholding at the beginning of the year		Cumulative Shareholding during the year	
		No. of Shares	% of total Shares of the company	No. of Shares	% of total Shares of the company
	At the beginning of the year	100	1	100	1
	Date wise Increase / Decrease in Shareholding during the year specifying the reasons for increase / decrease (e.g. allotment / transfer / bonus/ sweat equity etc)	NIL	Nil	Nil	Nil
	At the End of the year	100	1	100	1

V. INDEBTEDNESS:

Indebtedness of the Company including interest outstanding/accrued but not due for payment

	Secured Loans excluding deposits	Unsecured Loans	Deposits	Total Indebtedness
Indebtedness at the beginning of the financial year	Nil	Nil	Nil	Nil
i) Principal Amount				
ii) Interest due but not paid				
iii) Interest accrued but not due				
Total (i+ii+iii)	Nil	Nil	Nil	Nil
Change in Indebtedness during the financial year	NA	NA	NA	NA
• Addition				
• Reduction				
Net Change	Nil	Nil	Nil	Nil
Indebtedness at the end of the financial year	Nil	Nil	Nil	Nil
i) Principal Amount				
ii) Interest due but not paid				
iii) Interest accrued but not due				
Total (i+ii+iii)	Nil	Nil	Nil	Nil

VI. REMUNERATION OF DIRECTORS AND KEY MANAGERIAL PERSONNEL

A. Remuneration to Managing Director, Whole-time Directors and/or Manager:

Sl. No.	Particulars of Remuneration	Name of MD/WTD/ Manager				Total Amount
		Dr. Mohd. Aslam, Managing Director	--	--	--	
1.	Gross salary (a) Salary as per provisions contained in section 17(1) of the Income-tax Act, 1961 (b) Value of perquisites u/s 17(2) Income-tax Act, 1961 (c) Profits in lieu of salary under section 17(3) Income- tax Act, 1961	N.A as he is holding Additional Charge as Managing Director of BIRAC	-	-	-	-
2.	Stock Option	-	-	-	-	-
3.	Sweat Equity	-	-	-	-	-
4.	Commission - as % of profit - others, specify...	-	-	-	-	-
5.	Others, please specify	-	-	-	-	-
	Total (A)	-	-	-	-	-
	Ceiling as per the Act	-	-	-	-	-

B. Remuneration to other directors

Sl. No.	Particulars of Remuneration	Name of Directors				Total Amount
		Prof. Ashok Jhunjunwala	Prof. Pankaj Chandra	Prof. Akhilesh Tyagi	Shri. Naresh Dayal	
1.	Independent Directors					
	• Fee for attending Board committee meetings (4 Meetings)	40,000	40,000	30,000	30,000	1,40,000
	• Commission	-	-	-	-	-
	• Others, please specify					
	• Audit Committee (4 Meetings)	40,000	40,000	30,000	-	1,10,000
	Total (1)	80,000	80,000	60,000	30,000	2,50,000
2.	Other Non-Executive Directors	Dr. Renu Swarup				
	• Fee for attending board committee meetings	NIL	-	-	-	-
	• Commission	-	-	-	-	-
	• Others, please specify	-	-	-	-	-
	Total (2)	-	-	-	-	-
	Total (B) = (1 + 2)	80,000	80,000	60,000	30,000	2,50,000
	Total Managerial Remuneration	80,000	80,000	60,000	30,000	2,50,000
	Overall Ceiling as per the Act	N.A.	N.A.	N.A.	N.A.	N.A.

C. REMUNERATION TO KEY MANAGERIAL PERSONNEL OTHER THAN MD/MANAGER/WTD *Exempted from disclosure as BIRAC is a government company*

Sl. No.	Particulars of Remuneration	Key Managerial Personnel			
		CEO	Company Secretary	CFO	Total
1.	Gross salary				
	(a) Salary as per provisions contained in section 17(1) of the Income-tax Act, 1961	-	-	-	-
	(b) Value of perquisites u/s 17(2) Income-tax Act, 1961	-	-	-	-
	(c) Profits in lieu of salary under Section 17(3) Income-tax Act, 1961	-	-	-	-
2.	Stock Option	-	-	-	-
3.	Sweat Equity	-	-	-	-
4.	Commission	-	-	-	-
	- as % of profit				
	- others, specify...				
5.	Others, please specify	-	-	-	-
	Total	-	-	-	-

VII. PENALTIES/PUNISHMENT/COMPOUNDING OF OFFENCES:

Type	Brief Description	Details of Penalty/ Punishment/ Compounding fees imposed	Authority [RD/NCLT/ COURT]	Appeal made, if any (give Details)
A. Company				
Penalty	Nil	Nil	Nil	Nil
Punishment	Nil	Nil	Nil	Nil
Compounding	Nil	Nil	Nil	Nil
B. Directors				
Penalty	Nil	Nil	Nil	Nil
Punishment	Nil	Nil	Nil	Nil
Compounding	Nil	Nil	Nil	Nil
C. Other officers in default				
Penalty	Nil	Nil	Nil	Nil
Punishment	Nil	Nil	Nil	Nil
Compounding	Nil	Nil	Nil	Nil



MANAGEMENT DISCUSSION AND ANALYSIS REPORT

MANAGEMENT DISCUSSION AND ANALYSIS REPORT

(Forming Part of the Directors' Report for 2019-20)

INDUSTRIAL STRUCTURE AND DEVELOPMENT

India has shown a consistent improvement in its innovation ranking for the last five years and jumped four positions this year to rank 48 out of 131 economies evaluated worldwide. With this, India becomes one of the top 50 most innovative countries globally. Further, India has retained its position as the most innovative country among Central and South Asian countries. Collective efforts of various government bodies nurturing innovation and entrepreneurship have played a critical role towards making this possible.

Biotechnology is recognized as the sunshine sector. It is expected to contribute \$150 billion USD Bioeconomy by 2025 that will have a multiplier cascading effect in meeting the target of \$5 trillion economy for the country by 2025.

According to the "Indian Bioeconomy Report" published by ABLE and BIRAC in March 2020, Indian Biotech Industry is valued at \$62.5 billion for calendar year 2019 as against \$51 billion in 2018. The BioEconomy registered 23 percent growth compared to the 14.68 percent growth in 2018. The BioEconomy continues to be spearheaded by the BioPharma segment as it alone contributed to 58 percent share of the total BioEconomy by value. Half of the BioPharma economy is through diagnostics and medical devices. Vaccines account for 30 percent of the BioEconomy by value, while biotherapeutics contributed for the rest. BioAgri is the second largest contributor to the country with 19 percent share. Research services' contribution to BioEconomy along with the BioIT and IT healthcare portfolio is estimated at \$9.5 billion. BioIndustrial segment has also performed well. The sector accounted for nearly 8 percent share. However, India continues to import large volumes of products, reagents, components, and raw material. This gap in import and export presents an immense potential that can be harnessed in order to make India a leading producer of Biotechnology and allied products and services.

Government's initiatives and role in harnessing the biotechnology potential of the country have been critical for strengthening the roots of innovations and research and development. BIRAC was set up as a dedicated agency by the Department of Biotechnology for spurring and promoting innovation and entrepreneurship in the Biotech sector. During the last 8 years of its existence, BIRAC has made a significant contribution in developing and strengthening biotech ecosystem in the country through its various flagship programmes such as BIG, BIPP, SBIRI, PACE, BioNEST, SITARE, eYUVA, SIIP etc. Besides various funding programs that have spurred the growth of start-ups in the field of biotechnology, BIRAC has made serious efforts to make early stage capital/ seed money accessible to the start-ups through equity schemes like SEED, LEAP, AcE; as well as forged various national and international partnerships to facilitate networking and stakeholder connects. Through BIRAC's BioNEST programme, 50 bioincubation facilities have been established across the country. BIRAC has been instrumental in connecting its beneficiaries with venture capitalists, biotech/healthcare accelerators and early stage funders. Mechanisms have also been created to provide support for regulatory and IP hurdles (such as FIRST Hub, RIFC and BIRAC PATH). During the Covid days, BIRAC quickly launched initiatives like Covid Research Consortium and Fast Track Review to facilitate start-ups develop effective solutions for combating the pandemic.

The Indian Biotechnology sector has always been the flag bearer for showcasing the country's strength and advancement in the modern technology arena. It was with this intent that a mega international event called Global Bio India was organized in November 2019.

Since inception, BIRAC has launched several programmes and initiatives that dynamically align closely with Government of India's national missions such as Start-up India, Make in India, Swachh Bharat, Swasth Bharat, Ayushman Bharat, Doubling farmer's income, Atmanirbhar Bharat etc. The onus now is to handhold, mentor and scale the innovations that can contribute towards the economic and scientific development of the nation by catering to the basic needs of food and nutrition and healthcare of the masses. It is with this objective and focus that BIRAC has to step up its efforts to address the unmet needs through technology adoption to the last mile and development of innovative affordable products.

STRENGTH AND WEAKNESSES

BIRAC's vision and mission directly aligns with the National Biotechnology Development Strategy (NBDS), formulated by DBT in 2015. It is also contributing to entrepreneurship and innovation ecosystem in the field of biotechnology under Atal Innovation Mission, Ministry of Skill Development & Entrepreneurship, MeitY, ICMR, through its own programmes or in partnership with agencies sharing common goals. BIRAC actively contributes to Make in India Biotech Strategy and Start



up India. All these national missions mention BIRAC as the go-to partner in the realm of biotechnology.

While the infrastructure (both human resources and facilities) and the overall environment that facilitates entrepreneurship and innovation has improved significantly in the recent past, there still exists a gap between engagement of industry and academia for translating gains of academic research into products and processes for societal benefit. In order to catalyse translational research, over the years, BIRAC has strengthened its partnership with academic institutes by establishing Early Translation Accelerators (ETAs), BioNEST bioincubators, E-Yuva Centres (pre-incubation centres) and supporting industry-academia collaborative projects.

Regulatory landscape will be one of the key factors that would determine the future growth of the Indian biotechnology sector. Aligning with government policy of Ease of Doing Business, BIRAC aims to provide key inputs to regulatory agencies in building a transparent evidence based regulatory landscape in India in the field of biosimilars, stem cells, medical technology, clinical trials and bio-agri products.

The biotech innovation ecosystem needs to scale in order to remain competitive and harness full potential. The number of biotech start-ups are expected to grow from 3500 in 2020 to 10,000 by 2025. To enable and support scaling of ecosystem, BIRAC must also scale the network of Bioincubation centres, Pipeline of Entrepreneurs, Start-ups and expand provisions for the deployment of innovative products in market. In order to stay effective and meaningful, BIRAC's funding resources need 5x scaling to meet the expected outcome.

RISK AND GOVERNANCE

The biotechnology innovation pathway involves long gestation period. This exerts enormous pressure on start-ups that are attempting to build novel, high quality and affordable products in India. For building an excellent bio-economy funded on innovation, the industry needs an aligned strategy that integrates all aspects of biotechnology innovation- science, translational research, industry-academia partnerships, academic curricula, entrepreneurship & vibrant Start-up and SMEs, incubators, early stage funding, Angel funding, late stage VC funding, routes to IPO, ease of doing business, financial and technical regulation -all these elements need to come together.

One of the gaps in Indian biotech Start-up is lack of participation of private equity – (i) Pre-series 'Angel Funding' in the range of INR 1 to 5 Cr, and (ii) Growth capital for potential Biotech start-ups at series A and above. This funding is crucial for start-ups to cross the valley of death. BIRAC in its limited capacity has initiated Biotechnology Innovation Fund - AcE (Accelerating Entrepreneurs) to support up to INR 7 Cr/start-up. This initiative has been able to successfully mobilize a commitment of INR 300 Cr Private equity for biotech start-ups. BIRAC has also initiated four regional centers, BIRAC Regional Entrepreneurship Centre (BREC), BIRAC Regional Innovation Centre (BRIC), Biotechnology Regional Bioinnovation Center (BRBC) and Biotechnology Regional Techno-Entrepreneurship Centre (BRTC) that conduct multitudes of programs which help start-ups to understand and refine their business models, regulators, connect them to investors for follow on funding.

Global economy risks are influenced by a variety of factors that are beyond the regional control. It also influences the emerging paths of global biotech industries. Pro-actively connecting India's ecosystem with the leading centres across the world e.g., US, UK, Germany, Finland, Singapore, Israel, Japan would make India's innovation ecosystem globally competent otherwise it may not be able to scale.

BIRAC engages into strategic partnerships to bring the best practices knowledge of other ecosystems including biotech industry both within and outside the country. BIRAC proactively has established partnerships with other S&T knowledge agencies across the world such as Business Finland, Nesta-UK, UKRI-Innovate UK, BIO-US, Vinnova Sweden to name a few.

OUR WORK

I. Investments

1. Biotechnology Ignition Grant (BIG)



The Biotechnology Ignition Grant (BIG) is BIRAC's flagship funding scheme that nurtures Biotech entrepreneurship in individuals and promotes early stage start-ups in the country. It provides early-stage funding for biotech start-ups and entrepreneurial individuals to support ideation and progression to proof-of-concept for ideas that have potential for commercialization. BIG is targeted towards researchers, scientists, clinicians, engineers, medical and non-medical graduates, experienced industry/ corporate entrepreneurs who could be from research institutes, academia and start-ups.

BIG works with four major mandates:

- Foster generation of ideas having commercialization potential
- Validate proof of concepts
- Encourage researchers to take technology closer to market through start-ups
- Promote biotech enterprise formation

BIG Programme is implemented in partnership with BIG partners across the country. These partners provide thorough mentorship (technical, IP, business), handholding and networking support from pre-submission stage to completion of the project (and even after). Currently, there are 8 BIG partners, of which 2 were added during FY 19-20. List of 8 BIG Partners are as follows:

- Centre for Cellular and Molecular Platforms (C-CAMP), Bangalore
- Foundation for Innovation and Technology Transfer (FITT), New Delhi
- IKP Knowledge Park, Hyderabad
- KIIT-TBI, Bhubaneshwar
- Venture Center-NCL, Pune
- SIIC, IIT-Kanpur
- SINE, IIT Bombay, Mumbai
- A-idea, NAARM, Hyderabad



BIG Partners

In FY 2019—2020, two new calls: BIG 15 and BIG 16 were launched on 1st July 2019 and 1st January 2020 respectively. A special call focussing on North East Region was also announced in November 2019.

The 14th call of BIG identified 70 proposals for support out of a total of 707 proposals received and BIG15th call supported 66 projects out of 895 proposals received. In total 136 new projects were supported in FY 2019-20.

As of FY2019-20, 201 projects were active and a sum of INR 43.50 crores was released to BIG partners to be disbursed to new and ongoing grantees.

BIG IMPACT

The impact made by BIG programme in promoting the entrepreneurial culture in the biotech sector can be easily seen through the tangible outcomes and achievements. 500+ projects have been supported through BIG so far and through these 500+ projects, BIG has facilitated creation of more than 130 new start-ups, supported nearly 100 women entrepreneurs, generated more than 1000 high skilled workforce. Through BIG, BIRAC has committed approximately INR 250.00 crores in the biotech innovation ecosystem. More than 150 IPs have been filed by the BIG grantees during the course of their projects. Another major highlight of the success of this programme is the ability of BIG grantees to secure further follow on funds through other sources including government and private funds.



Some of the BIG Grantees who raised follow on funding from private investors during the FY 19-20 are as follows:

S. No.	Innovator/Start Up	Source of Funds/Award
1.	Black Frog Technologies Pvt. Ltd.	Qualcomm Design in India Challenge
2.	Miraquales	<ul style="list-style-type: none"> • DRDO Innovation Award • Israel Mass Challenge Award
3.	Inochi Care	Medtech Winner Asia Pacific 2019 in Singapore
4.	Nemocare	<ul style="list-style-type: none"> • Axilor Ventures • Zone Startups India Empower Accelerator Program
5.	Ameliorate	<ul style="list-style-type: none"> • Arohan Social Innovation Gold Award • Equity Funding • VillgroiPitch Fund
6.	Kritsnam Technologies	Villgro and HUF
7.	BeAble Health	<ul style="list-style-type: none"> • Social Alpha Quest (FISE) • VillgroiPitch Fund
8.	Flexmotiv	VillgroiPitch Fund
9.	Lean Crop	Angel Investment
10.	Evelabs	HDFC Parivarthan Grant
11.	Valetude Primus Healthcare Pvt. Ltd.	India Health Fund (Tata Trust)
12.	Prognostics In-Med Private Limited	Angel Investment
13.	Ezerx Health Tech Pvt. Ltd.	<ul style="list-style-type: none"> • IOCL Startup Grant • Arohan Social Innovation Gold Award
14.	Revy Environmental Solutions	<ul style="list-style-type: none"> • Villgro (YES SCALE ACCELERATOR Tranche 2 & 3) • PoWered Accelerator by Zone Start Ups (Paid by Ryerson Futures India)
15.	Mimy Medical Simulations Pvt Ltd	Indian Angel Network (Pre-Series A)
16.	Harvest Wild	TruValueNetherlands
17.	SM Learning Skills Academy for Special Needs Pvt Ltd.	Social Alpha Assistive Technology grant



5th Edition of BIRAC's BIG Conclave, an annual gathering of BIG grantees and mentors was organized at IKP, Hyderabad, one of the BIG Partners. The theme for this year's conclave was "Industry Connect". More than 100 entrepreneurs and 40 mentors participated in the event.

The event included case studies of successful BIG grantees. Focused interactions with mentors from Industry was the highlight of the event, wherein BIG grantees got an opportunity to talk to specialized Industry experts and receive first hand guidance. Senior experts from Industry including Indian Immunologicals, Globion India, ITC Life Sciences and Technology Centre, Genotypic Technology DuPont, USP India, Stryker Global, Medtronic, GE had face to face interactions with cohorts of BIG grantees. The innovators also showcased their products/technologies during the event. The exhibition was visited by several technical and business mentors as well as investors. Day 2 of the event had a BIRAC-Start-up India "Investor Connect" event, open to start-ups and investors by invite only. Investor Connect brought together a rich pool of start-ups, Incubators, Investors & Industry leaders from various enterprises and institutions. The event provided a connect between biotech Start-ups ready for pre-series, series A & up to series B investments and investors seriously looking for deals in technology driven start-ups. Three types of interaction opportunities were provided including one on one meeting, pitching opportunity before a pool of investors and Exhibition. Out of 110 start-ups and 25 investors applications, 30 shortlisted start-ups were given an opportunity to have one on one meeting with at least 3 investors among a shortlisted pool of 18 investors.



Mr. Khalil Ahmed delivering Key note address at 5th BIG Conclave



2. Intensifying the Impact of Industrial Innovation (i4)

The programme has been initiated to support biotechnological product/technology development by strengthening R&D capabilities of start-ups/companies/LLPs. The programme provides impetus for pulling the translational ideas past PoC and taking them further along the innovation chain for validation, scale-up, demonstration and pre-commercialization of products and technologies. The programme is operated through two schemes based on the Technology Readiness Level (TRL):

- a) **Small Business Innovation Research Initiative (SBIRI):** Supports development and initial validation of products/technologies (up to TRL6). The Scheme offers 100% grant from BIRAC for project up to Rs. 50.0 Lakhs. For projects more than Rs. 50.0 Lakhs, BIRAC contribution is Rs. 50.0 lakhs + 50% of the cost exceeding 50.0 Lakhs.
- b) **Biotechnology Industry Partnership Programme (BIPP):** Supports validation, demonstration and pre-commercialization of products/technologies (up to TRL7 and above). Under BIPP, irrespective of the amount, BIRAC contribution does not exceed 50% of the project cost.

There is no ceiling with regard to overall project cost and royalty is admissible as per BIRAC guidelines under both SBIRI and BIPP.

a. Small Business Innovation Research Initiative (SBIRI)

SBIRI was launched to promote and facilitate companies to take their established proof of concepts (PoC) towards early stage validation, thus fulfilling a major gap in the product development cycle. However, the scheme has been instrumental in nurturing not only established companies, but also Start-ups and SMEs who are now availing this grant after completing the PoC studies in the BIG or other schemes of BIRAC.

Ever since its inception, 295 projects involving 226 sole companies and 69 collaborative projects have been supported through SBIRI with a commitment of Rs. 272 crore. Under the scheme, 56 products/technologies have been developed/ validated; some of which have already been commercialized. Many promising research leads are getting ready to hit the market. In addition, 35 IPs have been generated through various projects.

In the last financial year, three calls for proposals were processed. While the 40th and 42nd calls were regular calls targeting the major thematic research areas of BIRAC such as Vaccines and Clinical trials, Drugs, Biosimilar and Stem cells, Agriculture, Device and Diagnostics, Bioinformatics and Industrial Biotechnology, the 41st call was a challenge based call targeting specific research areas for each theme.

Under the 40th and 41st calls (as well as the 39th call that got closed on 31st March 2019), 183 proposals were received out of which 20 proposals were recommended for financial support. The 42th Call for proposals, which closed on 30th April, 2020 received 101 proposals which are under further consideration.

Of all the recommended projects, 10 projects from BIG scheme matured to secure follow on SBIRI funding. These focus on Validation of a blood based neuronal exosome platform for identification of Alzheimer's disease (AD) cases from non-AD dementia; Portable Surgical navigation with advanced planning and EVD guidance; Testing and Validation of indigenous dialysis cartridge in large animal; Portable, on-the-go Steriliser; Development an affordable and portable Video-EEG system for seizure diagnosis; Pilot scale production of Lipopeptide Biofungicide from *Bacillus amyloliquefaciens* and its efficacy studies in field; ArmAble: Gamified Upper Limb Rehabilitation - Extensive validation & Software Optimization.

The ongoing projects under the various thematic areas were mentored and monitored through "Project Monitoring Committee" site visits, online evaluations or presentations before Technical Evaluation Committee. In 2019-20, 77 unique beneficiaries were supported. Out of these, 67 beneficiaries were companies (SMEs and start-ups) and 10 were academic collaborators. A total of 19 projects got completed. Some of the products/technologies developed during the financial year are:

- A Single-use safety syringe with passive spring actuated needle stick injury and reuse prevention has been developed by Alpha Corpscules
- Omega-3-FA Fish/Poultry Feed has been developed by Arjuna Natural Limited
- Non-invasive second clinical study to test the prognostic ability of a proprietary diagnostic technology, OncoDiscover, designed to capture and concentrate circulating tumor cells (CTCs) in blood samples of patients with various carcinomas and used to predict progression free survival (PFS) and overall survival (OS) by Actorius Innovations and Research Pvt. Ltd
- Insulin receptor auto phosphorylation bioassay by Affigenix Biosolution Pvt. Ltd
- SKINSCOPE - Rapid, non-invasive, reagent-less screening device to detect and classify clinically relevant pathogens causing Skin and Soft Tissue Infections by Adiuvio Dignostics



Two SBIRI supported projects Krimmi Biotech Pvt. Ltd. And Actorius innovations Pvt. Ltd, were also awarded the BIRAC Innovator award during the year.

b. Biotechnology Industry Partnership Programme (BIPP)

The Biotechnology Industry Partnership Programme (BIPP), a Public-Private Partnership scheme, promotes innovative research for development of transformational technologies/ processes in Biotech Sector. The Scheme serves as a launch pad for scaling and commercializing high risk innovations through cost sharing between BIRAC and the industry.

Proposals funded in BIPP are categorized under 7 thematic areas namely Drugs including drug delivery, Vaccines, Biosimilars & Stem cells, Devices &

Diagnostics, Agriculture, Industrial Biotechnology including Secondary Agriculture and Bioinformatics.

Ever since its inception, 214 projects involving 151 sole companies and 63 collaborative projects have been supported under BIPP. A total of 52 products/technologies have been developed till date. While some of these have already been commercialized, others are at the pre-commercialisation stage. In addition, 8 facilities have been created as research resources and 32 new IPs have been generated.

During 2019-20, a total of 47 projects, including 12 new ones were supported. 10 projects got successfully completed during this period. Three new calls (47th, 48th and 49th) for proposals were announced, out of which 47th and 49th were regular calls targeting major thematic areas. The 48th call was a challenge based call on identified priority areas. Under 47th Call, 50 proposals were received out of which 7 proposals were recommended for support. Under 48th Call, 28 proposals were received out of which 3 proposals were recommended for financial support. In the 49th Call for proposals (which was announced on 15th February, 2020 and closed on 30th April, 2020), 52 proposals have been received which are under various stages of technical evaluation.

In the financial year 2019-20, the key achievements of the projects supported under BIPP are as below:

- Novel SPLAT technology for integrated pest management through mating disruption has been commercialized by ATGC Biotech Pvt. Ltd. The mating disruption products for control of pink bollworm (PBW), Brinjal Fruit and Shoot Borer (BFSB), Tuta absoluta and many other lepidopteran pests are being approved as Green label insect control products which will find its place in every organic grower practices.
- Early sales for JaipurBelt: Improved Belt System for Body Support developed by Newndra Innovations Private Limited have been achieved
- Biological evaluation of the catechins enriched extract fraction from the 100kg batch has been completed by Baijnath Pharmaceuticals Pvt. Ltd. with promising results
- Pilot clinical evaluation for Nano-engineered dental burs with better durability, efficiency, heat conduction and reduced vibrations has been successfully completed by Piscium Health Sciences Pvt. Ltd. and pre-marketing trails initiated.
- Mallipathra has standardized bench scale production of Cordyceps in an artificial environment on various vegetarian and non-vegetarian substrates. This is a natural immune booster which can combat various infections. The following products containing Cordyceps have been developed and commercialized: Cordyceps militaris capsules, Cordyceps militaris powder, Cordyceps fruiting body, Snowflake Cordyceps capsules and powder and Cordyceps Tea



Piscium Dental Burs



3. Promoting Academia Research Conversion to Enterprise (PACE)

The PACE scheme was launched to promote translation research within the country by the academia. This scheme encourages and supports academia to develop technology/product (up to PoC stage) of societal/ national importance and its subsequent validation by an industrial partner. The scheme has two components (a) Academic Innovation Research (AIR) and (b) Contract Research Scheme (CRS). The objective of AIR is to promote development of Proof-of-concept (PoC) for a process/product by academia with or without the involvement of industry. The CRS component aims at bridging the industry-academia gap through validation of a process or prototype (developed by the academia) by an industrial partner.

Since inception of the scheme, 20 calls have been launched and 105 projects have been supported involving 47 sole and 58 collaborative. So far, 7 technologies/products developed under the scheme have achieved TRL7 and 5 IPs have been generated. Few more technologies and new IP generation are in pipeline.

During 2019-20, 52 ongoing projects and 34 new projects involving 52 academic institutions and 31 collaborators were supported. During the year, three calls for proposals were announced and processed. The 18th and 20th calls were regular calls targeting the major thematic research areas of BIRAC. The 19th call was a challenge call that targeted specific research areas under each theme.

Under the 18th and 20th calls (as well as the 19th call that got closed on 30th November 2020), 533 proposals were received out of which 20 proposals have been recommended for financial support. The 20th call for proposals (which closed on 3th April 2020) received 146 proposals which are under various stages of technical evaluation.

Progress of projects with regard to the development of new technologies/products for moving towards commercialization was carefully monitored through PMC visits, thematic reviews, and online evaluation in accordance to the scheme guidelines. Some of the successful outcomes of the projects supported under PACE during 2019-20 includes:

- Tea Research Association, and Varsha Biosciences Pvt. Ltd conducted in vivo multi location/ ecological zones trials of biocontrol formulation produced in 20L fermenters for CIB registration.
- Low molecular weight fungal chitosan for healthcare applications developed by NCL, Pune attained TRL7.

4. Social Innovation Programme for Products: Affordable & Relevant to Societal Health (SPARSH)

SPARSH is the Social Innovation Program of BIRAC, launched in 2013, which addresses the need of finding innovative solutions to society's most pressing social problems. A total of 57 projects have so far been supported and 15 products/prototypes/technologies have been developed, along with generation of 5 new IPs.

SPARSH Centres for Social Innovation

SPARSH through its **Social Innovation Immersion Program (SIIP)** provides fellowships to "Social Innovators" for identifying and addressing specific needs and gaps in social sector and promote social entrepreneurship.

The Sparsh Centres provide rural and clinical immersion to the innovators. The innovators are mentored for systematic clinical & community observation, need assessment, refinement and affordable technology development. On completion, the Social innovators reach a point when they could submit an advanced proposal with some preliminary results suitable for seed funding.

Under the program, 35 social innovators in three thematic areas namely, "Maternal and Child Health" "Ageing and Health" and "Waste to value" have been mentored, and several novel and interesting ideas to tackle related problems were generated. Some of these ideas were further refined and presently, around 30 prototypes are in various stages of product development cycle. Most of the Social Innovators who were mentored through the program have been successful in raising follow-on funding or starting their own enterprise.

In the financial year 2019 – 20, 15 Social Innovators working in the area of "Ageing and Health" under Social Innovation Immersion program completed their 18 months fellowship and successfully developed alpha – prototypes for most pressing problems of society in the area of geriatrics.

The fellows after undergoing rigorous clinical and rural immersion for four months had come up with more than 50 problem statements each. These ideas are then refined and filtered to one idea with highest social impact and commercial potential by each fellow. The SPARSH Implementation Centres (Entrepreneurship Development Center, C-CAMP, SCTIMST – TIMED, and KIIT – TBI) along with SPARSH knowledge partner TISS, Mumbai and BIRAC mentored the fellows throughout the program.



Ageing & Health batch - Program Completion meeting at BIRAC



Exhibition of prototypes developed by the innovators

A new call for SPARSH Centres was announced during the year wherein 80 proposals from various technology incubators and institutes were received. These proposals were evaluated and out of these 14 were selected for establishment of BIRAC SPARSH Centres. These SPARSH centres will implement the program in six thematic areas i.e. Maternal & Child health, Ageing & Health, Waste to Value, AgriTech and Combating Environment Pollution.

SPARSH IMPLEMENTATION PARTNERS



II. Affordable Products and Technologies developed through Investment schemes

BIRAC has an inherent system of grading the projects into 7 theme areas for project monitoring and promoting innovation in that sector. The Healthcare sector has been categorized into 4 thematic areas namely, Drugs (including drug delivery), Biotherapeutics including Biosimilars and Regenerative Medicine, Vaccines, Devices and Diagnostics. The other theme areas for which BIRAC provides funding are Agriculture (including Aqua culture and Veterinary Sciences), Clean Energy & Environment (covering Secondary Agriculture) and Bioinformatics (including Artificial intelligence, Big Data Analysis, IoT's & software development).

BIRAC emphasizes that projects supported through its various funding schemes on conclusion yield the targeted outcome in the form of products, technology development, IPR, etc. Towards this end, BIRAC screens proposals under various schemes for their Technological Readiness Level (TRL) on a scale of TRL 1 to TRL 9 and filters in those having potential to reach higher TRLs through BIRAC support. Potential regulatory hurdles in the projects are already identified during the evaluation phase. Supported projects are regularly mentored and rigorously monitored. BIRAC assess the TRL progression of project through visits of Project Monitoring Committee (PMC) experts to the project implementation site, presentation of progress of the work by the Project Coordinators before the Technical Expert Committee (TEC) and online evaluation of milestone completion reports by the subject matter experts associated with a particular project.

There is always an effort on part of BIRAC to enable/assist the beneficiaries so that the product/process under development could be commercialized at the earliest. To this end, BIRAC has initiated a Product Commercialization Program Fund (PCP Fund) to address the challenges faced by innovators towards commercial launching of their product and market expansion.

The initiatives undertaken by BIRAC have resulted in successful completion of targeted milestones of many projects from different sectors, and development of many early/late stage technologies and affordable products. During the year 2019-20, 40 projects completed Early stage validation and 10 projects reached late stage validation & pre-commercialization stage and 15 project outcome lead to market launch of products/technologies.

1. Sector-wise

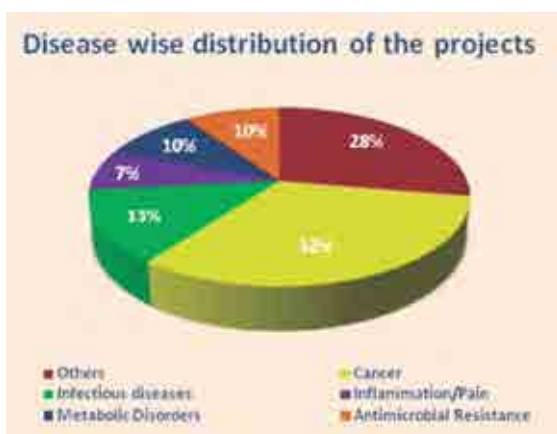
I. Healthcare

a. Drugs

BIRAC is focused to support product development in drugs area to meet the needs of patients impacted by a variety of diseases with unmet need / rare diseases that have little, or no treatment options for patients.

The projects supported mainly focus on establishment of proof of concept (PoC), preclinical studies of leads and clinical trials (Phase II and Phase III). This area primarily focuses on novel drug molecules starting from In-silico designing of novel molecules & analogous, generating PoCs through various In-vitro and In-vivo models and validating through human clinical trials. Secondly the focus is also on using novel drug delivery models and platform technologies for better efficacy, specificity and bioavailability of various available drugs in market.

Few platform technologies have successfully accomplished last year and are commercialized or ready to go to the next stage. The disease wise projection under this theme during last year shows that maximum number of projects are supported for Cancer, infectious diseases, metabolic diseases and other disease areas such as skin & ear disease/ Tissue engineering/ arthritis.



Following Products/Technologies have completed early stage technology Validation in 2019-20.

1. Platform technology as an alternate/better delivery to tablets and capsules for low dose API -nutraceuticals / pharmaceuticals (Jubeln lifesciences/Bonayu)

Developed a platform technology as an alternate/better delivery to tablets and capsules for low dose API - nutraceuticals / pharmaceuticals with POC of Vitamin D. The company has commercialized the product and currently producing 8 Lakhs strips/ Month.



2. Development of ready to use engineered cell lines for in vitro Insulin receptor phosphorylation bioassay to monitor Insulin drug potency (Affigenix Biosolution Pvt. Ltd.)

Developed and validated Insulin receptor auto phosphorylation bioassay using developed engineered cell lines expressing CHO IRA and CHO IRB genes. The validation parameters assessed were as per the regulatory guidelines requirement and the ELISA performance and in par with competitors' products. They are in discussion with clients (insulin manufacturers) for validation of potency of insulin.

3. Development of Clinical Grade Exosome Formulations (Exocan healthcare technologies Pvt. Ltd.)

Developed a process of purifying exosomes by developing a combination of tri phasic component system (GCA). They have completed successfully and validated purification of crude exosome preparations using an optimized GCA combination. This will be a standalone product which will be beneficiary for diagnostic/ research & R&D laboratories.

b. Biopharmaceuticals including Biosimilars and Regenerative Medicine

In recent years, the biopharmaceuticals market has advanced much faster than the market for all drugs and is believed to have great potential for further dynamic growth. The significant group of biopharmaceuticals are biosimilars followed by the emerging group of biobetters, which contain altered active pharmaceutical ingredients with enhanced efficacy. Therapeutic antibodies include mAbs and derivative antibodies, such as bispecific antibodies (bsAbs), antibody–drug conjugates, radiolabeled antibody conjugates, antigen-binding fragment Fab, and Fc-fusion proteins. While regenerative medicine holds promises for the treatment and, possibly, the cure of a number of challenging conditions in health sciences. It relies on the usage of stem cells, tissue engineering, and gene therapy alone or in different combinations towards repair, regenerate, or replace the damaged ones. BIRAC has supported several projects towards development of different biosimilars & regenerative medicines and the process optimization of existing products and their validation in this area for increasing the present market share/output in the country.

The projects supported under the biosimilar area addressed different diseases like Cancer, Diabetes, Inflammatory diseases, Alzheimer's. Further, funding included development and validation of different platform technologies for producing affordable monoclonal antibodies. The bio-therapeutics products under focus includes Foligraf, Rasburicase, Trastuzumab, Aflibercept, Sinapultide-A, Bevacizumab, Trastuzumab, Liraglutide, Glargine etc.

The projects under the thematic area of regenerative medicine included device development for stem cells isolation, their expansion and usage of different types of stem cells (Embryonic stem cells, Tissue-specific stem cells, Mesenchymal stem cells, Induced pluripotent stem cells) for disease indications like Periodontal Tissue repair, urethral strictures, urinary incontinence etc. Along with supporting clinical trials in the field of regenerative therapy, preparation of Stem cells Bank has also been funded by BIRAC.

Among BIRAC supported projects under the above theme, maximum number of projects are supported for development of Proof of Concept (PoC) or Early Stage Validation of the developed PoC. Further, to nurture the indigenous innovation, the program named Innovate in India (I3), an industry- academia collaborative mission of Department of Biotechnology (DBT) in collaboration with World Bank for accelerating discovery research to early development of Biopharmaceuticals has been implemented by BIRAC with a specific focus on the development of bio-therapeutics. Major areas considered under this theme include media and feed supplements, protein purification technology, IT platforms for quality management system in biopharmaceutical Industry, Bio-better and biotherapeutics, Antibody Drug Conjugates, CAR-T therapies etc.

Following product has been successfully validated and commercialized with the support of BIRAC in 2019-20:

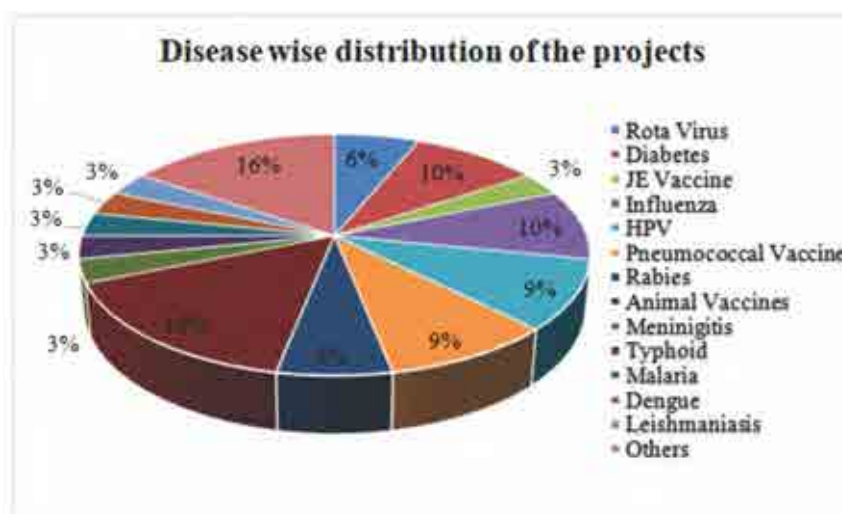
1. UREROW® - A patient-specific, biological & regenerative epithelial cell therapy that cures urethral stricture (Regrow Biosciences Pvt. Ltd., Mumbai)

This is a first product in India & South Asia that provides permanent solution for the urological problems in Male population addressing unmet clinical need for patients.

c. Vaccines

Vaccine development has played an important role in combating infectious diseases and may help tackle outbreaks in the future. BIRAC has supported 31 projects for vaccine development through various schemes. Six projects were supported through National Biopharma mission (A collaborative mission of DBT and World Bank). The projects supported in this area addresses diseases like Diarrhoea (Rotavirus), Japanese Encephalitis (JE), Influenza, Cervical Cancer (HPV), and Dengue. BIRAC supported projects to combat bacterial infections like Pneumococcal and Meningitis, Parasitic infections like Malaria and Leishmaniasis. Vaccines for Cattle and Rabies were also supported by BIRAC. NBM supported different projects for the development of vaccines for infectious diseases like, Dengue, Chikungunya, Influenza, cholera and development of pneumococcal vaccine.

Disease-wise breakups of projects supported so far is represented below:



DBT in Collaboration with CEPI (Coalition for Epidemic Preparedness Innovations) established a PMU; Ind-CEPI at BIRAC. Ind-CEPI Mission aims to strengthen the development of vaccines for the diseases of epidemic potential in India as well as build coordinated preparedness in the Indian public health system and vaccine industry to address existing and emergent infectious threats in India. One important project for the development of Vaccine against Chikungunya has been funded under this Mission.

d. Devices and Diagnostics

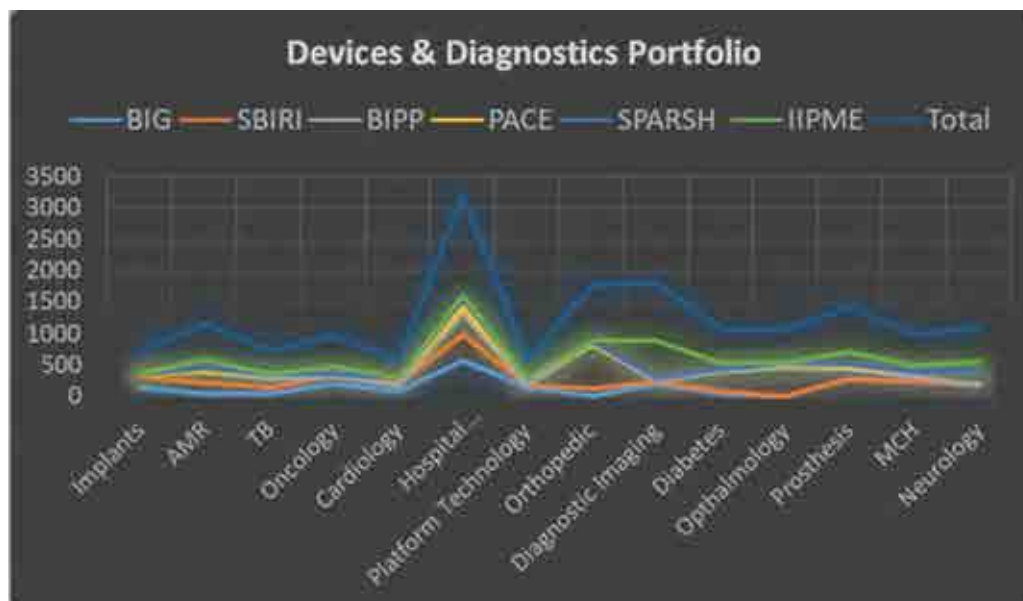
In 2015, the medical device market in India was worth \$16.27B, which increased to \$17.69B in 2017 at a CAGR of 4%. It is expected to grow at a CAGR of 8% from \$18.94B in 2018 to \$33.08B in 2025. The main segments were ophthalmic devices, cardiovascular devices, in vitro diagnostics, diagnostic imaging, and orthopedic devices. (Source: Global data)

BIRAC along with Country has witnessed a positive wave of developments in the devices and diagnostics sector over the year. Lot of young individuals have ventured into the sector and started their entrepreneurship journey. BIRAC

also promoted the “Make in India” “Start Up India” and **Invested around INR 371.7 Cr in Devices and Diagnostics** through **401 projects** in its flagship schemes BIG, SBIRI, BIPP, PACE, IIPME and SPARSH.

BIRAC is successful in supporting innovators and helping them to achieve TRL – 9 from Devices and Diagnostics sector i.e. **42 products have been commercialized**. The devices and diagnostics sector has seen maximum number of patent filing i.e. **94 patents are filed** by various companies for innovative technologies.

BIRAC product portfolio ranges from handheld PoC devices to high end diagnostic imaging devices and surgical Instruments. **Hospital Consumables, Diagnostic Imaging instruments and orthopedic segment** has witnessed maximum funding support through innovative projects. Connected medical device, self & home care devices and Patient aids are the fastest growing segments.



The most prominent challenges faced by Start-ups of the Devices and diagnostic sector are Improving the Quality of Products, Support for Regulatory Certifications, Help in Clinical Validation, Facilitation for GeM registration and access to testing and standardisation labs.

Following products have been market launched/commercialized or completed validation in 2019-2020

Products/technologies market launched or commercialized

1. Autostainer for cytopathology and Histopathology (Aindra Systems Pvt. Ltd)

Aindra systems have developed Intellistain an Automated slide stainer for Cytopathology, Histopathology and Hematology and has been validated at multiple centres for Pap smear slide staining. Aindra has developed two variants of, the IntelliStain-LT and the IntelliStain-XT that can stain 15 and 30 slides at a time respectively. Device is CE certified and was launched with pre-orders from many customers.



2. Technology to capture and concentrate Circulating Tumor Cells (CTCs) from blood for cancer diagnosis (Actorius Innovations and Research Pvt. Ltd)



Actorius has developed a non-invasive diagnostic technology, OncoDiscover test, to capture and concentrate circulating tumor cells (CTCs) in blood samples of patients with various carcinomas and used to predict progression free survival (PFS) and overall survival (OS). Oncodiscover has completed the clinically performance evaluation as a liquid biopsy diagnostic technology and has been cleared by CDSCO, India for manufacturing and marketing.

3. Handheld Oral Cancer Screening device (SasCan Medtech Pvt Ltd.)

OralScan is a hand-held device for screening and detection of oral cancers by real-time analysis of tissue fluorescence and diffuse reflectance images captured by its inbuilt monochrome camera on illumination with multiple wavelengths of light. Oralscan helps to screen, detect and guide the clinician to the most malignant site in a potentially malignant lesion for biopsy.

Device along with the AI based algorithm has been tested at multiple centers on more than 300 patients. Oralscan has CE certification and CDSCO has given NoC for marketing and manufacturing. Product has received pre-orders and ready for market.

**4. JaipurBelt: Improved Belt System for Body Support (Newndra Innovations Private Limited)**

JaipurBelt™- an unpowered, lightweight, efficient and affordable, validated and patented exoskeleton to assist spine and waist for spinal patients suffering from Kyphosis, Spondylitis, Slip disc or Back pain and manual workers (who have to work in a back-bent position or have to repeatedly/continuously bend their back or have to lift heavy jobs or have spine and back problems, due to workload, age, lifestyle). JaipurBelt design is patent protected product has NoC from CDSCO for manufacturing and sale and they have achieved early sales. Product is priced at Rs. 9000/-. There are multi-central clinical studies ongoing using this product through BIRAC support

5. Flexcrutch: Energy efficient Crutches (Flexmotiv Technologies Private Limited)

Flexcrutch has a flexure and kinetic shape based crutch tip for enhanced mobility and reduced energy consumption. User study has been conducted at Faridabad and Chennai. The Trials were done at Military Hospital Kirkee, ICRC, APD. Gait analysis is performed at AIIMS gait lab to prove that the device provides gait is close to natural gait. Device is Compliant with BIS 5143

Product Launched post user validation on 10th August, 2019. More than 100 units sold. Base version is priced around Rs. 3000.

**6. Hand cranked defibrillator for low resource settings (Jeevtronics Pvt. Ltd)**

An affordable Bi-Phasic defibrillator with a built-in power generator for low resource settings using a hand crank. In-built power generator (12 seconds of easy hand cranking) charges a high voltage capacitor to 1800V. A battery-less operation, wireless enabled device for patient data record and transmission are added advantages in the device. Device charging & discharging cycles have been extensively validated. Market launched and priced at Rs, 89,500/- and more than 20 units sold

7. "RightBiotic: The Fastest Antibiotic Finder (Xcellence in Biological Innovations and Technologies)

The system comprises of a readout machine with an on board embedded chip comprising of a microprocessor, an optical sensor, a strip loading mechanism integrated with appropriate light source and transmitted light absorption system, and an on-board analytical algorithm, the output from which is displayed on a screen and printed for permanent records. An accompanying kit containing required consumables has proprietary medium for accelerated bacterial growth, a system for harvesting bacteria from the biological fluid and pre-functionalized strips for testing for 15-23 antibiotics for antibiogram. Validation completed and product launched. More than 20 units have been sold.



8. FlexiOH: The Next Generation Orthopedic Immobilization Technology (JC OrthoHeal Pvt. Ltd.)

FlexiOH is absolute washable, breathable, lightweight and customized immobilization cast for bone fractures and musculoskeletal injuries. JC OrthoHeal has licensed the technology from DBT. PCT has been filed and entered into National application in Canada, USA, Europe, Brazil, Australia, Malaysia and Vietnam apart from Indian patent. Trademark application for FlexiOH is done and Product is CE certified. Product commercially launched and currently has good acceptance among orthopedicians both as primary cast or follow-up cast and or as a splint. Product sold in more than 14 countries. Two-arm clinical trials still to be performed to position Flexi-OH as definitive cast for fracture immobilization is underway in India.



9. SmartScope- Portable Colposcope for Cervical cancer Screening (Periwinkle technologies)

The Smart Scope® test is a simple 5-minute non-invasive test to detect cervical infections and other abnormalities using a handheld imaging device and AI-enabled image analyzing software. It is a modern way to examine the mouth of the uterus - known as the cervix - in women in the age group of 30 to 65 years.

The device has been extensively validated and shows >90% sensitivity and specificity when compared to PAP smear. The device has been commercialized and 50+ installations have been done. The MRP is Rs. 3,50,000/- for basic device kit and Rs. 900/- for 10-test kit of disposables.



10. Alerio XR - Compact Mobile General X-Ray (Iatome Electric India Pvt Ltd)

The Company has developed the advanced version of Alerio XR (Portable X-ray) with BIRAC grant. The advancements include reduction in size & weight, composite polymer insulation, Digital Sensor interface for wireless image transfer and improved aesthetics, ergonomics and build. It is battery operated and on full charge of battery, 150 dental X-rays can be done. A discharged battery can be fully charged in 1 hour. X-Ray Leakage on the surface of the system is 7 Times lower than AERB Limits.

The cost of the advanced version of the system is Rs. 95,000/-. Five units of the current system have been sold.



11. EnjectTM- Safety Syringe for Parenteral/ Pre Filled Injections, and Vaccine Delivery (Alpha Corpuscles Pvt. Ltd)

Unsafe injections place patients at risk of disability and death. According to the estimates produced for the 2010 Global Burden of Disease Study, unsafe injections are responsible every year worldwide for 33,800 new HIV infections, 1.7 million hepatitis B infections and 315,000 hepatitis C infections.

Alfa Corpuscles, utilizing breakthrough technologies, including award winning integrated spring actuated passive needle stick injury and reuse prevention, has developed the EnjectTM safety syringes that provide much needed safety and regulatory compliance.

Validation Completed by an ICMR Sponsored and Monitored, Controlled Multicentric Clinical Trial covering 2000 Subjects.



12. Scintiglo - a portable urine protein analyzer device for Mass Healthcare (Cutting Edge Medical Devices Pvt. Ltd)

A Smart Point of care diagnostic device, SCINTIGLO, for the Early detection of kidney diseases in patients suffering from diabetes and hypertension and high risk pregnancies by a simple non-invasive urine test. The devices can perform rapid and highly accurate and reliable quantitative estimation of proteins in urine in even extremely low quantities of even 2 – 20 mg/100 ml of urine. It properly estimates proteins in urine in ranges of Microalbuminuria/micropoteinuria. The tests performed on our innovative device are 12-15 times lesser than the prevailing rates of the test in the market. Product is market launched

**13. ILLUMINATE- Portable Hand Held Dermoscope (Adiuvio Diagnostics Pvt. Ltd)**

Wound assessment and management is very crucial with the rise in Skin and soft tissue Infections SSTI. Company is developing a portable non-invasive device, Skinscope, that can non-invasively detect and monitor any SSTI ranging from diabetic foot ulcer, burns, Pressure ulcers, surgical sites infections etc. within 2 minutes, aiding doctors by providing information on colonizing pathogen, pathogenic load and wound closure rate. They have commercialized the Illuminate device capable of detecting clinically relevant pathogens.

14. Virtual Reality VR goggles to aid in exercising vestibular disorders in elderly patients (Lattice Innovations Private Limited)

The Product is useful in persons with vestibular disorders, they are benefitted after receiving virtual reality based therapy (VRT) vs customised vestibular physical therapy (PT) as an intervention for habituation of dizziness symptoms using the dizziness handicap inventory.

The Company has collaborated with Cyclops manufactures, which sells India's first VNG (videonystagmography) device, and has over 200 installations across India and the Middle East. VNG is a tool used in the diagnosis of patients with Vestibular disorders. Lattice product fits well with Cyclops' VNG product – rehabilitation is a natural complement to diagnosis. Lattice and Cyclops jointly soft-launched the product at AOICON - Asia Ociana International conference for Otolaryngologists - from Jan 9-13, 2019 in Hyderabad.

**15. NEURO TOUCH- PoC screening device for Peripheral Neuropathy (Yostra Labs Pvt. Ltd)**

Diabetic Peripheral Neuropathy (DPN) in the foot can be prevented by early diagnosis. Through the NeuroTouch the diabetic patients can be screened for symptoms of DPN and so it can be prevented. A Point of Care, multi-parameter



(4 tests in 1), portable screening device for Peripheral Neuropathy. It helps the physician to perform basic screening tests for Neuropathy – the monofilament test, vibration perception test, hot and cold perception test and skin temperature measurement. Reports are generated on a cloud server via wireless data transfer after the tests are completed. They have sold more than 40 units, with cost per unit as INR 2 Lakhs.

16. Osteo3d: Online Platform for Pre-surgical Planning (Df3d creations private limited)

An online surgical planning platform for Fibula Based Reconstruction for Head & Neck surgeries. It facilitates surgeons to plan the reconstruction by uploading the Patient's medical data to the online platform and conduct online virtual planning for the generation of patient specific 3d printed surgical guides for efficient and accurate surgical procedures. It is ISO 13485 certified, and tremendous results observed through increased accuracy and efficiency of surgical procedures. They have sold 50+ live cases.



List of validated (TRL-7) products/ technologies

1. HUG – A Negative Pressure Wound Therapy device (Dr. Joseph Thomas)

A device to deliver Negative Pressure Wound Therapy (NPWT) safely and effectively while keeping the costs economical and affordable in order to make this treatment modality available to patients from a wider socioeconomic background. The multi-centric trial using the device has been completed at 4 different centres on a total of 100 patients. The prototype used in the clinical trial as well as the final design awaiting regulatory clearance. They have incorporated a start-up named Remmidi Innovations Pvt. Ltd to take the product forward.



2. Orthoscrew- PLA based bioabsorbable screw for orthopaedic surgery- (Orthocrafts Innovations Pvt. Ltd)



Orthocrafts has a technology license from NCL-CSIR, Pune for the know-how for the synthesis of high molecular weight polylactic acid (PLA) and they have used this technology for synthesis of PLA with various molecular weight and different properties. Orthocrafts has used high molecular weight PLA for manufacturing bioabsorbable screws for ACL surgery called OrthoScrew, using injection moulding technology. They are also developing and validating other bioabsorbable implants like OsteoAnchor and OsteoTack using the same platform technology. The Company has received Test license from CDSCO for OrthoScrew.

3. 98.6 Fever Watch- An IoT device for Fever and Respiratory Rate Measurement of neonates (Helyxon Healthcare Solutions Pvt Ltd)

A compact sized real time reusable wireless remote monitoring IOT based wearable device which can be used on neonates to identify Hypo & Hyper thermia issues. Through BIRAC IIPME support respiration rate feature was added to this for monitoring of neonates. This solution we will be able to remotely monitor multiple babies even from the far away rural areas and provide them instant decision making support by experts.



4. HighNoon- CT Guided Needle Navigation Device (Kornerstone Devices Private Limited)



HigNoon device assist and offer light & shadow based angular guidance Orbital & Cranio Caudal to place the needle on targets within the body with precision. Guides the clinician to confidently, accurately, insert the needle with multiple checkpoints. The device was improved and 5 prototypes of improved version was built and completed validation at two hospitals. Going ahead with quality certifications and marketing

5. BIG RC- Endodontic Root Canal Treatment Files (Dzeal Private Limited)

Company has developed three variants of nitinol based BIG endodontic files, assembled 100 files, tested in ex vivo conditions, received feedback and obtained NOC for manufacturing and marketing of the device. Detailed clinical validation is underway with three variants.



6. Nano-engineered dental burs with better durability and efficiency (Piscium Health Sciences Pvt. Ltd)

Nano diamond coated dental burs were developed and tested for extended durability on extracted teeth. Validated by dentists at Nair hospital and dental college Mumbai. Product has received NoC from CDSCO for manufacturing.

7. Custom 3D printed foot orthosis using foot images from smartphone for various foot problem (Shapecrunch Technology Pvt. Ltd. in collaboration with AIIMS)

A correlation between pressure map and gait was done to incorporate the foot pressure data into the algorithm for designing insoles. Feedback was received from 1023 patients using thee insoles. More than half of the patients had Flat Feet, Plantar Fasciitis or combination. About 80% of the patients expressed satisfaction on the performance of the insoles.

8. KEYAR & DAKSH- Pregnancy Monitoring abdominal patch and application (Janitri Innovations Private Limited)

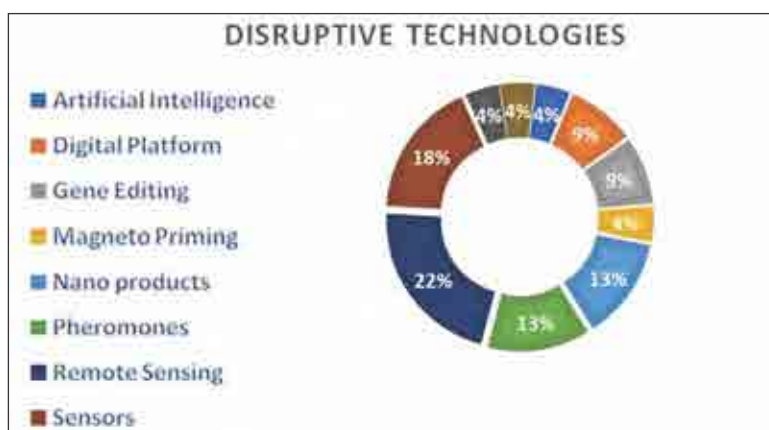
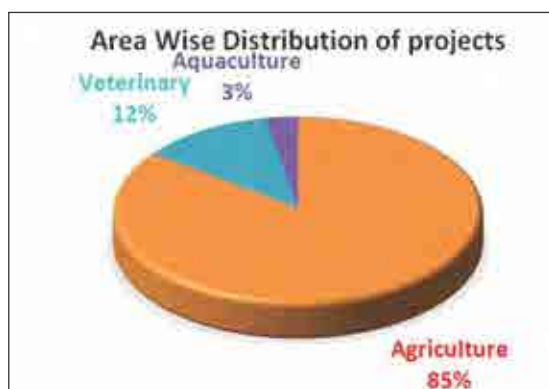
KEYAR is an affordable and easy to use and wearable fetal heart rate and uterine contraction monitoring device developed through BIRAC support which communicates with DAKSH intrapartum monitoring mobile application. DAKSH labor monitoring mobile application is already deployed in 140+ hospital. An improved integrated version has been developed and tested on more than 60 patients through planned Clinical trials.

**ii. Agriculture (including Aqua culture and Veterinary Sciences)**

Agriculture has remained as a centerpiece of Indian economy. It is not only a main source of livelihood for a majority of Indian population but also has the responsibility to feed the billion plus population and therefore, needs technological interventions to leapfrog into a future. Serious interventions are needed at every link in the food chain- from seed to fork. Similar to the transformations in other sectors, technologies under agriculture are undergoing revolution and shaping farming practices. In the last few years, concentrated efforts with respect to technology leaps and policy initiatives have contributed significantly towards sustainable agriculture being established which focuses on environmentally viable technologies ensuring food security and rural employment.

BIRAC has supported multiple projects in the field of agriculture and allied areas like veterinary and Aquaculture. Under Agriculture the pipeline of projects supported up till now covers major part of the agriculture innovation system such as Marker Assisted Selection (MAS), transgenics, tissue culture, biocontrol and plant health. Under aquaculture, supported projects are mainly dealing with control of diseases in shrimp farming. Under veterinary some of the notably technologies funded are for improved semen technology, vaccine development, improved germplasm cells for poultry development, bovine sperm sorting and low-cost milk fat analyzer etc.

Under agriculture sub area, lately wide support has been extended to various disruptive technologies in agriculture space. Technologies such as AI, nano pesticides, CRISPR, pheromones, remote sensing, sensors, residue testing by MALDI, seed invigoration by magneto priming, digital technologies, nano pesticides are being encouraged under entrepreneurial ventures to put the Indian stakeholders at par with the global players.



List of Technologies (TRL7) \ Commercialized Products and Technologies

1. Development of an integrated product with plant growth & defence potential through end to end utilization of marine biological resources (T Stanes and company Ltd.)

The project has made the use of marine biological resources like seaweed for the development of a biological product having both plant growth and defence potential. The work includes the collection, identification, authentication, extraction, of sea weed and seaweed associated microbes throughput screening, formulation, In vitro testing, mode of action followed by green house and In-house field evaluation of less utilized abundantly available marine resources (Phaeophyta, Rhodophyta and Chlorophyta). Amongst the products that have been developed from marine resources, the product (5MIN - marine microbes based PGPR), principally, is intended to improve soil quality, and concomitantly increase plant growth & development (includes yield and quality of the produce). The product is made available in a concentrated form, (aluminium sachets) with an application rate of 100gm/acre, instead of 2-3 litres/acre (packed in bottles) that is conventionally used. GAGE (macro-algal extracts) & REDEEM (marine microbe with macro algal extracts) are Organic Bio-stimulant products, with plant hormone like activities that improves the physiological potential in plants & sustains optimum yields.



2. Control of pests using Specialized Pheromone & Lure Application Technology (SPLAT) (ATGC Biotech Pvt. Ltd.)

The project aimed at controlling pests with use of Specialized Pheromone & Lure Application Technology (SPLAT) through mating disruption/ Auto confusion/ Attract & Kill and MAT in males. The technology developed involves sustained release of pheromone formulations for manipulating insect behaviour by sending false female signals to males, creating auto-confusion and disrupt mating. A Ready to Use, No Pump, No Spray, No Water, No Pest Resistance, An Eco-friendly, Apply and Forget technology, is applied once a month for achieving perfect 'Family Planning' programs among Insects. Independent field evaluation trials conducted on a large-scale for four of the economically devastating pests like Pink Boll Worm in Cotton (SPLAT-PBW), Fruit and Shoot Borer in Brinjal (SPLAT-BFSB), Tuta absoluta (South American Tomato Leaf Miner) in Tomato (SPLAT-TUTA) and Leaf Miner in Citrus (SPLAT-CLM) crops have shown promising results in terms of lowered losses and unquantifiable indirect benefits in terms of farmers and consumer health on account of reduced exposure to pesticides.



3. Validation and bench-scale production of beneficial nematodes on waste silkworm pupae against agricultural pests like root grubs, shoot borers, root weevils, fungus gnat etc., to protect crops like arecanut, sugarcane, banana and other vegetative crops (Krimmi Biotech LLP)

The company has developed an alternative cost effective and faster method for large scale multiplication of the beneficial nematode, *Heterorabditis indica* using discarded silkworm pupae as a media for growing the nematodes. These nematodes can be used as a biological control of several insect pests viz., root grubs that afflict several cash crops such as sugarcane, areca nut, cardamom, etc. The final product developed was a coco peat based formulation with a shelf life of 9-12 months. The company is working on liquid-based formulations with its own funds towards the same. Some interesting preliminary data has also been generated for the same using linked acrylic polymer.



Fig: EPN emerging from silkworm pupae

4. Shielding Livestock from Paratuberculosis using Point of Care Diagnostics PoCD (Amity University, Jaipur and Genomix Molecular Diagnostics Pvt. Ltd., Hyderabad)

The *Mycobacterium avium* subspecies paratuberculosis (MAP) causes paratuberculosis (Johne's disease), a systemic and chronic inflammation of intestine that affects bovine, small ruminants like goat and sheep. The disease has a greater economic importance in cattle and in small ruminants. But its effective control is impeded due to lack of rapid and accurate diagnostics. Applicant developed a LAMP-coupled lateral flow device (LFD) for rapid detection of paratuberculosis in livestock animal species such as cattle and in small ruminants at resource-limited areas. They compared their test with cultural-positive and PCR-positive samples. Overall sensitivity and specificity of the LAMP-coupled LFD assays were 100% and 97.02% respectively in comparison with the culture as the gold standard method. The sensitivity detection limit of developed assay was 10 fg/μl and specificity was 100%. This assay successfully detected MAP not only by using bacterial DNA but also in clinical fecal samples. The clear band formation at control and test positions was observed on LAMP-coupled LFD. The developed assay is a simple, rapid, easy to perform, and is very useful in early diagnosis of *Mycobacterium avium* subsp. paratuberculosis at point of care resource-limited areas.

They also developed Plate ELISA for the detection of MAP. Plate ELISA was found to be 94.8% sensitive as compared commercial kit which showed sensitivity of 93.9% specificity of ELISA was found to be 100% with the test developed.



5. ParvoCure- Novel therapeutic formulation for treating Parvoviral enteritis of dogs (Cisgen Biotech Discoveries Pvt. Ltd)

Aim of the proposal was to develop and Clinical evaluation and their scale up of a novel therapeutic formulation for treating Parvo viral disease of dogs. The granule formulation was prepared and the in-vitro release kinetics were verified in a simulated gastric juice. Completed the storage stability studies. Completed in vitro neutralization assay. Completed the In vivo dog studies to determine the pharmacokinetic and pharmacodynamics of the formulation. Efficacy studies were performed. The ParvoCure tablets prevented the establishment of the Parvoviral enteritis when the tablets were administered prophylactically. When the tablets were administered 2 days post infection (treatment group), the disease severity was reversed and the animals returned to normal health status. The tablet was evaluated in clinically infected animals in the Preventive medicine department of Madras Veterinary College, the tablets were effective in curing the disease. Scale-up capability of IgY tablet making was assessed by producing 1 lakh tablets.



6. Animal Disease Diagnosis and Treatment (Prof. Utpal Tatu)

In this proposal they developed an animal diagnostic facility to offer timely diagnosis of infections for better management of animal diseases. The facility will provide sample collection, molecular and immunological diagnosis of infections in biological samples from sick animals from animal farms and agricultural industries. This service will result in improved health and productivity of livestock.



7. Deworming Drench Gun (Maran)

Animals naturally struggle when being drenched or dosed. Often the animal head is held high, so that it cannot swallow properly

- Liquids should be given slowly, allowing time for the animal to swallow
- The operator usually hurries the procedure, resulting in choking of the animal
- On an average, spillage of dosage is around 20-30%
- The available products requires refilling frequently of the dosage
- Most products have only a Single dosage setting



Dr. Maran developed an efficient and productive tool for deworming/drenching, to overcome the above problems.

8. Smart Easy Artificial insemination Gun to upgrade breeding programme to boon diary sector (Cisgen Biotech Discoveries Private Limited & Adiuvo Diagnostics Pvt Ltd)

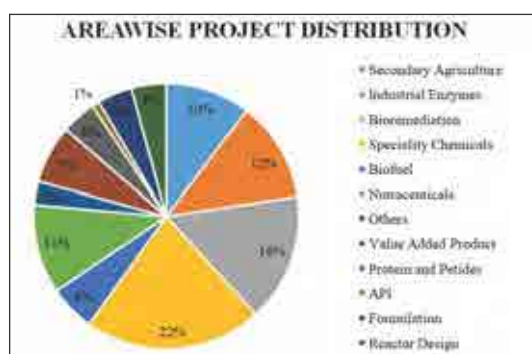
Artificial Insemination is an imaging device and a system that can inseminate veterinary animals, using an image guided system. The device is inserted into the reproductive tract of veterinary animals, using a hollow scope fitted with multiple light sources, camera and a hollow tube where the conventional insemination gun can be inserted. An artificial insemination gun capable of real time imaging of the reproductive tract in a cow and relays image on a smartphone via Bluetooth has been developed. The smartphone has an application where details of the insemination can be entered, stored and retrieved. Epicollect Mobile app developed so that veterinarian directly submit their data to the project database from their mobile phone and could significantly increase the collection and collation of data and retrieval of data from server.

With the help of the developed device reproductive tract along with insemination path is imaged and relayed on to a screen, which aids the farmers and doctors to view in real-time and accurately inseminate into the body of the uterus and also to analyse the heat period.

iii. Industrial Biotechnology including secondary agriculture

Clean Energy & Environment includes development of processes for sustainable production of chemicals, materials and fuels. These processing methods makes use of enzymes and microorganisms to produce products that are can be used in varied industrial sectors, such as pharmaceutical, nutrition, paper, textiles, chemicals and polymers. Secondary agriculture provides value addition to agricultural products, creating facilities for primary processing and stress management in agriculture and adds value to the basic agro commodities to allow farmers to get better returns from their harvest. It also creates new jobs in the rural sector to grow rural economy which is entirely based on agriculture.

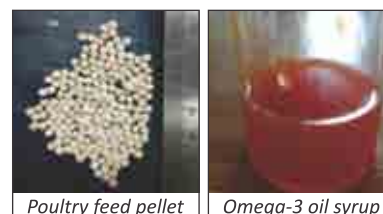
The projects that have been supported involves the use of biotechnological platforms and can be categorized in several sub-areas such as bioenergy, speciality chemicals, industrial enzymes, industrial processes, bioremediation, secondary agriculture, infrastructure support and many other fine chemicals as shown below.



List of commercialized Products and Technologies

1. Omega 3 rich syrup for Pediatric use and animal feed (Arjuna Natural Limited)

The developed Omega 3 liquid suspension is without unpleasant odour and flavour, but with added fruity flavour. This will be an attractive option for supplement to children. The second product is Poultry feed supplement and is obtained from the by-product of Omega 3 manufacturing. This will result in Omega 3 enriched eggs.



2. Algae coated fodder with nutritional value for dairy animals (Sabran Bioenttri Pvt Ltd)

Dry fodder has been coated with nutritional algal biomass along with Aloe Vera, Acacia or Guar gum inputs to make it green and loaded with needed bio-nutritionals. Vital proteins, needed vitamins, amino acids, PUFA compounds and mineral get loaded on dry fodder with high nutritional algae biomass making it Green Fodder Forever or Fodder Roti.

**3. Vitamin D Fortified Mushrooms (Innotech Agriposhakam)**

The company established an innovative intervention to increase the natural property of mushrooms in accumulating Vitamin-D

**List of Products/Processes/Technologies completed Early Stage Validation****1. Production of low molecular weight fungal chitosan for healthcare applications (NCL Pune and Intox)**

The processes yields chitosan of about 25% of fungal biomass and the molecular weight was determined to be around 40- 43 kDa. The resulted chitosan molecule was comparable to the marine derived chitosan with degree of deacetylation.

2. Microcrystalline cellulose and silica from rice husk (Gulebahar Sheikh)

A technology for pilot scale production process of microcrystalline cellulose and Silica from raw rice husk, for use in diverse Industrial sector has been established.

**3. Microbial consortium based biofertilizer for increased Ramie Fiber yield (Shaon Ray)**

Scalability of biofertilizer production was tested upto 5.9m³ and 7.3m³ biofilm reactors volume with above 9m³/day processing capacity. Field trial shows more than 1.5 fold increase in agricultural yield.

**4. Plant growth promoting factor (Sowbhagya Biotech Private Limited, Hyderabad)**

The company has developed plant growth promoting factor by Bacillus subtilis SR1 under the influence of the feather protein hydrolysate.

**5. Flocco-A Biodegradable Flocculation Filter (Dr. Devlina Das)**

A technology for three different products have been designed. Flocculant, Filter granules and tablets and B-ClayTM (Clay – Polymer composite based products with a specialized technology of adsorption coupled with vital micronutrient leaching as an alternative to plastic bottles).

6. Phycocyanin pigment from the algal biomass (Microbloom Tech Pvt. Ltd.)

The company has designed and developed an extraction system and protocol for extracting Phycocyanin pigment from the algal biomass (Spirulina) in pilot scale quantity. The company was able to meet the E18 and E22 grade parameters required for Food color regulation in Europe and USA.

**7. Writable-erasable coating (Dr. Rajkumar Halder)**

The product is an indigenous coating that can be applied on any object and thereafter can be used as a writing and/or expression tool and then erase it without leaving any ghost images.

8. Currency Paper Mill Sludge supplemented wood fibre based Softboard and Hardboards (Western India Plywoods Ltd)

Waste obtained from the Bank Note Paper Mill (BNPM), a currency paper manufacturing unit owned by the Govt. of India in Mysore, as one of the raw materials along with the conventional hardwood pulp to reduce the consumption of wood in the production of fibreboards (Softboards and hardboards). Optimized the ratio of paper mills sludge (PMS) and wood pulp to improve the quality of the finished products complying to standards IS 1658:2006 for Hardboard and IS 3348:1965 for Softboard. So far 922 Metric tonnes of PMS from BNPM used to generate 5,500 Metric tonnes of fibreboard, which are awaiting environmental testing at third party labs.



9. Indigenous Smart Device to Produce Ultra-pure Type-1 Water (Althion Tech Innovations Pvt Ltd)

The product is water purifier which develops type 1 water for use in biotech and healthcare systems based on indigenous Polyamide membrane technology licensed from IICT, Hyderabad. Device development completed along with enclosures and being deployed at academic institutions for feedback and adaptation.



10. Disposable Organic Brushes Shaving brush, Tooth Brush and Bath brush made from Discarded Crop Fibers (Sowjanya Madala)

This is Natural, Eco friendly completely biodegradable single use product, prepared from renewable sources in low cost for hygienic purpose.



11. Bench scale production of snow flake Cordyceps and Cordyceps militaris through solid state and sub-merged fermentation, respectively for nutraceutical applications (Mallipathra Nutraceuticals Pvt. Ltd.)

The company has developed a technology for scale up the artificial cultivation of medicinal Mushroom. The main focus of the company is to develop low cost high value Nutraceutical products from Cordyceps mushrooms. The standardization and validation of the process of producing these Cordyceps in bench scale and the same has been commercialized. About 30 lakhs turnover has been achieved with the available facility and FSSAI registration has been obtained. The company is working towards the creation of facility for large scale production for continuous production and commercialization of the same in an industrial Area.

Following are the products developed which contains Cordyceps. The products have been packed as per desired packing matching with quality parameters which will be used as a nutritional supplement.

- Cordyceps militaris capsules
- Cordyceps militaris powder
- Cordyceps fruiting body
- Snowflake Cordyceps capsules and powder
- Cordyceps Tea



Fig: Snowflake Cordyceps Fruiting body and capsules

iv. Bioinformatics

BIRAC had supported seven proposals based on quality & final deliverables. Maximum fund is mobilized through the BIPP scheme, even though, number of projects are same in SBIRI & BIPP scheme implying Funded projects equally belong to both categories i.e. early stage development & product development. 5 IP's have been generated (3 Patents & 2 Trademarks). 78% funds are disbursed through the BIPP for bioinformatics sector. 58% projects have been successfully completed late stage validation. Rest of them are at early and late stage validation technologies.

Artificial intelligence and Big data analysis has significantly evolved across the globe owing to increasing application in biotech and med-tech research & development. The growth in the global bioinformatics market has positive implications for the Bio-IT industry. Bioinformatics and Big Data Analysis are the fastest-expanding fields in India's biotechnology sector today and BIRAC is encouraging and focussing on the translational bioinformatics, Artificial intelligence & Big Data Analysis driven projects.

Following are few technologies which are market launched or completed validation in 2019-2020:



1. See Sound app - A novel speech visualization tool for improving auditory perception and speech performance of hearing impaired children and adults using their visual cortex (4S Medical Research Private Limited)

It is a novel speech visualization tool to improve speech performance and communication skills of a deaf and dumb person, currently relying only on sign language. See Sound Live uses its advantage, computing skills of a smart phone, to create a Visual Equivalent of the sound spoken. The brain is then trained to use this visual equivalent as a feedback of its efforts to speak. Version 1 of SEE Sound implemented at few schools addressing deaf children.



2. A Remote Cardiac Monitoring and Real-Time Outpatient Cardiac Telemetry device name Upbeat (Monitra Healthcare Pvt. Ltd)

upBeat® is the most advanced bio-sensing platform which makes remote monitoring comfortable and easy.

- upBeat® Skin Patch: No wires, slim profile, discreet and can be easily worn on the chest
- upBeat® App: Logs symptoms, receive data from biosensor & relays to upBeat® cloud.
- upBeat® Cloud: Holds a vast amount of raw data in its native format, used for analysis.
- upBeat®.AI: Analyses data, personalizes alerts & reports allow online access.



3. Scalable Tele-Pathology platform with affordable hardware and low data footprint (Morphel Pvt. Ltd)

A tele-reporting & digital analysis platform for digital pathology, one-size-fits-all scanner automates bright field microscopy, this scanner is affordable while promising state-of-the-art speed & quality. It scans the region of interest exhaustively capturing perfectly focused images and stitches the captured images into a single continuous virtual slide for intuitive navigation experience for the pathologist.

4. Using Artificial Intelligence for abnormality detection and analysis of medical images (Endimension Technology Private Limited)

An artificial intelligence based tool for automatically detecting key abnormalities in CT scans and X-ray images developed and validated at TMC, Mumbai.

v. Technology upgradation

The technical group along with experts take the responsibility of continuously monitoring and mentoring the supported projects to meet their objectives. Technical group assigns nodal officers for each thematic area (to have overall understanding of projects from that theme) and technical officers for each project (to closely monitor the progress of the project). Further, they take the responsibility of achieving the goals for their respective projects. This close monitoring and mentoring has resulted in development of several processes, technologies, commercialization of products/technologies (TRL-8 & 9), technology maturation of projects to Technology Readiness Level-7 (TRL-7) and filing of IPRs. Table below provides information on the products/technologies at validation, pre-commercialization and commercialization stage and IP filed through BIRAC funding during 2019-20.

S.No	Category	Number
1	Products commercialized	15
2	Process/technologies at Pre-commercialization stage	10
3	Number of projects at TRL-7 stage	40
4	IP filed	12

IP Filed:

The following Indian Patent applications were filed during 2019-20:

1. A self-driven rehabilitation device and method thereof (IN201941022639)
2. Method of fabrication of metal nano-wire film on flexible substrate for bio-signal measurement (IN201921022239)
3. A Prosthetic Gripper (IN201931016247)
4. Aptamers against Phospholipase A2 in snake venom and uses thereof (IN201911027455)
5. Carbon Fiber Truss Based Radiolucent Patient Support (IN201941052523)
6. Integrated irrigation suction device (TEMP/E-1/35059/2019-DEL)
7. A method of production of polypeptide of interest in mammalian cell culture medium (IN 201921016673)
8. Refrigeration device for regulating temperature of small volume loads (IN201941013056)
9. Bacteriophage therapy of infectious diseases in aquaculture (IN201941021408)
10. Compact RO system without softener for hemodialysis (IN201941049152)
11. A CAPILLARY BIOREACTOR FOR ALGAL BIOPROCESS (IN202041010694)
12. A stable delivery complex comprising a dipeptide with a conformationally restricted amino acid (IN202011007388)

II. Entrepreneurship Development

1. BioNEST (Bioincubators Nurturing Enterprises for Scaling Technologies)

BIRAC is aware of the needs of the biotech start-ups in the country and our portfolio for entrepreneurship development includes not just funding but also support for bioincubation -a crucial determinant for developing a holistic ecosystem for biotech enterprises. Through the Flagship BioNEST scheme, BIRAC has extended/sanctioned funding support to 50 bioincubators across the nation. Each of these bioincubators have been selected based on an assessment matrix that evaluates their capabilities in supporting biotech ventures as well as ability to provide nesting grounds for the budding biotech start-ups. This is in line with the key strategies of BIRAC that are to foster innovation and entrepreneurship in all places of research, to promote affordable innovation in key social sectors with higher focus on start-ups and SMEs. The BioNEST scheme also championed the mandate of the Start-up India Action Plan announced by Hon'ble Prime Minister on 16th January, 2016 that targeted scaling up of biotech start-up ecosystem. The initial aim to have at least 2000 Biotech start-up by 2020 and creation of 50 Bioincubators with world class facilities and access to the best bioincubation environs for propelling innovative ideas towards product commercialization has been achieved.

BioNEST bioincubators are mandated to provide incubation space to entrepreneurs and Start-ups along with access to high end infrastructure, specialized and advanced equipment, business mentorship, IP, legal and regulatory guidance and networking opportunities to start-ups.



Different areas under which BioNESTs are supported

BIRAC under the BioNEST Scheme:

- Provides incubation space to start-ups and entrepreneurs
- Provides access to world class infrastructure and high end equipment facilities
- Connects industry and academia and enable interactions for efficient exchange of knowledge as well as facilitate technical and business mentorship
- Provides enabling services and required mentorship for IP and Technology Management, legal contracts, resource mobilisation and networking platform

Impact created by BIRAC's BioNEST Programme

Over the years BioNEST has been able to create a nurturing ecosystem for the budding biotech entrepreneurs and start-ups. Till now INR 300+ crores have been sanctioned and INR 218.44 crores have been disbursed under BioNEST scheme. BIRAC has approved 50 bio incubators creating a cumulative area of **54, 8719 sq. ft** for budding entrepreneurs. The incubators sanctioned during the FY 2019-20 are as follows:

TANUVAS, Chennai; IITR Lucknow, Uttar Pradesh; University of Delhi, Delhi; Indigram Labs, Delhi; IBSD & BRDC, Shillong, Meghalaya; Banaras Hindu University, Varanasi, Uttar Pradesh; Amal Jyothi College of Engineering, Kottayam, Kerala; Sri Ramachandra Institute of Higher Education and Research, Chennai and NIPER Ahmedabad, Gujarat.



50 BioNESTs Milestone achievement celebrations



Glimpses of Site Visits conducted at various New and existing Incubators during the FY 2019-20

More than 600 incubatees have been supported by these Incubation centres. 1000+ Jobs have been created through the start-ups and innovators incubated at these Incubators.



BioNEST Map

S. No.	List of Bio-incubators supported under BioNEST	State/UT
1.	Panjab University	Chandigarh
2.	Foundation for Innovation And Technology Transfer (FITT), IIT Delhi	Delhi
3.	Zonal Technology Management and Business Promotion Development (ZTM-BPD), Indian Agricultural Research Institute (IARI)	Delhi
4.	Clean Energy International Incubation Centre (CEIIC)	Delhi
5.	DPSRU Innovation & Incubator Foundation (DIIF)	Delhi
6.	University of Delhi, South Campus	Delhi
7.	Indigram Labs	Delhi
8.	Regional Centre for Biotechnology (RCB), Faridabad	Haryana
9.	IIT Kanpur	Uttar Pradesh
10.	Indian Institute of Toxicology Research (IITR)	Uttar Pradesh
11.	Banaras Hindu University	Uttar Pradesh
12.	Technology Incubation and Entrepreneurship Development Society (TIEDS), IIT Roorkee	Uttarakhand
13.	Savli Technology Business Incubator (STBI)	Gujarat
14.	Ahmedabad University (AU)	Gujarat
15.	SRISTI Innovations	Gujarat
16.	B. V. Patel Pharmaceutical Education and Research Development (PERD)	Gujarat
17.	National Institute of Pharmaceutical Education and Research (NIPER)	Gujarat
18.	Birla Institute of Technology & Science (BITS), Pilani, Goa Campus	Goa
19.	Centre for Cellular and Molecular Platforms (C-CAMP)	Karnataka
20.	Bangalore Bioinnovation Centre (BBC)	Karnataka
21.	Indian Institute of Horticultural Research	Karnataka
22.	IKP Eden	Karnataka
23.	Mazumdar Shaw Medical Foundation (MSMF), Bengaluru	Karnataka
24.	Venture Center, Pune	Maharashtra
25.	Society for Innovation and Entrepreneurship (SINE), IIT Bombay	Maharashtra
26.	Research Innovation Incubation Design laboratory Foundation (RiiDL)	Maharashtra
27.	IIT Madras Research Park	Tamil Nadu
28.	Healthcare Technology Innovation Centre - IIT Madras	Tamil Nadu

29.	Golden Jubilee Biotech Park for Women Society	Tamil Nadu
30.	PSG, Coimbatore	Tamil Nadu
31.	Vellore Institute of Technology (VIT), Vellore	Tamil Nadu
32.	Crescent Innovation & Incubation Council (CIIC), Chennai	Tamil Nadu
33.	Shanmugha Arts, Science, Technology & Research Academy (SASTRA)	Tamil Nadu
34.	Tamil Nadu Veterinary and Animal Sciences University (TANUVAS)	Tamil Nadu
35.	Sri Ramachandra Institute of Higher Education and Research (SRIHER)	Tamil Nadu
36.	Amal Jyothi College of Engineering (AJCE)	Kerala
37.	IKP Knowledge Park	Telangana
38.	Society for Biotechnology Incubation Centre (SBTIC)	Telangana
39.	a-IDEA, National Academy of Agricultural Research Management (NAARM)	Telangana
40.	University of Hyderabad (UoH)	Telangana
41.	International Crops Research Institute for the Semi-Arid Tropics (ICRISAT)	Telangana
42.	L.V. Prasad Eye Institute	Telangana
43.	International Institute of Information Technology (IIIT)	Telangana
44.	SPMVV – Women Biotech Incubation Facility	Andhra Pradesh
45.	Andhra Pradesh Med Tech Zone (AMTZ)	Andhra Pradesh
46.	Kalinga Institute of Industrial Technology (KIIT)	Odisha
47.	Institute of Advanced Study in Science and Technology (IASST)	Assam
48.	National Institute of Pharmaceutical Education & Research (NIPER), Guwahati	Assam
49.	Mizoram University	Mizoram
50.	Institute of Bioresources and Sustainable Development (IBSD) & Bio Resources Development Centre (BRDC)	Meghalaya



BioNEST BioIncubators

2. SEED Fund (Sustainable Entrepreneurship and Enterprise Development Fund)

Through Bioincubators, BIRAC is able to support the “space, services and knowledge” requirements of start-ups, however there existed wide gaps in financial support required by a technology driven start-up in the initial phases. BIRAC’s SEED Fund primarily aims to address these needs through BIRAC’s BioNEST bioincubators.

The basic idea of SEED Fund is to provide equity based capital assistance to start-ups with new and meritorious ideas, innovations and technologies. This would enable some of these start-ups to graduate to a level where they will be able to raise investments from angels/venture capitalists or they will reach a position to seek loans from commercial

banks/financial institutions. The SEED fund support is positioned to act as a bridge between promoters' investment and Venture/Angel investment and is provided to the start-ups through bio incubators for scaling enterprises. Under the SEED fund programme:

- 16 BioNEST incubators have been provided up to INR 200 Lakhs each for investing in Biotech Start-ups.
- The SEED Fund Partner (Bioincubator) can invest INR 15 – 30 lakhs per start-up against a small equity/equity linked instruments. Upon exit 50% of net returns will be retained by SEED Fund partner Incubator and 50% will be shared with BIRAC for it to plough back in the ecosystem.
- Total Sanctioned Amount under the programme is INR 29.00 Cr. out of which INR 20.80 Cr. has been disbursed.

Impact created by BIRAC's SEED Fund Programme

SEED Fund Partners are identified with the aim of providing early stage and bridge funding to innovative technology driven life science start-ups. It also provides the first equity exposure to the start-ups and enable them to build confidence to raise the partnered funding from various angels & other Institutional Investors. Till now INR 29.00 Crores have been sanctioned and INR 20.80 Crores has been disbursed under BIRAC SEED Fund program. Till date 16 Seed Fund bio incubators partners have supported more than 30 Seed Funded Start-ups companies creating a cumulative valuation of more than INR 365.4 Cr. 6 BioNEST bio-incubators provided SEED Fund during the FY 2019-20 are as follows:

a-IDEA, NAARM-TBI,, Hyderabad; Vellore Institute of Technology-Technology Business Incubator -(VIT TBI), Vellore; RiiDL, SomiyaVidyavihar, Mumbai; IKP-EDEN-Bangalore; Golden Jubilee Women Biotech Park, Chennai and Panjab University, Chandigarh, Punjab.

S. No	Name of SEED Fund Partners
1.	a-IDEA, NAARM-TBI, Hyderabad
2.	Bangalore Bioinnovation Centre, Bangalore
3.	Centre for Cellular and Molecular Platforms, Bangalore
4.	Entrepreneurship Development Center, Pune
5.	Foundation for Innovation And Technology Transfer (FITT), IIT Delhi
6.	Golden Jubilee Women Biotech Park, Chennai
7.	Gujarat State Biotechnology Mission (GSBTM), Gujarat
8.	FIRST, IIT Kanpur`
9.	IIT Madras
10.	IKP Knowledge Park, Hyderabad
11.	IKP-EDEN, Bangalore
12.	KIIT-Technology Business Incubator, Bhubaneswar
13.	Panjab University, Chandigarh
14.	RiiDL, Somiya Vidyavihar, Mumbai
15.	SINE, IIT Bombay
16.	Vellore Institute of Technology-Technology Business Incubator

3. LEAP (Launching Entrepreneurial Driven Affordable Products) Fund

LEAP (Launching Entrepreneurial Driven Affordable Products) is also an equity linked funding scheme newly launched in 2019-20. LEAP fund is aimed at enabling potential biotech start-ups to pilot/commercialize their products/ technologies. Thus, the proposed funding support is positioned to act as a catalyst in bringing technologies/ products forward towards piloting/ commercialization and reducing their gestation to commercialization. Under the LEAP fund programme:

- 6 BioNEST incubators have been provided up to INR 500 Lakhs for investing in Biotech Start-ups.
- The LEAP Fund Partner (Bioincubator) can invest INR 30 – 100 lakhs per start-up against a small equity/equity linked instruments. Upon exit 50% of net returns will be retained by SEED Fund partner Incubator and 50% will be shared with BIRAC for it to plough back in the ecosystem.
- Total Sanctioned Amount under the programme is **INR 24.50 Cr.** out of which **INR 17.50 Cr.** has been disbursed.



S. No	Name of LEAP Fund Partners
1.	Entrepreneurship Development Center, Pune
2.	Centre for Cellular and Molecular Platforms, Bangalore
3.	Foundation for Innovation And Technology Transfer (FITT), IIT Delhi
4.	IKP Knowledge Park, Hyderabad
5.	SINE, IIT Bombay
6.	KIIT-Technology Business Incubator, Bhubaneswar

4. Biotechnology Innovation Fund – AcE

BIRAC is implementing AcE fund on behalf of DBT. AcE (Accelerating Entrepreneurs) Fund operates as “Fund of Funds”, which is mandated to foster R&D and innovation in Biotechnology domains (including areas such as healthcare, pharma, medical devices, agriculture, sanitation, clean energy, etc.). Through AcE Fund, BIRAC partners and co-invests with SEBI-registered Alternate Investment funds (i.e. Venture Funds and Angel Funds) that are professionally managed to nudge them for investment in biotech sector. The main role of AcE Fund is to plug the gap of the “Valley of Death” encountered by the Biotech start-ups during their product development cycle and growth phase. AcE Fund will enable creation of an ecosystem that will provide risk capital to young enterprises to undertake research and development in high priority technology areas.

The Daughter Funds are committed to invest 2X amount of BIRAC’s investment in biotech start-ups. The Daughter Funds supported by the AcE Fund will support start-ups at an early and growth stage that may be ready to receive pre-Series-A or Series-A funding – with a minimum commitment towards start-ups in the biotech space. The Fund can make a maximum capital commitment of up to INR 30 crore or up to 30 per cent of the total aggregate capital commitment amount (i.e. fund corpus) in the each Daughter Fund. Under BIRAC’s mandate, a daughter fund can invest up to INR 7 crores in a start-up against equity held by the Partner.

Under the AcE Fund initiative, two calls for empanelment of partners have been announced and INR 150 Cr has been sanctioned so far. Through these calls, 13 partners have been identified.

Partners selected during the 1st Round have initiated the Drawdown Request. A total of INR 26.58 crores was released to 5 partners identified during the 1st Call. For the additional 8 partners selected through 2nd Call, due diligence & Signing of agreement is in process.

S. No.	Name of AcE Fund Partners
1	Bharat Innovation Fund
2	IAN (Indian Angel Network)
3	GVFL Ltd
4	Stake boat Capital Pvt. Ltd
5	KITVEN Fund

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

E-YUVA scheme [Earlier University Innovation Clusters (UIC)] is mandated to promote a culture of applied research and need-oriented (societal or industry) entrepreneurial innovation among young students and researchers. The scheme has been revised during FY 2019-20 to expand its scope and outreach to Under Graduate level students also in addition to its earlier coverage of Post Graduate and Post Doctoral Students.

The scheme now provides funding support (through fellowship and research grant), technical and business mentoring, exposure to bioincubation model, orientation to entrepreneurial culture etc. to students at various levels including UG, PG and post doctoral students

EYUVA is implemented through dedicated hubs called E-Yuva Centers (EYCs) housed within the University/Institute set up and mentored by a BIRAC BioNEST supported bio incubator. EYCs act as anchors and extend requisite support and mentoring to students.

The scheme provides support under following two categories:

- a. BIRAC's Innovation Fellows (for post graduates and above)
- b. BIRAC's E-Yuva Fellows (for under graduate students)

BIRAC supported EYCs encompass the following:

- Pre-incubation space (3,000 sq. ft. or more)
- Manage Fellowships for students as per categories mentioned above
- Conduct Entrepreneurial Awareness Workshops for students

BIRAC's support to the existing 5 UICs (listed below) is now being enhanced further and these centres would now be called as E-YUVA centres.

1. Anna University, Chennai
2. Panjab University, Chandigarh
3. Tamil Nadu Agricultural University, Coimbatore
4. University of Rajasthan, Jaipur
5. University of Agricultural Sciences, Dharwad

Identification of new EYUVA Centres is in process. First call seeking proposals against EYUVA centres was announced in January 2020.

6. SITARE (Students Innovations for Advancement of Research Explorations)

Students Innovations for Translation & Advancement of Research Explorations (SITARE) Scheme is aimed at supporting innovative student (up to PhD) projects in the area of Biotechnology. The scheme is mandated to expand and populate innovation funnel especially early stage innovations for meeting unmet societal needs through frugal and sustainable approaches.

The scheme was being operated by BIRAC in partnership with Society for Research and Initiatives for Sustainable Technologies and Institutions (SRISTI) till FY 18-19. Recognizing the potential of this award programme for creating a strong pool of innovators at the base of pyramid, the program was converted to scheme mode with effect from FY 19-20. Number of partners may now be expanded to enhance the outreach and scope of the scheme.

There are two components of the scheme as mentioned below:

- **BIRAC-SRISTI Gandhian Young Technological Innovation (GYTI) Awards (SITARE):** Under this component, 15 innovative projects, led by a student/student team are awarded INR 15 lakhs each. This award is given for carrying out research work on an innovative idea for a period of 18 to 24 months.
- **BIRAC-SRISTI Appreciation Awards:** About 40 students are awarded up to INR 1 lakh each for carrying out research work in the area of grass root innovations. These awardees are identified through residential workshops of up to 4 weeks each conducted by SRISTI. This residential workshop programme is called as Biotech Innovation Ignition School (BIIS).

We now have more than 60 innovators supported under GYTI awards (SITARE) covering areas such as development of new antimicrobials, devices and diagnostics for resource poor settings, maternal and child health care, wastewater treatment etc.

During the BIIS Workshop, students are provided hands on training in various basic techniques of biochemistry, microbiology, phytochemistry etc. in collaboration with large institutions. One such workshop was organized at Ahmedabad during FY 2019-20.

7. Regional Centres

Under the Start-up India Action Plan announced by Hon'ble Prime Minister on 16th Jan 2016, BIRAC was mandated to set up 5 Regional Centres by 2020. So far, 4 Regional Centres have been set up in partnership with Bioincubators supported by BIRAC's BioNEST programme.



**a. BIRAC Regional Innovation Centre (BRIC)**

The BIRAC Regional Innovation Centre was established in partnership with BIRAC's BioNEST Incubator IKP, Hyderabad in 2013 as the first regional centre of BIRAC. Currently, 3rd Phase for BRIC is operational (since Feb 2018) and the earlier 2 Phases completed over 5 years (2013-2018) undertook following activities:

- RIS Mapping for ten clusters
- Engaging with academia and start-ups on IPR through its IP and Technology Transfer Cell
- Entrepreneurial Capacity Building

During the initial 3-year period (2013-2016), BRIC focussed on four life sciences clusters in southern India: Hyderabad, Bengaluru, Chennai and Thiruvananthapuram. With the successful completion of Phase I, a report on mapping the four innovation ecosystems was released. A similar exercise with similar mandates was taken up as Phase II study in six clusters in Central India: Ahmedabad, Mumbai, Pune, Bhopal-Indore, Bhubaneswar and Vishakhapatnam. The Phase II initiative was a continuation of Phase I with the above mentioned objectives that were spread over 13 months (Dec, 2016 to Feb 2018). A consolidated report on Mapping of the ten clusters along with policy recommendations to improve and enhance the innovation capacities of the clusters was released in October 2017 during IKMC annual meet.

Based on the learning derived from the above studies and the effectiveness of such work in policy making, BRIC Phase III was initiated in 2018 by expanding the study to twelve additional clusters covering North and Eastern India and also two clusters in the West and South not covered in the earlier Phases. The Phase III study, along with the earlier reports, would provide a national level perspective of the status of life science innovation as well as variations in innovation capacity and maturity across clusters. The outcome of the study would provide insights along with recommendations that can be helpful for BIRAC in designing targeted programmes at the cluster level.



BRIC stakeholder meeting at 9th November, IKMC-2019

b. BIRAC Regional Entrepreneurship Centre (BREC)

The BIRAC Regional Entrepreneurship Centre (BREC) was set up in partnership with BIRAC's BioNEST incubator C-CAMP, Bangalore in 2017 as the 2nd BIRAC Regional Centre. BREC is mandated to create awareness and inculcate a spirit of bio-entrepreneurship, facilitate and catalyze the journey of biotech ideas of bio-entrepreneurs towards commercialization, enable and empower bio-entrepreneurs through business and technology advice and mentorship covering aspects of raising investments, legal, IP and market understanding. Phase I of BREC was completed in January 2020 and Phase II has been initiated with enhanced scope of activities.

Highlights of the activities conducted by BREC under Phase-I is as follows:

- 1900+ Students inspired to pursue bio-entrepreneurship as a career through Entrepreneurship Awareness Workshops
- 600+ entrepreneurs/start-ups provided specialized domain knowledge through specialized workshops
- 500+ One-on-one meetings with between Investors & Start-ups through Investors Meet
- 6300+ Registrations for National Biotech Entrepreneurship Challenge from across 32 States, Cash prizes and investment opportunities worth INR 6.00 Cr mobilized
- 175+ entrepreneurs and start-ups mentored through intense training through an intense annual boot-camp involving international faculty

Scope of activities of Phase-II of BREC (2020-2023) is as follows:

1. Life Science Entrepreneurship Awareness Program (8 events per year)
2. National Bio Entrepreneurship Competition (Annual Event)
3. Bio Entrepreneurship Boot Camp (Annual Event)
4. One-on-One Investor Meetings (6 events per year)
5. Entrepreneurship Development Workshops (4 events per year)
6. Advanced Entrepreneurship Development Workshops (2 events per year)
7. Incubator Manager Immersion Programme (3 events per year)
8. BIRAC Grantees alumni portal



NBEC 2019 Launch



BREC Entrepreneurship Workshop, Manipur

c. BIRAC Regional Bio-Innovation Centre (BRBC)

BIRAC Regional Bioinnovation Centre (BRBC) was set up in partnership with BIRAC's BioNEST incubator Venture Centre, Pune in 2018 as the 3rd BIRAC Regional Centre. BRBC is mandated to be a high quality national resource center to support and promote Entrepreneurship in Life Sciences. The centre conducted following activities during FY 2019-20:

- **Venture Mentoring Service:** This activity is aimed at creation of high level mentor pool for networking and match making with prospective and experienced entrepreneurs. During the year 2019-20, BRBC organized 4 mentor match mixers reaching out to 130+ beneficiaries and engaged 20 mentors. As a follow up of the mentor mixers, more than 200 one on one clinics with mentors were organized.
- **Venture Base Camps:** BRBC conducted 5 base camps during the year on following topics:
 - ♦ Internal Auditor Training Course
 - ♦ Medtech Ideation
 - ♦ Clinical Study Design for Medical Devices and In Vitro Diagnostics
 - ♦ ISO 13485:2016 Medical Devices Quality Management-Introduction and Internal Auditor Training Course

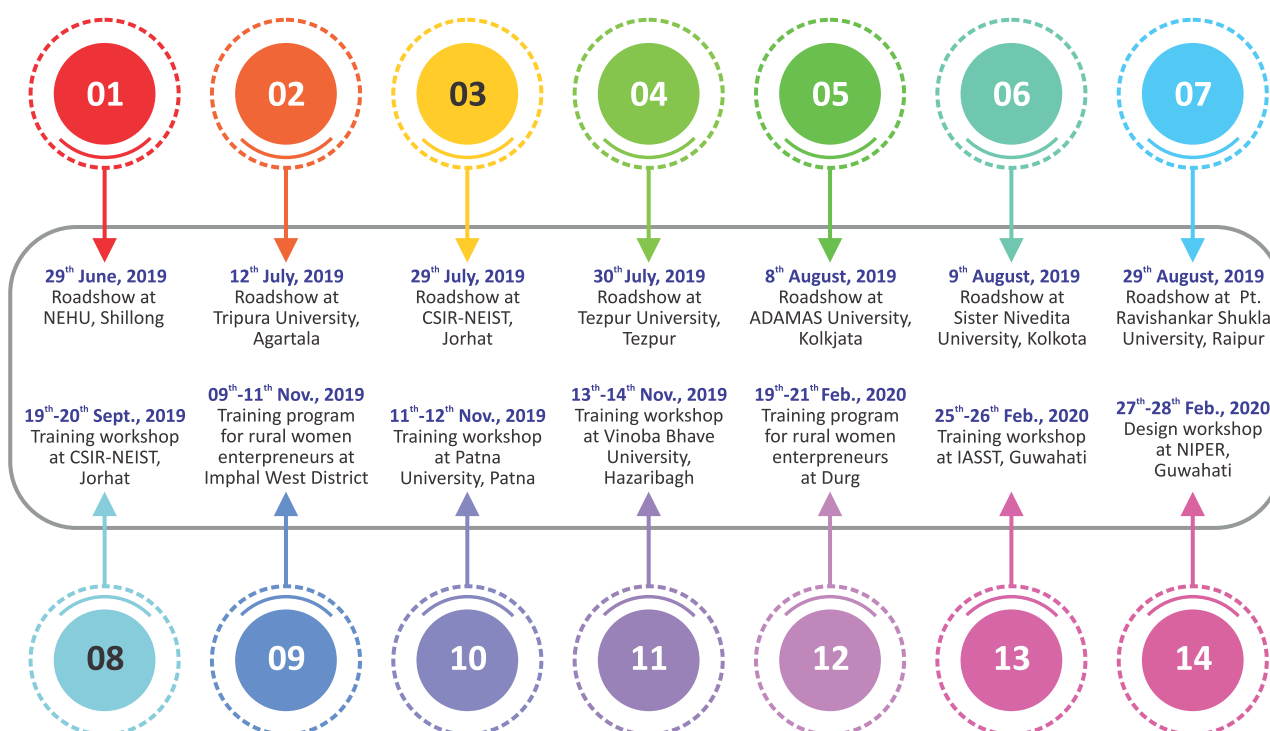


- ♦ Medical Devices Design and Risk Management-Methods, Techniques and Tools
The camps benefitted 150+ entrepreneurs/start-ups.
- Regulatory Information and Facilitation Center (RIFC): Through RIFC, BRBC facilitates a seamless, personalized approach for entrepreneurs in understanding the regulatory approval process for biotech products in India. During the year 2019-20, 6 Regulatory clinics were conducted and more than 85 entrepreneurs and start-ups benefitted through the clinics and workshop.
- BioIncubation Practice School for western regions: 20 Incubation Managers including 3 from BioNEST incubators were trained with good practices for bioincubation during the year 2019-20. The immersion programme focused on following topics:
 - ♦ Relation between Incubator and host institution
 - ♦ Drawing a roadmap based on inputs, outputs, outcomes, activities and resources
 - ♦ Formats of incubation: physical vs. virtual vs. associate
 - ♦ Creating a pipeline of incubatees
 - ♦ Types of incubatees to focus on: competencies leveraged, industry focused, market focused, customer focused, women centric.
 - ♦ Sustaining the incubator
- City Camps: 5 City Camps were organized providing an overview of the essentials of scientific entrepreneurship. The camps were held at CIIC-Chennai, RCB-Faridabad, AIC-CCMB Hyderabad, GBP-Guwahati and SPPU-Pune. The city Camps were attended by more than 200 entrepreneurs/ start-ups, students, researchers etc. The camps focused on topics such as Fund raising, company formation, IP, Legal, Regulatory Requirements, Business Strategies etc.

d. BIRAC Regional Techno-Entrepreneurship Centre for East & North East– BRTC (for E & NE)

BIRAC's 4th Regional Centre BRTC, set up in partnership with KIIT-BioNEST in 2019 aims to develop the biotech entrepreneurial ecosystem especially laying a foundation for development of biotech cluster in East and North East Regions including Odisha, Chhattisgarh, Jharkhand, West Bengal and Bihar and the North East (Assam, Meghalaya, Guwahati, Imphal, Manipur, and Tripura). A focused effort would also include promoting Women Entrepreneurship and Social Entrepreneurship in the region.

The centre conducted following activities during FY 2019-20:



Impact created by the Centre during FY2019-20:

- 900 + Innovators reached out through awareness programs to excite them about bio entrepreneurship and different funding opportunities of BIRAC available to promote innovation and product development.
- Mobilized 27 Innovative projects from North East and 90 from East for funding support from BIRAC under the scheme “Biotechnology Ignition Grant” Call 15.
- Forged collaborations with 7 institutes from East and North East for promoting entrepreneurship and technology development.
- Undertook several initiatives to amplify biotech entrepreneurial ecosystem in Shillong, Agartala, Assam, Chhattisgarh, Kolkata, Manipur, Bihar, Jharkhand.
- Encouraged establishment of Bioincubators at Tripura University, NEIST Jorhat, Pt Ravi Shankar University, Raipur with the support of BIRAC.
- 30+ Innovators were provided one-on-one mentoring sessions for idea development and raising funding through 2 days extensive training workshop.



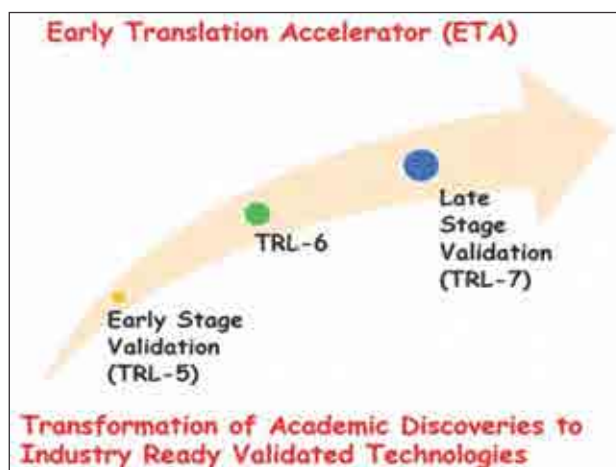
III. Affordable Product Development

1. Early Translation Accelerator (ETA)

BIRAC is supporting Early Translation Accelerators (ETAs) to focus on catalyzing transformation of young academic discoveries (publications/patents) with possible commercial and societal impact into economically viable ventures and technologies. The aim of the ETA is to add translational component to establish proof-of-concept/validation and to attract industry to take these validated technologies further in terms of development and is expected to collaborate with academic investigators, engage industry and to leverage international translation ecosystems. Although commercialization of early stage technologies is a difficult task, adding this translational component to establish proof-of-concept/validation is a big step towards attracting industry to take these validated technologies further in terms of development.

The ETA is being created to act as an interface between academia and industry, with the main objective of identifying academic ideas with commercial potential and finding a suitable industrial partner for technology transfer and commercialization. The ETA will not only act as an interface, but also play an active role in further developing lab-scale ideas and tailoring them to suit industrial requirements. The network developed by the ETA with academia and industry and the modalities developed for translational research and technology transfer will make the ETA as an attractive proposition to be leveraged by academia as well as industry.

Towards achieving this BIRAC has already supported healthcare ETA at C-CAMP and Industrial Biotechnology ETA (ETA-IB) at IIT-Madras.





A total of three projects were selected and supported under the health care ETA at C-CAMP.

These are as follows:

1. Platform for improved erythropoietin (EPO)
2. Validation of novel compounds in neuro-degenerative diseases
3. Validation of novel Self-assembled short peptide based nanomaterials for Glioblastoma therapy.

All the project under ETA –healthcare at C-CAMP have been completed. A process and product patent filed in the first project at C-CAMP i.e. Lentiviral Vector Platform for improved Erythropoietin expression concomitant with shRNA mediated host cell elastase down regulation has been completed. The technology has been taken by Sekkei Bio Private Ltd. Patent filing for the other two projects is underway.

The second ETA for Industrial Biotechnology (IB) has been established at IIT-Madras in 2017-18. The ETA-IB involved the development of a structure for translational research, and technology development for production of industrially important proteins and metabolites, from natural and recombinant systems. There were total four projects supported under these areas.

In the FY 2019-20 two new ETA in the area of Healthcare and Devices & Diagnostics at Yennepoya University and BETIC (IIT-Mumbai) respectively has been established. C-CAMP; the first ETA has successfully completed the first set of three projects. Three projects are ongoing and one project completed at IIT-Madras ETA. Identification of the projects are under process.

2. Research Alliance for Product Innovation and Development (RAPID)

i. BIRAC - USAID – ICAR – Development of climate resilient wheat cultivars

In 2016-17, BIRAC in partnership with USAID and Indian Council for Agriculture (ICAR) had initiated a five year long project for development of high-yielding, heat-tolerant wheat cultivars appropriate for the Indo-Gangetic Plains. These new varieties are proposed to be developed by building upon the available resources and breeding material utilizing data from model systems and currently available modern breeding, genetic, genomic, physiological, and biochemical tools.

The overall objectives of Optimizing marker assisted background selection (MABS) transfer of already available and newly discovered QTLs for heat tolerance to popular, elite wheat cultivars grown in the Indo-Gangetic Plains, and identifying and developing user-friendly DNA markers for heat tolerance by evaluating wheat germplasm

In Washington State University, the selected lines have been evaluated for drought stress tolerance and double haploid populations have been developed. These have been screened and evaluated for heat tolerance under the controlled conditions. Field trials are on in the relevant Indian institutes to identify the markers and release the heat tolerant varieties.



Drought tolerant wheat lines

ii. BIRAC-QUT, Australia – Bio-fortification and disease resistance in Banana

BIRAC has supported a technology development and transfer program for bio fortified and disease resistance banana from Queensland University of Technology (QUT), Australia with an overall aim to address food and nutritional security through bio-fortification.

Under this program, technology transfer has been carried out for developing transgenic varieties of Indian banana (Grand Naine and Rasthali) with enhanced micronutrients (iron and pro vitamin A) and disease resistance (Fusarium (FOC) and Banana bunchy top virus (BBTV)).

The program's objectives are being jointly translated by 5 Indian research organisations namely, National Agri-Food Biotechnology Institute (NABI), National Research Centre for Banana (NRCB), Bhabha Atomic Research Centre (BARC), Indian Institute of Horticultural Research (IIHR) and Tamil Nadu Agricultural University (TNAU).

Several promising events with high provitamin A content identified by both NABI, and NRCB are now ready for Event Selection Trials (EST). Similarly, few transgenic banana events with relatively higher concentration of iron as

compared to the control have also been identified. Initial characterization of events generated for Foc resistance and BBTV under controlled conditions has shown promising results. These are being evaluated further for resistance, agronomic traits, yield analysis and molecular data.



PVA enriched transgenic banana cv. Grand Naine by over expression of phytoene synthase gene



*Transgenic Grand Naine event (Bunch)
Transgenic Fruit with high PVA
(77µgPVA/gdw of pulp)*



Control Grand Naine (4.04µgPVA/gdw of pulp)

3 Secondary Agriculture

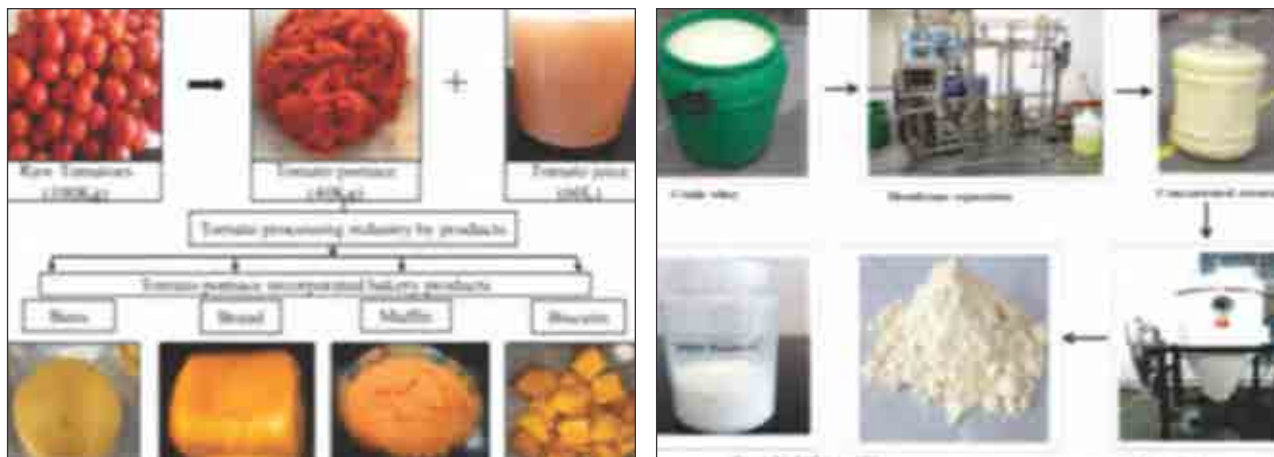
The Punjab State Council for Science & Technology (PSCST) and Panjab University have joined hands with three premier Central agencies to develop agricultural technologies with an aim to enhance farmers' income and promote crop diversification. Biotechnology Industry Research Assistance Council (BIRAC) would help the state in setting up the secondary agriculture entrepreneurial network for early translation from primary to secondary agriculture under the secondary agriculture entrepreneurial network. The Network was jointly launched by Dr. Renu Swarup, Secretary, Dept. of Biotechnology (DBT), Govt. of India and Sh. Karan Avtar Singh, IAS, Chief Secretary, Govt. of Punjab. The project aims at promoting new enterprises and to support existing industry in the secondary agriculture sector.



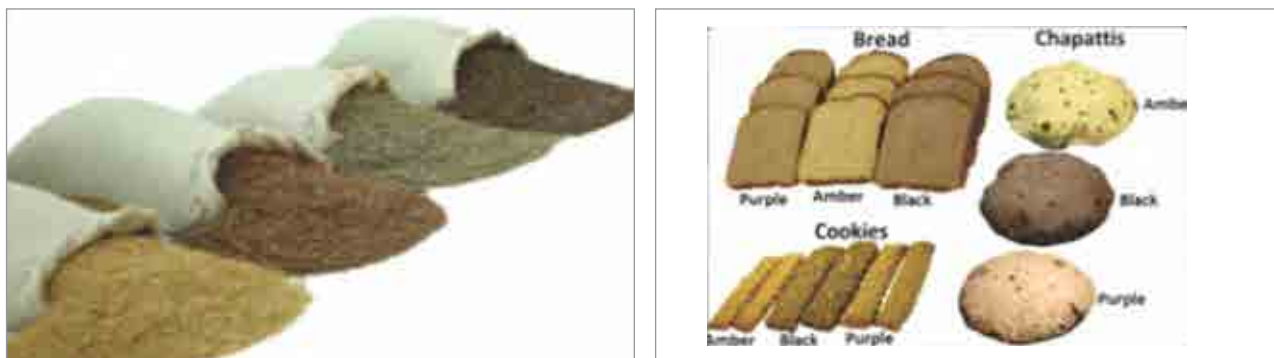
The initiative will develop technologies such as value-added products from tomatoes and anthocyanin-rich wheat (anti-oxidants). It will also lead to development of technologies for enhancing shelf life of fruits and curbing stubble burning. After laboratory success and validation, the technologies will be transferred to the industry for commercial exploitation. The strategic initiative is to support the food processing industry and promote start-ups in the Agri food sector.

The project will also assess the unmet needs of the Agri-food industry and develop technological solutions for the agricultural sector. The project will validate technology and provide support for its commercialisation. The multi-agency efforts are led by PSCST. Other partners are National Agri Food Biotechnology Institution (NABI), Centre for Innovative and Applied Bioprocessing (CIAB) and BioNest–Panjab University as the partner institutions. A special call was launched to invite proposals under secondary agriculture.

Few of the technologies supported are shown in the figures below:



By-products of tomato processing industry and illustration of ultra-filtration membrane reactor at CIAB



Chapatti and Biscuits and bread prepared from Purple, Black and white wheat

The network is now being led by Punjab State Biotech Corporation and a meeting to evaluate the projects to be funded under Fruits and Vegetables and Cereals and grains was done.

4. Waste to Energy Mission

BIRAC with core competency as a knowledge provider can bring about a transformational change in the sanitation condition of the country by fostering and nurturing innovative technologies for Waste treatment, disposal and conversion to value added products. BIRAC can institutionalize a major role in identifying appropriate intervention themes including:

1. Facilitating the development of technologies that could be commercialized or scaled up within a specified time frame
2. Formation of commercially viable model for waste management services

Wet lab Student Challenge

To take this program forward, Department of Biotechnology (DBT), Ministry of Science and Technology, Govt of India through BIRAC and Wetskills Foundation had organized the Wetlab student challenge from 5-16 October 2019 at Delhi. This was a unique event with a focus on establishing Water Innovation in the City, aligned to a water experience lab at the Barapullah Drain in Delhi. There were a total of 16 students and entrepreneurs from Netherlands and India. They worked in mixed and multidisciplinary teams of four people, to develop innovative concepts to the challenges provided during the extensive two-week program. The different challenges on which the participants had to develop solutions include:

Challenge 1: Citizen Science

Challenge 2: Technological- and non-technical solutions needed at the Barapullah Drain

Challenge 3: Creation of an experience center

Challenge 4: Entrepreneurship and knowledge exchange

The teams pitched their solutions during a special seminar aligned to the Tech Summit (Delhi, 15-16 October 2019). The challenge based on “Citizen Science” received the first prize.



Award ceremony for wet lab student challenge

Innovation Clean Technology - Scale up

Under the 100 days agenda of the Department of Biotechnology, it was proposed that few promising technologies in the area of waste management/waste to energy should be taken forward for Scale up/implementation at 10 sites/States. The implementation of these technologies had to be done in association with Municipal Corporations/Urban local bodies (ULBs) identified by the companies. Few potential technologies, which had achieved TRL 7, supported by DBT/BIRAC were shortlisted for consideration. Out of these, a total of 5 technologies have been identified which are being implemented in association with the Municipality/ULB of Goa, Bangalore, Thiruvananthapuram and Greater Mumbai.

5. Program on Synthetic Biology

The area of Synthetic Biology today requires special attention in view of the enormous applicable potential. Since Synthetic biology is an emerging technology, BIRAC has supported a program on “Synthetic Biology for transition towards a bio-based economy”. The main aim of the program is to generate joint research, development and commercialization activities.

Based on the response of the first call, the second call for synthetic biology was announced on 15th May 2020. The theme of the call was "Synthetic Biology for transition towards a bio-based economy". A total of 48 proposals were received out of which 6 were recommended for support by the Apex committee. These projects focus on developing products such as rose oxide, sandalwood sesquiterpenes and biobutanol production. The first release for three of these has been processed. The evaluation of the progress of the projects sanctioned in the first call was also conducted. The projects are progressing towards PoC development.

6. Program and Setting up of a Translational Facility for Nutraceuticals Research, Validation and Business (TFNRVB)

In India, awareness of nutraceutical is rapidly increasing and the markets are likely to grow rapidly. With the current change in mind set towards preventive care, this area can be a good business opportunity in India if we develop quality products within affordable costs.

Urbanization and advent of technology has brought about a steep rise in lifestyle related diseases in the last three decades. This has made consumers strive for diet options and has spurred the Nutraceuticals market demand. Furthermore, supply of natural food with added medicinal/health related population is still dependent on the natural products for medicinal purposes, according to a report published by WHO.

Nutraceuticals business is divided into three segments - functional foods, functional beverages and dietary supplements. Sources report that India's nutraceuticals market is expected to touch US\$ 4 billion by 2020 on account of the strong demand for dietary supplements from the upper and middle class



In view of the above background, a National Translational Facility for Nutraceuticals Research, Validation and Business Development (TFNRVBD) Development is proposed to be established at Center of Innovative and Applied Bioprocessing (CIAB), Mohali with following objectives:

- To develop novel functional foods and spices
- To develop process for lab- and pilot - scale production of nutraceuticals
- To develop analytical facility for studying the food stability, functionality, flavour, and taste, etc.
- To create ideation platforms/ think tank around functional food and nutraceuticals based translational activities at TRL6 or above and business development.

IV. Partnerships

A. Co-funding Partnerships

a. International

i. Wellcome trust

BIRAC has collaborated with the Wellcome Trust, a global charity based in the United Kingdom, to scout and support innovations in translational medicine in the domain of diagnostics for infectious diseases. The objective of this initiative is to fund translational research projects to deliver safe and effective healthcare products for India at affordable costs through collaborative research. Two proposals have been funded from 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 pursued by THSTI-Designinnova-University of Turku-Kaviogen whereas the second proposal on 'A Bench side molecular assay for detection of carbapenem resistant gram negative bacteria' is pursued by Vitas Pharma. VITAS proposal, has been completed and focused on developing a molecular diagnostic assay, based on Loop-mediated isothermal amplification (LAMP), for the detection of Carbapenem resistant Gram negative bacteria (CRGNB). LAMP based assays were found to be sensitive enough to detect the resistance in patients samples and they have performed multi-centric trials (approx. 1800 isolates). The other proposal from THSTI focuses on developing a multiplex point-of-care assay system for the detection of blood borne infections with high sensitivity such as HIV, HCV, HBsAg and HCV. The project has been regulatory monitored and mentored.

ii. CEFIPRA and Bpi France

BIRAC has joined hands with CEFIPRA – the Indo-French Centre for Promotion of Advanced Research in India 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 two partnership programs, one with the French Embassy (2014-2015) and another with Bpi France financement (2015-2016). The two calls have been launched till date under two joint partnerships under the collaboration i.e. BIRAC CEFIPRA French Embassy and BIRAC CEFIPRA Bpi France program

The first call in collaboration with French Embassy was announced during 2014 and two projects were selected for funding in the areas of molecular diagnostics for cardiovascular diseases. One project has been completed from first call and has developed mAbs against oxidized ApoA1 which could recognize the human, mice and rabbit atherosclerotic plaques. These monoclonal antibodies were developed for the screening validation of CVD patient sera, atherosclerotic plaques of CVD patients. The other proposal is also completed and worked on developing a peptide-based - diagnostic kit for an early detection of immune response in acute myocardial infarction patients

The second call with French Embassy was launched in the areas of Molecular diagnostic for prediction of Alzheimer's & other dementia, new assisting technologies for mobility of physically challenged (incl. prosthesis and robotics applications) and biomaterials & cell engineering for health applications. One project has been awarded focuses on designing an electrochemical immunosensor for the detection of Amyloid Beta in Biological Fluids of Alzheimer's Patients. This project has been completed in June 2019.

Bpi-France financement is a public investment bank which finances businesses from the seed phase to transfer to stock exchange listing through loans, guarantees and equity and provides support to innovation projects. The call for proposals has been launched in the area of digital health & individualized medicine and one project has been recommended for funding in 2016-17 which will be monitored in 2017-2018. Single project has been awarded and is working on developing a simple telemedicine tool that can be used by patients and their family and professionals which allows to connect examination devices: blood pressure cuff / sphygmomanometer, thermometer etc.

BIRAC may launch the third calls in each partnership in 2020-2021 after deciding upon the scope of future calls and themes aiming to promote interaction between potential French and Indian participants.

iii. NESTA

BIRAC has collaborated with NESTA, a UK based innovation charity organization, for creating a pipeline of innovators for the Longitude prize, in the area of anti-microbial resistance (AMR). Longitude prize is an initiative of NESTA focused on finding solutions to help tackle the problems in the AMR domain. Two calls have been announced under NESTA discovery program. In order to build successful collaboration between BIRAC and NESTA the 3rd round of BIRAC NESTA discovery award funding (BIRAC-DAF) is awarded in the form of BIRAC NESTA boost grants. Purpose of these grants is to ensure that the strongest Indian teams have the financial support necessary to complete their projects and to be potential candidates for the Longitude Prize.

Three teams (NanoDx, Module Innovations & OmiX in Collaboration with Spot sense) have been identified & awarded in first round of under the BIRAC boost grant. The three proposals focus on developing rapid and point of care diagnosis of uropathogens causing urinary tract infection (UTI), point-of-care diagnostic device for rapid identification and stratification of bacterial septicemia in critically-ill patients and detecting urinary tract infections by automation of bacterial DNA extraction process and real-time voltammetric readout during the isothermal amplification process. The projects have been sanctioned and work has been initiated.

b. National Partnerships

i. Ministry of Electronics and Information Technology, Government of India (MeitY) - Industry Innovation Programme on Medical Electronics (IIPME)

Industry Innovation Programme on Medical Electronics (IIPME) is a collaborative project between the Ministry of Electronics and Information Technology, Government of India and BIRAC. The programme is mandated to fund a portfolio of Indian led projects that target innovations in the multi-disciplinary areas comprising of electronics, engineering, medical devices, healthcare, software, algorithms and information technology.

IIPME was initiated in February 2015 to help address the challenges of the medical electronics fraternity and to bring in fast-paced research and development in this hitherto untouched area. The call for proposals was announced in the following areas,

- Imaging and navigation
- Technologies for chronic diseases
- Convergence of medical device and bioinformatics
- Increasing the outreach through Medical electronics

Through three rounds of evaluation between 2015 and 2017, 36 projects were supported under three categories a) Seed fund b) Early Transition c) Transition to Scale. Most of the projects have completed and remaining six projects will be completed in next 6 months. Four of the completed projects have led to market launching of products technologies and seven more projects have reached pre-commercialization stage. Another set of five projects have completed pilot level clinical investigation using the developed device through IIPME project and nearly ten projects have completed Proof of concept prototype and In-house verification study. More than 60% of projects supported have provided desired outcome in terms of their milestone completion and technology advancement on TRL scale. Additionally, there are few new IP generated from supported technologies during the project period in the form of patent or design registration.

Following are the list of successful projects

Commercially launched Product technologies:-

- Sohum Device for Neonatal deafness screening (Sohum Innovation Labs India)
- Smartscope- Transvaginal Digital Colposcope (Periwinkle Technologies Pvt. Ltd)
- SanMitra 100- Hand-cranked Defibrillator (Jeevtronics Pvt. Ltd)
- KEYAR- Wearable Uterine Contraction and Fetal Heart rate monitor (Janitri Innovations Pvt. Ltd)
- Alerio- AXR Portable Digital X-ray (Iatome Electric India Pvt Ltd)



Validated Product technologies which are ready for commercial launching:-

- Laparoscopy Surgical Simulator (Merkel Haptics Pvt. Ltd)
- Computer controlled Hexapod Couch for LINAC (Panacea Medtech Pvt. Ltd)
- Tabplan- X-ray to 3D software (AlgoSurg Pvt. Ltd (Dr. Vikas Karade)
- Intellistain- Automated Slide Stainer (Aindra Systems Pvt. Ltd)
- SeeSound Live- App for Speech training for Deaf (4S Medical Research Pvt Ltd)
- Scintiglo- Urine protein Analyzer (Cutting Edge Medical Devices Pvt. Ltd)

Product technologies which have completed pilot scale validation:-

- Voice prosthetic device for Laryngectomy patients (Anahera Healthcare Pvt. Ltd)
- Optoglucometer for preliminary diabetic screening (Aries Biomed Pvt. Ltd)
- Fever Watch with Respiratory rate monitoring for NICUs (Helyxon Healthcare Pvt. Ltd)
- Version-2 of HighNoon device- CT guided needle navigator (Kornerstone Medical Devices)
- easyNav- Image Guided Surgical Navigation System for Spine (Happy Reliable Surgeries)

ii. Bio-toilets in North Eastern India

Given the central importance of sanitation and hygiene in India and in light of the Swachh Bharat Abhiyan, it is important to explore sanitation solutions from different sources. The Department of Biotechnology funded a program from The Energy and Resources Institute (TERI) North Eastern Regional Centre, Guwahati to install 100 toilets in schools in North Eastern India, and BIRAC is mandated with the implementation, management and coordination of the entire project.

The proposal aimed at phase wise installation of 100 toilets and exploring the scale-up option for indigenously available technologies such as bio-digester technology.



Fig: Biogas generation; Awareness campaign in school; influent and effluent after treatment

All the 100 toilets have been installed. The state wise break-up for the installed units is as follows: Assam: 35; Tripura: 15; Mizoram: 10; Manipur: 10; Nagaland: 5; Sikkim: 5; Arunachal Pradesh: 5; Meghalaya: 15. Several campaigns have been conducted in schools to make the children understand the importance of using toilets.

iii. DBT- BIRAC Mission Program on Anti-Microbial Resistance

The Department of Biotechnology, Government of India has announced this Joint call with the Biotechnology Industry Research Assistance Council (BIRAC) on antimicrobial resistance (AMR). This joint mission program focuses on nurturing collaborations between academia and industry partners to enhance their capabilities for developing new antibiotics and therapeutics for AMR. First joint call has been announced in 2018-19. It was decided that academia will be supported by DBT and Industry will be supported by Industry.

A single proposal from JNU has been shortlisted in collaboration with Anthem Bioscience in first round of call & would now be supported for 3 years. The proposal focuses on development of the lead compound PPEF, (bisbenzimidazole) targeting topoisomerase IA from the library of bisbenzimidazoles that have shown to inhibit selectively topoisomerase IA enzyme. The proposal aims to undertake development of bio-enhanced and targeted drug delivery systems (DDS) of PPEF to enable translation of this new lead for clinical application.

iv. DBT- BIRAC Program on New Drug Development

DBT-BIRAC has initiated a program on “Drug Development” with a vision to develop indigenous and cost effective new drugs against the priority disease areas in the country. The joint call is announced in January 2020 and is focused on lead optimization and preclinical testing of candidate therapeutics for the given four diseases i.e. Tuberculosis, Cardio-Vascular Diseases (CVD), Chronic Obstructive Pulmonary Diseases (COPD) and Cancer (oral, head and neck, cervical and breast cancer).

First STAG meeting for the evaluation of proposals will held on 3rd July 2020.

v. DBT-BIRAC program on globally accessible and cost effective novel antibodies

In order to tap the huge potential of novel antibodies as immune-therapeutics, the DBT has announced a joint call with BIRAC on “globally accessible and cost effective Novel antibodies”. This call will focus on the three prioritized areas:- Antimicrobial resistance (AMR), Human immunodeficiency virus (HIV) and snakebite envenoming (SBE).

The call closed in February 2020 and first STAG Meeting for proposal evaluation was held in May 2020.

B. Networks, Platforms and Market Access

I. Wadhvani Initiative for Sustainable Healthcare (WISH) Foundation

BIRAC has partnered with WISH (Wadhvani Initiative for Sustainable Healthcare) Foundation (a Non-Profit Organization

involved in taking innovation to the end users) for leveraging the network and engage the SCALE programme of WISH to validate the innovations in primary healthcare centres through state governments.

Mandate of the partnership: Identify and assess need based, high potential innovations and demonstrate their technical worthiness for scale up

- Conduct field test beds for demonstration of innovations within public health service delivery system
- Build effective partnerships to identify and nurture innovations
- Facilitate introduction and connect of innovators with public procurement initiatives
- Build an innovation ecosystem to accelerate scale-up of innovations

These centers would help to create a pipeline for the state governments to systematically induct promising and high impact innovations on continuous basis.

Under this Partnership, four (4) BIRAC supported products/technologies per year are validated by WISH at different Primary Healthcare Centers and so far three (3) technologies/products have been validated under the Partnership, as mentioned below:

a. Accurate Tele-ECG On Mobile (ATOM)-12-lead ECG:

- **Innovator:** Cardea Biomedical Technologies Pvt. Ltd.
- **Field validation** studies were conducted at PHC at Neendar, Jaipur



Field Visit at PHC Neendar, Jaipur on 30th July, 2019--Technician performing ECG of a patient using ATOM device

b. Sohum- detection of hearing impairment in neonates

- **Innovator:** Sohum Labs
- **Field validation** studies were conducted at J K Lone Hospital, Jaipur



Field Visit at J K Lone Hospital on 30th July, 2019--Audiologist measuring hearing ability of an infant using SOHUM device

c. Aina- device to measure glycosylated Hb, blood sugar, lipid and creatinine

- **Innovator:** Jana Care
- **Field validation** studies were conducted at Tea gardens of Hathikuli and Letekujan, Assam

As an outcome of the studies, 3 White papers along with recommendations of the studies were handed over to the innovators.

Five more innovations listed below have been provided to WISH in January, 2020 for field validation

S. No	Innovation	Organisation / Innovators
1	Enject™ Safety Syringe	Alfa Corpuscles Private Limited
2	AyuSynk-Digital stethoscope	Ayu Devices Pvt. Ltd.
3	Neurotouch	Yostra Labs
4	Dozee	Turtle Shell Technologies Pvt. Ltd.
5	ReMeDi NOVA	Neurosynaptic Communication

ii. BIRAC-ICMR

BIRAC and ICMR has signed an MoU, wherein, both the parties decided to establish a collaborative framework under which both can carry out activities related to the exchange of best practices and setting up of coordinated support measures to foster technology and knowledge transfer and cooperation for validation studies.

BIRAC and ICMR together have formulated a model whereby BIRAC supported start-ups can validate their innovations by leveraging ICMR's labs, research facilities and associated resources. The proposed model will enable BIRAC supported start-ups and SMEs to use ICMR's resources. It was agreed that Clinical validation studies for BIRAC supported products/technologies can be performed through ICMR clinical trial network

BIRAC has shortlisted a list of 19 projects which have reached at least TRL6/7 and are ready for human clinical investigations. 5-6 projects in Phase-I for clinical validation/ trials will be supported under the partnership. In order to review the data available for these technologies, an advisory committee meeting was organised at ICMR. Out of the five discussed technologies, two were shortlisted for clinical validation at ICMR centres.

iii. The Indus Entrepreneurs (TiE)-Delhi NCR

BIRAC has partnered with TiE-Delhi NCR to leverage each other's strengths for mentoring biotech start-ups and providing continuous platform for BIRAC supported start-ups to interface with funders and investors. Under the umbrella of this partnership, BIRAC and TiE jointly organize two sets of activities every year, viz. BIRAC –TiE WInER Award and BIRAC-TiE Entrepreneurship awareness workshops.

Activities conducted during the FY 2019-20 are mentioned below:

1. **BIRAC –TiE WInER Award:** Women In Entrepreneurial Research (WInER) Award is focused at rewarding the women entrepreneurs in biotechnology. 3rd edition of BIRAC-TiE WInER Award was launched during FY 19-20). 15 women entrepreneurs were selected and awarded with 5 lakhs each on the BIRAC's 8th Foundation Day, held on 20th March 2020. The awardees would now receive access to a residential accelerator programme for regulatory, IP, licensing, fund raising, mentoring; and a chance to win final award of INR 25 lakhs each for top 3 women entrepreneurs.
2. **BIRAC-TiE Entrepreneurship awareness workshops:** Like previous year, BIRAC in collaboration with TiE-Delhi NCR organised 4 Entrepreneurship Conclaves. Cities covered in FY 19-20 included Jalandhar, Kolkata, Kerala and Delhi. The initiative aims at spreading awareness about Bio-Entrepreneurship across the country. The conclaves brought together successful Start-up entrepreneurs to share their stories and experiences with students and young entrepreneurs. The young minds were also made aware of BIRAC's role in bolstering the Indian start-up culture as well as exploring avenues for a smoother transition from a university environment to the real world. More than 300 Students and young entrepreneurs from various educational institutions benefitted from discussions on pertinent topics, interesting case studies and introduction to various aspects of entrepreneurship.



BIRAC-TIE Entrepreneurship Awareness Workshop at Kolkata

iv. TATA Trusts's Foundation for Innovation and Social Entrepreneurship (FISE)-Social Alpha

BIRAC has joined hands with Social Alpha to foster an ecosystem to develop Assistive Technologies (AT) solutions. Social Alpha is a not-for-profit platform created by Foundation for Innovation and Social Entrepreneurship (FISE), sponsored and supported by the Tata Trusts to nurture start-ups through their lab to market journey. The 'BIRAC-Social Alpha Quest for Assistive Technologies– supported by Mphasis' was launched in June 2019 with a view to identify start-ups working in the AT sector.

Out of 100+ applications received for the quest, top 14 start-ups were selected as the winners and the winning solutions included assistive technologies in speech and hearing impairment, locomotor disability, visual impairment and intellectual disability for children and adults.



Top 14 Indian Awardees of BIRAC-Social Alpha Quest for B



Cohort of 14 Awardees of BIRAC-Social Alpha Quest for Assistive Technologies Supported by Mphasis

v. BIRAC and CARB-X(Combating Antibiotic-Resistant Bacteria Biopharmaceutical Accelerator (“CARB-X”))

BIRAC and CARB-X signed a partnership agreement having common objectives to establish a collaborative framework under which the agencies shall carry out activities related to the exchange of best practices and setting up of coordinated support measures to foster technology; knowledge transfer and innovation cooperation for enhancing Indian R&D in the area of Antimicrobial Resistance. CARB-X is an integral part of Boston University’s non-profit research mission.

vi. BIRAC & PHD Chamber of Commerce and Industry (PHDCCI)

PHDCCI is the National Apex Chamber and has been relentlessly working for the socio-economic development of Indian States with an axiom: "Strong States Make Strong Nation". Under aegis of its State Development Council (SDC) and state chapters, the Chamber essentially carries forward the mission of empowering States to strengthen India's federal structure governance.

For creating and promoting "Biotechnology Innovation System" in states, PHDCCI entered into a strategic partnership with BIRAC. The partnership will enable BIRAC and states to strengthen the Start-up Eco-system. BIRAC & PHDCCI partnership shall give BIRAC access and strengthen its reach to states by implementing its mandate for Make in India.

Under this partnership a BIOTECH STATE CONNECT SUMMIT was organized to promote the innovation and entrepreneurship in Biotech Start-up Ecosystem in every state, A Biotech State Connect Session was also organised and the session attracted participation of key decision-makers from various state governments.

vii. BIRAC-ISBA Partnership

BIRAC and ISBA entered into a partnership in 2017 to strengthen the entrepreneurship development initiatives with a special focus on the BioNEST (Bioincubators for Nurturing Entrepreneurship for Scaling Technologies). Under the partnership, following events were organised during FY 19-20.

ISBACON 2019 – The ISBA Annual Conference

ISBACON 2019 – the annual conference of ISBA, supported by BIRAC, was held during July 18-19, 2019 at Amaljothi College of Engineering, Kottayam. The conference was inaugurated by His Excellency Justice (Retd.), Dr. P Sathasivam - Governor of Kerala. The conference witnessed over 200 participants from various incubation centres pan India.

During the conference, there were special lectures, panel discussions, plenary talk and presentation on ISBA Road Ahead by various ISBA Working Groups.



Inaugural Session of ISBACON 2019

BIRAC BioNEST Outreach Programs

- BIRAC and ISBA jointly organized an outreach programme at the Technology Business Incubator - NIT Calicut, Kozhikode in September, 2019. The session started with the registration followed by the Welcome Address by Ms. Preethi Manniledam, CEO - TBI, NIT Calicut and Chief Guest Address by Dr. S. Ashok, Dean (Research & Consultancy), NIT Calicut. Dr. Bhuvnesh Shrivastava, Manager Make in India Cell, BIRAC addressed the audience on “BIRAC Nurturing Biotech Start-up Ecosystem & How BIRAC can help innovators through various schemes”. Mr. Sherin Sam Jose, CEO - Start-up Valley, AJCE explained the Role of Incubation Centres to the participants.



BIRAC – ISBA Outreach Programme at NIT Calicut in Kozhikode

BIRAC Innovation Challenge Award

BIRAC in association with knowledge partner Social Alpha and BIRAC's Bio-NEST Incubator partner Clean Energy International Incubation Centre (CEIIC) has launched the 2nd call of the BIRAC-Innovation Challenge award-SoCH (Solution for Community Health) 2020-21 during its 8th Foundation Day, held on March 20, 2020. The challenge is envisioned to identify and facilitate Indian innovators working towards combating clean cooking based challenges having national and global relevance. The award is focused for the theme "Innovative, Efficient and Affordable Solutions for Clean Cooking in Rural and Community Settings" and the proposals are invited in the areas of Biomass, Electricity, LPG, Solar and Biogas based cooking solutions on MyGov/ BIRAC online portal. This BIRAC-CEIIC-Social Alpha partnership will encourage national & international stakeholders to join hands in scaling and promoting the adoption of the clean cooking solutions across the country.



Launch of BIRAC-Innovation Challenge Award-SoCH 2020-21 <https://innovate.mygov.in/birac/>

V. Extramural Project Management Units

i. Program Management Unit at BIRAC- a partnership of the Department of Biotechnology, the Bill & Melinda Gates Foundation, the Wellcome Trust

Grand Challenges India (GCI) was born out of a partnership of the Department of Biotechnology (DBT), Government of India and the Bill & Melinda Gates Foundation in 2012 with the aim to encourage Indian innovation and research to develop affordable and sustainable solutions to improve health and well-being in India, and across the globe. In 2016, Wellcome Trust also joined the partnership.

GCI was launched with the aim of directing funding and research to address some of the greatest public health challenges that India faces today. GCI is committed to seeking and rewarding established researchers, young entrepreneurs and innovators from both academia and industry.

GCI works across a range of health and developmental priorities ranging from agriculture, nutrition, sanitation, maternal and child health to infectious diseases. Presently GCI supports a range of research and development activities from basic research, translational research, intervention trials, clinical trials, data integration and analysis, product and technology development. GCI also funds projects at various stages in their lifecycle; from basic science research in laboratories, to proof-of-concept projects and potentially to scale-up to innovation projects.

GCI is currently working to expand our funding arenas and mechanisms. Grand Challenges India runs open calls as well as specialised programmes.

1. Ideation Grants

a. Grand Challenges Exploration

Grand Challenges Exploration (GCE)-India is one of the unique initiatives under GCI ambit that is aimed at identifying

health care innovation that will enable the goal of equitable health care. The GCE-India initiative is being managed and administered by GCI and is implemented by IKP Knowledge Park, a science park at Hyderabad.

The GCE-India is one of the path-breaking programs under GCI initiative that intends to provide seed funding to the highly innovative ideas at the pre-proof concept stage. This fast-track program is aimed at identifying, nurturing and encouraging innovative ideas to create novel, indigenous technologies to improve the public health situation in India and beyond. The program helps exploratory research that might have a tremendous impact on developing world healthcare and development ecosystems. The program supports selected grantees for a period of 18 months to the tune of \$100,000 to test their idea and generate initial evidence.

Since inception (August 2015) five calls have been launched under the GCE-India platform. With an increasing number of applications received in subsequent Rounds of GCE-India calls (85, 156, 237, 777 and 703 respectively), the program has demonstrated exponential growth in the last five years.

Till date, GCI has altogether supported/ recommended 37 projects under GCE-India innovative. The supported projects are mainly focused at developing point-of-care diagnostics (PoC) test or kit for antimicrobial resistance (AMR), tuberculosis (TB), malaria and HIV diagnostics: to make a way for better infection control. The GCE-India team ensures that besides granting funding assistance, the investigators also receive access to technical and regulatory advisors along with a network of market entry/business development professionals to help refine the proposed solutions proposed and take the ideas to the next stage of realization.



b. Sentinels Initiative

The Gates Foundation launched 'Sentinels Experiment in India' as an open initiative to support explicit innovation practitioners, new partners, new ideas, and new opportunities that can either solve gaps in existing strategies or create completely new opportunities and pathways to the outcomes sought on the broader global health challenges.

The Sentinels initiative intends to source innovation in India, by working with sentinels for excellence and innovation, who can help identify new ideas and scientists in their institutions, networks, and regions. The experiment used special administrative mechanisms to provide awards of INR 50,00,000/- to each innovative project to generate proofs-of-concept.

The initiative engaged with seven innovation practitioners for new ideas that are focused on exploring, the unique aspect of the health issues with special emphasis on innovative, impactful research of new innovations.

The seven supported projects aiming to solve a wide range of problems are enlisted below: piloting and testing varied concepts

- Two projects are exploring the nutrition predictive metrics and nutrient uptake and metabolism coordinates, one, through protein synthesis dynamics in the brain, in rat models and later is studying the Environmental Enteric Dysfunction (EED) in *Drosophila Melanogaster* (vinegar fly) a low-cost animal model.
- The other two projects are studying *Mycobacterium tuberculosis*, likely to identify the potential 'anti-latency' lead molecule(s) and the other is trying develop a novel mycobacterium OMV coated nanoparticle (OMV-particles) for efficient vaccine delivery system.
- One team plans to test a technique to establish a gene drive method and engineer into the carrier of Flaviviral infections, *Aedes aegypti* population without disturbing the ecological niche.
- A Pune based company, Module Innovations plans to establish proof of concept for a novel system to determine antibiotic resistance profile of 4 major uropathogens against a panel of 8 antibiotics used in current clinical practice, and these 4 bacteria include *E. coli*, *Klebsiella*, *P. aeruginosa* and *Enterococci* spp.
- Lastly, Sea6 Energy Private Limited, Bangalore aims to improve upon the prototype product by conducting extensive field trials, and developing next-generation products by blending the active ingredients of existing products with the potential active ingredients from other red seaweed species.



2. Maternal and Child Health Initiatives

a. All Children Thriving (ACT)

The well-being of mothers, infants and children being an important paradigm of the healthy future is an important public health priority.

Although, birth defects, adverse pregnancy outcomes and developmental disabilities in children are interrelated functions of several known determinants (such as maternal health, nutritional deficiencies, infectious diseases, genetics, enteric health, water, and sanitation). Incidentally, much remains unknown about the root cause. It was to understand some of these factors that the All Children Thriving (ACT) call was launched as the third call under Grand Challenges India (GCI) framework. The ACT call is aimed at investigating novel cost-effective measurement tools and mechanisms to combat unhealthy birth, growth and development. The program by putting best strategies in place aims to ensure that not only all children survive, but also remain on the trajectory of healthy and productive lives and try to adequately alleviate the burden of birth defects, adverse pregnancy outcomes and developmental disabilities in children.

There are eight projects supported under ACT initiative (1 full grant and 7 seed grants). All the projects are aimed at exploring a unique element with special emphasis on innovative, impactful research on maternal and child health and development. Three projects are focused on prevention of ailment, disorders, and impairment among newborns, children and mothers, as they are the backbone of the nation's health system.

Three are aimed at developing simple low-cost biomarkers that can be applied early in life for adverse outcomes among mother and children. Four projects intend to validate/ develop interventions or packages of interventions for improvement in maternal and child health. Whereas one of the projects is aimed at the development of biobanks for long term storage of biospecimens to reduce time and cost for future research in this area. Majority of supported programmes are now nearing completion and results obtained may aid in the generation of evidence-based policy in public health.



3. Vaccines

a. qHPV Clinical Development

Cervical Cancer, the leading cause of female cancer mortality worldwide, affects women in low and middle-income countries. India has the highest burden of cervical cancer. Two vaccines for cervical cancer, Gardasil, and Cervarix are available. Although both vaccines are licensed in India, very limited vaccination has occurred in India due to the high cost of vaccines. The Executive Committee (EC) provided in principle approval for qHPV Vaccine Phase II/III Clinical Development to be funded through Grand Challenges India. International Agency for Research on Cancer (WHO-IARC) will act as an advisory partner. The phase II clinical trial was completed successfully and the Phase III trial was initiated in February 2020.

4. Health-Tech Program

a. The Med-Tech Challenge

The Med-Tech Challenge: Innovation to Impact Acceleration Training & Award program is designed around the needs of Indian innovators and entrepreneurs working in the areas of developing medical technologies for public health who have a validated proof-of-concept for their technology and are in the process of taking their product to the market.

The DBT-GoI, BMGF & Wellcome together have launched a challenge under the Grand Challenges, focused on funding some of the most compelling and unfinished medical technologies and tools through a competitive grant process, through a portfolio approach. The theme of the call is to provide business training and mentorship to the innovators of compelling medical technologies and tools specifically those in the translational space. This program is designed as a call by nomination, where each of the funding partners will nominate applicants that fit into the inclusion criteria. The call will also have a Technical Facilitator who will be assessing and providing the training to the selected participants and will also be part of the review process.

The program aims to fill the gap in the development and delivery of affordable medical technologies in India and plans to address the low movement of affordable technologies through the development pipeline.

In FY 2019-2020, the program was signed and launched and the first phase of the selection process to select the workshop applicants. This phase was completed with the conduction of the Joint Triage Committee who selected the workshop applicants. The workshop was scheduled to be held in March 2020.

5. Agriculture Development

a. Nutrition-Sensitive Agriculture

The project entitled 'Food-based nutritional security for malnourished rural households through capacity building and establishment of Nutri-gardens' is being implemented by M. S. Swaminathan Research Foundation in collaboration with four State Agriculture Universities and Krishi Vigyan Kendras (KVKs) at Palghar, Maharashtra; Thirur, Tamil Nadu; Kanpur Dehat, Uttar Pradesh; Jeypore Campus of MSSRF, Odisha.

The National Nutrition Strategy by NITI Aayog, Government of India, in its vision 2022 is committed to ensuring that every child, adolescent girl, and woman attains optimal nutritional status- especially those from the most vulnerable communities, focussing to prevent and reduce undernutrition across the life cycle, especially in the first three years of life, since the first few years of life are the foundation for ensuring optimum physical growth, development, cognition and cumulative lifelong learning.

This program is being supported for the purpose of advocacy as a specialized initiative under the Agriculture Development and Nutrition portfolio, to showcase the vibrancy in the Ag. Dev. & Nut. arena in India and the impact that GCI supported programmes are creating in communities across the country- improving lives through improved food & nutrition, livelihoods, farm productivity for larger public health goals.

The overall impact of the project will be an improvement in Diet Diversity Score of the undernourished farm households' up to 60% from base level and appropriate awareness through training at the grassroots level (farmers and malnourished sections of the society) and other stakeholders including policymakers to come out with enabling policies that will eradicate malnutrition.

State Agriculture Universities:

- Chandra Shekhar Azad University of Agriculture and Technology, Kanpur Dehat, UP
- Dr. Balasaheb Sawant Konkan Krishi Vidyapeeth, Dapoli, Maharashtra
- Orissa University of Agriculture and Technology, Bhubaneswar, Odisha
- Tamil Nadu Agricultural University, Coimbatore, Tamil Nadu



Glimpses of program activities at one of the project site



Current Progress Updates:

The program has completed one year of its implementation and has been reviewed by the Scientific Advisory Group constituted for this program.

The program has achieved the following during the reporting period.

- Completion of the landscaping of 4 gardens on respective sites on the basis of nutrition themes. More than 50 species of the plants have been collected for germplasm.
- Establishment and maintenance of mother nursery - The establishment of mother nursery has also been completed.
- Planting of nutri-rich plants: Specific area was allotted, for each nutrient section. In each section, nested plots were developed to accommodate herbs, annuals and perennial crop/plant are added. The information board in each section provided issues related to the deficiency of nutrition and its manifestation in human health vs. the plants that provide specific nutrition. This enables the farmers to choose varieties to enrich their farms and the consumers to select plants to overcome issues of malnutrition.
- In each of the sites, 25 small and marginal farmers from 10 villages were selected to form 10 Farmers Self Help Groups (FSHGs). These FSHGs will be associated with this program and participate in horticultural training and to make their farms enriched with nutri-rich plants.
- Training of master trainers and members of Farmer Self Help Groups and Community Hunger Fighters to disseminate knowledge through nutrition literacy programmes.

6. Data Analytics Programmes

a. Immunization Data: Innovating for Action (GCI-IDIA)

The fourth thematic call was announced on 15th November 2017 on 'Improving Immunization Data Systems', a program directed at addressing challenges faced in collecting, analyzing and using data on immunization and health. The call was open for 60 days with funding support from the Department of Biotechnology, GoI, and the Bill & Melinda Gates Foundation to support the set of projects aligned to the Indian strategy requirement and in technical partnership with the Ministry of Health and Family Welfare, Government of India, the Department of Health Research (DHR) and the Indian Council of Medical Research (ICMR), who will be providing their valuable technical and practical inputs in selecting and reviewing projects. The overall goal is to seek ideas that should be potentially translatable to practical interventions in India's immunization program.

The call closed on 15th January 2018 at 11:59:59 PM and accepted 70 applications that were submitted online only. The screening was done on the 70 applications internally, which assessed initial eligibility of proposals which reviewed the scope of the scheme as per the mandate pre-defined in the call RFP and did the due diligence of submitted documents. Thirty-Six applicants were selected for presentation to TAG, where 9 applications were shortlisted for funding support. These projects were all signed in FY 2018-2019.

The supported nine project teams are testing a blend of innovative technologies involving block chain technologies, data warehousing, mobile applications and development of health monitors for distinct health officials. In FY 19-20 all the projects undertook their specific activities, supported by mentors and the GCI teams, as well as the state immunization officers and health authorities.

b. Knowledge Integration (ki) Data Challenge

Data Science Challenge is the sixth call under GCI, launched 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 ki India or to other relevant data sets that applicants can access. The call was synergized with the Grand Challenges calls from Brazil and later with Africa.

The program received 119 applications and each application underwent three-tier screening process and 10 projects were shortlisted for funding support.

The ten supported teams are using specialized skills and valuable experience that will help interpret conclusive results through additional analyses that may help predict pregnancy outcomes, birth outcomes and childhood health and development patterns.

In 2018-2019, a global kick-off meeting was conducted in New Delhi, India with the GC India, Brazil teams that were selected to synergise and collaborate teams with similar research interests and share experiences.

The Summary of the shortlisted projects is as below:

1. Preterm birth risk in pregnant women – prediction using machine learning models, Translational Health Science and Technology Institute; Collaborator: Indian Institute of Technology, Madras

The study proposes on pregnant women (Garbh-ini) cohort, a multidimensional longitudinal dataset purposely designed to study preterm birth. The study will apply data-driven machine learning approaches to develop an accurate and clinically useful model to predict the risk of preterm births.

2. A data science approach to develop growth cut-offs for graded care of malnutrition; St. John's Research Institute, Bangalore; Collaborator: Society for Applied Studies

The study aims to calculate cut-offs using data provided by HBGDki and datasets with SAS, SJRI where weight, height, and age are available for children below five years in combination with other outcomes such as death, morbidity or hospitalization.

3. Child undernutrition in India: Exploration of the nutritional gap based on distal and proximal factors, St. John's Research Institute, Bangalore

Intends to adopt unconventional data analytical techniques to explore the multiple dimensions of child undernutrition in India, utilizing existing national surveys and the HBGDki database.

4. Developing district-level forecasts of vaccine coverage and inferring vaccine confidence across India using large public health datasets; IIT Delhi; Collaborator(s): INCLIN Trust, JNU & Imperial College, UK

The study aims to explore regional trends and variations in vaccine uptake, uncover relationships to other socioeconomic, demographic, and public health indicators, and develop a predictive model of the state of vaccine confidence in different parts of India. The main goal of the study is to develop a prototype coverage monitoring and forecasting system across districts by using Gaussian process

5. The Brookings India Maternal & Child Health Monitor, Brookings Institution India Center

The study proposes an econometric analysis to collate, collect and map data at a highly disaggregated district level and where possible sub-district level from multiple data sources. The developed monitor will be a new and innovative way of viewing and presenting real-time informatics in a usable format but will go through the academic rigour and economic and econometric analysis.

6. Secular trends and predictors of linear growth and stunting in India: developing descriptive, latent and mechanistic models; KEM, Pune

The study proposes to perform group factor analysis, a versatile statistical unsupervised integration of multiple data sources that provide interpretable low-dimensional data in terms of factors. The expected outcomes are Longitudinal growth curves of height in different geographic areas of India born over 70 years, Rates of stunting over time, Inter-generational changes in height, Relationship of birth characteristics and postnatal growth with later linear growth.

7. Big Data Analytics and Data warehousing - A systematic way to integrate Maternal and Child Health data, Clear insights Consulting Pvt Ltd

The study aims to synthesize disaggregated, publicly available NFHS and DLHS survey data. The data warehouse will provide a framework for all information needs of health including scheduled management information system reports, which different functional divisions and sections produce as required for internal use and for submission to Government etc.

8. Size matters: Predicting personalized risk of SGA, National Chemical Laboratory, Pune

The project aims to solve the problem of a large number of low-weight births in the Indian population and the inability to predict the risk reliably in the antenatal period.

9. Understanding the effects of initiation of complementary feeding at four months compared to six months on growth and infection among Indian children, Christian Medical College and Hospital

The study may describe the breastfeeding patterns in individual studies using a survival analysis approach and overall, through a meta-analytic approach.

10. Exploring risk factors of adverse maternal and child health outcomes using machine learning and other advanced data analytical approaches, Department of Humanities and Social Sciences, IITD



Combining multiple data sets from HBGDKi using ML tools for prediction, classification and topic discovery may yield new insights for adverse birth outcomes and intermediate outcomes of interest.

7. Policy Support Program

a. Knowledge Integration and Translational Platform (KnIT)

The Knowledge Integration and Translational Platform (KnIT) was launched in 2016 and are a unique knowledge synthesis platform that aims to bridge the gap between research and policy and facilitate evidence-based policy making for public health in India.

KnIT was set up as a response to the challenges discussed previously and specifically targets Indian policymakers as the end users of the knowledge synthesized, explicitly at the State level, in keeping with the current health policy structure, where the mandate of healthcare lies with the state.

Currently, KnIT knowledge synthesis focuses on two tracks, maternal and child health issues and nutrition.

The Nutrition track examines public health and medical interventions to mitigate stunting, wasting, severe malnutrition, low birth weight, optimal body composition, and metabolic unfitness or obesity. The nutrition tracking worked on six areas where there are essential questions to be addressed; low-birth-weight babies continuing from the previous years, nutritional status of Indian children in early life, impact of change in nutritional status on diarrhoeal mortality in India, gestational weight and birth outcomes, antenatal care utilization and data science in maternal and child health. This track has led to the publishing of 8 articles in peer-reviewed journals in 2019-2020.

MCH focuses on identifying the health system challenges that are barriers to effective, equitable, impactful delivery of health services, and identifies strategies on how to overcome them. It also focuses on designing delivery strategies based on evidence, and piloting and evaluating programmes aimed at improving program delivery, directing implementation research to optimize primary and secondary level healthcare, and generating evidence-based, human resource linked strategies relevant to MCH. The MCH team is currently focusing on the care of sick and small new-borns in the SNCUs, to assess the state of treatment and the demand-supply gap in this space. The team has conducted a quantitative and qualitative survey in Himachal Pradesh to collect data from SNCUs and NBSUs and has also undertaken in-community follow-ups to assess the care that the babies are receiving.

In FY 19-20, the analysis of the data was completed and the results were discussed with experts. Key recommendations were also prepared for the state officials of Himachal Pradesh, for system level strengthening and scaling up of neonatal care facilities. Additionally, the Domain center began work on an exemplar analysis of the actors associated with the decline in stunting in India and an assessment of the need, appropriateness and acceptability of potential biomedical interventions for the prevention and control of Respiratory Syncytial Virus in infants and young children in India.

The State Interaction Unit has worked with the states of Haryana, Rajasthan, and others to provide evidence-based recommendations.

8. Antimicrobial Resistance (AMR)

Antimicrobial resistance (AMR) has become a major healthcare threat in recent times due to excessive use of antimicrobials, especially antibiotics, leading to dramatic rise in resistance. India has been one of its worst-affected regions with a widespread presence of multi-drug resistant (MDR) strains of pathogenic microbes responsible for TB, malaria and other deadly infections. In light of the pervasive incidence and avoidable mortality among the poverty-stricken and underserved sectors Grand Challenges India (GCI) team had launched its fifth Grand Challenges India call on AMR. This program was directed at addressing challenges that are being faced in tackling AMR in India and in comparable geographies.

This call is part of a global call on AMR, where Grand Challenges partners from Brazil, South Africa, Africa and India have come together and announced a call for proposals.

This program primarily aimed at encouraging innovation in tackling AMR under three specific categories: solutions for better use of surveillance data to achieve actionable results, innovations in products and technologies to break infection cycles in healthcare settings and to remove antibiotics from effluents.

In line with the call mandate the 10 shortlisted projects are mainly supporting projects that are broadly aimed at addressing big gaps in the surveillance and response system for infectious diseases threats. The projects are progressing as per their intended milestones.

9. Sanitation - Reinvent the Toilet Challenge

a. Phase 2 - Transition to Scale Activities planned for 2019 – 2024

Decentralization of wastewater treatment is a sustainable solution to address this problem that locally treats the sewage and also reuses/recycle. The two technologies that are simple, cost-effective, reliable, and culturally acceptable would be supported under innovation-to-scale. One of the technologies, such as the electrochemical reactor that works on a novel electrochemical process in which the water to be treated is subjected to extremes of pH to kill the coliform and Helminths.

The second technology is the completely solar-powered eToilet which is connected to the NEWGenerator this creating a unique model of sanitation recovery with a perfect back-end processing through which resource generation/recovery is made possible. The NEWgenerator harvests nutrient fertilizers (Nitrogen, Phosphorous, and Potassium), energy through biogas, and clean water from human wastes

The machine achieves a high level of waste treatment through the use of anaerobic membrane bioreactor technology (AnMBR). A high level of pathogen destruction is performed to ensure safe sanitation.



10. Convenings

a. IDIA Kick-off Meeting, April 2019, New Delhi

- On April 10th 2019, the first Kick-off and TAG meeting combined were held in New Delhi with the grantees, TAG and PMC members and stakeholders from various ministries among others.
- The goal of the kick-off meeting was to introduce the relevant Ministries, State Immunization Officers, mentors teams to facilitate conversations between the stakeholders, mentors and the grantees.

The SEPIOs, PMC members and the TAG experts discussed each of the grantee presentations in detail and provided valuable feedback.



GCI-IDIA Kick-off Meeting

b. Grand Challenges Annual Meeting, 2019, Addis Ababa, October, 2019

- DBT and GCI-BIRAC participated in Grand Challenges Annual Meeting at Addis Ababa from 29th - 30th October, 2019 to forge new collaborations with African and other partner countries to address the Grand Challenges in Public Health.
- Secretary DBT Dr.Renu Swarup, led the DBT-BIRAC and Grand Challenges India Delegation at the meeting and was accompanied by Dr. A.Vamsi Krishna, Scientist E, DBT, Dr Shirshendu Mukherjee, Mission Director, Dr Chandra Madhavi and Dr Arshi Mehboob from Grand Challenges India.
- The Meeting was a convening of over 1000 leaders from across the global community to share best practices, encourage collaboration and seek solutions for public health challenges. The meeting included scientific tracks with a series of complementary plenary sessions along with side meetings.

The Secretary DBT invited the Grand Challenges community to GCAM 2020 which was scheduled to be held in New Delhi in October 2020.



Grand Challenges Annual Meeting, 2019



c. Women Leaders in Global Health Conference; November 2019, Kigali, Rwanda

The annual Women Leaders in Global Health (WLGH) conference brings together established and emerging leaders from across the global and national health community to advance gender equity in health leadership. The conference was hosted by the University of Global Health Equity in Kigali, Rwanda in 2019. The 2-day conference on 9th-10th November focused on the issues and solutions faced by African woman leaders and contributors to the health agenda.

The conference saw 1053 attendees, 119 speakers and 81 countries represented. The conference also sponsored 166 scholarship winners and 126 participants with funded tickets. The conference saw speakers from 33 countries across the globe.

Ms. Anjana Sheshadri represented Grand Challenges India. An announcement about the WLGH conference 2020 to be held in India was also made on behalf of Secretary DBT.



Women Leaders in Global Health Conference, 2019

d. Lecture by Dr. Steven Buchsbaum, January 2020, New Delhi

A lecture for Dr. Steven Buchsbaum, Deputy Director, Discovery and Translational Sciences, Bill and Melinda Gates Foundation was organised by Grand Challenges India on 22nd January in New Delhi. Dr. Buchsbaum delivered a lecture on “Reflections from: DARPA to HSARPA to Grand Challenges”. An overview of innovations and DARPA and HSARPA models for organisations to source the right innovations for making a difference.

The event saw participation from DBT, BIRAC, GCI, India country office of Gates Foundation and other key stakeholders.



Lecture by Dr Steven Buchsbaum

11. Communications

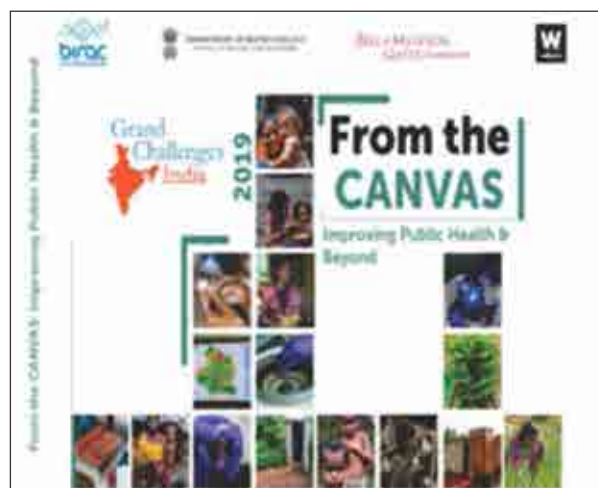
The GCI Communications team maintains and manages the GCI microsite, hosted on the BIRAC website.

GCI launched their second publication in 2019 “From the Canvas-Improving Public Health & Beyond”, a photo book highlighting Grand Challenges India success stories from across the portfolio. An image repository of Grand Challenges India programmes has also been created as a resource for publications and publicity collaterals.

The Communication team also supports in planning and managing DBT- BIRAC Leadership Dialogue Series along with other outreach activities and representation at various events.



DBT-BIRAC Leadership Dialogue Series



GCI Publication-From the Canvas

12. Scientific Sub-Committee of National Technical Board on Nutrition (SSC-NTBN)

The Government of India has constituted the **National Technical Board on Nutrition (NTBN)** under the Chairmanship of Dr Vinod K. Paul, Member (Health), NITI Aayog to make technical recommendations on policy relevant issues on Nutrition in December 2017. A Scientific Sub-Committee of National Technical Board on Nutrition (SSC-NTBN) was subsequently constituted by NITI Aayog with Secretary, DBT and Secretary DHR as Co-Chairs.



SSC-NTBN Third Meeting

The Secretariat of SSC-NTBN was established at BIRAC. The PMU-BIRAC (GCI) acts as primary fiduciary agency and is responsible for the execution and management of the secretariat. The mandate of this committee is to provide technical recommendations to NTBN (National Technical Board on Nutrition) on policy related issues and also to evolve strategies for mitigation of anaemia, micronutrient and protein malnutrition. The secretariat supports the NTBN functioning by providing evidence based technical assistance on issues brought up by Niti Aayog.

The Board of SSC-NTBN has met thrice till date to provide technical recommendations on Operational guidelines on 1) Infant and Young Child Feeding and 2) Prevention of malnutrition and community-based management of severe acute malnutrition. Third meeting of SSC-NTBN was organized on December 9, 2019 to deliberate on 'Appetite Assessment and Test' for community management of severely acute malnourished children (c-SAM). The Board has identified priority research areas which are being considered to work upon. Expansion of the board and work area is also under consideration.

ii. Industry-Academia Collaborative Mission for Accelerating Discovery Research To Early Development For Biopharmaceuticals - "Innovate in India for Inclusiveness" (i3)

The Industry-Academia Collaborative Mission of Department of Biotechnology (DBT), Govt of India for accelerating discovery research to early development for Biopharmaceuticals approved by the Cabinet for a total cost US\$ 250 million and 50% co-funded by the World Bank is being implemented at Biotechnology Research Assistance Council (BIRAC).



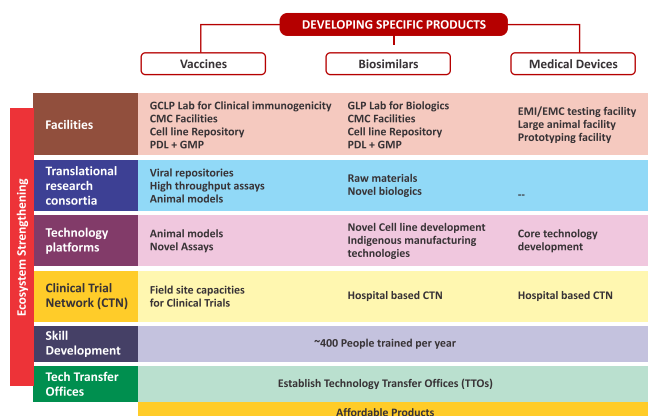
Inter-Ministerial Steering Committee Meeting held on 20th Dec 2019

Updates on major activities:

1. Specific Product Development:

The mission has three major identified verticals for product development namely Vaccines, Biotherapeutics and Medical Devices and Diagnostics.

Multipronged approach to support current product pipeline and to expedite discovery and development of novel products in the coming 5 years



Approaches to product development

Product Type	Product Name
Vaccine	Universal Flu Vaccine, Cholera Vaccine, Dengue Vaccine (live attenuated and recombinant), Pneumococcal Vaccine. These vaccine candidates are currently under different stages of development. In addition, 3 SARS-CoV-2 vaccine candidates have also been identified to be supported
Biotherapeutics	Human Serum Albumin, Herceptin, Insulin Glargine, Liraglutide, Ranibizumab, rHU Biosimilar Lispro, Ustekinumab, Palivizumab and Aflibercept. These are currently under different stages of development. The mission is also supporting development of clones namely Ramucirumab, Golimumab and Factor VIII.
Medical Devices and Diagnostics	Raw materials for bio-absorbable implants (bone implants), room temperature stable molecular diagnostic reagents, slip ring CT scanners, next generation endoscopes, next generation MRI scanners, medical grade camera for surgeries and laproscopic surgery systems. In addition,

2. Building Shared Infrastructure:

The program is dedicatedly working to create an ecosystem that enables affordable product development in the country viz-a-viz creation of GLP, GMP, GCLP facilities besides cell line repositories and facilities for medical device testing and prototyping. Creation of translational research consortia and establishing clinical trial network and technology transfer offices are other areas of prime importance for the mission.

2.1. Facilities:

Product vertical supported	Facility Type	Number of facilities
Biotherapeutics	GLP compliant facilities for analytical characterization of biotherapeutics	03
	PDL-GMP manufacturing facilities for biotherapeutics (Mammalian & Microbial)	02
	Cell line repositories (Mammalian & Microbial)	02
Medical Devices and Diagnostics	Medical Device and diagnostics rapid prototyping facilities	4
	Large animal facility for preclinical testing	01
	EMI/EMC safety testing facilities	01
	Large scale manufacturing DBT-AMTZ CoMMAND strategy.	01
Vaccines	GCLP compliant clinical immunogenicity labs for supporting Vaccine clinical trials	02



Centre for Advanced Protein Studies (CAPS) at Syngene, Bangalore



cGMP facility at Shilpa Medicare, Dharwad



National Centre for Pneumococcal Vaccine Immunogenicity Evaluation at Central Research Laboratory attached to Kempegowda Institute of Medical Sciences (KIMS), Bangalore



National Centre for Immunogenicity and Antivirals at Interactive Research School for Health Affairs (IRSHA), Pune, Bharati Vidyapeeth

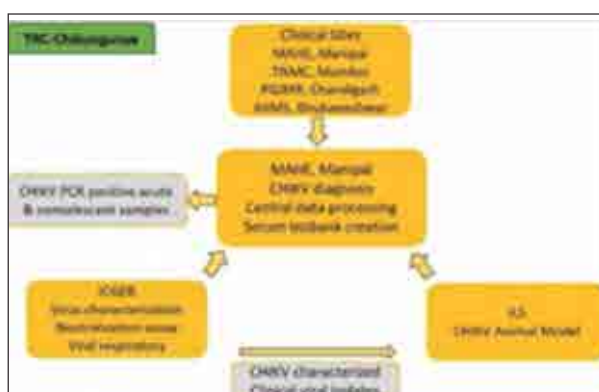
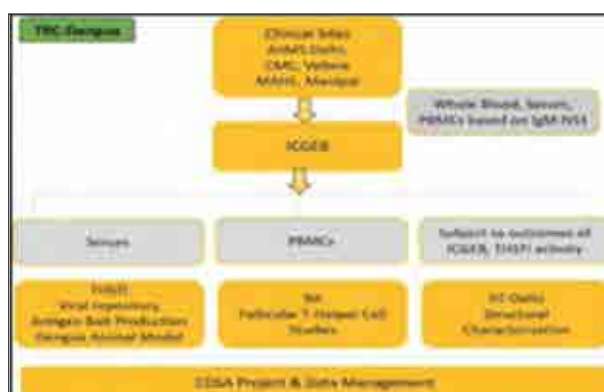




Medical device testing facility at Palamur Bioscience, Hyderabad

2.2. Translational Research Consortia:

Establishing Translational Research Consortia (TRC)	1. TRC for Dengue: 3 clinical sites and 5 premier institutes across the country led by ICGEB, Delhi.
	2. TRC for Chikungunya (CHKV): 4 hospitals and 3 premier research institutes across the country, led by Manipal Academy of Higher Education.



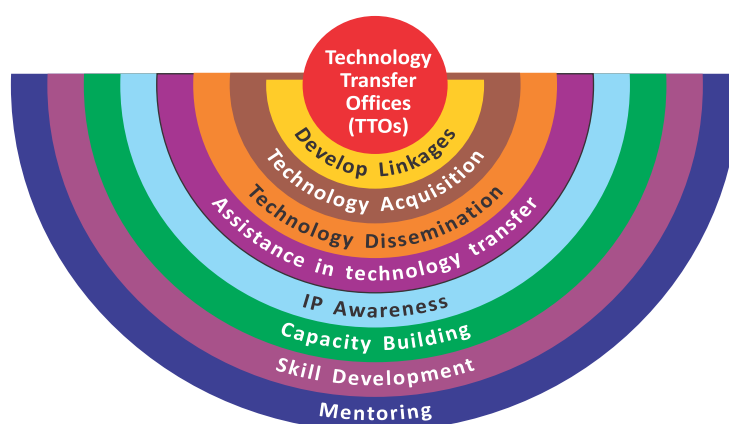
NBM supported TRC ecosystem

2.3. Clinical Trial Network:

Clinical Trial Network (CTN)	<ul style="list-style-type: none"> CTN's for hospital-based trials in patients for testing biologicals in different specialties of oncology, diabetology, rheumatology and ophthalmology Epidemiology of Dengue and Chikungunya in already existing Demographic Surveillance sites to strengthen the capacity for vaccine clinical trials Establishment of new Demography sites to prepare them for conduct of epidemiology studies and vaccine clinical trials
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2.4. Technology Transfer Offices (TTO's):

Establishing Technology Transfer Offices (TTO's)	<p>5 TTO's have been established with a view to strengthen the technology transfer capacity of the country.</p> <ul style="list-style-type: none"> IKP Knowledge Park, Hyderabad Centre for Cellular and Molecular Platforms (C-CAMP) KIIT Technology Business incubator, Bhubaneswar Biotechnology Business Incubation Facility (BBIF), Foundation for Innovation and Technology Transfer (FITT), New Delhi Entrepreneurship Development Center (EDC), Pune
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Functions of a TTO

3. Building and strengthening domain specific knowledge and management skills:

The Mission supports trainings and workshops as per its mandate. Workshops in the areas of clinical research, regulatory compliances, technology transfer, biopharmaceuticals and medical devices have been majorly supported. 19 workshops were supported during 2019-20 and about 996 participants were trained including 345 women candidates.

S. No.	Title of workshop	Dates	Venue	No. of candidates trained	No. of female candidates trained
1	National Workshop of Regulatory Compliance for Accelerating Innovations	April 09, 2019	Center for Cellular and Molecular Platforms (C-CAMP), Bangalore	61	18
2	National Workshop of Regulatory Compliance for Accelerating Innovations	May 29, 2019	National Institute of Pharmaceutical Education and Research (NIPER), Hyderabad	74	23
3	National Workshop of Regulatory Compliance for Accelerating Innovations	June 13, 2019	National Institute of Pharmaceutical Education and Research (NIPER), Guwahati	149	30
4	National Workshop of Regulatory Compliance for Accelerating Innovations	July 30, 2019	The Maharaja Sayajirao University of Baroda, Vadodara, Gujarat	106	18
5	Technology Transfer and Commercialization Training-2019	Sep 8-12, 2019	Pune	26	9
6	Technology Transfer and Commercialization Training-2019	Sep 13-17, 2019	Hyderabad	26	10
7	Workshop on Electromagnetic Interference and Compatibility (EMI/EMC) Techniques	Oct 9-13, 2019	IIT-Kanpur	59	18
8	Workshop on Design for Manufacturing	Oct 25, 2019	C-CAMP, Bangalore	18	3
9	Advanced Training on Technology Transfer	Dec 4-6, 2019	Hyderabad	25	10
10	CBT Course series on Biomanufacturing	Dec 10-12, 2019	IIT-Delhi	57	29
11	Hands-on Training on Medical Device Prototyping	Jan 13-17, 2020	IIT-Kanpur	30	14
12	Hands-on Training on Downstream Bioprocess Development	Jan 20-24, 2020	KIIT- TBI, Bhubaneswar	25	12



13	Lecture Series on Good Clinical Practice	Jan 28-29, 2020	Clinical Development Services Agency, Faridabad	63	28
14	Lecture Series on Good Clinical Laboratory Practice	Jan 30-31, 2020	Clinical Development Services Agency, Faridabad	57	29
15	Hands-on Training on Biopharmaceutical Product Development	Feb 3-7, 2020	Institute of Chemical Technology, Mumbai	98	43
16	Lecture Series on Good Clinical Practice	Feb 11-12, 2020	Venture Center, Pune	60	29
17	Hands-on Training on Operation and Testing of Medical Devices	Feb 24-28, 2020	Central Scientific Instruments Organization, Regional Center, Delhi	25	07
18	Hands-on Training on Product Validation and Quality Control	March 2-6, 2020	KIIT-Technology Business Incubator, Bhubaneswar	25	12
19	Lecture Series on Empowering the Changemakers in Biopharma Sector	March 3-5, 2020	KIIT-Technology Business Incubator, Bhubaneswar	38	15



Advanced Technology Transfer Training at Hyderabad, 4th–6th Dec 2019



Lecture series on Good Clinical Laboratory Practice held at CDSA, Faridabad, 30th -31st January, 2020



Hands-on Training on Operation and Testing of Medical Devices held at Central Scientific Instruments Organization, Regional Center, Delhi during 24-28 February, 2020

4. Engagement with Industry:

Discussion Forum on Clinical Trial Network, 9th Apr 2019

Strengthening clinical research capabilities in the country for enhancing product development capabilities in vaccines, biotherapeutics (including monoclonal antibodies) and medical devices is a key area within the mission. For this purpose, a brainstorming session was held at BIRAC office on the 9th of April 2019, that had representation from academia, industry, tertiary hospitals and contract research organizations from India and abroad. This brainstorming session was fructiferous in identifying and addressing a number of problems pertaining to establishment of clinical trial networks in India and coming up with useful suggestions on addressing these problems.



Discussion forum with the theme “Towards Strengthening the Clinical Research Capabilities in India and building Clinical Trial Networks” held on 9th April 2019

Discussion Forum on Platforms and Health Technologies for Infectious Diseases with Epidemic potential, 1st Aug 2019

The Ind-CEPI Mission of Department of Biotechnology, “Epidemic preparedness through rapid vaccine development: Support of Indian vaccine development aligned with the global initiative of the Coalition for Epidemic Preparedness Innovations (CEPI)” is to be implemented by BIRAC. This Mission aims to strengthen the development of vaccines and associated technologies for the diseases of epidemic potential in India as well as build coordinated preparedness in the Indian regulatory system, public health system and vaccine industry to address existing and emergent infectious threats in India. In view of the same, NBM-BIRAC hosted a discussion forum of CEPI officials, DBT and THSTI representatives from industry & academia on 1st August 2019 in Delhi.



Discussion Forum on Platforms and Health Technologies for Infectious Diseases with Epidemic potential, 1st Aug 2019

Convergence Meeting for Vaccine and related components, 19th Nov 2019

In this meeting all the components funded under the Mission as an effort for development of biologicals i.e. Translational Research Consortia (TRC), GCLP laboratory, GLP analytical lab, GMP contract manufacturing facility, and Vaccine product development were brought together on one platform. All the grantees were invited for presenting their project status. Additionally, a discussion forum to identify and prioritize Infectious diseases for Translational Research Consortia and Vaccine Development was held to guide the strategy for NBM.



Convergence Meet for vaccine and related components, 19th Nov 2019

Acute Febrile Illness Surveillance Discussion under the Clinical Trial Field Capacity Strengthening of National Biopharma Mission, BIRAC Office, 10 February, 2020

A meeting was held on 10th February 2020 at BIRAC Office for discussion on Fever Investigation Algorithm for carrying out Acute Febrile Illness Surveillance at different geographical locations in the country. This fever algorithm will be included in the protocol being developed in collaboration with ICMR for initiating the epidemiology studies.



Acute Febrile Illness Surveillance Discussion under the Clinical Trial Field Capacity Strengthening of National Biopharma Mission held at BIRAC Office on 10th February, 2020

5. Safeguards Management

Institutional arrangements for monitoring compliance of grantees to Environmental Safeguards are in place at the PMU and successful grantees. Environmental Health Risk Management Plan (EHRMP) of the grantees are being updated and disclosed on the website of the National Biopharma Mission (NBM) and the grantees. The environmental expert of the PMU is providing training on safeguards to the grantees and regular training are being rolled out for Scientific Advisory Group (SAG) and PMU members. A comprehensive record of the status of Environmental compliance by each grantee is maintained by the Mission. Through site visits of the grantees experts have trained about 400 industry professionals in Indian environmental regulations.

VI Specialized services

1. Intellectual Property & Technology Transfer

- BIRAC in-house IP & Technology Management group provides support to start-ups, academia and SMEs on various aspects of IP & Technology Management such as Patent searches, (Patentability Search, Freedom-to-operate, Landscaping, Validity/invalidity search), patent drafting, filing, Technology evaluation, marketing and drafting of license agreement and negotiation.
- BIRAC conducts an extensive IP evaluation for grant proposals that it receives under its flagship programmes such as BIPP, PACE, SBIRI, IIPME, SPARSH, BMGF, Wellcome Trust, National Bio-Pharma Mission and BIG. In addition to this, the group also provides guidance on many of the IP and licensing issues in collaborative research projects including the international projects.

- BIRAC operates BIRAC-PATH (Patenting and Technology Transfer for Harnessing Innovations) scheme that extends support to protect the intellectual property which emerges out from the innovative projects funded by BIRAC and facilitate transfer of technology and commercialization. BIRAC-PATH provides facilitation of supporting the patent filing in India as well as to International jurisdictions.
- **Mandate of BIRAC-PATH Scheme**
 - To facilitate the protection of entrepreneur's, industries and SMEs Intellectual Property, BIRAC has initiated a Patenting & Technology transfer for Harnessing Innovations (PATH) scheme, to encourage the technological innovation in the country.
 - To implement the scheme, BIRAC has also empanelled technically competent and experienced IP & Technology Transfer (TT) firms who could provide assistance for Patent search, filing, drafting and commercialization of such technologies, if required. BIRAC had supported projects under BIG, SBIRI and BIPP and had provided assistance in supporting IP generated in the funded program.
- BIRAC-PATH program was launched in 2013 and under the program, 15 patent filings for start-ups, academic institutions and SMEs have been supported so far. In 2019-20, a total of 7 BIRAC beneficiaries were supported under BIRAC-PATH for patent drafting, filing and maintenance of patent applications nationally and internationally. In addition to this, 5 technologies have been assigned to the empanelled technology transfer firms to scout the industrial partners.
- Patent filing support has been extended for Provisional and Complete Indian filing, PCT filing and national phase entries in different countries such as ARIPO, US, EU, Australia, and India. These patent applications are filed mainly in the area of secondary agriculture, agriculture, Industrial Biotechnology and healthcare.
- **List of the Patent applications supported under BIRAC-PATH**

S. No.	Name of Company & Scheme	Project	Jurisdictions/Patent maintenance/prosecution supported
1.	Anna University (PACE)	Production of L-2-Aminobutyrate From Pyruvate/ Citrimate/ Citraconate by biotransformation and Cell Free System	Complete filing in India & PCT filing
2.	Windmill Health (BIG)	Foot Pedal	Prosecution and annuity maintenance supported for India and EU patent application Jurisdictions supported: India, US & EU
3.	Carot Labs Pvt Ltd (SBIRI)	A Capillary Bioreactor For Algal Bioprocess	Provisional Filing in India
4.	ICGEB-C-CAMP (ETA)	A stable delivery complex comprising a dipeptide with a conformationally restricted amino acid	Provisional filing in India
5.	TestRight Nanosystems Private Limited (BIG)	Spectrometer and method for measuring the spectral characteristics thereof	Annuity maintenance supported for India as well as EU Jurisdictions supported: EU, India & US
6.	Synthera Biomedical Private Limited (SBIRI/BIG)	Manufacture of porous glass and glass-ceramic particulate structures by gel-casting	US & India
7.	Nesa Medtech (BIG)	A system and method for the ablation of uterine fibroids	Complete filing in India & PCT filing

- BIRAC intends to closely work with Bio-incubators and Regional Centres to provide the whole gamut of IP & Technology Management services to the ecosystem. To begin with, IP & Technology Management group initiated "IP Law Clinic" for its beneficiaries to provide a platform to BIRAC supported innovators for one-to-one interaction with the experts on IP & Technology Transfer related matters. In 2019-2020, 2 such IP Law Clinics were conducted in association with Bio-NEST and BIG partners at Bhubaneswar and New Delhi.



- Apart from the various IP & Technology Management offerings, the BIRAC IP & Technology Management group also organize several IP & Technology Management awareness and capacity building workshops for start-ups, SMEs and academicians. In 2019-20, three such workshops were organized as per the details below:

S. No.	Workshop Partners	Number of Participants attended
1.	VIT, Vellore	~45
2.	IIT, Indore	~50
3.	BITS, Goa	~50



IP & Technology Management Workshop

2. Product Commercialization Program (PCP)

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, technology transfer, regulatory, business plan, market conditions, networking, etc. PCP fund addresses few of these critical requirements through target funding.

The main objectives of PCP Fund are:

- To hasten the product commercialization processes by providing all necessary support to the projects which have performed well under the ongoing funding programs of BIRAC and have high commercial potential.
- To become a Product Development Partner of such technologies by providing required support including financial grant, mentoring, connecting with Investors, regulatory facilitation, market access, etc.

Besides BIRAC supported start-ups, Indian Biotech start-ups with products/technologies of nationally importance, developed through support from other sources, and which are at TRL-7 or above are also eligible. PCP fund application if submitted online throughout the year and is evaluated once every quarter.

A BIRAC internal PCU Committee identifies those projects that have attained TRL 7 or higher TRL and have the potential to get commercialized. Projects short-listed by the BIRAC internal Committee are placed for the consideration of SCPC committee which identifies the specific needs of the project and accordingly recommends and decide the funding support and deliverables.

As recommended by the Screening Committee for Product Commercialization (SCPC) three start-ups were provided funding support in 2019-20.

- Aarna Biomedicals Pvt. Ltd.– Poorti & Sampoori Breast prosthesis Kit
- Aspartika Biotech Pvt. Ltd.- Pupa oil & Protein products
- Innaumation Medical Devices Pvt. Ltd- Aum voice prosthesis

VII. Mentoring and capacity building

1. BIRAC-University of Cambridge Entrepreneurship Education Programme - IGNITE

BIRAC partnered with Judge Business School (JBS) at University of Cambridge in 2013 for IGNITE programme with an aim to provide bio-entrepreneurs international mentoring opportunity to transform their innovative idea to a successful business venture.

IGNITE is an intensive, one week training programme for the early stage ventures to help assess and validate the commercial feasibility of their business plans and better define and shape its potential for success. In FY 2019-20, 5 start-ups supported under Biotechnology Ignition Grant (BIG) scheme attended one week residential boot camp, IGNITE at Judge Business School (JBS), University of Cambridge, UK. The boot camp witnessed around 50 participants from across the world. The boot camp comprised lectures, workshops and one to one practical mentoring sessions. There were set themes for each day, covering various areas of entrepreneurship such as Value Proposition, Preparation of Business Models, Teams,



BIRAC BIG Ignite fellows, 2019 at Judge Business School, University of Cambridge, UK

Defining Marketing Strategy, One to one mentoring clinics, Finance and Business Negotiations. Networking events were also held during evenings enabling delegates to continuously communicate, refine and validate their ideas with other innovators, successful entrepreneurs, investors, bankers, corporate and business professionals. The programme provided the start-ups an excellent exposure to Cambridge start up ecosystem and helped them learn various aspects of entrepreneurship, understand global IP prospects, refine business plans, and network with peer group.

VIII. Regulatory facilitation

1. FIRST HUB

The FIRST HUB was launched on 10 August 2018 and within a short time has received huge response from Innovators across Country. The FIRST HUB is a platform to solve the queries of Innovators through Face to Face meetings, Telecon or E-mail response. FIRST HUB provides the platform wherein queries related to various governmental organisations can be discussed. The FIRST HUB has representation from CDSCO, ICMR, DBT, BIS, NIB, GeM, KIHT and BIRAC. 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. BIRAC is committed to develop the start-up ecosystem in India and facilitate the innovators in their product development journey.

12 monthly meetings were conducted during 2019 – 20 and close to 220 queries were resolved. In addition a special FIRST HUB session was conducted during the Global Bio India event.





2. BIRAC Regulatory Affairs Cell

BIRAC Regulatory Affairs Cell created in November 2018 with a mandate “To facilitate the process of interpreting the rules and regulations and fostering innovation through helping entrepreneurs pass through regulatory hurdles” has carried out all the activities successfully.

Three meetings of Regulatory Advisory Committee were organized on July, November 2019 and March 2020 respectively. Total number of 39, 43 and 19 proposals respectively were discussed for identifying probable regulatory issues in the area of Biosimilars, Vaccines, Agriculture, Secondary Agriculture, Industrial Biotechnology, Medical Devices and Diagnostics.

Regulatory Advisory Cell's Advisory Committee has members from all the above-mentioned areas and help in identifying regulatory requirements for the proposals shortlisted for Apex consideration in the SBIRI, BIPP, PACE, SPARSH and NBM programs of BIRAC

3. Regulatory Workshops

As per the one of the recommendations of the inter-ministerial meeting at Niti Ayog, BIRAC has worked with Department of Biotechnology (DBT) and Central Drugs Standard Control Organisation (CDSCO) and Clinical Development Services Agency (CDSA); to organise a series of six “National workshops on regulatory compliance for accelerating innovations”.

First workshop of this series was organized on December 10, 2018 at ICGEB, New Delhi. The second workshop of the series was held in Venture Centre on February 2019. Next four regulatory workshops of the series are conducted in the FY 2019 -20 at Bangalore, Hyderabad, Guwahati and Vadodara.

April 09, 2019	National workshop on regulatory compliance for accelerating innovations	C-CAMP, Bangalore, India	89
May 29, 2019	National workshop on regulatory compliance for accelerating innovations	NIPER, Hyderabad	108
June 13, 2019	National workshop on regulatory compliance for accelerating innovations	NIPER, Guwahati	149
July 30, 2019	National Workshop of Regulatory Compliance for Accelerating Innovations	The Maharaja Sayajirao University of Baroda, Vadodara, Gujarat	106





IX. New Initiatives

1. Program on Gaur Gum

There is a high year-to-year variation in production of guar, and consequently in exports of guar and its derivatives. Guar gum is mainly used in the food and bakery industry and the food safety concerns are becoming important for the guar processing industry. The preparedness of guar split and guar gum manufacturing industries for these food safety concerns, high fluctuations in area, production and productivity of guar seed, high volatile prices of guar seed and gum splits, are crucial limitations to the growth of guar industry.

The Guar Industry has evolved from being used for domestic and ruminant feed purpose to finding use in industry. Owing to new technologies and ongoing R & D, the natural gum property of guar can have varied applications from food, pharma industry to oil Industry. The guar industry is poised to grow and develop owing to high focus on research in Universities and technical institutes of the world. Leading players operating in the global guar gum market include Jai Bharat Gum, Vikas WSP, Hindustan Gums, Shree Ram Gum, Cargill Inc., Lucid Group, Ashland Inc., Supreme Gums Pvt. Ltd, India Glycols Ltd, Rama industries and Lamberti.

Looking at the agricultural and industrial importance of this marginalized crop, BIRAC is trying to prepare a road map for the overall development of guar production, R&D and processing industry, aligning the views of all the stakeholders in the value chain in the form of single vision strategy.

A niche area meeting with members from the academic institutes was organised in the month of Jan 2019 to identify the need for the Guar Gum and how the Industry- Academia association can be beneficial in bringing together the expertise to work upon the existing gaps in the R&D of Guar-Gum.





The major recommendation of the above meeting was to develop a Program on Guar gum (including announcing a call for the development of technologies, organizing awareness workshops, hands-on training workshops) to be developed by involving relevant industry and academia. The call for proposals for guar gum was announced on 15th July 2019 to 31st August 2019. A total of 84 eligible proposals has been received. Out of these 9 projects have been finally considered for BIRAC funding. The GLA and first release for some of the projects has been done and are being processed as per the norms of BIRAC.

2. Accelerated Translational Grant for Commercialization (ATGC)

Department of Biotechnology (DBT) in collaboration with Biotechnology Industry Research Assistance Council (BIRAC) launched this scheme in 2019-20 with an aim to accelerate translational research leads beyond early stage validation and encourage academia to develop technology/product & processes. The mission of this program is to enable academic researchers to take their laboratory research leads with established proof-of-concept and early stage validation to the next phase via translational research opportunities.

The scheme has two categories

1. Academic Lead Translation (ALT)
2. Academic Industry Translational Research (AITR)

a) Academic Lead Translation (ALT)

The objective of Academic Lead Translation (ALT) scheme is to promote validation of demonstrated Proof-of-concept (PoC) for a process/product. The academic institutions could do it independently or collaborate with other academic partners with complimentary expertise to translate the leads or in a contract research mode to develop the leads.

b) Academic Industry Translational Research (AITR)

The objective of Academic Industry Translational Research (AITR) scheme is to promote validation of Proof-of-concept (PoC) for a process/product by academia with the involvement of industry or for validation by the industry in contract research mode.

DBT will fund the academic partner and industry will be funded by BIRAC.

So far three call has been announced. In the first and second call one project from each call has been recommended with Industry Partner. There are 3 projects with industry partners has been recommended in the 3rd Call.

3. DBT- BIRAC efforts to combat Covid-19 Pandemic

DBT-BIRAC along with National Biopharma Mission responded to the new requirements posed by the Covid-19 Pandemic by offering fast track funding opportunities under Covid Research Consortium, enhanced mentoring and networking support, regulatory facilitation through frequent FIRST Hub Meetings etc. Fast Track initiative supported product commercialization including Diagnostic Kits, Preventive, Monitoring and Assistive solutions.).

Additionally, Grand Challenges India began new specialised Covid-19 programs on Sewage Surveillance, Sero-Surveillance, Mobile Diagnostic Labs.

a) DBT-BIRAC COVID-19 Research Consortium

In view of the limited current level of knowledge on the pandemic causing SARS CoV-2 virus and Coronavirus disease (COVID-19), critical research questions need to be answered urgently, and ways have to be found to fund priority research that can contribute to curtail this outbreak and prepare for future outbreaks. Hence, DBT-BIRAC announced COVID-19 Research Consortium.

Under DBT-BIRAC Covid-19 Research Consortium, two calls have been launched. A total of 1073 proposals were received out of which 120 projects have been recommended for financial support. Out of these 120, 79 are from Industry and 41 are from Academic Institutes. These have been categorized into thematic areas such as Diagnostics (50), Any other intervention (26), Therapeutics (21), vaccines (19) and Drug repurposing (04). 46 proposals were recommended for funding under BIRAC.

b) Fast tracked Review and Funding support under COVID-19 fund

In view of a need to identify and provide fast track support to Health-Tech Start-ups and companies for immediate deployment (0-3 months) of technology solutions focused on address challenges of Covid-19, a Fast track Internal Review Committee was constituted at BIRAC to review and recommend the proposals that can be supported under

Covid-19 fund. Eight Start-ups have been supported under Fast Track scheme to scale-up and market launch technologies relevant to Covid-19 pandemic situation. Additionally, BIRAC has also approved support to two Co-funding partners for supporting up to 25 Start-ups under the BIRAC's mandate to foster market deployment of innovative solutions addressing Covid-19 challenges.

c) BIRAC Compendium: DBT-BIRAC Supported Products & Technologies

On the occasion of National Technology Day (11th May), BIRAC launched COVID- 19: DBT-BIRAC Supported Products & Technologies Compendium showcasing Products in Market, Products to be in Market in 3-6 Months & COVID-19 Research pipeline additional facilitations. Public domain link for compendium is https://birac.nic.in/desc_new.php?id=719

d) Webinars on COVID Solutions

Make in India Facilitation Cell organized the following webinars to support Start-ups and Entrepreneurs in the challenging solution of COVID-19:

- **Start-up Ecosystem:** Navigating through COVID-19 crisis on 28th May 2020
- **New Trends in Investment for Healthcare Start-ups:** Investors' Perspectives on 29th May, 2020



- Special Webinar session of FIRST HUB for developing COVID-19 Solutions

BIRAC's Make in India Cell organized a special Webinar session of FIRST HUB on 17th April 2020, dedicated for queries seeking regulatory guidance for the development of Covid-19 solutions. About 350 Start-ups registered to seek Regulatory guidance for development of COVID solutions from CDSCO, ICMR, BIS, NIB, DBT, BIRAC and eGEM.





e) GCI Covid-19 Programs

- **Sewage Surveillance:** GCI initiated a sewage surveillance program for developing, validating and implementing sewage surveillance protocols for testing sewage for the presence of the virus as a potential early warning system. This is under the specialized programs vertical of the GCI programs.
- **Sero-surveillance program:** GCI has also initiated a sero-surveillance program as a specialized program to support projects conducting sero-surveillance for Covid-19. Two projects are being funded under this program.
- **Mobile Diagnostic Program:** The DBT and Gates Foundation through the Grand Challenges India mechanism has considered to support and fund three Mobile Diagnostics labs. The shared investment will establish proof of concept of Mobile Diagnostics Labs and consider infrastructure to set up 3 mobile labs, supported by BMGF and DBT, as a specialized program under Grand Challenges India.

The first model is that of Kawach, which will be developed by a private company, Science By Design Lab systems (I) Pvt. Ltd., who are based in Mumbai. The second model, of which 2 vans will be funded, is that of the Defence Research and Development Organisation (DRDO), which will be developed in Chennai through a DRDO's industrial partner.

X. Supporting National Programs

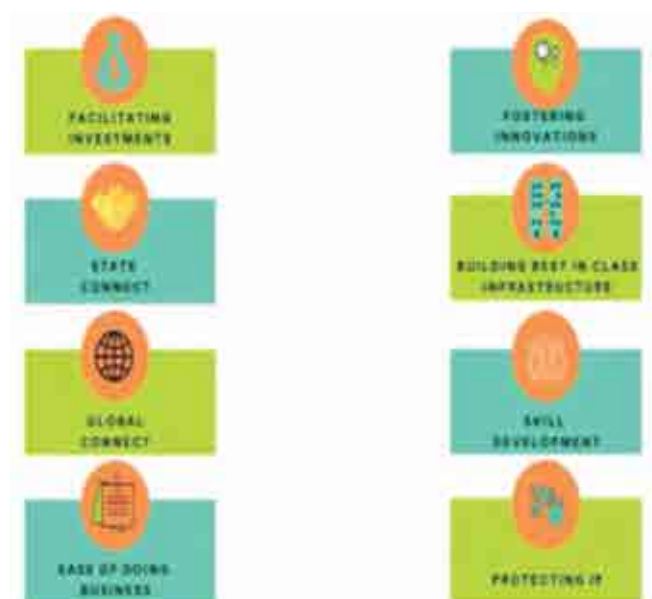
Biotechnology has emerged as an integral part of the Indian bio-economy. The estimated market size of the Indian bio-economy was \$ 65.79 billion in 2019, up from \$ 51 Bn in FY 2018, setting a further target of \$ 150 Bn by 2024-25. This growth trajectory for the sector is an outcome of Govt's constant efforts and initiatives to promote this sector making India a Global Biotech Leader. The Bio-economy target for 2024-25 has thus been revised from \$100 Bn earlier to \$ 150 Bn.

BIRAC along with Department of Biotechnology (DBT) is playing a crucial role in the implementation of the flagship programs of the Indian Government, such as 'Make in India' and 'Start-up India'. BIRAC recognizes the necessity for entrepreneurship development among the youth in the country and hence has taken initiatives to build, support and promote Indian Biotech Ecosystem through various programmes.

1. Make in India

Make in India (MII) Facilitation Cell for Biotechnology at BIRAC is spearheading MII programme, the flagship program of Government of India through multiple initiatives for supporting the Biotech innovation ecosystem, developing the manufacturing sector and promoting foreign direct investments. The Make-in-India Cell ensures wider dissemination of information related to various Government programs and other information relevant to the establishment and growth of Start-ups, SMEs and companies in the country.

The cell guides the investors, Start-ups and entrepreneurs onto the gamut of business related issues in biotechnology such as regulatory landscape in the country, entry options and procedures, investment opportunities and routes, FDI/ EXIM/ Industrial policies.



Activities of Make in India Facilitation Cell at BIRAC

❖ Objectives:

- ✓ Contribute to Make in India growth through identifying and promoting new areas in Biotechnology
- ✓ Coordinate activities of Make in India with Department for Promotion of Industry and Internal Trade, Government of India
- ✓ Catalyse the growth of manufacturing industry by mapping incentives and opportunities provided by Central and State Governments
- ✓ Facilitate Start-ups, SMEs and companies by communicating policies and incentives extended by the Government for the programme
- ✓ Support the Make in India programme by addressing the queries received from various stakeholders

❖ New Initiatives of Make-in-India Cell during FY19-20

1. Global Bio-India 2019

DBT and BIRAC organized Global Bio-India 2019 from 21st – 23rd November 2019 at Aerocity, Delhi in partnership with Confederation of Indian Industry (CII), Association of Biotechnology Led Enterprises (ABLE) and Invest India. The Make in India Cell at BIRAC established a secretariat at BIRAC for this mega event and steered all activities. This event was a testimony of growing prowess of Biotech sector in the country and showcase to International community. The three-day long event witnessed a rich technical program of 40 sessions, CEO roundtables, workshops, product launches, new initiative launches, etc. It attracted 3000+ delegates, 190 exhibitors, 25+ countries, 300+ start-ups, 50+ incubators, 60+ Research Institutes, 800+ business meetings scheduling and representation from 10+ states. There were over 60 government, research and educational institutions that took part in the event. In addition there were 2 Satellite conferences on Nanobiotek and Nano for Agri at the event.



Glimpses of Global Bio-India 2019

Major Highlights of the Global Bio India 2019 are as follows:

- The **New Product Launch** session at the event provided a unique opportunity to 9 selected BIRAC supported start-ups to launch their product before global community.
- An intensive interactive **Boot Camp** course was also launched with the focus on development of novel drugs, including recombinant proteins, monoclonal antibodies, fusion proteins, cell therapy, gene therapy, and gene editing technologies.
- The **Bio-partnering** event at Global Bio-India was fruitful in helping the stakeholders and investors to connect.
- **UNHIE, BIRAC and Social Alpha announce India accelerator platform** for healthcare innovations on 21st November

2019, the first day of the global event. This Platform will lead to successful adoption of at least 100 Indian innovations in 5 years; leading to creation of new market opportunities worth \$500 million for India's MedTech start-ups.

- An **e-portal (www.biotech-solutions.com)** showcasing **100+BIRAC supported commercialized Biotech Products and Technologies** was launched by Shri Piyush Goyal, Hon'ble Minister of Railways and Commerce, Government of India during GBI 2019.



Biotech Showcase Portal

- **Biotech Angels Network**, an initiative intended at bringing together 50+ angel investors, HNIs, early-stage VCs, 10 corporate/family offices was launched by Dr. Renu Swarup, Secretary DBT and Chairperson BIRAC. The network is expected to lead to 150 investments in Biotech start-ups in 3 years.
- Several important publications were launched during GBI and they have been detailed out in a separate section.
- MoUs with State Govt. and other agencies were signed and are detailed subsequently.

The multi-pronged Global Bio-India 2019 was conducive in bringing together the academia, innovators, researchers, start-ups, medium and large companies for facilitating the innovation ecosystem in India.



Biotech Angel Network

2. CSR Initiative:

Make in India Cell spearheaded initiative related to the CSR funds (i) policy advocacy with MCA for private institution funded incubators to be eligible to receive CSR funds that has been notified now; (ii) BIRAC can now accept CSR funds from corporates that can be used for supporting start-ups, technology business Incubators, regional centres etc.

Focus Areas:

Implement CSR funds through BIRAC Programmes/ Schemes including:

- **Product/ Technology Development**
- Creating **National Footprints via Incubation Network**
- **Capacity Building & Training, Human Resource Development**
- Creating **Platform opportunities** for start-ups/Entrepreneurs/SMEs
- **Knowledge Partner for States**
- **Supporting Govt. Initiatives** - MAKE IN INDIA, START-UP INDIA, Ayushman Bharat, Swachh Bharat
- Promoting **Women Entrepreneurship**
- Making India a hub for design and **development of novel, affordable and effective biopharmaceutical products and solutions**

This will be implemented to gain impetus in coming year.



CSR Initiative

❖ Major activities of Make in India in 2019-20:

1. Strategy Meets & Stakeholders' Discussion



Glimpses of Strategy Meets & Stakeholders' Discussion

- a. **DPIIT-CII National Consultation Meeting for Make in India 2.0:** Make in India Cell Participated in the “National Consultation meeting for Make in India 2.0” organized by DPIIT & CII on 15th January, 2020 at India Habitat Centre. To facilitate the discussions during this National Meeting, Make in India Facilitation Cell at BIRAC organized a Pre-Forum discussion on 14th January, 2020 with stakeholders including representatives from Biotech industries (Vaccines, Biosimilars, Emerging therapies, Bio-Services, Medical Devices, Diagnostics, Agritech) to discuss the sectoral recommendations, policy interventions, tax incentives, infrastructure & regulatory interventions required for creating a firm roadmap for India to become \$150 Bn Bio-economy by 2024-25.

The recommendations of the National Consultation Meeting were consolidated and presented to Shri Piyush Goyal, Hon’ble Minister of Railways and Commerce, in a Report-Back Session to draw a sectoral roadmap for Make in India 2.0. This high level Report back session was attended by Mr. Amitabh Kant, CEO NITI Aayog; Dr. Guruprasad Mohapatra, Secretary, DPIIT, and Dr. Renu Swarup, Secretary DBT along with many other sector experts.

- b. **Stakeholders’ Meeting for a \$100 Bn Bio-Manufacturing Hub by FY 2024:** DBT along with Make in India Facilitation cell of BIRAC jointly organized a stakeholder’s discussion on 13th March 2020. This meeting was organized following a clarion announcement of establishing a \$100 Bn Bio-manufacturing Hub in India by 2024-25. The key Industry stakeholders of Biotech subsectors such as Bio-pharma, Bio-Agri, Bio-Industrial, Bio-Energy, Bio-Services etc. participated in the meeting in the Chairmanship of Dr. Renu Swarup, Secretary, DBT to discuss and prepare a well-defined Strategy and Action Plan for making India a \$100 Bn Bio-Manufacturing Hub by FY 2024-25.

2. FIRST (Facilitation of Innovation & Regulation for Start-ups and Innovators) Hub

FIRST Hub, a facilitation unit, set up by BIRAC, to address the queries of Start-ups, Entrepreneurs, Researchers, Academicians, Incubation Centres, SMEs, etc. completed 1 year of successful operation with support from DBT, CDSO, ICMR, NIB & BIS. FIRST Hub has addressed 200+ queries till date.

3. State Connect Activities

I. State Connect Summit

A BIOTECH STATE CONNECT SUMMIT was organized by Make in India Facilitation Cell in an effort to facilitate Biotech Start-up ecosystem in every State. The Summit was held on 7th September, 2019 at Delhi with representatives from 15 Indian States. The agenda of State Connect Summit was to promote States’ Start-up /Biotech policies on National as well as International forums and create a vibrant biotech ecosystem in India.



State Biotech Connect Roundtable Meeting organized on 7th September, 2019 by Make in India Cell, BIRAC

ii. MoU Signing

A Memorandum of Understanding was signed between Department of Science, Technology and Environment (DSTE), Punjab and BIRAC during the Global Bio-India 2019 recognizing BIRAC as a knowledge partner to jointly promote biotechnology innovation ecosystem in the state through Make in India Cell.



MOU Signing of BIRAC with DSTE-Punjab

iii. State Biotech Cohort Meeting :

Secretary, DBT and Secretary, Make in India Cell joined in the State Biotech Cohort Meeting organised by Department of Science & Technology (DST), Rajasthan to promote Rajasthan Biotech Innovation Ecosystem. MoU with the state will also be signed later.



State Biotech Cohort Meeting, Jaipur

4. Publications /Sector Reports

- **Lab to Market Booklet:** 2nd Edition of “Lab to Market” booklet was released in November at Global Bio-India 2019 featuring 111 innovative products and technologies by Indian start-ups that have reached the market. The booklet covered details of product/ technology including its USP, Value proposition, Pricing, Target Customers, number of units sold, Contact information of the Start-up etc.



2nd Edition of Lab to Market Booklet

- **Sectoral Reports:**



Sectoral Reports

- **Assessment of Indian Biotechnology Landscape 2019**

It is a comprehensive report that analyses the current scenario of the biotech industry, highlights the challenges and issues that the industry faces and provides recommendations to overcome the hurdles. The report launched during the Global Bio India 2019 adjudges the performance of the Indian biotech industry vis-a-vis other top players. It also provides the myriad of investment opportunities. At present, India's share in the global biotech sector is around 3 percent but the study predicts that the share would increase to 19 percent by 2025 in the global biotech sector. A significant portion of the study report is devoted to making global comparisons and drawing insights from the best practices across the world. The recommendations that emerge from the report can potentially play a key role in guiding the approach of the government in driving policy making for the Biotech industry. This report has been compiled in collaboration with Institute for Competitiveness.

- **India Bio-Economy Report 2019 & Indian Bio-Economy Report 2020:**

The India Bio-Economy Report (IBER) is an effort to map India's Bio-Economy and monitor the extent to which policies adapt to growth, resilience and sustainability needs. While growth in demand presents significant opportunities for application of biotechnology, government policies have a proactive role in addressing challenges such as increasing productivity growth, enhancing environmental performance and adaptation to climate change, and improving resilience of unforeseen circumstances. These reports have been compiled in collaboration with ABLE (Association of Biotech Led Enterprises).

- **India: The Emerging Hub for Biologics and Biosimilars**

The report focuses on the changing dynamics of the pharmaceutical market and the global emerging biotherapeutics landscape. It also highlights the initiatives taken by the Government of India to promote biotech-based drug development and to support the pharmaceutical industry with necessary infrastructure, funding and global collaborations to bridge the technical knowledge gap and further development of regulatory guidelines to capture the opportunity of becoming a global hub for manufacturing of biologics; innovating globally competitive, novel, affordable - vaccines, biosimilars and advanced immunotherapeutics, that is accessible to all for India and the World. This report has been compiled in collaboration with Cortellis: a Clarivate analytic solution.

- **Assessing the Regional Competitiveness of the Indian Bioeconomy: Moving Towards a Sustainable, Circular Model -2019-20:**

This report is a study that analyses the competitiveness of the overall Indian bioeconomy with special emphasis on its regional bio-clusters. The report analyses India's bioeconomy position among its peers, the performance, policy drivers and core growth drivers. In addition, the study also carries out a holistic regional cluster analysis of the Indian bioeconomy. This report has been compiled in collaboration with Institute for Competitiveness.

5. Showcasing of Innovation Technologies at International Levels

i. EU-India Innovation Partnership and Latitude 59

2nd networking event under EU India Partnership was held at Lift99 (Incubation Centre) in Tallinn, Estonia on 14-15th

May 2019. Incubator representatives from 13 EU countries and 10 from India including 2 from BioNEST Bio-Incubators (KIIT, Bhubneshwar and SINE, IIT Mumbai) participated in Incubators and Accelerators Networking event. BIRAC was represented by Dr. Manish Diwan, Head, Strategic Partnership & Entrepreneurship Development.



EU-India Innovation Partnership and Latitude 59

Latitude59 is the largest annual international start up event in Estonia. The event brings together potential investors & start-ups for pitching, wooing and matchmaking activities. Latitude59 is an opportunity to demonstrate the product in front of the whole tech community in Estonia and many other relevant visitors including investors, media, potential customers and attending techies to get their direct feedback and support.

BIRAC along with 5 Start-ups participated in Latitude59, at Tallinn, Estonia from 15-17 May 2019. BIRAC delegation to the event was represented by Dr Manish Diwan, Head, Strategic Partnership & Entrepreneurship Development, along with representatives from following 5 Start-ups:

- a. Aristogene Biosciences Pvt. Ltd.
- b. J C Orthoheal Pvt. Ltd.
- c. Turtle Shell Pvt. Ltd.
- d. Innaumation Medical Devices Pvt. Ltd.
- e. Ayu Devices Pvt. Ltd.

BIRAC supported Start-ups exhibited their products/technologies and witnessed a large number of visitors at their booths and queries from Start-ups, Investors & potential customers. Honourable Ambassador of Estonia Mr. Riho Kruuv also visited the Indian Start-ups demo booths and interacted with them.

The event gave Indian Start-ups an opportunity to meet EU Start-ups, international investors and industry leaders from Estonia as well the Estonian Start-up ecosystem. Likewise this engagement brought awareness to Estonian/EU participants about the Indian Biotech ecosystem.

ii. International Business and Innovation Summit, Singapore

The High Commission of India, in partnership with agencies of the Governments of India and Singapore, organized the two-day Business and Innovation Summit, 'India-Singapore: The Next Phase', on September 9-10, 2019 at Marina Bay Sands Expo and Convention Centre, Singapore. The Summit was attended by India's Minister of External Affairs, Sh. S Jaishankar and Singapore's Foreign Minister, Mr. Vivian Balakrishnan, among others. The event also featured Ministerial keynotes, panel discussions, round-tables, Start-up and Innovation Exhibition, investor pitching, lunches as well as opportunities for networking and meetings. The Summit provided a platform for international businesses to connect with India.

Two BIRAC supported start-ups' founders-Mr. Ravi Bhogu, Founder, Monitra Healthcare Pvt. Ltd (Area-AI) and Mr. Archit Agarwal, Founder and CEO Sanfe (Area - Healthcare) also participated in the event. Dr. Chhaya Chauhan, Manager Incubation, BIRAC participated in the panel discussion on Health care sector where role of Government Enablers: Policies, Incentives, Support Mechanisms was discussed.



International Business and Innovation Summit, Singapore

InSprenur3.0-Start-up & Innovation Exhibition

Along with this event also included InSprenur3.0-Start-up & Innovation Exhibition where around 60 start-ups from India and Singapore participated. BIRAC supported start-ups Monitra Healthcare Pvt. Ltd (Area-AI) and Sanfe (Area - Healthcare) also got an opportunity to showcase their products/technologies at the exhibition.

In addition to the above, team comprising BIRAC and DST officials visited the National Research Foundation (the top policy and funding body for research functioning under PMO), A*Star (Agency for Science, Technology and Research, which functions under the Ministry of Trade and Industry for translating research into enterprise and commercial viability) and Nanyang Technology University to explore opportunities for collaborations.

- USD 100 Bn Bio-manufacturing Hub: Hon'ble Prime Minister of India recently announced creation of a USD 100 Bn Bio-manufacturing Hub in the country during the Indian Science Congress held on 7th January, 2020 at Bengaluru. This announcement could be central to scaling up of Indian Bio-economy to USD 150 Bn by 2024-25. The Start-up ecosystem is expected to grow 4-5 times in the next 5 years. Likewise Industry growth, FDI, capacity building, policy initiatives and global partnership activities need to be scaled up. MII cell is expected to match up the efforts. In pursuance of revised target of USD 150 Bn Bio-economy & to create USD 100 Bn Bio-manufacturing hub, Biotechnology Make in India Facilitation Cell at BIRAC is taking up several new initiatives and playing a critical role in streamlining efforts of various stakeholders.

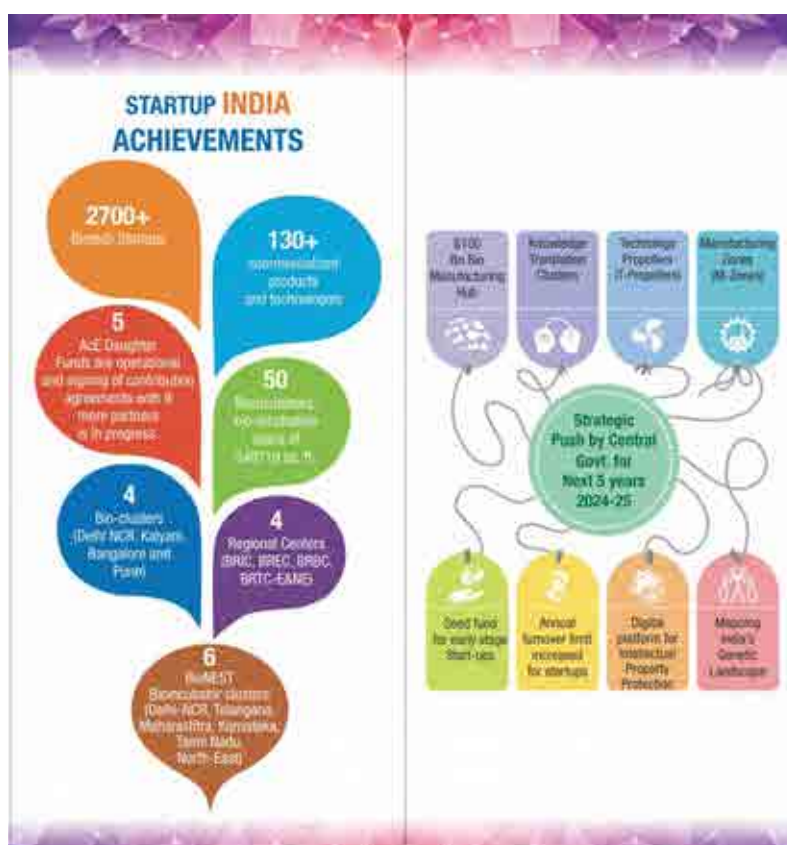
2. Start-up India

- Start-up India is a flagship initiative of the Government of India, intended to build a strong eco-system for nurturing innovation and start-ups in the country that will drive sustainable economic growth and generate large scale employment opportunities. The Government through this initiative aims to empower start-ups to grow through innovation and design. The Hon'ble Prime Minister of India formally launched the initiative on January 16, 2016. The Department of Biotechnology and BIRAC endeavours to scale up the number of Start-ups in the sector by handholding them from ideation to commercialization of their products/ technologies. Make in India Cell at BIRAC is also implementing, monitoring and reporting Start-up India Action plan with key stakeholders i.e. Start-up India Team, Invest India, etc

Major Achievements under Start-up India Initiative:

- **50** Bioincubators have been setup across India creating a total incubation space of **5,48,719 sq. ft.**
- DBT is supporting **4 Bio-clusters** (NCR, Kalyani, Bangalore and Pune)
- Equity based schemes such as SEED, LEAP and AcE (Fund of Funds) are operational to provide equity based capital assistance to start-ups and act as a bridge between promoters' investment and venture/angel investors.
- **4 BIRAC Regional Centres** have been set up to promote Biotech innovation ecosystem:
 - ✓ BRIC at IKP-BioNEST, Hyderabad

- ✓ BREC at C-CAMP-BioNEST, Bengaluru
- ✓ BRBC at Venture Centre-BioNEST, Pune
- ✓ BRTC at KIIT-BioNEST, Bhubaneswar
- **Five bio-connect** offices have been established:
- ✓ CCAMP BioNEST with California Institute for Quantitative Biosciences (QB3)
- ✓ CCAMP- Sister Innovation HUB with Roslin Innovation Centre, University of Edinburgh, UK
- ✓ CEIIC BioNEST with European Union
- ✓ KIIT BioNEST – with TECHNOPORT SA – BELVAL Business Incubator, Luxembourg
- ✓ KIIT BioNEST – with Start-Life Centre, Wageningen University Netherland
- **Six BioNEST clusters** have been recognized to promote networking & resource sharing among BioNEST incubators network of 50 Incubation Centres.
- Through National Biopharma Mission, **5 Technology Transfer Offices** have been approved out of the 6 BioNEST Clusters to support Incubators, Research Institutes, Start-ups & SMEs in their respective vicinities.



Achievements of Startup India

XI. Facilitating Industry Academic Interaction

1. Foundation Day

The 8th Foundation Day was celebrated on 20th March 2020 through virtual participation of BIRAC Stakeholders. The theme of the event was “Scaling Biotech Innovations for Global Impact”.

The event started with a welcome address by Dr. Mohd. Aslam, MD, BIRAC followed by Foundation Day address by Dr. Renu Swarup, Secretary DBT & Chairperson BIRAC where she congratulated BIRAC for the 8th Foundation day mentioning that with over 3500 Start-ups, 50 Bioincubators, 150 Products/Tech and Global & National Partnerships, we now have a strong base of innovation ecosystem in the country. With Bio-economy reaching \$62.5 Bn in March 2020, Biotech innovation ecosystem is well poised to contribute towards achieving the national target of US\$ 150 Bn by 2025.

Important highlights of the Foundation Day include:

- ❖ **Launch of sectoral reports:** Dr. Renu Swarup launched Sectoral Reports and BIRAC Publications during the event. Dr. Amit Kapoor, CEO, Institute of Competitiveness, joined the event through video conferencing for the launch of “Assessing the Regional Competitiveness of the Indian Bioeconomy: Moving Towards a Sustainable, Circular Model” report. Mr. Narayanan Suresh, Chief Operating Officer, Association of Biotechnology-Led Enterprises also joined virtually for the release of the “Indian Bioeconomy Report 2020” and shared his insights about the report which is an effort to map India’s BioEconomy. BIRAC’s Corporate Brochure 2020, Make In India Facilitation Cell flyer, BIRAC’s i3 Newsletter - March Edition 2020 were also launched during the event.



Launch of Sectoral Reports and BIRAC Publications

- ❖ **Product Launch: Eight new products** developed by BIRAC supported Start-ups were launched virtually during BIRAC’s 8th Foundation Day. The products launched include:
 1. Glanders Antibody based Rapid Test Kit, Genomixz molecular Diagnostics Pvt. Ltd & National Research Centres on Equines (NRCE).
 2. SNIPR, BioPrimeAgri Solutions Pvt. Ltd.
 3. Voxelgrids 1.5T Scanner, Voxelgrids Innovations Pvt. Ltd.
 4. upBeat, Monitra Healthcare Pvt. Ltd.
 5. UREGROW, Regrow Biosciences Pvt. Ltd.
 6. Remmed VR tele eye care solution, Visint Healthcare Pvt. Ltd.
 7. Cervastra, Ainda Systems Pvt. Ltd.
 8. MALL's cordyceps, Capsule 7 Powder, Mallipatra Neutraceuticals Pvt. Ltd.



BIRAC supported Products' Launch

- ❖ **BIRAC-TiEWInER Awardees:** 15 Women Entrepreneurs identified as awardees of the 3rd edition of BIRAC-TiEWInER (Women in Entrepreneurial Research) Award were felicitated virtually during the event.



BIRAC-TiE WinER Awardees

- ❖ **Launch of SoCH (2nd Edition):** 2nd Edition of BIRAC Innovation Challenge Award, **SoCH- Solutions for Community Health 2020**, was launched in association with Knowledge Partner Social Alpha and CEIIC BioNEST Incubator inviting proposals for **"Innovative, Efficient & Affordable Solutions for Clean Cooking in Rural and Community Settings"**.



Launch of BIRAC Innovation Challenge Award, SoCH

- ❖ **BIRAC Partners' Bytes:** BIRAC's stakeholder network including BIG Partners, Regional Centres, Bio-Incubators, WISH joined the event through Video Conferencing and congratulated BIRAC team for their constant efforts to encourage the Biotech Innovators across the country.



BIRAC Partners' Bytes

- ❖ **New Partnerships:** On the 8th Foundation Day, two new partnerships were also announced.
 - **NASSCOM (National Association of Software and Services Companies):** BIRAC-NASSCOM partnership would provide Innovation platform for enterprises, enablers and innovators in emerging technologies of AI, ML, IoT, Big Data, Analytics, AR/VR and Robotics for Digital Transformation. It is aimed at improving accessibility, affordability and quality of healthcare by working with digital solution providers.
 - **UKRI (UK Research and Innovation), Innovate UK:** BIRAC-UKRI partnership along with Innovate UK as implementing partner would facilitate Innovation Ecosystem connect between UK and India for Biotech Sector.



MoU Signing with NASSCOM & UKRI

2. Outreach Initiatives

a. Communications

The communication team at BIRAC support the various teams & verticals and is responsible for communicating the work undertaken by the organization to a diverse audience, including innovators, scientists, academics, policymakers, investors and many others. The Communications team also has the responsibility to promote BIRAC's brand presence through the digital, print, and social media and participation at various events.

The communication team ensures that BIRAC gets good media coverage for their contribution in Biotechnology. The team supports with press releases/ editorials/articles/opinion pieces for different publications along with planning/coordination for a press conference and other aspects of the event in terms of management. The team also supports the outreach committee at BIRAC for the need-based communications along with developing the content for the website, publicity collaterals and social media platforms.

For the year 2019-20, the team carried on the **Vigyan se Vikas** - a weekly feature that highlights the supported innovations.

A quarterly publication of BIRAC **Newsletter i3** which features cover stories, expert opinions, innovator opinions, BIRAC events and program updates is done regularly. This year's publication touched upon various themes: Women in Entrepreneurship & Research, Innovate for Excellence in Biotech Space, Power to transform lives: Bioscience to Bioeconomy and Scaling Biotech Innovations for Global Impact.

The Communication team coordinated the **DBT-BIRAC Leadership Dialogue Series**-the main aim of this platform is to bring together leaders from various domains across the world to share their experiences. It was launched in July 2019 and so far, three lectures have been organized.

The communication team actively supported the **Global Bio India- 2019**- India's first biotechnology stakeholders' conglomerate. The communication team managed the pre- and post-event activities along with the handling of media queries and coordination of the event.

The team regularly contributes to the **Vigyan Samachar**- an initiative to streamline and hasten the process of science communication and increase the visibility of science and technology news in different media. This initiative began in January 2020 and the team submits weekly stories for the Minister's office on innovations, products & technologies, workshops and training.

BIRAC participates in a number of events around the year to interact with the target audience and to aware people about various programs and schemes under BIRAC. Some of the events where the communications team represented the organization are: **Skoch Awards; Ayushman Bharat- Aaroyga Manthan; Exhibition cum workshop on Technologies in Food Processing; 2019 World Conference on Access to Medical Products - Achieving the SDGs 2030; Project Vigyan Samachar workshop; Bio Asia 2020 and North East 2020.**

BIRAC has been at the forefront in the times of COVID and several press releases have been done to inform the media and further the masses at large to aware them about the work done by the organization to fight against this pandemic. The communication team compiled a **COVID-19: DBT-BIRAC Supported Products & Technologies Compendium**.

The communication team at BIRAC works closely with DBT to support various outreach activities.

b. BIRAC's presence at BIO International Convention 2019

The annual BIO International Convention, hosted by the Biotechnology International Organization was held from 3rd-6th June at Pennsylvania Convention Centre, Philadelphia, USA. The Event 2019 gathered over 17,000 visitors in Biotechnology field, more than 8400 Corporations, more than 315 academic institutions from 49 US States & Region and attendees from 67 countries. BIO also hosted nearly 47,000 BIO One-on-One Partnering between more than 7,900 delegates from 3,900 companies.

BIRAC team comprising Dr. Sanjay Saxena, Head, Investment and Dr. Dhiraj Kumar, Sr. Manager, Technical participated in the conference. Dr. Sanjay Saxena participated in IndoUS Bilateral meetings and also delivered invited talks. BIRAC exhibited its portfolio of schemes and impact through a booth in India Pavilion. BIRAC officials interacted with various visitors and informed them about different initiatives. Various events were held at the international pavilions.



BIRAC's participation at BIO USA 2019 at Philadelphia

BIO 2019 offered four days of inspiring programmes, exhibitions, educational sessions, speakers, company presentations and business meetings.

c. Visit of Indian Delegation to Sweden

BIRAC as a part of its effort to connect global ecosystem, entered into a strategic partnership with Sweden through Vinnova, a Swedish funding agency. DBT & Vinnova signed a MoU with BIRAC as implementing agency for Exchange programme of Indian & Swedish Start-ups, Market access to Start-ups, networking events and access to Test Beds. This was signed as an extension of an existing partnership between DBT & Vinnova.

Under the tripartite MoU, a senior delegation of BIRAC's BioNEST supported Bio-incubator representatives visited Sweden (6th May- 9th May 2019) to discuss & understand the Swedish Ecosystem under Sweden-India Innovation Partnership and interactions with implementing agencies. The objective was to connect the global ecosystem and facilitate networking of Biotech Incubators, Start-ups to gain access to Test Beds, KOLs, Experts and Markets from the two countries.

BIRAC-Vinnova partnership has also been aligned to leverage Digital Health space further. Delegation visited following centres and had meeting with their representatives:

- Uppsala University and Innovation Centre
- Sting Incubator, Sweden
- AstraZeneca Bio Venture in Gothenburg, Sweden
- KTH Royal Technical University



Visit of Indian delegation to the Innovation Hub, Uppsala, Sweden & Indian Delegation at Sting incubator, discussing the incubation Ecosystem

This Program provided an opportunity for closer interaction between the two countries and to look out for opportunities like Exchange for Swedish & Indian Start-ups & facilitated by Tech clusters, soft landing of start-ups, bilateral innovation, exploring new areas for partnerships which could possibly lead to synergies for speedy growth and learning from peer to peer ecosystem. This visit gave Incubator representatives a first-hand exposure to the Swedish Ecosystem to identify actionable follow through and outcome oriented activities.

d. BioAsia 2020: “‘Today for Tomorrow’ (17th Feb-19th Feb, 2020)

The 17th Edition of the event with theme ‘Today for Tomorrow’ was inaugurated by Mr. KT Rama Rao, Minister for Industries and Commerce & IT, Government of Telangana. The 3 days event saw the presence of stalwarts from Life Sciences, Biotechnology, Pharma and Healthcare industries in India and abroad and focused on how innovations and technological disruptions are re-shaping the global life sciences sector. Over 2,000 delegates from Industry, Government, Scientist Community, Academia and Start-ups representing 37 countries participated in the global bio-business event.

BIRAC sponsored panel discussion on Collaborative R&D: Unlocking the potential of public and private partnerships was held on Day 2 of the event. Dr. Ajit Shetty, Corporate VP Global Operations, J&J USA (Retd.), Chairman Emeritus, Janssen Pharmaceutica, Belgium & Chairman, International Advisory Board, BioAsia moderated this session. The panelists included Mr. Ajit Rangnekar, Director General, Research & Innovation Circle of Hyderabad, Dr. Subodh Deshmukh, Global Head of Product Development, Sandoz, Mr. Krishna Kanumuri, CEO & Managing Director, Sai Life Sciences Ltd., Mr. Jonathan Hunt, CEO Syngene International, Dr. Srinivas S Rao, Global Head, Translational In Vivo Models Global Research Platform, Sanofi, USA, Dr. Omkaram Nalamasu, Chief Technology Officer, Applied Materials

& President, Applied Ventures, USA; Dr. Margrit Leuthold, Deputy Program Director, 'Future Health Technologies' Program, Singapore ETH Zurich Centre. The session converged upon establishing various ways and mechanisms to develop programs based on public-private partnerships for solving global health problems

BIRAC also co-sponsored the Start-up Stage Awards that concluded on day 3 of the event. Mr. KT Rama Rao; Hon'ble Minister for Industries and Commerce, Government of Telangana graced the award ceremony. The top 5 awardees who received this prestigious award included Heamac Healthcare Pvt. Ltd., Callzy, Flexmotiv, Lycan 3D, Oncosimis Biotech Pvt. Ltd.



BIRAC at BioAsia 2020

e. 3rd Emerging North East 2020

The Association of Chambers of Commerce and Industry recently organized "Emerging North East Event". The 3rd Edition of this event was held from 27th Feb to 29th Feb 2020 at Maniram Dewan Trade Centre, Guwahati, Assam. The three day exhibition brought large number of National & International Stakeholders from the Industry, institutions, Government & developmental sectors to showcase their programs, schemes & products; along with the opportunities and way forward.



Glimpses from 3rd Emerging North East 2020

The event comprised series of discussion, technical sessions and business meeting with focus on leveraging Agri & Food processing technologies potential, Role of Industry & Institutions in exploring the opportunities and leveraging the overall development of the North- Eastern Region.

The Governor of Assam, Sh. Jagdish Mukhi inaugurated the event. Other dignitaries from Ministry of Industry Commerce, Food Processing Industry, Ministry of Micro, Small & Medium & Enterprises (MSME) were also present at the event.

BIRAC supported as well as participated in the event and familiarized the audience about various BIRAC schemes, programs & ongoing calls.

The Event was supported by Ministry of Food Processing & Industries, Department of Tourism & Skill Development.

f. Visit to Spain under INDIAN LEADERS PROGRAMME 2019

7th Edition of Indian Leaders Programme of the Spain India Council Foundation (SICF) was held from 1st-6th July, 2019 with a focus on “Entrepreneurship and Start ups”. The Spain-India Council Foundation is a non-profit private entity, which aims to foster mutual understanding between the two countries. It brings together the efforts of a broad range of sectors to promote India-related interests, such as science, technology, research, culture and academy, as well as financial, trade and business cooperation, acting as a civil society platform.

Ms. Shilpy Kochhar, Senior Manager, Entrepreneurship Development, BIRAC represented BIRAC along with Dr. Anil Wali, Managing Director, FITT, New Delhi; Ms. Ananya Chandra, Assistant Vice President, AGNIi, Invest India, New Delhi; Dr. Sanjay Pal, Senior Faculty, EDII, Ahmedabad and Dr. H Purushotham, Chairman & Managing Director, NRDC. The 5 days programme included discussions meetings with City Councils & financial institutions, interaction with officials from relevant Ministries, visit to incubators, business school and meeting start-ups as well as established MNCs. The programme overall presented a broad overview of the Start-up ecosystem in Spain, particularly in cities including Madrid, Valladolid and Barcelona.



Visit to Boecillo, a Biotech Incubator & Visit to Ministry of Science, Innovation and Universities

Some of the important institutions visited include:

- CDTI, a Public Business Entity under the Ministry of Economy, Industry and Competitiveness, which fosters the technological development and innovation of Spanish companies.
- Ministry of Science, Innovation and Universities responsible for fostering research and innovation, and management of international relations in this area and the Spanish representation in programs and international organizations, and the EU.
- Madrid City Council, a local body promoting entrepreneurship
- Boecillo Technological Park, a Biotech Incubation Centre with high technology equipped laboratories designed to support research activities and biotechnology developments.
- CaixaBank, a financial group with a socially responsible, long-term universal banking model, based on quality, trust, and specialization.

The programme also provided an excellent opportunity to explore potential areas of collaboration between Spain and India, particularly for start-up and entrepreneurs



XII. OUR FUTURE PLANS

- To strengthen the BioNEST network and expand its presence in deeper pockets of the country
- **Bio-Incubation Centres:** Set up 10 new bioincubators under the BioNEST scheme. New bioincubators would be set up to include locations to provide adequate coverage across the country including Tier 2 cities.
- **BioNEST Clusters:** There are 7 BioNEST Clusters based on geographical locations. Encourage interaction and networking both intra and inter- BioNEST clusters.. This would provide opportunities for handholding, showcasing, peer to peer learning and handholding of emerging bioincubators.
- **Incubation Managers Training:** Incubation practice school was a new initiative launched in 2018, through one of the BIRAC's Regional centres, addressing an important gap in the Start-up ecosystem. This will be expanded to 3 Regional Centres.
- **BIRAC as a Knowledge Partner:** Expand BIRAC's contributions and reach as a knowledge partner through national and international level partners engagement.
- **Evangelization:** Expand outreach for BIRAC's schemes to deeper pockets of the country by adding a new layer of BIG Associate Partners. For this, mature BioNEST Bioincubators will be engaged as Associate Partners for evangelization and outreach.
- **Expanding the portfolio of partners under SITARE scheme:** The scheme is currently managed in partnership with SRISTI, Ahmedabad. Additional relevant partner for reaching to more and more students will be inducted.
- **New EYUVA Centres:** Central call for induction of more universities/institutions was announced during January 2020. More centres will be inducted as EYUVA Centres during 2020-21.
- **BioAngels initiative:** Implementation of Biotech Angel Network (BioAngels) with IAN (Indian Angel Network) which was announced at the Global Bio India 2019.
- **Resource Mobilization:** BIRAC as Implementing/ Knowledge partner to co-promote Entrepreneurial & Start-up activities with Ministries/ States/ Corporates shall undertake activities to mobilize extramural resources.
- **Global Bio India 2020:** The first edition of Global Bio India organized in November 2019 was very well received and lauded by the Biotech Community. It is planned to make this event an annual feature. GBI 2020 is proposed to be organized during FY 20-21.
- **State Connect:** Activities would be undertaken to streamline the State Biotech ecosystem with central agencies. Such activities may include State Connect Conclaves, Sensitization Workshops, Regional Cluster Meetings, State Facilitation for Biotech Policy – Drafting, Review & Implementation etc.
- **Project Development Cell (PDC) for Biotechnology sector** is proposed to be established at BIRAC for joint implementation with DBT. The PDC Cell would be anchored as a unit within MII Cell of BIRAC.
- **Upscale initiative of Field validation:** To facilitate last mile conversion and forward traction of products/ technologies developed by Start-ups, field validation activity would be expanded to cover from existing 4-5 technologies per year to about 15/ year. This would include expansion of partner network.
- **AcE fund (Fund of Funds):** Expansion of AcE fund partners from current 5 to 10. Attempt to expand the corpus for AcE fund.
- **Setting up of the 5th Regional Centre:** BIRAC is spreading the ecosystem reach and expanding the inclusion throughout the country. So far it has strategically created 4 Regional Centres - BREC (Bangalore), BRIC (Hyderabad), BRBC (Pune) and BRTC (Bhubaneswar). It would be expanding the number of Regional Centres to a total of 5 by 2020.

XII. SUPPORTING SERVICES

a. Legal

The Legal Cell of BIRAC provides a wide array of advisory and support services including drafting, reviewing, executing and modifying contracts, agreements and internal policies and ensuring that they are in compliance with all the statutory and legal requirements.

The services of the Legal Cell also includes providing legal guidance for the on-going and new funding programs, providing legal protection and risk management advice to management, managing the legal due diligence process

pertaining to the various funding schemes, advising the management on the modalities of national and international co-funding initiatives facilitating technology acquisition, implementation of the National Biopharma Mission, promoting alternative dispute resolution etc.

b. Internal control system and their adequacy

The Company has established systems providing adequate internal controls, commensurate with the size and nature of the business. Such systems have been appropriately documented. There is a very clear policy to maintain confidentiality and ensure No-Conflict of Interest.

c. Human resources

The HR & Administration Department in BIRAC is an essential component which is primarily focused on maximizing employee productivity in line with Company's objectives. It plays an essential role in developing a Company's strategy as well as handling the employee-centric activities of the organization.

The HR & Administration Department with its diverse mix of skill set and unique perspective on business operations, is positioned to add strategic value on critical issues across the employee life span from recruiting and on boarding to talent development and retention.

HR Department is constantly in the endeavour to induct right people at the right time to meet organizational needs. The department has put concerted efforts in talent management and succession planning practices, strong performance management and training initiatives to ensure that it consistently develops inspiring, strong and credible leadership. BIRAC is a growing organisation and succession plan is an integral part of the strategic planning process, to achieve the long terms goals & objectives of the Company and also to help mitigate risk associated with attrition. A holistic succession plan has been implemented across the organization and an integrated systematic approach has been adopted for identifying, developing, and retaining capable and skilled employees in line with current and projected organisational objectives.

HR Department reviews the performance of employees in a systematic way and takes it as a developmental tool for all round development of the employee and the organization. Online submission of Annual Performance Appraisal Reports (APAR) in respect of all executives (E1 and above) is activated in the beginning of the financial year and closes in April – May of the following year with end year appraisal and review. Based on the performance ratings, the contracts of employees are renewed and promotions are awarded. DPC is convened twice a year and assesses the suitability of employees for contract renewals and promotions.

Training and development activities have played a key role to upgrade the workforce to adopt new technologies, systems and practices and make the workforce ready to face the future challenges. BIRAC is focussed on enhancing skill development of its employees by organizing in-house trainings and identifying domain specific training in reputed training institutes. In 2019-20 more than 200 man-days training have been imparted to BIRAC Employees including domain specific trainings and soft skill trainings.

BIRAC's 3i portal received SKOCH Order of Merit and Governance Bronze Award at the Skoch Summit, 28th-29th Aug 2019. SKOCH Award is the highest civilian honour in the country conferred by an independent organization, which encourages the best efforts in the area of digital, financial and social inclusion.

Human Resource & Administration Department in BIRAC strives on implementing employee engagement activities through which employees feels a strong emotional and personal connection to their workplace which in turn reduces staff turnover, improve productivity and efficiency. National events such as Swachhata Pakhwada, Hindi Maha, Constitution Day, Women's Day etc. are also observed in BIRAC with fervour and zeal.

1. Swachhata Pakhwada

Swachhata Pakhwada was observed in BIRAC from 1st May to 15th May 2019. Swachhata pledge was administered by Managing Director, BIRAC wherein everyone pledged to devote 100 hours an year as 'Shramadaan' to ensure cleanliness of the work area & surroundings.

E-banners on awareness about cleanliness and the observance of Swachhata Pakhwada were displayed at the Reception area. A cleanliness activity to clean the area near by electrical installations, stairs and glass doors was organized at the office premises.

During the programme, all the Employees of BIRAC performed "Shramdaan" and carried out a cleanliness drive by cleaning office corridor.



A slogan writing competition was also organised on the theme “Swachh Bharat” and all employees actively participated and contributed towards the mission.

2. Yoga Day

Biotechnology Industry Research Assistance Council (BIRAC) organised the Yoga Day Programme on 21st June 2019 at Lodhi Garden, New Delhi. Employees gathered early in the morning and practiced yoga with enthusiasm in the presence of Yoga instructor, who guided through the series of yogasanas enriched the employees with the value and benefits of this ancient and modern practice.

As per the Common Yoga Protocol (CYP) issued by Ministry of AYUSH, Government of India yogas were performed.

A meditation session was also organised, wherein Sister from Brahmakumaris enriched the employees by explaining the importance of meditation and guided through the meditation. Dr. Renu Swarup, Secretary - DBT & Chairperson – BIRAC closed the International Yoga Day by addressing the employees and speaking on the importance of yoga.

3. Fire Safety Drill

Fire Safety Drill was organised in BIRAC 22nd August 2019 by DRDO wherein a lecture was delivered about types of fire and how to respond quickly, calmly, and safely in case of fire. Employees were practically briefed about the best way to minimize the risk of fire and to understand the potential threats and put in place preventive measures. The purpose of this fire drill was to ensure that everyone knows how to exit safely as quickly as possible if a fire or other emergency occurs.

BIRAC employees were also educated on the principles and practices of using a fire extinguisher and the hazards associated with fighting small or developing fires with hands on training.

4. Hindi Maha

This year BIRAC observed Hindi Maha from 01st September 2019 to 30th September 2019 to promote and propagate the use of our national language. During this period, competitions like Hindi Numbers, Hindi Translation and Hindi Muhaware were organized in BIRAC, where all employees participated with great enthusiasm.

5. Swachhata Hi Seva - 2019 Campaign

On account of Swachhata Hi Seva - 2019 Campaign, BIRAC carried out various activities. This year's campaign was focused on **Plastic Waste Awareness and Management**.

During the campaign employees and housekeeping staff/Office Attendants were sensitized regarding segregation of waste which leads to higher recovery of recyclables hence saving the limited natural resources, landfill space and also enables a hygienic environment for handling of waste by waste workers. Employees were also briefed about the hazardous effects of single-use plastic on the environment and the health of animals and aquatic life.

Also an e-forum was made live for employees for putting up innovative ideas on the "**Alternative choices for single use plastic**". All the ideas received have been shared among employees to create awareness and have alternative choices for single-use plastic in houses, office and work spaces.

BIRAC has also discarded the single use plastic bottles in meetings and replaced them with reusable Stainless Steel Water Bottles which are eco-friendly and maintains water's original integrity.

6. Vigilance Awareness Week and National Unity Day

Vigilance Awareness week was observed in BIRAC from 28th October to 02nd November, 2019. The observance of the Vigilance Awareness Week commenced with the Integrity Pledge taken by all employees of BIRAC. BIRAC also celebrated Rashtriya Ekta Diwas by administering a pledge as part of Birth Anniversary Celebration of Sardar Vallabhbhai Patel on 31st October 2019.

7. Constitution day

Constitution day was celebrated in BIRAC on 26th November 2019. The event commenced by reading out The Preamble of Indian Constitution which records the aims and aspirations of the people of India and reflects the basic spirit of the Constitution.

8. Women's Day 2020

International Women's Day is observed on March 8th every year celebrating the social, economic, cultural and political achievements of women. BIRAC also celebrated Women's Day where Dr. Renu Swarup, Secretary DBT & Chairperson BIRAC and Dr. Mohd. Aslam, Advisor (Scientist 'G') DBT & MD BIRAC addressed employees.



BIRAC celebrated exceptional work done by Indian women by remembering how Indian Women have broken gender barriers and worked hard for their rights and made progress in the field of politics, arts, science, law etc.

Employees of BIRAC also actively participated in the event by singing inspirational songs, poems and sharing their views on achievement on women's.

With regular communication and sustained efforts HR and Admin Department is ensuring that employees are aligned on achieving BIRAC's strategic mission, while keeping employees engaged and motivated. It strongly believes in fostering a culture of trust and mutual respect in all its employees and seeks to ensure that BIRAC's core values and principles are understood by all.



REPORT ON CORPORATE GOVERNANCE

REPORT ON CORPORATE GOVERNANCE

1. BIRAC PHILOSOPHY ON GUIDELINES ON CORPORATE GOVERNANCE

Corporate Governance refers to a set of systems, principles and processes by which a company is governed. They provide the guidelines as to how a company can be directed or be controlled such that it can fulfil its goals and objectives in a manner that adds to the value of the company and is also beneficial for all the stakeholders in the long term. Stakeholders in this case would include everyone ranging from the board of directors, management, shareholders to customers, employees and society. BIRAC is committed to sound principles of Corporate Governance with respect to all its policies, practices and procedures. The Company's policies clearly reflect its values of transparency, professionalism and accountability. BIRAC consistently strives to uphold these values so as to generate long term economic value to all the stakeholders.

2. BOARD OF DIRECTORS

The Board of Directors currently consists of 3 Directors viz. an Executive Chairperson, an Executive Managing Director and a Government Nominee Director. The Board also had 4 independent directors, whose term ended on March 15, 2020.

Four Board meetings of the Company were held on the following dates: June 12, 2019, August 21, 2019, November 14, 2019 and February 12, 2020

The details of the Directors and the Board meetings attended are as follows till 31st March, 2020:

Name of the Director	Category	Directorships in other companies	Member/ Chairman of Committees in other companies		Board Meetings Attended (Nos.)	Attendance at last AGM
			Member	Chairman		
Dr. Renu Swarup	Chairperson (Executive)	Nil	Nil	Nil	4	Yes
Dr. Mohd. Aslam*	Managing Director & Government Nominee Director	2	Nil	Nil	4	Yes
Ms. Anju Bhalla#	Managing Director (Executive)	Nil	Nil	Nil	0	No
Prof. Ashok Jhunjhunwala**	Independent Director	3	Nil	Nil	4	No
Prof. Pankaj Chandra**	Independent Director	Nil	Nil	Nil	4	No
Prof. Akhilesh Tyagi**	Independent Director	1	Nil	Nil	3	Yes
Shri. Naresh Dayal**	Independent Director	1	Nil	Nil	3	No

**Dr. Mohd Aslam was the Managing Director of BIRAC upto April 9, 2020; Also, his term as Government Nominee Director ends on November 30, 2020.*

#Ms. Anju Bhalla, Joint Secretary, DST was appointed as the Managing Director of BIRAC w.e.f. April 10, 2020

***Held position as Independent Director till March 15, 2020*

None of the Directors are members of more than 10 Committees and/ or act as Chairman of more than 5 Committees as prescribed under the Guidelines on Corporate Governance for Central Public Sector Enterprises (CPSEs) issued by the Department of Public Enterprises (DPE).

There are no pecuniary relationships or transactions of the non-executive directors of the Company.

3. AUDIT COMMITTEE

The Audit Committee consisted of four Directors viz. Prof. Akhilesh Tyagi, Independent Director as Chairman, Prof. Pankaj Chandra, Independent Director, Prof. Ashok Jhunjhunwala, Independent Director and Dr. Mohd. Aslam, Managing Director. The term of the independent directors ended on March 15, 2020. The appointment of non-official directors is in process with Department of Public Enterprises (DPE).

Four Audit Committee meetings were held on the following dates: June 12, 2019, August 21, 2019, November 14, 2019 and February 12, 2020

The details of attendance of the directors at the Audit Committee meeting are as follows:

Name of the Director	No. of Audit committee meetings attended
Prof. Akhilesh Tyagi*	3
Prof. Ashok Jhunjhunwala*	4
Prof. Pankaj Chandra*	4
Dr. Mohd. Aslam#	4

tenure upto April 9, 2020

* tenure upto March 15, 2020

4. REMUNERATION COMMITTEE

The Remuneration Committee was constituted on August 24, 2018 to decide on the annual variable pay pool and the policy for its payout within the prescribed time. Prof. Pankaj Chandra, Independent Director was appointed as the Chairman of the Committee and Prof. Ashok Jhunjhunwala, Independent Director and Dr. Mohd. Aslam, Managing Director, BIRAC were the members of the Committee.

5. BOARD PROCEDURE

The meetings of the Board are generally held at the Company's registered office at New Delhi. The Company complies with the statutory requirements for holding board meetings. Apart from the statutory matters requiring Board's approval, all major decisions including key financial ratios, actual operations, feedback reports and minutes of meetings are regularly placed before the Board.

6. SHAREHOLDER INFORMATION AS ON MARCH 31, 2020

Category Code	Category of shareholders	Total number of shares	Total value of shares (in Rs.)	Total shareholding as a percentage of total number of shares
Shareholding of Promoter and promoter category	President of India	9000	90,00,000	100
	Dr. Renu Swarup (held on behalf of the President of India)	900	9,00,000	9
	Dr. Mohd. Aslam (held on behalf of the President of India)	100	1,00,000	1
	GRAND TOTAL	10000	1,00,00,000	100

7. GENERAL BODY MEETINGS

The details of general body meetings are as follows:

Period ended on	Venue	Date	Time
31.03.18	MTNL Building, 1 st floor, 9, CGO Complex, Lodhi Road, New Delhi – 110 003	25.09.18	12.30 p.m.
31.03.19	Department of Biotechnology, 2, CGO Complex, 7 th floor, Lodhi Road, New Delhi – 110003.	23.09.19	10.15 a.m.
31.03.20	MTNL Building, 1 st floor, 9, CGO Complex, Lodhi Road, New Delhi – 110 003	18.12.2020	05.45 p.m.

8. DISCLOSURES (AS PER DPE GUIDELINES)

1. The Company has not entered into any material, financial or commercial transaction with the Directors or the management or their relatives in which they are either directly or through their relatives interested as directors and/or partners
2. The Company has complied with applicable rules and regulations and no penalties or strictures were imposed on the Company by any statutory authority during the last two years
3. The Company has complied with the applicable provisions of the guidelines of Corporate Governance
4. Department of Public Enterprises vide its OM F.No. DPE/14/(38)/10-Fin. dated 17.04.2020, advised all CPSEs to submit an annual compliance report on implementation of policies and guidelines issued by DPE by 31st July, 2020 for financial year 2019-20. In compliance of the directives of DPE, BIRAC submitted its compliance report to the Department of Biotechnology for onward transmission to DPE
5. No item of expenditure was debited in the books of accounts which was not for the purpose of the organisation
6. No expenses of a personal nature of the Members of the Board of Directors were incurred out of the funds of the Company.

9. MEANS OF COMMUNICATION

Members/ shareholders are apprised about the performance of the Company at each Annual General Meeting. The Company is an unlisted, private limited Section 8 Company and therefore, the need to communicate its quarterly or half-yearly results does not arise.

10. COMPLIANCE CERTIFICATE

In terms of Clause 8.2 of the DPE Guidelines on Corporate Governance, a certificate from a practising Company Secretary, M/s. Neelam Gupta & Associates, New Delhi confirming the compliance of the provisions of Corporate Governance forms a part of the report on Corporate Governance.

11. CODE OF CONDUCT

BIRAC is committed to conduct business in accordance with the highest standards of business ethics and compliance with the applicable laws, rules and regulations. A Code of Business Conduct and Ethics in accordance with the DPE Guidelines has been laid down for all Board members and senior management.

All the members of the Board and senior management personnel have affirmed compliance with the same for the financial year 2019-20. The Code of Business Conduct and Ethics has also been put up on the website of the Company (www.birac.nic.in)

DECLARATION AS REQUIRED UNDER THE DPE GUIDELINES ON CORPORATE GOVERNANCE

“All the members of the Board and Senior Management Personnel have affirmed compliance of the **Code of Business Conduct & Ethics for Board Members and Senior Management** for the financial year ended on March 31, 2020”.

Sd/-
Dr. Renu Swarup
Chairperson



CERTIFICATE OF COMPLIANCE OF CORPORATE GOVERNANCE AS PER THE GUIDELINES OF DEPARTMENT OF PUBLIC ENTERPRISES (DPE) BY A COMPANY SECRETARY IN WHOLE TIME PRACTICE

To the members of Biotechnology Industry Research Assistance Council (BIRAC)

We have examined the compliance of the conditions of Corporate Governance by Biotechnology Industry Research Assistance Council ("the Company") for the year ended on March 31, 2020, as stipulated in the guidelines of Corporate Governance for Central Public Sector Enterprises (CPSEs) issued by Department of Public Enterprises (DPE) vide its order dated May 14, 2010.

The compliance of the conditions of Corporate Governance is the responsibility of the Management. Our examination was carried out in accordance with the provisions of the guidelines of DPE and limited to a review of the procedures and implementation thereof, adopted by the Company, for ensuring the compliance of the conditions of Corporate Governance. It is neither an audit nor an expression of opinion of the financial statement of the Corporation.

In our opinion and to the best of our information and based on the submission, clarifications and explanations given to us, and according to the reports, records and documents maintained by the Company, we certify that the Company has complied with the conditions of Corporate Governance, as stipulated in the guidelines of DPE.

We further state that such compliance is neither an assurance as to the future viability of the Company nor the efficiency or effectiveness with which the management has conducted the affairs of the Company.

For **Neelam Gupta & Associates**
Company Secretary

Sd/-
(Neelam Gupta)
Practicing Company Secretary
Proprietor
PCS 6590

Date: 15.10.2020
Place : New Delhi



AUDITORS' REPORT & ANNUAL ACCOUNTS

INDEPENDENT AUDITOR'S REPORT

UDIN : 20097881AAAAJS5296

To the Members of

Biotechnology Industry Research Assistance Council

Report on the Financial Statements

Opinion

We have audited the accompanying financial statements of Biotechnology Industry Research Assistance Council ("the Company") which comprises the Balance Sheet as at March 31, 2020, the Statement of income & expenditure and statement of cash flows for the year ended, and notes to the financial statements, including a summary of significant accounting policies and other explanatory information.

In our opinion and to the best of our information and according to the explanations given to us, the aforesaid financial statements give the information required by the Act in the manner so required and give a true and fair view in conformity with the accounting principles generally accepted in India, of the state of affairs of the Company as at March 31, 2020, and income and expenditure for the year ended on that date.

Basis for Opinion

We conducted our audit in accordance with the Standards on Auditing (SAs) specified under section 143(10) of the Companies Act, 2013. Our responsibilities under those Standards are further described in the Auditor's Responsibilities for the Audit of the Financial Statements section of our report. We are independent of the Company in accordance with the Code of Ethics issued by the Institute of Chartered Accountants of India together with the ethical requirements that are relevant to our audit of the financial statements under the provisions of the Companies Act, 2013 and the Rules there under, and we have fulfilled our other ethical responsibilities in accordance with these requirements and the Code of Ethics. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

Responsibility of Management for the Financial Statements

The Company's Board of Directors is responsible for the matters stated in section 134(5) of the Companies Act, 2013 with respect to the preparation of these financial statements that give a true and fair view of the financial position, financial performance, and cash flows of the Company in accordance with the accounting principles generally accepted in India, including the accounting Standards specified under section 133 of the Act. This responsibility also includes maintenance of adequate accounting records in accordance with the provisions of the Act for safeguarding of the assets of the Company and for preventing and detecting frauds and other irregularities; selection and application of appropriate implementation and maintenance of accounting policies; making judgments and estimates that are reasonable and prudent; and design, implementation and maintenance of adequate internal financial controls, that were operating effectively for ensuring the accuracy and completeness of the accounting records, relevant to the preparation and presentation of the financial statement that give a true and fair view and are free from material misstatement, whether due to fraud or error.

In preparing the financial statements, management is responsible for assessing the Company's ability to continue as a going concern, disclosing, as applicable, matters related to going concern and using the going concern basis of accounting unless management either intends to liquidate the Company or to cease operations, or has no realistic alternative but to do so.

Those Board of Directors are also responsible for overseeing the company's financial reporting process.

Auditor's Responsibility for the Audit of the Financial Statements

Our objectives are to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes our opinion. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with SAs will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these financial statements.

Report on Other Legal and Regulatory Requirements

As required by the Companies (Auditor's Report) Order, 2016 ("the Order"), issued by the Central Government of India in terms of sub-section (11) of section 143 of the Companies Act, 2013, we give in the Annexure a statement on the matters specified in paragraphs 3 and 4 of the Order, to the extent applicable.



Address : First Floor, 95, National Park,
Lajpat Nagar IV, New Delhi-110024
Phone : 011-49097836
Email : carahulv@gmail.com
Website : www.rma-ca.com

As required by Section 143(3) of the Act, we report that:

We have sought and obtained all the information and explanations which to the best of our knowledge and belief were necessary for the purposes of our audit.

- In our opinion, proper books of account as required by law have been kept by the Company so far as it appears from our examination of those books.
- The Balance Sheet, the Statement of Income & expenditure and the cash flow statement dealt with by this Report are in agreement with the books of account
- In our opinion, the aforesaid financial statements comply with the Accounting Standards specified under Section 133 of the Act, read with Rule 7 of the Companies (Accounts) Rules, 2014.
- On the basis of the written representations received from the directors as on 31st March, 2020 taken on record by the Board of Directors, none of the directors is disqualified as on 31st March, 2020 from being appointed as a director in terms of Section 164 (2) of the Act.
- With respect to the adequacy of the internal financial controls over financial reporting of the Company and the operating effectiveness of such controls, refer to our separate Report in "Annexure A".
- With respect to the other matters to be included in the Auditor's Report in accordance with Rule 11 of the Companies (Audit and Auditors) Rules, 2014, in our opinion and to the best of our information and according to the explanations given to us:
 - The Company has disclosed the impact of pending litigations on its financial position in its financial statements.
 - The Company has made provision, as required under the applicable law or accounting standards, for material foreseeable losses, if any, on long-term contracts including derivative contract.
 - There were no amounts which were required to be transferred to the Investor Education and Protection Fund by the Company.

Further as per the direction of comptroller and Auditor General of India, we are reporting on the points as asked u/s 143(5) as given below:

S. No.	Direction u/s 143(5)	Reply
1.	Whether the company has system in place to process all the accounting transactions through IT system? If yes, the implications of processing of accounting transactions outside IT system on the integrity of the accounts along with the financial implications, if any, may be stated.	Yes, the company has system in place to process all the accounting transactions through IT system.
2.	Whether there is any restructuring of an existing loan or cases of waiver/ write off of debts /loans/interest etc. made by a lender to the company due to the company's inability to repay the loan? If yes, the financial impact may be stated.	No, there is no restructuring/ waiver/ write off of any debt/ loan availed by the company.
3.	Whether funds received/receivable for specific schemes from central/ state agencies were properly accounted for/ utilized as per its term and conditions? List the cases of deviation.	Yes, funds received/receivable for specific schemes from central / state agencies have been properly accounted for/ utilized as per its terms and conditions.

For RMA & Associates LLP
Chartered Accountants
Firm Registration No. 000978N / N500062

Sd/-
Rahul Vashishth
Partner
M. No. 097881

Place: New Delhi
Date: 27.08.2020

Report on Internal Financial Controls over Financial Reporting

Report on the Internal Financial Controls under Clause (i) of Sub-section 3 of Section 143 of the Companies Act, 2013 ("the Act")

We have audited the internal financial controls over financial reporting of **Biotechnology Industry Research Assistance Council** ("the Company") as of March 31, 2020 in conjunction with our audit of the financial statements of the Company for the year ended on that date.

Management's Responsibility for Internal Financial Controls

The Company's management is responsible for establishing and maintaining internal financial controls based on the internal control over financial reporting criteria established by the Company considering the essential components of internal control stated in the Guidance Note on Audit of Internal Financial Controls over Financial Reporting issued by the Institute of Chartered Accountants of India. These responsibilities include the design, implementation and maintenance of adequate internal financial controls that were operating effectively for ensuring the orderly and efficient conduct of its business, including adherence to company's policies, the safeguarding of its assets, the prevention and detection of frauds and errors, the accuracy and completeness of the accounting records, and the timely preparation of reliable financial information, as required under the Companies Act, 2013.

Auditors' Responsibility

Our responsibility is to express an opinion on the Company's internal financial controls over financial reporting based on our audit. We conducted our audit in accordance with the Guidance Note on Audit of Internal Financial Controls Over Financial Reporting (the "Guidance Note") and the Standards on Auditing, issued by ICAI and deemed to be prescribed under section 143(10) of the Companies Act, 2013, to the extent applicable to an audit of internal financial controls, both applicable to an audit of Internal Financial Controls and, both issued by the Institute of Chartered Accountants of India. Those Standards and the Guidance Note require that we comply with ethical requirements and plan and perform the audit to obtain reasonable assurance about whether adequate internal financial controls over financial reporting was established and maintained and if such controls operated effectively in all material respects.

Our audit involves performing procedures to obtain audit evidence about the adequacy of the internal financial controls system over financial reporting and their operating effectiveness. Our audit of internal financial controls over financial reporting included obtaining an understanding of internal financial controls over financial reporting, assessing the risk that a material weakness exists, and testing and evaluating the design and operating effectiveness of internal control based on the assessed risk. The procedures selected depend on the auditor's judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion on the Company's internal financial controls system over financial reporting.

Meaning of Internal Financial Controls over Financial Reporting

A company's internal financial control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company's internal financial control over financial reporting includes those policies and procedures that:

- (1) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company;
- (2) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and
- (3) Provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company's assets that could have a material effect on the financial statements.

**Inherent Limitations of Internal Financial Controls over Financial Reporting**

Because of the inherent limitations of internal financial controls over financial reporting, including the possibility of collusion or improper management override of controls, material misstatements due to error or fraud may occur and not be detected. Also, projections of any evaluation of the internal financial controls over financial reporting to future periods are subject to the risk that the internal financial control over financial reporting may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

Opinion

In our opinion, the Company has, in all material respects, an adequate internal financial controls system over financial reporting and such internal financial controls over financial reporting were operating effectively as at March 31, 2020, based on the internal control over financial reporting criteria established by the Company considering the essential components of internal control stated in the Guidance Note on Audit of Internal Financial Controls Over Financial Reporting issued by the Institute of Chartered Accountants of India.

For RMA & Associates LLP**Chartered Accountants****Firm Registration No. 000978N / N500062****Sd/-****Rahul Vashishth****Partner****M. No. 097881****Place: New Delhi****Date: 27.08.2020**

Biotechnology Industry Research Assistance Council (BIRAC)

BALANCE SHEET AS AT 31st March 2020

CIN U73100DL2012NPL233152

(Amount in Rs.)

Particulars	Note No.	As at 31.03.2020	As at 31.03.2019
I EQUITY AND LIABILITIES			
(1) Shareholder's Funds			
(a) Share Capital	1	1,00,00,000	1,00,00,000
(b) Reserves and Surplus	2	1,10,88,57,922	98,24,31,683
(2) Deferred Government Grant	3	64,60,831	85,67,288
(3) Non Current Liabilities	4	74,50,77,006	84,02,24,048
(4) Current Liabilities	5	2,90,76,70,653	2,54,14,07,314
TOTAL		4,77,80,66,413	4,38,26,30,333
II ASSETS			
(1) Non-Current Assets			
(a) Fixed Assets			
(i) Tangible Assets	6	61,83,601	85,39,180
(ii) Intangible Assets	6	2,77,230	28,108
(b) Non-Current Investments	7	25,82,03,152	6,60,60,717
(c) Long-Term Loans and Advances	8	11,49,40,778	47,61,98,733
(2) Current Assets			
(a) Cash and Cash Equivalents	9	3,35,58,04,654	2,83,11,71,319
(b) Other Current Assets	10	1,04,26,56,997	1,00,06,32,275
TOTAL		4,77,80,66,413	4,38,26,30,333
Significant Accounting Policies and the accompanying Notes to Accounts.	16 & 17		

The notes referred to above form integral part of Financial Statements.

For and on behalf of Board of Directors

Sd/-
Kavita Anandani
(Company Secretary)

Sd/-
Anju Bhalla
(Managing Director)
DIN 06981734

Sd/-
Renu Swarup
(Chairperson)
DIN 01264943

Auditors Report

As per our report of even date attached

For RMA & Associates LLP

Chartered Accountants

Firm Reg. No. 000978N/ N500062

Sd/-

CA. Rahul Vashishtha

(Partner)

Membership No. 097881

Place : New Delhi

Date : 27.08.2020



Biotechnology Industry Research Assistance Council (BIRAC)			
STATEMENT OF INCOME & EXPENDITURE FOR THE PERIOD ENDED 31st March 2020			
CIN U73100DL2012NPL233152			
(Amount in Rs.)			
Particulars	Note No.	For the Period ended 31.03.2020	For the Period ended 31.03.2019
(1) INCOME			
Grants Received as Utilised	11	1,78,75,32,847	1,74,54,27,149
Extra-Mural Grants Received as Utilised	13A-H	2,35,05,83,379	99,60,29,904
Other Income	12	8,52,13,524	5,38,14,398
Total Revenue		4,22,33,29,750	2,79,52,71,451
(2) EXPENDITURE			
Programme Expenditure	13	1,64,62,44,684	1,62,87,10,442
Extra-Mural Programme Expenditure	13A-H	2,35,05,83,379	99,60,29,904
Employee Benefit Expenses	14	7,04,34,781	8,26,98,629
Depreciation & Amortisation Expenses	6	27,80,888	28,08,111
Other Expenses	15	7,37,40,742	6,96,11,287
Total Expenses		4,14,37,84,473	2,77,98,58,372
(3) Surplus of Income over Expenditure before exceptional and extraordinary items		7,95,45,277	1,54,13,079
Add/ (Less): Prior Period Income/(Expenditure) (net)		-	-
(4) Surplus before extraordinary items		7,95,45,277	1,54,13,079
Add/(Less): Extraordinary Items		-	-
(5) Income before tax		7,95,45,277	1,54,13,079
Less: Provision for Income Tax		-	-
Surplus Carried Forward to Reserve & Surplus A/c		7,95,45,277	1,54,13,079
Earning per equity share:			
(1) Basic		7,955	1,541
(2) Diluted		7,955	1,541
Significant Accounting Policies and the accompanying Notes to Accounts.	16 & 17		

The notes referred to above form integral part of Financial Statements.

For and on behalf of Board of Directors

Sd/-
Kavita Anandani
(Company Secretary)

Sd/-
Anju Bhalla
(Managing Director)
DIN 06981734

Sd/-
Renu Swarup
(Chairperson)
DIN 01264943

Auditors Report

As per our report of even date attached

For RMA & Associates LLP

Chartered Accountants

Firm Reg. No. 000978N/ N500062

Sd/-

CA. Rahul Vashishtha

(Partner)

Membership No. 097881

Place : New Delhi

Date : 27.08.2020

Biotechnology Industry Research Assistance Council (BIRAC)

Cash Flow Statement for the Period Ended 31st March 2020

CIN U73100DL2012NPL233152

(Amount in Rs.)

Particulars	For the Period ended 31.03.2020	For the Period ended 31.03.2019
Cash Flow from Operating Activities:		
Net Surplus as per Income & Expenditure Account	7,95,45,277	1,54,13,079
Adjustments for :		
Depreciation	27,80,888	28,08,111
Management Expenses	(11,01,695)	(7,16,495)
Foreign Exchange Fluctuation	28,111	1,93,725
Interest Income	(7,31,44,340)	(4,66,55,603)
Operating Profit before Working Capital changes	(7,14,37,036)	(4,43,70,262)
Increase/(Decrease) in Provisions & Payables	31,56,19,139	13,85,32,977
Increase/(Decrease) in Grant Utilisation	13,25,16,110	1,54,26,40,878
Increase/(Decrease) In Capital Reserve/Deferred Income	(21,06,457)	(16,60,015)
Fund Utilisation Towards PPP Activities (Net)	(4,82,66,079)	(26,43,312)
Provision for Sub-Standard & Doubtful Assets	-	-
(Increase)/ Decrease in Other Current Assets	(27,39,95,933)	(5,51,99,489)
(Increase)/Decrease in Advances PPP Activities (Net)	32,02,88,406	24,64,43,525
	44,40,55,186	1,86,81,14,564
Cash Generated from / (used in) Operations	45,21,63,426	1,83,91,57,381
Income Tax Refund / (Paid)	-	-
Net Cash from (Used in) Operating Activities (A)	45,21,63,426	1,83,91,57,381
Cash Flow From/ (Used In) Investing Activities:		
Purchase of Fixed Assets	(6,74,431)	(11,48,096)
Net Cash from/(Used in) Investing Activities (B)	(6,74,431)	(11,48,096)
Cash Flow From/ (Used In) Financing Activities:		
Interest Income	7,31,44,340	4,66,55,603
Net Cash from/(Used in) Financing Activities (C)	7,31,44,340	4,66,55,603
Net Increase in Cash and Cash Equivalents D=(A+B+C)	52,46,33,335	1,88,46,64,888
Cash and Cash Equivalent at beginning of the year (E)	2,83,11,71,319	94,65,06,431
"Cash and Cash Equivalent at end of the year (Refer Note 17.15)" F=(D+E)	3,35,58,04,655	2,83,11,71,319

For and on behalf of Board of Directors

Sd/-
Kavita Anandani
(Company Secretary)

Sd/-
Anju Bhalla
(Managing Director)
DIN 06981734

Sd/-
Renu Swarup
(Chairperson)
DIN 01264943

Auditors Report

As per our report of even date attached
For RMA & Associates LLP
Chartered Accountants
Firm Reg. No. 000978N/ N500062

Sd/-
CA. Rahul Vashishtha
(Partner)
Membership No. 097881
Place : New Delhi
Date : 27.08.2020



Biotechnology Industry Research Assistance Council (BIRAC)

NOTES TO FINANCIAL STATEMENTS

1. Share Capital		(Amount in Rs.)
Particulars	As at 31.03.2020	As at 31.03.2019
A. Authorised		
10,000 (10,000) Equity shares of Rs 1000/-each	1,00,00,000	1,00,00,000
B. Issued, Subscribed & Fully paid		
10,000 (10,000) Equity shares of Rs 1000/-Each fully paid up	1,00,00,000	1,00,00,000
Subscribed but not fully paid	Nil	Nil
TOTAL	1,00,00,000	1,00,00,000

C. Reconciliation of Number of Shares

Particulars	As at 31.03.2020	As at 31.03.2019
	No of shares	No of shares
Number of equity shares at the beginning	10,000	10,000
Add: Equity shares issued during the period	-	-
Number of equity shares at the end (closing balance)	10,000	10,000

D. Details of Shareholders holding more than 5% in equity shares of the company

Name of Shareholder	As at 31.03.2020		As at 31.03.2019	
	No. of fully paid up shares	% of shares held	No. of fully paid up shares	% of shares held
President of India	9,000	90%	9,000	90%
"Dr. Renu Swarup (held on behalf of President of India)"	900	9%	900	9%

E. Other details and Rights

The company has only one class of equity shares issued at par value of Rs.1000 each.

Each equity shareholder has right to one vote per share.

The shares do not have dividend rights.

Shares carry no distribution right in the event of liquidation.

2. Reserves and Surplus

(Amount in Rs.)

Particulars	As at 31.03.2020	As at 31.03.2019
I. Capital Reserve		
BIRAC Fund (Non Recurring)		
Opening Balance	-	1,02,27,303
Add: On Account of Capital Expenditure during the period	-	-
	-	1,02,27,303
Less: Depreciation on Capital Expenditure (Refer Note 6)	-	-
	-	1,02,27,303
Less: Transferred to Deferred Income (Refer Note 16.2.4A)	-	(1,02,27,303)
(A)	-	-
II. Other Reserve		
Funds Utilised for Loans under PPP Activities after 31/03/2014	56,10,23,150	67,06,74,654
Less: Provision for Sub-Standard & Doubtful Assets (Refer Note 17.3)	(1,05,97,382)	(53,49,938)
Post BIRAC Realised	40,39,06,157	24,21,26,246
(B)	95,43,31,925	90,74,50,962
III. General Reserve		
Surplus		
Opening Balance	7,49,80,720	5,95,67,641
Appropriation :		
Less: Fund utilised during the previous year	-	-
Add: Transfer from Statement of Income & Expenditure	7,95,45,277	1,54,13,079
(C)	15,45,25,997	7,49,80,720
TOTAL (A+B+C)	1,10,88,57,922	98,24,31,683

3. Deferred Government Grant

(Amount in Rs.)

Particulars	As at 31.03.2020	As at 31.03.2019
Opening Balance	-	-
Deferred Government Grant Transferred from Capital Reserve (Refer Note 16.2.4A)	85,67,288	1,02,27,303
Add: On Account of Capital Expenditure during the Period	6,74,431	11,48,096
Less: On Account of Depreciation on Fixed Assets during the Period	(27,80,888)	(28,08,111)
TOTAL	64,60,831	85,67,288

Refer Note 16.2.4A



4. Non Current Liabilities

(Amount in Rs.)

Particulars	As at 31.03.2020	As at 31.03.2019
Pre-BIRAC Unrealised Portfolio		
Pre-BIRAC Unrealised Portfolio	99,21,81,742	1,20,28,18,642
Less: Provision for Sub-Standard & Doubtful Assets (Refer Note 17.3)	50,53,07,888	42,86,55,311
(A)	48,68,73,854	77,41,63,331
ACE Funding (Refer Note 17.17.1)	(B) 25,82,03,152	6,60,60,717
TOTAL	(A+B) 74,50,77,006	84,02,24,048

5. Current Liabilities

(Amount in Rs.)

Particulars	As at 31.03.2020	As at 31.03.2019
Unutilised Grant (Refer Note 17.12)		
Unutilised Grant (BIRAC)	-	-
Unutilised Grant (PPP Activities)	-	-
Unutilised Grant (DBT-BMGF-WT PMU) #	90,81,35,134	66,18,23,417
Unutilised Grant (Make in India Facilitation Cell)	-	62,20,460
Unutilised Grant (Bio-toilets in schools from North East Region)	3,76,583	4,44,505
Unutilised Grant (National Biopharma Mission - I3)	35,70,59,491	87,79,84,456
Unutilised Grant (MeitY)	-	53,51,299
Unutilised Grant (SSC NTBN)	53,95,564	78,17,000
Unutilised Grant (Ind CEPI)	28,63,81,459	-
(A)	1,55,73,48,231	1,55,96,41,137
DBT AcE Fund (Refer Note 17.12)		
Unutilised AcE Fund	(B) 82,25,33,701	68,77,24,686
Trade Payables		
Trade payables dues to micro and small enterprises (Refer Note 17.14)	2,336,541	37,39,803
Trade payables other than due to micro and small enterprises	4,97,62,538	2,36,54,734
(C)	5,20,99,079	2,73,94,537
Other Payables		
Pre-BIRAC Realised Portfolio	46,81,02,757	25,81,47,857
Less : Refunded to DBT	-	-
(D)	46,81,02,757	25,81,47,857
Statutory Liabilities	58,11,391	46,73,839
Provision for Gratuity & Leave Encashment	17,75,494	38,25,258
(E)	52,77,88,721	29,40,41,491
TOTAL	(A+B+C+D+E) 2,90,76,70,653	2,54,14,07,314

Unutilised Grant under DBT-BMGF-WT PMU is to be utilised over a period of three years.

6. Schedule of Fixed Assets

(Amount in Rs.)

Particulars	Gross Block				Depreciation			Net Block	
	As at	Addition	Sales/ Adjustments	As at	As at	For the Period	Adjustments	WDV as at	WDV as at
	1-Apr-2019	2019-20	2019-20	31-Mar-20	1-Apr-2019	2019-20	2019-20	31-Mar-20	31-Mar-19
Tangible Assets									
Furniture & Fixtures	2,65,77,824	14,991	-	2,65,92,815	1,94,63,527	18,46,751	-	52,82,537	71,14,297
Office Equipment	3,63,633	3,39,840	-	7,03,473	2,70,417	1,32,663	-	3,00,393	93,216
Computers	55,08,100	-	-	55,08,100	41,76,433	7,30,996	-	6,00,671	13,31,667
Total Tangible Assets	3,24,49,557	3,54,831	-	3,28,04,388	2,39,10,377	27,10,410	-	61,83,601	85,39,180
Intangible Assets	7,67,786	3,19,600	-	10,87,386	7,39,678	70,478	-	2,77,230	28,108
Total Intangible Assets	7,67,786	3,19,600	-	10,87,386	7,39,678	70,478	-	2,77,230	28,108
Total	3,32,17,343	6,74,431	-	3,38,91,774	2,46,50,055	27,80,888	-	64,60,831	85,67,288
Previous Year Figures	3,20,69,247	11,48,096	-	3,32,17,343	2,18,41,944	28,08,111	-	85,67,288	1,02,27,303

**7. Non-Current Investments****(Amount in Rs.)**

Particulars	As at 31.03.2020	As at 31.03.2019
Others (held on behalf of DBT)		
AcE Funding (Refer Note 17.17.1)	25,82,03,152	6,60,60,717
	25,82,03,152	6,60,60,717

8. Long Term Loans & Advances**(Amount in Rs.)**

Particulars	As at 31.03.2020	As at 31.03.2019
Security Deposit		
Security Deposit	1,23,39,969	1,05,39,969
Long Term Loans and Advances (Secured against Bank Guarantee/ Hypothecation/ Personal Guarantee) *		
Loans Portfolio (Including Interest on Loan Accounts PPP Activities)	1,55,32,04,889	1,87,34,93,295
Less: Current maturities of Long Term Loans & advances reflected under Current assets (\$)	93,46,98,810	97,38,29,281
Less: Provision for Doubtful Assets (Refer Note 17.3)	45,71,18,201	39,17,28,981
Less: Provision for Sub-Standard Assets (Refer Note 17.3)	5,87,87,069	4,22,76,269
	10,26,00,809	46,56,58,764
TOTAL	11,49,40,778	47,61,98,733

* Refer 17.3 & 17.4.

(\$)The current maturities of Long term Loans & Advances of Rs. 93,46,98,810/- (Previous year Rs. 97,38,29,281/-) includes the over dues as per Note no. 17.4 of Notes to Accounts.

9. Cash & Cash Equivalents**(Amount in Rs.)**

Particulars	As at 31.03.2020	As at 31.03.2019
Cash in Hand	23,824	12,207
Balances with Banks: (Refer Note 17.15)		
In Current Accounts	1,18,223	2,78,381
In Saving Accounts	1,18,61,23,739	1,43,85,40,597
In Fixed Deposits	2,16,95,38,868	1,39,23,40,135
TOTAL	3,35,58,04,654	2,83,11,71,319

10. Other Current Assets

(Amount in Rs.)

Particulars	As at 31.03.2020	As at 31.03.2019
Current maturities of Long Term Loans and Advances: (*)	93,46,98,810	97,38,29,281
(Secured against Bank Guarantee/Hypothecation/ Personal Guarantee)		
Other Assets		
Accrued Interest-FD & Saving Account (PPP, DBT / WT)	1,41,94,501	61,60,421
Recoverable from Government Agencies (Tax Credit)	1,46,23,563	1,58,04,311
Prepaid Expenses	25,99,112	23,35,066
Recoverable from DBT & Sponsors- GBI Events	5,59,00,000	-
Other Recoverable	2,06,41,012	25,03,196
TOTAL	1,04,26,56,997	1,00,06,32,275

* Refer 17.3 & 17.4

11. Income

(Amount in Rs.)

Grants Received as Utilised	For the Period ended 31.3.2020	For the Period ended 31.03.2019
PPP Activities	1,47,21,47,432	1,43,62,26,139
BIRAC Activities	31,53,85,415	30,92,01,010
TOTAL	1,78,75,32,847	1,74,54,27,149

12. Other Income

(Amount in Rs.)

Particulars	For the Period ended 31.3.2020	For the Period ended 31.03.2019
Royalty	43,26,833	27,10,066
Management Fee - BMGF	11,01,695	7,16,495
Interest Received - Bank Accounts	7,31,44,340	4,66,55,603
Additional Interest	11,96,449	9,14,124
Other Receipts	26,63,319	10,000
Amortised Deferred Government Grant	27,80,888	28,08,111
TOTAL	8,52,13,524	5,38,14,398



13. Programme Expenditure

(Amount in Rs.)

Particulars	For the Period ended 31.3.2020	For the Period ended 31.03.2019
Grants Disbursed		
PPP Activities	1,42,24,28,681	1,42,12,19,799
BIRAC Activities	17,22,44,052	16,49,45,976
Programme Expenditure		
PPP Activities (Operational expenditure on Advertisement, Meeting and PMC)	5,15,71,950	4,25,44,667
Total	1,64,62,44,684	1,62,87,10,442

13A. Programme Management Unit DBT & BMGF

(Amount in Rs.)

Particulars	For the Period ended 31.3.2020	For the Period ended 31.03.2019
Programme Expenditure (GCI)	21,88,83,872	27,69,39,212
Operational Expenditure	4,76,33,390	5,02,42,740
Operational Non Recurring Expenditure	-	-
(A)	26,65,17,262	32,71,81,952
Less:		
Programme Funds from DBT (GCI)	10,49,18,330	4,30,33,046
Programme Funds from BMGF (GCI)	11,39,65,542	23,38,50,911
Programme Funds from US AID (GCI)	-	55,255
(B)	21,88,83,872	27,69,39,212
Less:		
Operational Fund from DBT	56,40,468	46,63,123
Operational Non Recurring Fund from DBT	-	-
Operational Fund from BMGF	3,62,48,120	3,87,85,079
Operational Non Recurring Fund from BMGF	-	-
Operational Recurring Fund from WT	57,44,802	67,94,538
(C)	4,76,33,390	5,02,42,740
(Refer to Note : 17.13.3)	(A-B-C)	0

13B. Extra-Mural Programme - MeitY
(Amount in Rs.)

Particulars	For the Period ended 31.3.2020	For the Period ended 31.03.2019
Programme Expenditure	1,48,79,667	2,02,40,183
Operational Expenditure	4,71,632	2,44,227
(A)	1,53,51,299	2,04,84,410
Less:		
Programme Funds from MeitY	1,48,79,667	20,240,183
(B)	1,48,79,667	20,240,183
Less:		
Operational Fund from MeitY	4,71,632	2,44,227
(C)	4,71,632	2,44,227
(Refer to Note : 17.13.4)	(A-B-C)	-

13C. Extra-Mural Programme - Make In India
(Amount in Rs.)

Particulars	For the Period ended 31.3.2020	For the Period ended 31.03.2019
Programme Expenditure	34,19,079	-
Operational Expenditure	29,07,270	49,10,330
(A)	63,26,349	49,10,330
Less:		
Programme Funds from Make in India	34,19,079	-
(B)	34,19,079	-
Less:		
Operational Fund from Make in India	29,07,270	49,10,330
(C)	29,07,270	49,10,330
(Refer to Note : 17.13.5)	(A-B-C)	-

13D. Extra-Mural Programme - Biotoilets in Schools from NER
(Amount in Rs.)

Particulars	For the Period ended 31.3.2020	For the Period ended 31.03.2019
Programme Expenditure	-	1,20,20,000
Operational Expenditure	79,781	1,36,349
(A)	79,781	1,21,56,349
Less:		
Programme Funds from Biotoilets in NER School	-	1,20,20,000
(B)	-	1,20,20,000
Less:		
Operational Fund from Biotoilets in NER School	79,781	1,36,349
(C)	79,781	1,36,349
(Refer to Note : 17.13.6)	(A-B-C)	-

**13E. Extra-Mural Programme - National Biopharma Mission (Innovate in India) (Amount in Rs.)**

Particulars	For the Period ended 31.3.2020	For the Period ended 31.03.2019
Programme Expenditure	1,93,37,69,420	57,25,61,084
Operational Expenditure	8,20,69,275	5,75,12,552
(A)	2,01,58,38,695	63,00,73,636
Less:		
Programme Funds from National Biopharma Mission (I3)	1,93,37,69,420	57,25,61,084
(B)	1,93,37,69,420	57,25,61,084
Less:		
Operational Fund from National Biopharma Mission (I3)	8,20,69,275	5,75,12,552
(C)	8,20,69,275	5,75,12,552
(Refer to Note : 17.13.7) (A-B-C)	(0)	-

13F. Extra-Mural Programme - AcE Fund (Amount in Rs.)

Particulars	For the Period ended 31.3.2020	For the Period ended 31.03.2019
Operational Expenditure	3,01,867	12,23,227
(A)	3,01,867	12,23,227
Less:		
Operational Fund from AcE Fund	3,01,867	12,23,227
(B)	3,01,867	12,23,227
(Refer to Note : 17.13.8) (A-B)	-	-

13G. Extra-Mural Programme - DBT-BIRAC-SSC(NTBN) (Amount in Rs.)

Particulars	For the Period ended 31.3.2020	For the Period ended 31.03.2019
Operational Expenditure	2,635,725	-
(A)	2,635,725	-
Less:		
Operational Fund from DBT-BIRAC-SSC(NTBN)	2,635,725	-
(B)	2,635,725	-
(Refer to Note : 17.13.9) (A-B)	-	-

13H. Ind CEPI

(Amount in Rs.)

Particulars	For the Period ended 31.3.2020	For the Period ended 31.03.2019
Programme Expenditure	4,35,32,400	-
Operational Expenditure	-	-
(A)	4,35,32,400	-
Less:		
Programme Funds from National Biopharma Mission (I3)	4,35,32,400	-
(B)	4,35,32,400	-
Less:		
Operational Fund from National Biopharma Mission (I3)	-	-
(C)	-	-
(Refer to Note : 17.13.10)	(A-B-C)	-

14. Employees Benefit Expenses

(Amount in Rs.)

Particulars	For the Period ended 31.3.2020	For the Period ended 31.03.2019
Salary & Allowances to Staff	6,45,32,135	7,18,05,826
Employer's Contribution to Provident Fund & Other Funds	59,02,646	1,08,92,803
TOTAL	7,04,34,781	8,26,98,629

**15. Other Expenses****(Amount in Rs.)**

Particulars	For the Period ended 31.3.2020	For the Period ended 31.03.2019
(A) Rent	4,08,50,712	3,52,93,480
(B) Advertisement & Publication	26,65,812	25,49,255
(C) Journal & Subscription	9,745	25,53,812
(D) Meetings:		
Meetings & Conferences	14,35,176	45,42,605
Sitting Fees & TA and DA	4,67,772	4,74,929
(E) Office and Administration Expenditure:		
Travel	35,10,588	31,57,201
Office Expenses	1,15,51,532	85,25,281
AMC Computer	12,15,020	11,93,372
Legal & Professional	1,49,260	66,740
Postage & Telephone Expenses	570,979	6,87,658
Power & Electricity	24,58,368	23,54,358
Printing & Stationery	3,98,464	6,32,581
Internet Expenses	17,07,313	17,07,313
(F) Training Expenses	9,04,642	7,01,608
(G) Consultancy Fee	56,31,398	47,99,722
(H) Statutory Audit Fees	1,85,850	1,77,000
(I) Miscellaneous Expenses	-	647
(J) Foreign Exchange Fluctuation	28,111	1,93,725
TOTAL	7,37,40,742	6,96,11,287

Refer Notes: 17.19 List of Abbreviations used in Financial Statement:

16. Significant Accounting Policies

1. Corporate Information

Biotechnology Industry Research Assistance Council (BIRAC) “the Company” is a Section 8 “Not-for-Profit Company” under the provisions of the Companies Act 2013, having CIN U73100DL2012NPL233152. BIRAC is also registered under Section 12A of the Income Tax Act 1961. The Company is engaged in nurturing, promoting and mentoring Research and Development in Biotech Sector.

2. Basis of Preparation of Financial Statements

The Financial Statements of the Company are prepared in accordance with Generally Accepted Accounting Principles in India (Indian GAAP). These are in compliance, in all material respects, with the Accounting Standards notified under the Companies (Accounting Standards) Amendment Rules, 2016, (as amended) and the relevant provisions of the Companies Act 2013. The Financial Statements are prepared on accrual basis and under the historical cost convention.

Preparation of Financial Statement requires the Management to make estimates and assumptions in regard to the reported amount of assets, liabilities, expenses and income of the reporting period. The estimates used in preparation of the Financial Statement are prudent and reasonable. The difference between the actual results and estimates, if any, are recognised in the reporting period in which the results are known and /or materialised.

2.1 Revenue Recognition

- i) Interest:
 - a) Interest on loan granted is recognised on a time proportion basis taking into account the amount outstanding and applicable rate of interest. Interest Accrued, not yet realisable during the year on loans under various schemes are shown under other Reserves. Additional interest on the delayed payment is recognised on receipt basis.
 - b) Interest against time deposits with banks are accounted on accrual basis.
- ii) Royalty is recognised on accrual basis on acknowledgement of amount due by the beneficiary.
- iii) Management Fee is recognised on accrual basis in accordance with the terms of the relevant agreement.

2.2 Grants-in-Aid

Income by way of grants-in-aid has been recognised under Matching Principle of Accounting. All expenditure incurred out of the grants-in-aid, comprising of grants disbursed and other programmatic expenditure are matched with equal amount of income and adjusted against the grants- in -aid. Unspent balance of Grants- in -aid are carried forward as liability to be utilised in subsequent years.

The application of funds for disbursement of loans under different schemes is shown as Loans and Advances under Non-Current Assets. Loans disbursed during the year under different scheme are shown under other reserves as per Matching Principle of Accounting.

2.3 Expenditure

All expenses are accounted for on accrual basis.

Funds released as grants-in-aid are treated as expenditure in the Income & Expenditure Account. Further, amount unutilised as per the Utilisation Certificates received on completion of the projects are accounted as Income.

2.4 Reserve & Surplus

- a) Grant-in-aid used for acquiring depreciable assets set up as Deferred Government Grant and recognised in the Statement of Income & Expenditure on a systematic basis over the useful life of the asset.
- b) DBT portfolio taken in account by BIRAC from BCIL as on 31.3.2014 vide DBT transfer Order dated 25th September 2012 and approved by Board dated 17th December 2013 was classified as Other Reserves. Consequent to the direction by DBT vide Order dated 8.11.2017, the pre BIRAC Realised Portfolio is to be refunded back to DBT. In accordance to the Order, outstanding unrealised portfolio has been transferred from Other Reserves to Non-Current Liabilities and pre - BIRAC Realised Portfolio has been transferred from Other Reserves to Current Liabilities. Funds utilized for Loans subsequent to the date of take over along with accrued interest (not yet realisable) during the financial year is continued to be held as Other Reserves.

Provision for any substandard / doubtful / Bad debt that may arise on non-recovery from any borrower would be adjusted against the taken over amount first. Any write-off which is not covered by the amount taken over would be subsequently adjusted against Fund utilized subsequent to the date of take over held under “Other Reserves”.



2.4A Deferred Government Grant

Grant-in-aid used for acquiring depreciable assets set up as Deferred Government Grant and recognised in the Statement of Income & Expenditure on a systematic basis over the useful life of the asset.

2.5 Fixed Assets

Fixed Assets are stated at cost, net of accumulated depreciation and accumulated impairment losses, if any. Gains or losses arising from disposal of fixed assets are measured as the difference between the net disposal proceeds and the carrying amount of the assets disposed of.

2.6 Depreciation and Amortisation

Depreciation on assets is provided on useful life basis on written down value method as prescribed under Schedule II to the Companies Act, 2013.

Depreciation on fixed assets added/disposed of during the year/period is provided on pro-rata basis with reference to the date of addition/disposal.

2.7 Intangible Assets

Intangible assets acquired are measured separately at cost. Intangible assets are carried at cost less accumulated amortization and accumulated impairment losses, if any. Internally, generated

intangible assets are not capitalized and expensed off in the Statement of Income and Expenditure in the year in which the expenditure is incurred.

Intangible assets are amortized over a period of five years as per Accounting Standard - 26 as no useful life provided in Schedule II to the Companies Act, 2013.

2.8 Investments

Current investments are carried at lower of cost and quoted/fair value, computed category-wise. Long-term investments are stated at cost. Provision for diminution in the value of long-term investments is made only if such a decline is other than temporary.

2.9 Foreign Exchange Transactions/Translation

Foreign currency transactions and balances: Foreign Currency Transfer is made as per the approved Government guidelines. For any contribution being received from foreign entities, the necessary approval is obtained under the Foreign Contribution (Regulation) Act, 2010.

- (i) Initial Recognition: Foreign currency transactions are recorded in the reporting currency by applying the exchange rate between the reporting currency and the foreign currency at the date of the transaction.
- (ii) Conversion: Foreign Currency monetary items are retranslated using the exchange rate prevailing at the reporting date.
- (iii) Exchange Difference: Exchange differences arising on long-term foreign currency monetary items related to acquisition of a fixed asset are capitalized and depreciated over the remaining useful life of the asset. The exchange differences on other foreign currency monetary items are accumulated in 'Foreign Currency Monetary Item Translation Difference Account' and amortized over the remaining life of the concerned monetary item.

All other exchange differences are recognized as income or as expenses in the period in which they arise.

2.10 Employees Benefits

- a) All the employees of the Company are on contractual basis. Provision of Employer's contribution is made as per the provisions of Employees Provident Fund Act, 1952.
- b) The Company makes annual contributions under the Employees Gratuity scheme to a fund administered by Trustees covering all eligible employees. The plan provides for lump sum payments to employees whose right to receive gratuity had vested at the time of resignation, retirement, death while in employment or on termination of employment of an amount equivalent to 15 days salary for each completed year of service or part thereof in excess of six months. Vesting occurs upon completion of five years of service except in case of death.

The plan assets are maintained with SBI Life Insurance Company Ltd. Employee Gratuity Scheme. The details of Investments maintained by SBI Life Insurance Company Ltd are not made available and have therefore not been disclosed.

- c) Company's liability towards employee benefits such as leave encashment is provided on the basis of actuarial valuation.

2.11 Operating Leases

Lease payments for assets taken on operating lease are recognised as an expense in the Statement of Income & Expenditure as per terms of lease agreement.

2.12 Provisions & Contingent Liabilities

- a) Funds sanctioned and yet to be released till the reporting period due to timing difference of milestone are not taken as liability, these are accounted as expenses on actual release of payment.
- b) Provisioning on substandard Asset has been provided as per the approved classification of asset based on recoverability.
- c) A provision is recognized when the company has present obligations as a result of past event. It is probable that an outflow of resources embodying economic benefits will be required to settle the obligations and reliable estimate can be made of amount of the obligation. Provisions are not discounted at their present value and are determined based on the best estimate required to settle the obligation at the reporting date. These estimates are reviewed at each reporting date and adjusted to reflect the current best estimates.

2.13 Earning Per Share

The company is a section 8 "Not for Profit Company". It does not generate any income/ revenue from its activities. It does not distribute any dividend to its shareholders. However for the compliance of AS -20 the company has computed EPS as under:

- a) Basic earnings per share are calculated by dividing the net income or loss for the period attributable to equity shareholders by weighted average number of equity shares outstanding during the period.
- b) For the purpose of calculating diluted earnings per share, the net profit or loss for the period attributable to equity shareholders and the weighted average number of shares outstanding during the period are adjusted for the effects of all diluting potential equity shares.

**17. Notes to Accounts for the period ended 31st March 2020.**

17.1 Biotechnology Industry Research Assistance Council (BIRAC) receives funds from Department of Biotechnology (DBT), Ministry of Science & Technology, Government of India by way of grant-in-aid for its operation.

17.2 The disbursement were made in tranches as per the milestones determined for the activities. Contingent liability on account of sanctioned grants but not disbursed due to the timing difference of milestone based payments are not accounted.

During the current reporting period BIRAC disbursed the following amounts under different Schemes.

(Amount in Rs.)

Particulars	Disbursement For the period ended 31.03.2020	Disbursement For the period ended 31.03.2019
PPP Activities		
Biotechnology Industry Partnership Programme (BIPP)	25,19,74,249	24,32,29,341
Small Business Innovation Research Initiatives (SBIRI)	6,63,65,626	6,58,27,702
Bio- Incubators support Scheme (BISS)	35,46,47,114	24,74,46,540
Biotech Ignition Grant (BIG)	43,50,00,000	42,09,00,000
University Innovation Cluster (UIC)	1,59,40,000	1,19,90,000
Translation Accelerator (TA)	74,45,950	89,00,037
Contract Research Scheme (CRS)	10,29,47,508	9,05,22,741
Social Innovation programme for Products: Affordable & Relevant to Societal Health (SPARSH)	5,66,44,734	6,42,80,438
Seed Funding for Incubators	4,80,00,000	10,50,00,000
Leap Funding	-	19,50,00,000
Product Commercialization Unit (PCU)	4,10,00,000	-
SRISTI	4,00,00,000	-
Mission Program on Anti Microbial Resistance (AMR)	1,69,48,000	-
Innovation Clean technologies	1,82,00,000	-
Total	1,45,51,13,181	1,45,30,96,799
BIRAC Activities		
Partnership Program	9,38,88,961	3,46,03,544
Capacity Building & Awareness	71,57,304	1,08,84,304
Technology Transfer / Acquisition	10,84,257	83,49,488
IP Services	1,05,51,797	95,04,124
Entrepreneurial Development / Regional Centres	5,95,61,733	9,47,94,878
Communication Strategy Campaign	-	68,09,638
Total	17,22,44,052	16,49,45,976

17.3 Loan and instalment due from borrowers shown under Long term Loans & Advances and other Current Assets respectively are secured wholly or partly by way of bank Guarantee/Hypothecation of asset/personal guarantee.

BIRAC has classified the loan assets based on aging of overdue under standard asset, standard asset –Rescheduled, sub-standard asset, and doubtful assets as under:

Standard Asset	Loan accounts not rescheduled and not classified as substandard or doubtful.
Standard Asset - Rescheduled	Loan accounts which, on account of reschedulement, are not classified as substandard or doubtful assets.
Substandard Asset	Loan accounts, other than Standard Asset- Rescheduled, in which payment of instalment is due for more than one year.
Doubtful Asset	Loan accounts certified as doubtful assets by Internal Recovery Committee of BIRAC.

On Classification of an asset from standard to sub-standard or doubtful, interest has been derecognised and requisite provisioning are made for the substandard asset and Doubtful assets. The details of standard, standard-rescheduled, substandard and doubtful assets and the provisions are done on annual basis.

Particulars		As on 31.3.2020	As on 31.3.2019
Standard Asset	A	69,59,60,876	1,08,12,57,225
Standard Asset – Rescheduled	B	12,63,41,155	13,27,22,103
Sub Standard Assets	C	21,59,00,560	15,67,13,615
Doubtful Assets	D	51,50,02,305	50,28,00,355
Total Assets	E (A+B+C+D)	1,55,32,04,895	1,87,34,93,298
Provision on Substandard Assets	F	5,87,87,069	4,22,76,269
Provision on Doubtful Assets	G	45,71,18,201	39,17,28,981
Total Provision	H(F+G)	51,59,05,270	43,40,05,249
Interest derecognised	I	76,26,731	30,34,631

The settlement committee has been constituted to examine substandard accounts and doubtful assets and write off proposals. They are considered on case to case basis.

17.4 The current maturities of the loan & advances amounting to Rs. 93,46,98,810/- (Previous Year Rs. 97,38,29,281/-) includes overdue amount as per Table below and are disclosed under other current assets (Refer to notes to financial statement 8)

Age Wise Overdue Position		As on 31.03.2020	As on 31.3.2019
Upto one year	(A)	3,76,15,170	4,60,49,447
More than one year accumulated	(B)	63,32,46,121	582,7,88,541
Total (A+B)		67,08,61,291	62,88,37,988

17.5 Suit Filed Accounts:

17.5.1 Suits filed by the company: 2

	As on 31.03.2020		As on 31.3.2019	
	Number of accounts	Total Amount*	Number of accounts	Total Amount
Suit filed accounts	2	10,98,33,667.95	2	10,98,33,667.95

* The Suit filed account as above are classified as doubtful assets and 100% provision has been made

17.5.2 Suits filed against the company: Nil

17.6 Programme Management Unit – DBT and BMGF

Department of Biotechnology (DBT) and Bill Melinda Gates Foundation (BMGF) have signed an MOU for supporting priority areas of research. BIRAC has been entrusted the responsibility to be the “Technical Management Unit”. In this regard, BIRAC established a Programme Management Unit to administer programmes, of affordable product development in the area of Health Care and Agriculture. **Refer Note 17.13.3**

**17.7 BIRAC – Extra Mural Programme**

- (a) MeitY(IIPME): Industry innovation programme on Medical electronics has been initiated by BIRAC in collaboration with Ministry of Electronics and Information Technology, Government of India. Refer Note 17.13.4
- (b) Make in India Facilitation Cell: BIRAC has established a programme management unit for Biotechnology Industry Facilitation – Make in India Cell to channelize investment in India. Refer Note 17.13.5
- (c) Bio-toilets in schools from North East Region: BIRAC is undertaking a programme on Bio toilets in schools from North East Region for benchtop demonstration of anaerobic digester for biogas generation and its utilization. Refer Note 17.13.6
- (d) National BioPharma Mission (I3) : The program named Innovate in India (I3) is an industry- academia collaborative mission of Department of Biotechnology (DBT) in collaboration with World Bank for accelerating discovery research to early development of Biopharmaceuticals and to be implemented by Biotechnology Industry Research Assistance Council (BIRAC). Refer Note 17.13.7
- (e) AcE Fund: BIRAC is implementing the Biotechnology Innovation Fund - AcE Fund initiated by Department of Biotechnology, Govt of India for providing risk capital to Biotech startups for product development cycle and growth phase. Refer Notes Refer Note 17.13.8
- (f) SSC(NTBN): BIRAC is undertaking a programme on Setting up of secretarial for scientific sub - committee (SSC-NTBN) under the national Technical Board on Nutrition (NTBN). Refer Notes Refer Note 17.13.9
- (g) CEPI: BIRAC is undertaking a programme on Setting up of Epidemic preparedness through rapid vaccine development : support of Indian Vaccine development aligned with the global initiative of the Coalition for Epidemic preparedness Innovative (CEPI). Refer Notes Refer Note 17.13.10
- (h) GBI: Global Bio India 2019, A mega Biotech event was organised by DBT along with BIRAC on 21-23 Nov 2019, New Delhi. BIRAC implemented the event through Make in India (MII) cell at BIRAC with others partners. The event witnessed a participation of 2500+ participants from Academia, Industry, Startups Investors National & International fraternity. Refer Notes Refer Note 17.13.11

17.8 Prior Period Adjustment

The prior period items are accounted in accordance with Accounting Standard - 5.

The previous year figures are reclassified and regrouped in accordance with the requirements applicable in the current financial year.

17.9 Related Party Disclosure:

The provisions of Accounting Standard-18 are not applicable as there is no transaction between a reporting enterprise and its related parties.

17.10 Provision for Tax:

No Provision for Income Tax has been made in the current reporting period since the company has been registered as a charitable entity u/s 12A of Income Tax Act, 1961 vide order No. 2974 dated 12th May, 2014.

17.11 Foreign Exchange Transactions:

During the current reporting period the following income/expenditure has been incurred.

A. Income: Grant received in foreign exchange to the extent utilised Rs. 15,59,58,464 (Previous Year Rs. 27,94,85,783)

B. Expenditure:

S. No.	Particulars	For the Period ended 31.03.2020	For the Period ended 31.03.2019
(i)	Technology Transfer	4,58,339	61,77,266
(ii)	Books, Journal and Database Subscriptions	46,18,556	10,55,680
(iii)	Entrepreneurship Development	24,60,077	42,71,356
(iv)	Advertisement/Publicity/Publication	12,73,625	55,88,002
(v)	Foreign Travel and Meetings	5,46,055	18,80,496

C. CIF Value of import is Nil for the current reporting period.

17.12 Details of Grant Utilisation
(Amount in Rs.)

S. No.	Particulars	Fund Available	Fund Utilised	Balance
1	BIRAC	31,60,59,846	31,70,94,005	(10,34,160)
2	PPP Activities	1,50,48,31,932	1,50,66,85,131	(18,53,200)
3	PMU - DBT/BMGF:			
	(i) Operational	21,59,77,942	4,76,33,389	16,83,44,552
	BMGF	20,62,54,256	3,62,48,119	17,00,06,136
	DBT Operational	39,73,446	56,40,468	(16,67,022)
	DBT - Non Recurring	-	-	-
	WT Operational	57,50,240	57,44,802	5,438
	(ii) Projects	95,86,74,454	21,88,83,872	73,97,90,582
	BMGF	65,81,79,598	11,39,65,542	54,42,14,056
	DBT	28,64,95,380	10,49,18,330	18,15,77,050
	USAID	1,39,99,477	-	1,39,99,477
	Total	1,17,46,52,396	26,65,17,261	90,81,35,134
4	MeitY(IIPME)	1,53,51,299	2,40,69,756	(87,18,457)
5	Make in India Facilitation Cell	63,26,349	63,26,349	-
6	Bio-toilets in schools from NER	4,56,364	79,781	3,76,583
7	National BioPharma Mission (I3)	2,39,31,63,577	2,03,61,04,085	35,70,59,491
8	AcE Fund	1,01,49,78,003	19,24,44,302	82,25,33,701
9	SSC(NTBN)	80,31,289	26,35,725	53,95,564
10	IndCEPI	32,99,13,859	4,35,32,400	28,63,81,459

17.13 Supplementary Schedule on Scheme Balances as on 31.03.2020
17.13.1 PPP Activities Funds
(Amount in Rs.)

	Particulars		AS ON 31.03.2020	AS ON 31.03.19
	Opening Balance		-	1,22,24,591
Add:	Funds received from DBT	1,50,00,00,000		1,44,02,85,000
Add:	Interest Income	12,23,499		45,69,819
Add:	Recoveries from unspent grant	36,08,433	1,50,48,31,932	1,10,23,729
			1,50,48,31,932	1,46,81,03,139
Less:	Amount disbursed during the year :			
	Grants Disbursed	1,42,24,28,681		1,42,12,19,799
	Loans Disbursed	3,26,84,500		3,18,77,000
	Programme Expenses	5,15,71,950	1,50,66,85,131	4,25,44,667
			(18,53,200)	(2,75,38,327)
Add :	Surplus Redeployed towards Expenses		18,53,200	2,75,38,327
	Unutilised Balance Carried Forward		-	-



17.13.2 BIRAC Funds

(Amount in Rs.)

	Particulars		AS ON 31.03.2020	AS ON 31.03.19
	Opening Balance		-	-
Add:	Received from DBT		31,00,00,000	30,98,80,000
Add:	Interest Income		3,62,793	4,69,106
Add:	Recoveries from unspent grant		56,97,053	-
			31,60,59,846	31,03,49,106
Less:	Amount disbursed for Grants			
	Partnership Programmes	9,38,88,961		3,46,03,544
	Technology Transfer & Acquisition	10,84,257		83,49,488
	Intellectual Property	1,05,51,797		95,04,124
	Entrepreneurial Development	5,95,61,733		9,47,94,878
	Capacity Building & Awareness	71,57,304		1,08,84,304
		-	17,22,44,052	68,09,638
			14,38,15,794	14,54,03,130
Less:	Utilisation towards:			
	Manpower Expenses	7,04,34,781		8,26,98,629
	Non-Recurring Expenses	6,74,431		11,48,096
	Recurring Expenses	7,37,40,742	14,48,49,954	6,96,11,287
			(10,34,160)	(80,54,882)
Add:	Surplus Redeployed towards Expenses		10,34,160	80,54,882
	Unutilised Balance Carried Forward		-	-

17.13.3 BMGF PMU

(Amount in Rs.)

	Particulars		AS ON 31.03.2020	AS ON 31.03.19
	Opening Balance			
	Operations Fund	15,03,15,724		12,66,92,499
	Project Fund	51,15,07,693	66,18,23,417	30,04,03,983
Add:	Received From BMGF - Project	33,29,22,981		29,82,04,192
	Received From BMGF - Operations	4,89,82,139		3,42,19,115
	Received From DBT - Project	10,40,00,000		18,78,12,144
	Received From DBT - Operations	-		83,69,625
	Received From WT - Operations	12,76,327	48,71,81,447	1,09,11,225
Add::	Bank Interest & Unspent Grant	2,56,47,532	2,56,47,532	2,23,92,586
			1,17,46,52,396	98,90,05,369
Less:	Project Disbursement			
	GCI: AgNu	-		3,73,347
	GCI: ACT	9,99,66,000		7,33,06,634
	GCI: IKP	-		4,80,00,000
	GCI: IDIA	2,78,14,548		2,54,28,084
	GCI: HPV	5,45,80,254		10,00,06,250
	GCI: AMR	1,45,10,500		1,00,42,624

	GCI: Ki Data Challenge	10,547		1,32,303
	GCI: Sentinels	2,16,75,618		3,99,970
	GCI: MSSFR	-		1,80,00,000
	GCI: RTTC	-		12,50,000
	GCI: Med Tech	3,26,405	21,88,83,872	-
Less:	Activities Expenditure			
	HBGDki	5,45,000		10,57,000
	KSTIP (KnIT	1,04,00,000		1,18,27,000
	Communication Support	20,68,016	1,30,13,016	18,52,177
Less:	Operational Expenditure			
	Manpower Expense	94,85,333		85,85,514
	Meeting Expenses	58,80,202		78,35,898
	Expenses for Space	1,13,26,070		1,02,58,920
	Administrative Expenses	10,82,272		13,15,198
	Equipment Expenses	-		-
	Wellcome Trust- Manpower	48,20,782		54,81,419
	Wellcome Trust- Travel	9,24,020		13,13,119
	Management Expenses	11,01,695	3,46,20,374	7,16,495
	Balance Fund			
	BMGF - Projects	54,42,14,056		32,04,81,869
	DBT - Projects	18,15,77,050		17,74,34,100
	USAID - Projects	1,39,99,477		1,35,91,725
	BMGF - Operations	17,00,06,136		14,19,47,300
	DBT - Operations	(16,67,022)		39,27,946
	WT- Operation	5,438	90,81,35,134	44,40,478
			90,81,35,134	66,18,23,417

17.13.4 MeitY(IIPME)

(Amount in Rs.)

	Particulars	AS ON 31.03.2020	AS ON 31.03.19
	Opening Balance	53,51,299	(2,22,60,450)
	Received during the period	1,00,00,000	4,80,80,000
		1,53,51,299	2,58,19,550
Add:	Bank Interest	-	16,159
		1,53,51,299	2,58,35,709
Less :	Programme Expenditure*	2,35,98,124	2,02,40,183
	Operational Expenditure	4,71,632	2,44,227
		(87,18,457)	53,51,299
Add:	Fund Redeployed towards Expenses from BIRAC	87,18,457	-
	Unutilised Balance Carried Forward	-	53,51,299

* The programme Expenditure includes loan disbursed amounting to Rs. NIL (Previous Year Rs. 10,00,000) having the total outstanding of Rs. 62,20,796/- (including accrued interest) (Previous Year Rs. 61,02,172/-).



17.13.5 Make in India Facilitation Cell

(Amount in Rs.)

Particulars		AS ON 31.03.2020	AS ON 31.03.19
	Opening Balance	62,20,460	4,50,770
	Received during the period	-	1,05,65,000
		62,20,460	1,10,15,770
Add:	Bank Interest	1,05,889	1,15,020
		63,26,349	1,11,30,790
Less :	Operational Expenditure	63,26,349	49,10,330
	Unutilised Balance Carried Forward	-	62,20,460

17.13.6 Bio-toilets in schools from North East Region

(Amount in Rs.)

Particulars		AS ON 31.03.2020	AS ON 31.03.19
	Opening Balance	4,44,505	1,24,12,762
	Received during the period	-	-
		4,44,505	1,24,12,762
Add:	Bank Interest	11,859	1,88,092
		4,56,364	1,26,00,854
Less :	Programme Expenditure	79,081	1,20,20,000
	Operational Expenditure	700	1,36,349
	Unutilised Balance Carried Forward	3,76,583	4,44,505

17.13.7 National Biopharma Mission (Innovate in India)

(Amount in Rs.)

Particulars		AS ON 31.03.2020	AS ON 31.03.19
	Opening Balance	87,79,84,456	3,77,92,702
	Received during the period	1,50,00,00,000	1,45,00,00,000
		2,37,79,84,456	1,48,77,92,702
Add:	Bank Interest	1,51,79,121	2,02,65,390
		2,39,31,63,577	1,50,80,58,092
Less :	Programme Expenditure	1,93,37,69,420	57,25,61,084
	Operational Expenditure	8,20,69,275	5,75,12,552
	Interest Refund to DBT	2,02,65,390	-
	Unutilised Balance Carried Forward	35,70,59,491	87,79,84,456

17.13.8 AcE Fund

(Amount in Rs.)

Particulars		AS ON 31.03.2020	AS ON 31.03.19
	Opening Balance	687,724,686	214,747,638
	Received during the period	300,000,000	522,900,000
		987,724,686	737,647,638
Add:	Bank Interest	27,253,317	17,360,992
		1,014,978,003	755,008,630
Less :	Ace Funding	192,142,435	66,060,717
	Operational Expenditure	301,867	1,223,227
	Unutilised Balance Carried Forward	822,533,701	687,724,686

17.13.9 SSC(NTBN)

(Amount in Rs.)

Particulars		AS ON 31.03.2020	AS ON 31.03.19
	Opening Balance	7,817,000	-
	Received during the period	-	7,817,000
		7,817,000	7,817,000
Add:	Bank Interest	214,289	-
	8,031,289	7,817,000	-
Less :	Operational Expenditure	2,635,725	-
	Unutilised Balance Carried Forward	5,395,564	7,817,000

17.13.10 Ind CEPI

(Amount in Rs.)

Particulars		AS ON 31.03.2020	AS ON 31.03.19
	Opening Balance	-	-
	Received during the period	324,719,000	-
		324,719,000	-
Add:	Bank Interest	5,194,859	-
		329,913,859	-
Less :	Operational Expenditure	43,532,400	-
	Unutilised Balance Carried Forward	286,381,459	-

17.13.11 GBI

(Amount in Rs.)

Particulars		AS ON 31.03.2020	AS ON 31.03.19
	Opening Balance	-	-
	Received from DBT	13,400,000	-
	Sponsorship	1,000,000	-
		14,400,000	-
Add:	Bank Interest	-	-
		14,400,000	-
Less :	Operational Expenditure	70,300,000	-
	Recoverable from DBT and Sponsors	(55,900,000)	-



17.14 Disclosures required under Section 22 of Micro, Small and Medium Enterprise (MSME) Development Act, 2006

(Amount in Rs.)

S.No.	Particulars	AS ON 31.03.2020	AS ON 31.03.19
(i)	Principal amount remaining unpaid to MSME suppliers as at the end of the reporting period.	2,336,541	3,739,803
(ii)	Interest due thereon remaining unpaid to MSME suppliers as at the end of the reporting period.	-	-
(iii)	The amount of interest paid along with the amounts of the payment made to the supplier beyond the appointed day.	-	-
(iv)	The amount of interest due and payable for the period.	-	-
(v)	The amount of interest accrued and remaining unpaid at the end of the reporting period.	-	-
(vi)	The amount of further interest due and payable even in the succeeding year, until such date when the interest dues as above are actually paid.	-	-
	Total	2,336,541	3,739,803

The above information regarding dues to Micro and Small Enterprises has been determined to the extent such parties have been identified on the basis of information collected with the Company.

17.15 Details of Balances with Banks

(Amount in Rs.)

Particulars	31-Mar-20	31-Mar-19
In Current Accounts		
Corporation Bank (DBT-BMGF PMU)	118,223	278,381
In Saving Accounts		
Corporation Bank (BIRAC/Make In India/Bio-Toilets/MeitY)	104,187,771	233,685,956
HDFC Bank (BIRAC)	6,467,600	
State Bank of India (PPP Activities/AcE,NBM)	687,845,811	670,251,122
State Bank of India (DBT-NBM PMU)	149,137,746	44,728,984
State Bank of India (DBT-BMGF PMU)	238,484,811	489,874,535
	1,186,123,739	1,438,540,597
In Fixed Deposits		
Corporation Bank -FD		
(BIRAC/Make In India/Bio-Toilets/MeitY)		
- Maturity More than 12 Months	-	-
- Others	-	400,240,135
Yes Bank - FD		
(AcE Fund/ PPP Activities/Portfolio Realised)		
- Maturity More than 12 Months	-	-
- Others	-	300,000,000
State Bank of India - FD		
(PPP Activities/Portfolio Realised)		
- Maturity More than 12 Months	-	-
- Others	2,169,538,868	692,100,000
	2,169,538,868	1,392,340,135

Cash and Cash Equivalents include deposits maintained by the Company with banks, which can be withdrawn by the Company at any point of time without prior notice or penalty on the principal in accordance of the terms & conditions of the creation of the deposits.

17.16 Disclosure pursuant to Accounting Standard (AS) 15 Revised "Employee Benefits" :

1 Assets and Liability (Balance Sheet Position)

i) The amounts recognised in Balance Sheet are as follows:

Para 120(n) of AS 15

Particulars	Financial Year ending	
	2019-20	2018-19
Present Value of Defined Benefit Obligations at the end	90,01,084	87,35,999
Fair Value of Plan Assets at the end	99,11,021	68,26,041
Funded Status - Deficit / (Surplus)	-9,09,937	19,09,958
Unrecognized Past Service Cost	-	-
Effects of Asset Ceiling	-	-
Net Liability / (Asset) at the end of the period	-9,09,937	19,09,958

ii) The amount recognised in profit and loss account

Particulars	Financial Year ending	
	2019-20	2018-19
Expenses to be recognised in Profit & Loss accounts	-4,22,709	2,459,452

iii) Experience adjustments on Present Value of Benefit Obligation and Plan Assets

Particulars	Financial Year ending	
	AS ON 31.03.20	AS ON 31.03.19
(Gain) / Loss on Plan Liabilities	15,47,958	2,59,930
% of Opening Plan Liabilities	17.72%	4.48%
Gain / (Loss) on Plan Assets	73,909	47,027
% of Opening Plan Assets	1.08%	0.96%

iv) "The recommended contribution is minimum of "Net Liability (Defined Benefit Obligation - Fund Balances as at valuation date) = Rs.0 or 8.33% of the wage bill".

2 The principal financial assumptions used in the valuation are shown in the Table below:

Particulars	Financial Year ending	
	AS ON 31.03.20	AS ON 31.03.19
Discount Rate (Per Annum)	6.78%	7.65%
Salary Growth Rate (Per Annum)	3.00%	10.00%
Expected Rate of Return on Plan Assets (Per Annum)	6.78%	7.65%

Please refer Section 7 (7.2) to see how the assumptions are derived

3 Valuation Results

The valuation results for the defined benefit gratuity plan as at 31/03/2020 are produced in the tables below:



3 Valuation Results

The valuation results for the defined benefit gratuity plan as at 31/03/2020 are produced in the tables below:

- i) The changes in the present value of defined benefit obligation representing reconciliation of opening and closing balance thereof are as follows: Para 120 (c) of AS 15

Particulars	Financial Year ending	
	AS ON 31.03.20	AS ON 31.03.19
Defined Benefit Obligation at the beginning	87,35,999	57,98,777
Add : Current Service Cost	18,85,909	22,13,390
Add : Interest Cost	6,68,304	4,63,902
Add : Prior Service Cost – Vested benefit	-	-
Add : Prior Service Cost – Non Vested benefit	-	-
Add : Curtailments	-	-
Less :Benefits Paid directly by the Company	-	-
Less : Benefits Paid from Fund	-	-
Add/Less : Net transfer in/(out) (including the effect of any business	-	-
Add/Less : Actuarial Loss / (Gain) on Obligation	-22,89,128	2,59,930
Defined Benefit Obligation at the end	90,01,084	87,35,999

- ii) Changes in the fair value of plan assets representing reconciliation of the opening and closing balances thereof are as follows: Para 120 (e) of AS 15

Particulars	Financial Year ending	
	AS ON 31.03.20	AS ON 31.03.19
Opening balance of the fair value of the plan assets	68,26,041	49,12,973
Add: Adjustment to Opening balance	-	-
Add: Expected Return on plan assets	6,13,885	4,30,743
Add: Contributions by Employer	23,97,186	14,35,298
Add: Contributions by Employer	-	-
Add: Assets Distributed on Settlements	-	-
Add: Assets Acquired on acquisition/(Distributed on Divestiture)	-	-
Add: Exchange Difference on Foreign Plans	-	-
Add/(less): Actuarial gains/(losses)	73,909	47,027
Less: Benefits Paid	-	-
Closing balance of the plan assets	99,11,021	68,26,041

iii) Fair value of plan assets

Particulars	Financial Year ending	
	AS ON 31.03.20	AS ON 31.03.19
Opening balance of the fair value of the plan assets	68,26,041	49,12,973
Add: Adjustment to Opening balance	-	-
Add: Actual Return on plan assets	6,87,794	4,77,770
Add: Contributions by Employer	23,97,186	14,35,298
Add: Contributions by Employer	-	-
Add: Assets Distributed on Settlements	-	-
Add: Assets Acquired on acquisition/(Distributed on Divestiture)	-	-
Add: Exchange Difference on Foreign Plans	-	-
Add/(less): Actuarial gains/(losses)	-	-
Less: Benefits Paid	-	-
Fair value of the plan assets at the end	99,11,021	68,26,041
Excess of Actual over estimated return on Plan Assets	73,909	47,027

iv) Expenses Recognised in the Profit & Loss Account

Particulars	Financial Year ending	
	AS ON 31.03.20	AS ON 31.03.19
Current Service Cost	18,85,909	22,13,390
Interest Cost on Obligation	6,68,304	4,63,902
Past Service Cost	-	-
Expected return on Plan Assets	-6,13,885	-4,30,743
Amortization of Prior service cost	-	-
Net actuarial (Gain)/Loss to be recognised	-23,63,037	2,12,903
Transfer In/Out	-	-
Curtailment (Gain)/Loss recognized	-	-
Settlement (Gain)/Loss recognised	-	-
Expense recognised in Profit & Loss account	-4,22,709	24,59,452

v) Amount for the current period

Particulars	Financial Year ending	
	AS ON 31.03.20	AS ON 31.03.19
Actuarial Loss / (Gain) for the current period - Obligation	-22,89,128	2,59,930
Actuarial Loss / (Gain) for the current period - Plan Assets	-73,909	-47,027
Total Actuarial Loss / (Gain) for the current period	-23,63,037	2,12,903
Actuarial Loss / (Gain) loss recognized in the current period	-23,63,037	2,12,903



vi) Movement in Liability recognized in the Balance Sheet

Particulars	Financial Year ending	
	AS ON 31.03.20	AS ON 31.03.19
Present Value of Obligations as at the beginning	87,35,999	57,98,777
Expenses Recognized in P & L Statement	-4,22,709	24,59,452
Benefits Paid	-	-
Actual Return on Plan Assets	6,87,794	4,77,770
Acquisition Adjustment	-	-
Present Value of Obligations as at the end	90,01,084	87,35,999

vii) Major categories of Plan Assets (as percentage of Total Plan Assets)

Particulars	Financial Year ending	
	AS ON 31.03.20	AS ON 31.03.19
Equities	-	-
Gilts	-	-
Bonds	-	-
Insurance Policies	100%	100%
Total	-	-

viii) Bifurcation of Present Value of Obligation at the end of the current period as per revised Schedule III of the Companies Act, 2013

Particulars	Financial Year ending	
	AS ON 31.03.20	AS ON 31.03.19
Current Liability (Short Term)	12,31,137	8,20,845
Non-Current Liability (Long Term)	77,69,947	79,15,154
Present Value of Obligation as at the end	90,01,084	87,35,999

17.17.1 Other Non-Current Investment

(Amount in Rs.)

S.No.	Particulars	Financial Year ending	
		31-Mar-20	31-Mar-19
1	Other Non-Current Investment (unquoted)		
a)	GVFL Startup Fund	4,11,60,000	2,87,00,000.00
b)	" IAN Fund"	10,02,53,839	3,36,60,000.00
c)	"Stakeboat Capital Fund"	2,60,42,579	37,00,717.00
d)	Bharat Innovation Fund	8,05,66,734	-
e)	Kitven Fund - 3	1,01,80,000	-
		25,82,03,152	6,60,60,717

Note:

1. BIRAC is implementing the Biotechnology Innovation Fund - AcE Fund initiated by Department of Biotechnology, Govt of India for providing risk capital to Biotech startups for product development cycle and growth phase.
2. The value of the investments are stated at cost. Provision for diminution in the value of long-term investments is made only if such a decline is other than temporary.
3. BIRAC undertakes Management and operation of AcE fund in the area of Biotechnology and life sciences and holds all investments made out of the AcE Fund in a fiduciary capacity for DBT.

17.17.2 Contingent liability

With respect to AcE fund draw down request as per the contribution agreement is yet to be received amounting to Rs. 36.18 crores.

17.18 The previous year's figures are reclassified and regrouped in accordance with the requirements applicable in the current financial year to make items comparable.

17.19 List of Abbreviations used in Financial Statement:

S. No.	Abbreviation	Description
1	BIRAC	Biotechnology Industry Research Assistance Council
2	AcE Fund	Accelerating Entrepreneurs
3	ACT	All Children Thriving
4	AgNu	Agriculture-Nutrition Projects
5	AMR	Antimicrobial Resistance
6	BCIL	Biotech Consortium India Limited
7	BIG	Biotechnology Ignition Grant
8	BIPP	Biotechnology Industry Partnership Programme
9	BISS	Bio Incubator Support Scheme
10	BMGF	Bill Melinda Gates Foundation
11	CRS	Contract Research Scheme
12	DBT	Department of Biotechnology, Ministry of Science & Technology, Government of India
13	ETA	Early Translational Accelerator
14	FD	Fixed Deposit
15	GCI	Grand Challenges of India
16	HBGDKi	Healthy Birth Growth Development Knowledge Integration
17	I&M	Industry and Manufacturing
18	IDIA	Immunization Data for Innovating Action
19	IIPME	Industry Innovation Programme on Medical Electronics
20	IMPRINT	Improving Growth in Infant Trail
21	IP	Intellectual Property
22	Ki	Knowledge Integration Data Challenge Programme
23	KSTIP(KnIT)	Knowledge Integration and Translation Platform (Knowledge Integration)
24	MeitY	Ministry of Electronics and Information Technology
25	Misc.	Miscellaneous
26	MTNL	Mahanagar Telephone Nigam Limited
27	NBM (I3)	National Biopharma Mission (Innovate in India)
28	PMC	Projects Monitoring committee
29	PMU	Programme Management Unit
30	PPP Activities	"Public-Private Partnership Activities (Earlier termed as Industry and Manufacturing (I&M) Sector.)"
31	RTTC	Reinvent the Toilet Challenge
32	SBH	State Bank of Hyderabad



33	SBIRI	Small Business Innovation Research Initiative
34	SPARSH	Social Innovation programme for Products: Affordable & Relevant to Societal Health
35	SSC-NTBN	Secretariat for Scientific sub-committee under the National Technical Board on Nutrition.
36	TA & DA	Travel Allowance & Diem Allowance
37	UIC	University Innovation Cluster
38	WT	Wellcome Trust
39	CEPI	Coalition for Epidemic preparedness Innovative
40	GBI	Global Bio India

For and on behalf of Board of Directors

Sd/-
Kavita Anandani
(Company Secretary)

Sd/-
Anju Bhalla
(Managing Director)
DIN 06981734

Sd/-
Renu Swarup
(Chairperson)
DIN 01264943

Auditors Report

As per our report of even date attached

For RMA & Associates LLP

Chartered Accountants

Firm Reg. No. 000978N/ N500062

Sd/-

CA. Rahul Vashishtha

(Partner)

Membership No. 097881

Place : New Delhi

Date : 27.08.2020

COMMENTS OF THE COMPTROLLER AND AUDITOR GENERAL OF INDIA UNDER SECTION 143(6) (b) OF THE COMPANIES ACT, 2013 ON THE FINANCIAL STATEMENTS OF BIOTECHNOLOGY INDUSTRY RESEARCH ASSISTANCE COUNCIL FOR THE YEAR ENDED 31 MARCH 2020.

The preparation of financial statements of Biotechnology Industry Research Assistance Council for the year ended 31 March 2020 in accordance with the financial reporting framework prescribed under the Companies Act, 2013 (Act) is the responsibility of the management of the company. The statutory auditors appointed by the Comptroller and Auditor General of India under section 139 (5) of the act are responsible for expressing opinion on the financial statement under section 143 of the Act based on independent audit in accordance with the standards on auditing prescribed under section 143(10) of the Act. This is stated to have been done by them vide their Audit Report dated 27.08.2020

I, on behalf of the Comptroller and Auditor General of India, have decided not to conduct the supplementary audit of the financial statements of Biotechnology Industry Research Assistance Council for the year ended 31 March 2020 under section 143 (6)(a) of the Act.

**For and on behalf of the
Comptroller & Auditor General of India**

**Sd/-
Director General of Audit
(Environment & Scientific Department)**

**Place : New Delhi
Date: 11.12.2020**



1000+
Beneficiaries
supported



50
Bioincubators
supported



4
Regional &
Entrepreneurship
Development
Centres



Funding support
by BIRAC
INR 1,090 Cr.



Industry
Commitment
INR 973 Cr.



209
Academic
institutes
Supported

Ignite Innovate Incubate

INR 350 Cr +
Partnered
funding raised
by Start-ups

10,000+
Manpower
supported
for high end skills



5,48,719 sq. ft.
of Incubation
space created



INR 200 Cr +
Committed
through Equity
fund



653
Companies
supported



16
Bioincubators
supported under
Equity based
SEED Fund,
LEAP funds



200+
IPs filed



150+
Products &
Technologies
developed



1500+
Start-ups and
Entrepreneurs
supported



Biotechnology Industry Research Assistance Council

(A Government of India Enterprise)

CIN No. : U73100DL2012NPL233152

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