GOVERNMENT OF INDIA
MINISTRY OF SCIENCE AND TECHNOLOGY
DEPARTMENT OF BIOTECHNOLOGY

LOK SABHA
UNSTARRED QUESTION NO. 2185
TO BE ANSWERED ON 23.09.2020

Research in Biotechnology

2185. Shri Raja Amareshwara Naik:
Shri Vinod Kumar Sonkar:
Shri Bhola Singh:
Shrimati Sangeeta Kumari Singh Deo:
Dr. Sukanta Majumdar:
Dr. Jayanta Kumar Roy:

Will the minister of SCIENCE & TECHNOLOGY be pleased to state:

a) whether the Government has set up Biotechnology Industry Research Assistance Council to promote Research and Development in Biotechnology;
b) if so, the details thereof including funds allocated, R&D projects undertaken and their output during the last three years and the current year;
c) the steps taken/being taken by the Government for the development of biotechnology as well as physical and human infrastructure in this sector;
d) whether Biotechnology has varied applications and far reaching impact and implications in prominent sectors and if so, the details thereof; and
e) whether there is urgent need to formulate regulatory framework for Biotechnology sector at national level, if so, the details thereof?

ANSWER

MINISTER OF HEALTH & FAMILY WELFARE;
MINISTER OF SCIENCE AND TECHNOLOGY;
AND MINISTER OF EARTH SCIENCES

(DR. HARSH VARDHAN)

(a) & (b)

Yes, Biotechnology Industry Research Assistance Council (BIRAC) has been established by Government of India as a Public Sector Enterprise under Department of Biotechnology (DBT) in March, 2012 to foster and nurture the Startup Ecosystem and promoting Academia –Industry Collaboration in Biotechnology.

BIRAC, through its various funding schemes, supports all stages of product development right from proof-of-concept demonstration to product commercialization. The schemes support entrepreneurs, start-ups, Companies and academic institutions, to work on research ideas that have translational potential. The details of Programs undertaken and their output during the last three years and the current year including funds allocated may please be seen at **Annexure – A.**

c)

The Department of Biotechnology has a major focus on promotion of Biotechnology through Research & Development and also in terms of Human resource and Infrastructure Development. The key areas of support are Research and Development, Demonstration, Product Development and Commercialization, Capacity building through Human Resource Development and Infrastructure strengthening.

DBT's major focus is on building Centre of Excellence in different areas. DBT also has 16 Autonomous Institutions under its administrative control with focus on promoting and strengthening Biotechnology through national and international partnerships. The key activities supported under Human Resource and Infrastructure is enlisted at **Annexure B.**

d)

Biotechnology sector is recognized as the key driver for contributing to India's $ 5 Trillion economy target by 2024. The biotechnology sector, mainly due to its multi-disciplinary approach holds the potential to provide an array of solutions for challenges in Health, Agriculture, Environment, Energy and Industrial Processes. This includes innovative solutions for various societal challenges, use of biosimilars for helping millions of people around the world in battling life-threatening medical issues, development and manufacture of vaccines for nearly 60% of Global immunization.
Improved crop varieties for increased production and providing better yields to the farmers while reducing the dependence on heavy consumption of water and energy. Industrial biotechnology is being channeled to produce biofuels that can help in ensuring cleaner environment. Biotechnology impacts each sector and the Biotechnology Sector in the country is growing rapidly.

e)

The Biotechnology research and development activities involving use of r-DNA technology and/or hazardous microorganism are being regulated in accordance with Rules for the manufacture, use, import, export & storage of hazardous microorganisms, GE organisms or cells,1989 of the Environment Protection Act, 1986. The Review Committee on Genetic Manipulation (RCGM) established under the Department of Biotechnology, Ministry of Science and Technology to monitor the safety of on-going research projects and activities (including small scale field trials, import, export etc) involving genetically engineered organisms.

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Details of Activities supported by BIRAC and outcomes during last 3 years

Annexure A

Name of the program/ scheme	Focus Area	Stakeholders	Budget (in Crores) (2017- till date)	Impact
BioNEST	Incubation support via grant in aid/capital investment for a maximum of 5 years	Academic institutions, Research institutes, existing incubators	301.00	50 BioIncubators established across the country 549219 Sq.Ft. incubation space created 700+ incubates supported
BIG	Ideation to early stage. Milestone based funding for 18 months in the form of grant in Aid	Indian citizens, company/LLP	250.00	• 8 BIG Partners engaged to implement the scheme • 125 new start ups incorporated through scheme support • More than 50 products/ technologies commercialized through BIG support • More than 500 innovative ideas supported • More than 150 IPs have been filed • 75+ start-ups have raised follow on funding
SITARE	Ideation to early stage. Support is in the form of award grant	Indian students	13.00	• Implemented through SITARE Partner- SRISTI, Ahmadabad • 64 SITARE- GYTI Awardees • 4 Start Ups • 20 IPs • 5 Residential Workshops • 170+ appreciation awardees
E-YUVA	Pre-incubation, creating an entrepreneurial culture at University Level.	Undergraduate and post graduate students	11.20	• 5 Universities recognized as EYUVA Centres • 5-10 more centres being inducted • 30 Innovation Fellows

				• 8 Start Ups incorporated • 10 IPs filed
SEED Fund	Equity funding	Start ups& SMEs	29.00	• 16 BioNEST Incubators engaged as SEED Fund Partners • 55+ start ups supported • Cumulative valuation of start • ups is more than 750 Cr.
LEAP Fund	Equity funding	Start ups& SMEs	24.50	• 6 BioNEST Incubators engaged as LEAP Fund Partners • 10 start ups supported • More than 50% companies have been able to raise external source of funding from Angel, VC, other sources
ACEFund	Equity Funding	Start Ups, SMEs and large companies	62.00	• Fund size: INR 150 crore • Number of ACE Daughter Funds:6 • Committed in ACE Daughter Funds: INR 82crores

i4 (Intensifying the Impact of Industrial Innovation) programme supports biotechnological product/technology development by strengthening R&D capabilities of start-ups/ companies/Limited Liability Partnerships (LLPs). The programme is operated through two schemes based on the Technology Readiness Level (TRL):

a. **Small Business Innovation Research Initiative (SBIRI):** The scheme was launched in 2005 to boost Public-Private Partnership (PPP) efforts in the country and promotes & facilitates companies to take their established proof of concepts (PoC) towards early stage validation.

Impact of SBIRI from 2017-till date:

SBIRI	
Calls Announced	10
Projects Supported	122
Funds Dispersed	20.54 Cr
Beneficiaries Supported	144
Products developed	21
Products Commercialized	15
Patents Filed	28

b. **Biotechnology Industry Partnership Programme(BIPP):**BIPP is BIRACs Flagship "Late Stage Funding" scheme. It is a public-private partnership scheme that promotes innovative research for development of transformational technologies/processes in the Biotech Sector. The Scheme serves as a launch pad for scaling and commercializing high risk innovations through cost sharing between BIRAC and the industry. No incremental developmentis supported underBIPP.

Impact of BIPP from 2017-till date:

BIPP	
Calls Announced	10
Projects Supported	91
Funds Dispersed	77.17 Cr
Beneficiaries Supported	115
Products developed	25
Products Commercialized	9
Patents Filed	10

Promoting Academic Research Conversion to Enterprise (PACE) Scheme: To encourage/support academia to develop technology/product (up to PoC stage) and its subsequent validation by an industrial partner.

Impact of PACE from 2017-till date:

PACE	
Projects Supported	104
Funds Dispersed	32.06 Cr
Beneficiaries Supported	118
Products developed	4
Products Commercialized	1
Patents Filed	6

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. 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". Through these clusters spread across 14 SPARSH centres in 9 states from India, around 33 Social Innovators are graduated and 70 are currently enrolled.

Impact of SPARSH from 2017-till date:

SPARSH	
Projects Supported	57
Beneficiaries Supported	133 including 70 SPARSH Fellows
Employment Generated	218
Patents Filed	15
SPARSH Centers Established	14
New Enterprises created	20
Products Commercialized	8

The details of the output for the last three years and the current year are as follows:

Year	TRL-7	TRL-8	TRL-9	IP filed
2017-2018	27	6	9	32
2018-2019	29	7	12	35
2019-2020	40	15	10	46
2020-2021 (Q1)	11	-	-	17

- TRL-7- Product/Technology completes late stage validation
- TRL-8- Product/Technology completes all essential requirements for commercialization
- TRL-9- Product/technology commercialized (includes technologies out licensed)

ANNEXURE B

a. The Department has implemented integrated Human Resource Development Program in Biotechnology comprising Postgraduate Teaching Program, DBT-Junior Research Fellowship Program, DBT- Research Associateship and DBT-Biotechnology industry Training Program (Apprenticeship) for skilled and trained manpower. Details of HRD Programs are as follows:

(i) DBT-Postgraduate Teaching Program: 72 courses are being offered and 4931 students were trained under this program in last three years.

(ii) **DBT- Junior Research Fellowship Program (DBT-JRF**): Total 2976 students were supported under this program and 398 Fellows completed PhD thesis in last three years.

(iii)**DBT-Research Associateship Program (DBT-RA):**: 596 Research Associate were supported under this program in last three years

(iv)**Biotech Industrial Training Program (BITP-Apprenticeship):**: 596 Research Associate were supported under this program in last three years

b. The Department has created and supported major high end infrastructure or facilities and also nurtured and strengthened existing sophisticated platforms in universities and institutes under the **Research Resources Service Facilities and Platforms (RRSFP) programme.**

During 2018-19, the Department introduced the **DBT-Scientific Infrastructure Access for Harnessing Academia University Research Joint Collaboration- DBT-SAHAJ Infrastructure portal.** A total of 46 major facilities are currently listed under the SAHAJ portal and **1, 39,386 users** have utilized these facilities in two years.