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Global Bio-India 2023

Transforming Lives
Biosciences to Bioeconomy



Bio-Pharma



Bio-Agri



Bio-Industrial



Bio-Energy



Bio-Services





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Dr Rajesh S Gokhale

Secretary DBT &
Chairperson BIRAC

From the Leaders Desk

The science and technology ecosystem in India, has always been a dynamic and evolving area, with the support of the Government of India through its different schemes and policies. The Indian biotechnology industry is on the cusp of entering a new era where it can provide significant economic growth and development to India and the world.

The Biotech innovation ecosystem's potential and its rapid growth are recognized as the key contributor to the growth of the global bioeconomy. The Global Bio India 2023 was the

largest representation of entire biotechnology stakeholders in the country to the national and international biotech community.

This year the Global Bio-India 2023 theme highlighted the potential and opportunities in 'Biotech Innovation' and 'Bio-manufacturing' and its impact on the Bioeconomy. Globally there has been a major thrust towards encouraging the growth of startups, entrepreneurs, academia, and industry collaboration. These kinds of events demonstrated India's potential in the biotech sector with evidence, both within the country and to the world. This would help pave out a roadmap to leapfrog the Biotech innovation and Bio-manufacturing in the country.

A lot of young innovators and entrepreneurs in the Biotech space are inclined towards nation building by providing innovative solutions to the unmet needs in the public health sector. From large manufacturers to young start-ups, the innovation ecosystem in the country has come together to empower the innovation ecosystem. Today, India is self-sufficient and marching towards Amrit kaal with Science, Technology, and Innovation.

India stands as a powerful example for the world of how embracing a culture of science and innovation can deliver progress on public health goals – both within India and globally. In line with the Atmanirbhar Bharat initiative, India has taken a leading role in the innovation and biotechnology industry, both large and small have risen to the occasion.

The potential of the biotech innovation ecosystem and its rapid growth have been well recognized as the key contributors to the growth of global bioeconomy. Globally there has been a major thrust towards encouraging the growth of startups, entrepreneurs, academia, and industry that are further steering the development of the Indian Biotechnology ecosystem.



Dr. Jitendra Kumar
Managing Director- BIRAC

Chief Editor's Take

India is becoming the world's leading bio-economy with fast-growing biotech start-ups and is the 3rd largest destination for biotechnology in Asia Pacific. The growth of the Indian biotechnology sector is fuelled by rising demand both at domestic as well as international levels. India has poised itself as a hub to deliver affordable access to innovative and inclusive healthcare solutions and holds 3% share in the global biotechnology industry. India stands as a powerful example for the world of how embracing a culture of science and innovation can deliver progress on public health goals – both within India and globally.

It was a proud moment to hold the third edition of Global Bio-India 2023. The third edition of the Global Bio-India 2023 was a testimony to the fact that India is all set to enter the league of nations who are leaders in Biotech.

The discussion of Global Bio India 2023 revolved around developing India as Biomanufacturing hub which also aligns well with the Prime Minister's vision call to position India as USD 100 Bn Biomanufacturing Hub. This event highlighted the potential and opportunities in 'Biotech Innovation' and 'Bio-manufacturing' and its impact on the Bioeconomy.

India's Bioeconomy is growing at a double-digit rate year on year and is expected to reach USD 300 Bn by 2030. Our country is being looked upon as emerging Global Innovation Hub to address not only our local needs but also the global challenges as well.

The three-day program witnessed global leaders' participation in technical sessions on Biomanufacturing: Biosciences to Bio-Economy for 'Atmanirbhar Bharat'; Preparing for the next Pandemic-Accelerate Biotech Innovations and deliver biotech products for sustainable future; Cell and Gene Therapy; Food and energy through biological manufacturing; Accelerating Biomanufacturing: Fostering enabling ecosystem with conducive regulatory frameworks; Niche Area meeting on AI in Drug Discovery; Harnessing the unlimited opportunities of Smart Proteins in India; Powering the Future: Bio-Based Energy Solutions; Harnessing the power of Genomics for personalized medicine; Emerging Agri-technologies for a Sustainable Future.

The Mega event saw 500+ exhibitors, 5600+ delegates, 25+ countries, 8 States representation promoting their Biotech policies; 200+ Universities and Research Institutions, 1200+ Biotech start-ups, 100+ bioincubators, 300+ Industry representation from Biopharma, Medtech, Diagnostics, Industrial Biotech, Bio-Agri; Stakeholder discussion on National and Global Regulatory Trends; Industry Academia interactions; Representation from Major Industry Associations, Investor Associations, Global Entrepreneurship Organizations, 1000+ B2B business meetings. There were 40+ sessions, 7 super sessions, CEO Roundtables, policy dialogues, 40+ Startup pitches to Investors and 5 International pitches; 30 new products of Startups were launched during Global Bio India 2023.

The third edition of Global Bio-India was nearly 3 times bigger than the previous two editions. The event witnessed entrepreneurs, scholars, scientists, start-ups, medium and large companies coming together on the same platform for the acceleration of the innovation ecosystem in India.

I am pleased to point out that such an exciting international conference, which had representation from national and international governments, private sector, start-ups, academics among many others was planned to bring together and showcase the best of the biotechnology innovation ecosystem will now be an annual event. We aim to create a bigger and better event.

India stands as a powerful example for the world of how embracing a culture of science and innovation can deliver progress on public health goals – both within India and globally.

Global Bio-India 2023

The Department of Biotechnology (DBT), Ministry of Science & Technology, Government of India, along with its Public Sector Undertaking, Biotechnology Industry Research Assistance Council (BIRAC) organized **Global Bio-India 2023** from 4th- 6th December, 2023 at Bharat Mandapam, Pragati Maidan, New Delhi. The associated partners to organize this event were the Association of Biotechnology Led Enterprises (ABLE), InvestIndia, Startup India, TiE-Delhi-NCR, Federation of Indian Chambers of Commerce & Industry (FICCI), Indian Venture and Alternate Capital Association (IVCA), Teamwork Arts and Global Business Inroads. The three-day event was the largest representation of entire biotechnology stakeholders in the country to national and international biotech community. Global Bio-India 2023 theme highlighted the potential and opportunities in **‘Biotech Innovation’** and **‘Bio-manufacturing’** and its impact on the Bioeconomy.

The event was inaugurated by Hon’ble Union Minister of State (Independent Charge) Science & Technology; MoS PMO, Personnel, Public Grievances, Pensions, Atomic Energy and Space, Dr Jitendra Singh. Hon’ble Minister lauded the efforts of DBT and BIRAC and emphasized that Biotechnology sector in India has evolved over the last three decades and has made significant contributions to various sectors including Health, Medicine, Agriculture, Industry and Bio-Informatics. The inaugural was graced



by dignitaries including Prof. Ajay Kumar Sood, Principal Scientific Adviser, Government of India, His Excellency Freddy Svane, Ambassador at Royal Danish Embassy in New Delhi; Prof. Abhay Karandikar, Secretary, Department of Science & Technology, Dr. Kiran Mazumdar Shaw, Chairperson and Managing Director, Biocon Ltd., Mr. G S Krishnan, President, Association of Biotech Led Enterprises; Dr Rajesh S Gokhale, Secretary, DBT and Chairman, BIRAC and Dr Jitendra Kumar, Managing Director, BIRAC.

Indian Bioeconomy Report 2023 was released highlighting India’s bioeconomy has reached to \$137 Bn Bioeconomy in 2022. BIRAC promoting Private Public Partnership entered MOUs - BIRAC-Foreign, Commonwealth and Development Office (FCDO, UK); BIRAC-Takeda; BIRAC-



MiltenyiBiotec and BIRAC-India Health Fund (IHF). DBT's Resource of Indian Vaccine Epidemiology Network (DRIVEN) Monograph on 'Setting Up Demographic Development and Environmental Surveillance Sites (DDESS)' - A handbook for epidemiologists and public health practitioners; Global Bio India 2023 Exhibitor Compendium and Bioincubation Centres Exhibitors Directory were also released during the inaugural ceremony.

The Plenary Session on the theme of “Biotech Ecosystem: Views from Key Opinion Leaders” was graced by Hon’ble Cabinet Minister, S&T Department, Govt of Odisha, Shri Ashok Chandra Panda; Dr. Rajesh S. Gokhale, Secretary, Department of Biotechnology and Chairman, BIRAC; Dr. Kiran Mazumdar-Shaw, CMD, Biocon group & Chairperson, ABLE; Dr. PM Murali, President - ABLE Council of Presidents and CMD - Jananom Pvt Ltd; Mr. G S Krishnan, President, ABLE; Ms. Padmaja Ruparel, Co- founder, IAN Network & Founding Partner, IAN Fund; Dr. Nisha Mendiratta, Executive Director, Indo-US Science and Technology Forum; Dr. Ravindra Patel, & CTO, OmniBRx Biotechnologies. The session was moderated by Dr. Jitendra Kumar, Managing Director, BIRAC.

The three-day program witnessed global leaders participation in technical sessions on Biomanufacturing: Biosciences to Bio-Economy for ‘Atmanirbhar Bharat’; Preparing for the next Pandemic-Accelerate Biotech Innovations and deliver biotech products for sustainable future; Cell

and Gene Therapy; Food and energy through biological manufacturing; Accelerating Biomanufacturing: Fostering enabling ecosystem with conducive regulatory frameworks; Niche Area meeting on AI in Drug Discovery; Harnessing the unlimited opportunities of Smart Proteins in India; Powering the Future: Bio-Based Energy Solutions; Harnessing the power of Genomics for personalized medicine; Emerging Agri-technologies for a Sustainable Future.

The event also saw Masterclass for Startups- Art of Pitching; B2B, B2G, G2G Meetings; Policy Dialogues; Science Community Connect; Startup pitching; Investors Conclave and CEOs Roundtable Meetings.

The Mega event saw 500+ exhibitors, 5600 + delegates, 25+ countries, 8 States representation promoting their Biotech policies; 200+ Universities and Research Institutions, 1200+ Biotech start-ups, 100+ bioincubators, 300+ Industry representation from Biopharma, Medtech, Diagnostics, Industrial Biotech, Bio-Agri; Stakeholder discussion on National and Global Regulatory Trends; Industry Academia interactions; Representation from Major Industry Associations, Investor Associations, Global Entrepreneurship Organizations, 1000+ B2B business meetings. There were 40+ sessions, 7 super sessions, CEO Roundtables, policy dialogues, 40+ Startup pitches to Investors and 5 International pitches; 30 new products of Startups were launched during Global Bio India 2023.

The third edition of Global Bio-India was nearly 3 times bigger than the previous two editions. The event witnessed entrepreneurs, scholars, scientists, start-ups, medium and large companies coming together on the same platform for the acceleration of the innovation ecosystem in India.



The Global Bio-India 2023 Award Ceremony for JanCARE and TiEWInER fellowship awards was held on Day 2, and was graced by Dr. N Kalaiselvi, DG-CSIR and Secretary DSIR; Dr. Rajesh S. Gokhale, Secretary, DBT and Chairperson, BIRAC; Dr. Jitendra Kumar, Managing Director, BIRAC; Dr. Alka Sharma, Senior Advisor, Department of Biotechnology; Dr. Penna Krishna Prashanthi,



Diabetologist & Non-Official Independent Director, Board of BIRAC; Ms. Geetika Dayal, TiE Delhi NCR and Mr. Sanjeev Malhotra, NASSCOM.

JanCARE session on healthtech innovations for Low resource settings recognized 9 awardees working in the areas of Chronic Pulmonary Obstructive Disease (COPD); Cancer; Mother and Childcare (MCH); and Non communicable diseases & Telemedicine were facilitated. A report on "The JanCARE Healthcare Innovation Challenge Field Deployment Report" was released that showcases on ground impact created by these healthtech innovative solutions. These solutions were deployed in PHCs, CHCs & last mile across 12 States bringing together State Government, Industry & other stakeholders.

Grand Challenges India, BIRAC and Women Lift Health announced a leadership development program titled "Women Leadership in STEM" that aims at mid-career women working in STEM.

Women Biotech WInER Fellowship Awards & Launch of Products from Women Entrepreneurs;

Top WInER Fellows under BIRAC-TiEWInER Fellowship Programme were also announced during the award session.

The event closed in the afternoon of 6th December, with a special address by Shri Rajesh Kotecha, Secretary, Ministry of Ayurveda, Yoga and Naturopathy, Unani, Siddha and Homoeopathy (AYUSH).

Secretary DBT Dr. Rajesh S Gokhale thanked the participants, speakers, panelists, partners, and organizers for putting together a wonderful event.

Managing Director, BIRAC announced that this event will be held annually and the 4th edition of Global Bio-India will be held in third week of September, that is 19-21 September, 2024. He also announced the “Global Bioincubators Network” initiative.

The Global Bio-India 2023 awards, including the BIRAC's Innovators Award, Exhibitor awards for Incubators and Startups, SPARSH Awards, Product launches, and Call launch for i4 and PACE, were done at the valedictory ceremony. The event demonstrated India's potential in the biotech sector with evidence, both within the country and to the world. This would help pave out a roadmap to leapfrog the Biotech innovation and Bio-manufacturing in the country.



Join us at the Global Bio-India2024 next year!

Session on Food and Energy through Biological Manufacturing

The session started with a keynote address by Dr. V. Prakash, Ex-Director, CFTRI. The panel had representation from research, academia, advocacy and corporate. It was interesting to learn from the varied experience of the panellists. The following were the major recommendation:

- Fortification of staples like wheat flour and millets for correcting protein deficiency in the general population and formulation of health supplements for adolescents, pregnant, lactating, mothers and geriatric population may be considered as one of the thrust areas in the smart protein sector.
- Among alternative dietary protein sources (fungal-, insect- and algal-derived dietary proteins and synthetic meats), fungal-derived proteins (mycoprotein) have undergone extensive work and also human clinical trials, product development and as a food ingredient. Also, the incidence of allergic reactions to mycoprotein remains exceptionally low. Considering the global demands for protein, mycoprotein fermentation technology offers an important new tool and offers a global sustainable food ingredient.
- The technologies for the protein ingredients may be well standardized for developing cost-effective technologies for preparing protein ingredients with good quality protein having different levels of protein, with improved functional properties, improved digestibility for therapeutic end uses, and similar to milk for beverage formulations.
- Comprehensive regulation is necessary to ensure that novel food ingredients do not harm human health. A systematic regulatory framework may be outlined in association with FSSAI and other food safety agencies to take the products to the market and ensure food safety.
- The future pace of adoption and market size will depend on five key factors: consumer acceptance, risks, cost position, policy response, and supply.
- Supporting start-ups on their path to commercial viability in India would assist to boost industry awareness, establish critical mass, and provide insights that can be applied to other new applications. The identified key ingredients may be used by the industries for various food fortification programmes to strengthen the smart protein sector.
- There is a need to adopt a multi disciplinary approach to new product development and find the right product-market fit for the smart protein sector such as:
 - ❖ Ingredient optimization for plant-based proteins, particularly utilizing indigenous crops.
 - ❖ Optimizing cell culture media and bioprocess for cultivated meat.
 - ❖ Improving yield and optimizing feedstocks for fermentation-derived proteins;
 - ❖ If the proteins are designed for therapeutic purposes, they should be well-validated.

- ❖ The well-developed robust technologies with well-proven advantages of plant proteins are one of the criteria for getting identified at the global level.
- ❖ Developing platform technologies having both industry relevance and commercial viability.
- Retrofitting existing manufacturing facilities and equipment to suit the needs of alternative protein applications. The infrastructure needs to exist at various levels including lab, pilot, and large manufacturing scale, and innovation successfully translates to the market only when it draws a line from experimental to large scale. Gaps in infrastructure availability and co-manufacturing capacity mean that entrepreneurs have to spend significant sums setting up their own facilities and that talent to operate these facilities is also in short supply. When it comes to building these centers of excellence or innovation centers, whether at the university or industry level, there are numerous challenges – including technology and knowledge transfer.



- Given these challenges, most of the knowledge exists from secondary research and we have limited hands-on experience – a point that often leads to questions about capability amongst investors looking at the space as well. Our industry is reliant on the internet, supplier expertise, and global expertise at the moment, and investment in education should go hand-in-hand with infrastructure. For instance, the availability of equipment like twin-screw extruders – the texturization equipment for the current gold-standard method of producing chewy, tasty, plant-based meat chunks, high-moisture extrusion – at the lab level is a critical step towards entrepreneurs' creating prototypes of their products, as well as towards training the next generation of innovators.

Special Session of FIRST Hub



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, BIRAC, and KIHT. It brings stakeholders to a single platform, so that they can interact directly. BIRAC is committed to promoting the start-up ecosystem in India and supporting the innovators in their product development journey. The queries can be submitted through the FIRST Hub portal available on the BIRAC website and benefit from the monthly meetings.

The FIRST Hub Session during the Global Bio event helped Innovators to resolve queries related to Regulatory pathways and Regulation, Funding opportunities, Mentorship, Investment opportunities, Market access, Industry-Academia

partnerships, and Intellectual Property by interacting directly with the FIRST Hub representatives.

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First Hub Session In Global Bio 2023 – Experts and Innovators

Session on Powering the Future: Bio-Based Energy Solutions

A panel discussion on Powering the Future: Bio-Based Energy Solutions was held on 5th December 2023 during the Global Bio India Event at Bharat Mandapam, Pragati Maidan, New Delhi. The panelists consisted of Dr. Preeti Jain, Global Director, LanzaTech, Shri S. Bharathan, Director-Refineries, HPCL, Dr. Bhaskar Bhadra, Senior General Manager, R & D, Synthetic Biology Group, Reliance Industries Ltd, Dr. Anand Ghosalkar, Chief Scientist, Praj Matrix- R&D Center, Mr. Krishna Mohan Puvvada, VP & Regional President MEIA, Novozymes and Mr. Edwin Hamoen, Programme Manager, Nature based materials, Wageningen Food & Biobased Research (WFBR), Netherlands. The panel was moderated by Dr. Shams Yazdani, Group leader, Microbial Engineering Group, ICGEB. The panel deliberated on important steps India has taken for the production of clean energy and 2G ethanol. In order to achieve the blending target of 20% by 2025, several biorefineries are at various stages of establishment by different Public Sector Oil Manufacturing Companies. Panipat biorefinery has already been commissioned to produce 100,000 liter ethanol per day by IOCL.



Few takeaways from the session were the need for innovation/policy interventions in feedstock supply chains for Biomass/2G feedstocks, promotion of indigenous enzyme manufacturing for the long-term sustainability of biorefinery and promote lignin valorization and production of value-added products from biomass for the economy of 2G ethanol process. Fuel production from C1-substrate and algae should also be looked into to resolve the scale-up, downstream processing and costing issues.

Special Session on BIRAC-TiEWInER Final Jury/Pitching

BIRAC and TiE have jointly institutionalized the WInER Fellowship Programme. This was a dedicated effort of BIRAC to reward and recognize woman entrepreneurs in the Biotech sector. We had recognized TiE-Delhi NCR as the implementing partner for WInER and announce the call for applications annually. Under this national programme, 15 women entrepreneurs working on innovative ideas that have a large societal impact, were awarded INR 5 lakhs each along with mentoring, hand-holding, an opportunity to participate in an intensive and customized accelerator programme.

In the session, the top 3 winners out of 15 women entrepreneurs were selected based on the review of the jury members where 10 minutes were given to the women entrepreneurs (4 minutes for Personal introduction and company profile & 6 minutes for Question & Answer session). The Top 3 identified women entrepreneurs were awarded INR 25 lakhs each during the Special Session for Women Entrepreneurs on Day 2 of GBI 2023.

Women Biotech WInER Fellowship Awards & Women Founding Product Launch

Women-owned business enterprises are playing a prominent role in society by generating employment opportunities in the country, bringing in demographic shifts and inspiring the next generation of women founders.

BIRAC as a Biotech ecosystem enabler has expanded its footprint over the decade in providing and strengthening the platform for talented women entrepreneurs and has played a significant role in promoting “women entrepreneurship” in the country.

The session was addressed by dignitaries to recognize the efforts and achievements of the women entrepreneurs in creating a transforming impact.

1. Product Launch:

The session provided an opportunity for the selected BIRAC-supported women start-ups to launch their products in front of the global community. The following 7 products were launched during the session:

- i. **Greenathon Technologies Private Limited:** MICRO-BIOZYMETM Green Technology Industrial Solution for the treatment of Textile Industrial Effluent
- ii. **AGROVRDDHI:** Development of an Aptamer-based paper microfluidics device for rapid and cost-effective detection of major pesticides from food and agricultural commodities

- iii. **SynerSense:** MoveAxon- Digital Human Motion Analysis Technology that is intended to be used to study walking or running patterns products for sports, wellness and healthcare segment
- iv. **Capsber Global Agro Private Limited:** Naturactiv+ - The world's first sustainable control method for female and male fruit flies in horticultural crops
- v. **Ramja Genosensor Private Limited:** PRATHAMASESNE - Ultrafast paper Genosensor which detects infection and antimicrobial resistance in 90 minutes
- vi. **Carditek Medical Devices Private Limited:** World's first truly wireless smallest wearable 12 lead ECG
- vii. **Medaara Healthcare Technologies Private Limited:** HCRIM – NexGen Healthcare Remote Interactive Machine (Mini clinic)

2. Felicitation of the Top 3 women entrepreneurs under the 4th edition of BIRAC-TiE WInER Fellowship Award and announcement of 5th edition of WInER Awards:

In this session, the Top 3 women entrepreneurs identified out of 15 pre-finalists through Business Pitching under the 4th edition of the WInER Programme were felicitated and awarded INR 25 lakhs each. The 5th edition of the WInER Fellowship Programme was also announced during the session.

Super Session on Masterclass for Startups: Art of Pitching

In the fast-paced world of entrepreneurship, one of the most crucial skills any founder can possess is the ability to pitch their start-up effectively. Whether you're seeking investment, or trying to win over potential customers, a well-crafted pitch can make all the difference. It's not just about presenting facts and figures; it's about telling a compelling story that captures the imagination and enthusiasm of your audience.

In this session, Mr. Ankur Warikoo, Founder- WebVeda, Content creator - wariCrew, Speaker and Author gave insight to the entrepreneurs in understanding the science and art of pitching and exploring the key elements that go into crafting an irresistible start-up pitch.

Session on जनCARE Healthcare Technologies for Low Resource Settings

A session on the BIRAC program “जनCARE Innovation Challenge” was organized on 4th Dec 2023 during the Global Bio India Event at Bharat Mandapam, Pragati Maidan, New Delhi. The session highlighted the achievements of the healthtech innovators supported under the जनCARE-program. The startups pitched about their product deployment using the Test Beds provided under the program across 12 states/UT in PHCs, CHC, & last mile. Noticeably, certain products have been successfully adopted by Government and Industry stakeholders. The session brought an opportunity to interact with HealthTech Startups for Investment, Technology Transfer providing forward pull.

A report on “जनCARE Healthcare Innovation Challenge Field Deployment” was launched showcasing the impact generated by the जनCARE awardees across the nation.

The session was coordinated by Dr. Chandra Madhavi, Chief Manager-Program, GCI and Ms. Rashmika Singh, Officer-Tech. Transfer & Commercialization



Launch of “जनCARE Healthcare Innovation Challenge Field Deployment Report”

9 healthtech products of startups supported under “जनCARE Innovation challenge” program, were launched at the global platform of Global Bio India 2023 on 5th Dec 2023

The product launch was done by esteemed dignitaries from organizations such as DBT, CSIR, TiE Delhi- NCR, NASSCOM, GCI, and BIRAC. The session also witnessed testimonials from the beneficiaries of the supported startups.

The session was coordinated by Dr. Chandra Madhavi, Chief Manager-Program, GCI and Ms. Rashmika Singh, Officer-Tech. Transfer & Commercialization



Sunfox Technologies Pvt. Ltd.



Savemom Pvt. Ltd.



Giftolexia Solutions Pvt. Ltd.



Arogyam Medisoft Solution



Onward Assist
(Inventigen Technologies Pvt. Ltd.)



Yuvitel Technology Pvt. Ltd.



Avyantra Health Technologies Pvt. Ltd.



Aindra Systems Pvt. Ltd.



Embright Infotech Pvt. Ltd.

Launch of Product developed by जनCARE awardee startups

Super Session on How Artificial Intelligence and Big Data will drive future biotech innovations



The rise of the commercial genomics industry and the expanding use of genomic techniques in biology and medicine have created a market for bioinformatics in biotechnology. This article emphasizes the crucial role of Artificial Intelligence (AI) and Big Data in driving future biotech innovations. The integration of AI algorithms and machine learning in biotechnological research has the potential to revolutionize various sectors, including drug discovery, precision medicine, agriculture, and industry. Collaboration among researchers, data scientists, and industry stakeholders is highlighted for ensuring the availability of high-quality data sets, essential for training AI models and making accurate predictions. Data privacy, security measures, and ethical considerations are emphasized to maintain public trust. While the future of biotechnology with AI holds immense

promise for improving human health, sustainability, and innovation, challenges such as data availability and ethical use of AI must be addressed responsibly.

1. Commercial Genomics Industry Boom:

- The commercial genomics industry's rapid growth has led to a demand for bioinformatics solutions, creating a market for software, hardware, and services.



2. Crucial Role of AI and Big Data:

- AI and Big Data are integral to interdisciplinary biotech innovations, particularly in genomics, playing a pivotal role in advancing research and applications in biology and medicine.

3. Data's Central Role:

- High-quality, diverse, and well- curated data sets are crucial for training AI models and making accurate predictions in biotechnology.

4. Necessity of Collaboration:

- Collaboration among researchers, data scientists, and industry stakeholders is essential to ensure the availability and accessibility of relevant data for AI-driven advancements.

5. Data Privacy and Security Measures:

- Strict measures for data privacy and security must be implemented to protect sensitive information, maintaining public trust in the biotech industry.

6. Revolutionizing Multiple Sectors:

- Integration of AI algorithms and machine learning in biotechnological research has the potential to revolutionized drug discovery, precision medicine, agriculture, and industry.

7. Promise for Human Health and Sustainability:

- The future of biotechnology with AI holds great promise for improving human health, sustainability, and fostering innovation.

8. Challenges to Address:

- Challenges such as data availability, interpretability, and ethical considerations must be addressed responsibly to ensure the ethical and responsible use of AI in biotechnology.





The Science Connect with Society - 'Be Inspired' Series was a public outreach initiative, sought to 'Fast-Track' the Future, by fostering curated and cutting-edge conversations that looked at cohesive solutions, grounded in innovation, to address the complex challenges of the present. The series featured range of speakers including researchers, clinicians, AI experts, industry partners, government scientists, ISRO representatives, and media personalities.

Medicine's Next Frontier: Detect, Decode, Decipher

This session delved into the future of medicine through molecular diagnostics. Dr. Soumya Swaminathan, in a video note, emphasized the significance of genetics in precision medicine. Speakers, Ashish Tripathi, and Dr. Ravi Jasuja, guided by moderator Dr. Ambarish Satwik, explored how deciphering the human genetic code can reveal potential diseases. Highlighting breakthroughs like the HrC Test for early cancer detection, the session instilled optimism about the evolving landscape of healthcare. It was a sneak peek into the transformative world shaping the future of medicine. The session was presented by Indegene.



Tech for Treatment - AI in Life Sciences & Biotech

This session explored AI's impact on life sciences and biotech, featuring speakers Ram Yeleswarapu and Dr. Arun Kumar, moderated by Jaspreet Bindra. They delved into AI's transformative role across the value chain, emphasizing its accelerated influence on healthcare future. The session presented by Indegene, provided a concise demystification of AI's exciting applications in the industry.



Stories of Young Change-Makers - This session provided a platform for young innovators who showcased their awe-inspiring innovations and the impactful work they are undertaking to shape a better future. These stories of young change-makers from various school units highlighted their remarkable contributions and endeavors to positively influence our tomorrow.

- Aarav Wadhvani, Ritwic Verma, Varun Sahni, Aarush Agarwal and Shreedhar Raj shared their journey for developing -Cortx - Your Health, Our Priority - a succinct platform committed to prioritizing users' health through the innovative services or solutions provided by Cortx.



- Sainish Tapuria shared his vision for developing the Pollution Alert App - Empowering Youth, Inspiring Action - a powerful tool designed to empower the younger generation, instilling a sense of responsibility and inspiring proactive measures in the fight against pollution.



India's Interstellar – Chandrayaan, Aditya, Gaganyaan

From the stage of Bharat Mandapam, ISRO's Dr. Sankarasubramanian, Aditya L1, ISRO, Dr Veeramuthuvel PD, Chandrayaan-3, ISRO and Dr. Imtiaz Ail Khan, Director, DHSP, ISRO enlightened audience on India's space exploration and shared inspiring adventures of country's space voyage Chandrayaan, Aditya, Gaganyaan. The ISRO officials offered insights into the accomplishments of the agency and shared views on ambitions and future programs of India's space research in the near future. The session was convened by Vishnu Som and aired on NDTV's program Left, Right & Centre on December 5, 2023, 09:30 p.m.



Link to the aired program: <https://www.ndtv.com/video/news/left-right-centre/meet-the-stars-of-chandrayaan-aditya-gaganyaan-743792?type=video>

The Ethics of AI - We Don't Need No Thought Control

This session featured a candid talk on "The Ethics of AI - We Don't Need No Thought Control!" where Prof Toby Walsh, UNSW AI Institute, Laureate Fellow and Jaspreet Bindra explored AI's ethical dimensions. Discussing neural networks and the responsibility tied to their power, the session touched on concerns like disinformation threats and AI's impact on employment. Prof. Walsh shared his views on role of machines in shaping the future of humanity and presented valuable insights into the ethical considerations of AI, emphasizing the need for responsible development and regulation of AI including deep-fakes.

Mr. Soumanil Mukherjee, Office of Principal Scientific Adviser (PSA) shared the Story of Manthan and how it is empowering India's Innovators. He spoke about various change-making initiatives by the Office of the PSA, Government of India that are encouraging and supporting the young minds across India.



Stories of Young Change-Makers

Session also hosted the young innovators who shared their awestruck innovations and their inspiring work aiming for a better future.

- **Arjun Sharma** shared his inspiring journey of Fast Radio Bursts: Unlocking Cosmic Whispers.
- **Sahil Seshadri, Lakshya Goswami, Uday Singh, Sourish Grover, Armaan Sharma** (Grade IX students of Shiv Nadar School, G. NOIDA) shared their inspiring invention, Zephyrus -A Breath of Fresh Innovative Air. Zephyrus is a cost-effective, eco-friendly, portable dual functioning cooling and heating device specially designed to cater to the needs of people in rural India.



Are We What We Eat? Sustainable Foods for the World's Survival

In the session titled "Are We What We Eat? - Sustainable Foods for the World's Survival," Prof Sonal Chaudhary from the University of York in conversation with Ms. Gargi Rawat from NDTV discussed the need for a sustainable global food system. Prof. Chaudhary emphasized the complexity of achieving inclusivity, environmental sustainability, and nutritious diets. She discussed how initiatives at the local level can instill systemic changes to bring back climate resilient grain into our fields and plates. She stressed on the need for collective action and localised decision making for a resilient and sustainable food system.

Dr. Penna Krishna Prashanthi, Senior Consultant Physician delivered a closing remark on the R&D prospects of Biotechnology sector in India. She discussed how industrial biotechnology has the potential to transform the healthcare, agriculture and contribute towards environmental sustainability. She mentioned that the future of biotechnology demands a confluence of academia, industry and policy makers for innovations and scientific outputs to translate into the society.



Startup Pitching

The “Startup Pitches” Session at Global Bio India 2023 served as a pivotal platform for emerging startups in the biotech sector to showcase their innovations, network with Industry Investors and secure potential investments. The primary objective of the session was to facilitate interaction between promising biotech startups and potential investors, mentors, and collaborators, fostering innovation and growth within the sector.

The session was spread over the three days of the event i.e 4th to 6th December 2023 at Startup Pavillion during Global Bio India 2023. Over 35+ national and 5 international startups participated, each given a specific time for stage appearance to present their pitch to a panel of esteemed investors and industry experts. Startups were required to present their business models, innovative solutions, market potential, and financial projections through concise pitches followed by Q&A sessions. Throughout these three days, approximately 35 investors and industry leaders participated actively.



In September 2023, the BIRAC AlkemiStartup mentorship program (powered by Alkemi Growth Capital LLP), launched national wide specifically for biotech startups. This unique initiative provides a special one-on-one mentoring opportunity, enabling companies to carefully craft business plans and pitch decks ready for investors. On December 5, 2023, during the event's second day, startups from the program got an exciting opportunity to showcase their innovative ideas to a distinguished group of investors at GBI 2023.

Startups showcased a wide array of innovations including Healthcare- Therapeutics, Vaccines, Devices, Diagnostics, Agriculture, Industrial Biotechnology, secondary Agriculture



and others, reflecting the sector's dynamism. The panel of judges and attendees included industry experts, venture capitalists, and mentors who provided feedback and insights. Beyond pitches, the session facilitated meaningful interactions, allowing startups to forge new collaborations, partnerships and gain mentorship.

Angel, VC investors expressed interest in some of the startups who pitched recognizing their innovative solutions, market traction, and growth potential. Discussions around funding, partnerships, and mentorship opportunities were prevalent, indicating the session's success in bridging the gap between startups and investors.

The Startup Pitches Session at Global Bio India 2023 provided spotlight to the emerging biotech talent, fostering investor connect and catalyzing collaborations with stakeholders.





BIOTECHNOLOGY INDUSTRY RESEARCH ASSISTANCE COUNCIL

(A Government of India Enterprise)

INVITES PROPOSALS

for

DEVELOPMENT, VALIDATION & PRE-COMMERCIALIZATION OF PRODUCTS/TECHNOLOGIES

in the areas of

**Healthcare; Energy and Environment;
Agriculture and Secondary Agriculture;
Veterinary Sciences and Aquaculture**

under

i4 (Intensifying the Impact of Industrial Innovation)

Supports industry through

- SBIRI (Small Business Innovation Research Initiative)
- BIPP (Biotechnology Industry Partnership Programme)

PACE (Promoting Academic Research Conversion to Enterprise)

Supports academia through

- AIR (Academic Innovation Research)
- CRS (Contract Research Scheme)

For online application and scheme details,
please log on to BIRAC website (www.birac.nic.in)

Last date for submission of proposals

20th JANUARY, 2024

(up to 5:30 pm)

For queries, please contact

GM & Head - Investment, BIRAC. Email: investment.birac@gov.in



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Grand Challenges India (GCI)'s Call on

Accelerating Catalyzing Solutions for Climate Change's Impact on Health in India

Jointly Supported by
the Department of Biotechnology (DBT), Ministry of Science and Technology,
Government of India & the Bill & Melinda Gates Foundation (BMGF)

About the Program

The call seeks innovative and transformational solutions aimed at strengthening, adapting and mitigating the impact of climate change on health and healthcare system.

Proposals are solicited on

- Locally led, system-level innovations that are scalable and sustainable
- Cross-cutting solutions at the intersection of multiple scientific and engineering disciplines

Submission Closes
on
31st January 2024

Please visit the BIRAC website at www.birac.nic.in for more information, online registration and submission of proposal

For queries, please write to us with subject line 'Climate change and Health' at mdpmubmgf.birac@nic.in (Mission Director, GCI, BIRAC), pmubmgf3.birac@nic.in (Senior Program Manager, GCI, BIRAC)



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GATES foundation



Grand Challenges India (GCI) call on

Accelerating Catalysing Solutions for Climate Change's impact on Agriculture in India

Jointly Supported by
Department of Biotechnology (DBT), Ministry of Science and
Technology, Government of India &
Bill & Melinda Gates Foundation (BMGF)

About the Program

The call seeks innovative research and pilot/feasibility projects utilizing transdisciplinary approaches to better adapt to mitigate or reverse the combined, deleterious effects of climate change on agriculture in India.

We are interested in

1. Locally led, system-level innovations that are scalable and sustainable.
2. Cross-cutting solutions at the intersection of multiple scientific and engineering disciplines.

Application Open
3rd December, 2023 to
31st January, 2024

Please visit the BIRAC website at www.birac.nic.in for more information
and online registration and submission of proposal

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GATES foundation



**Grand Challenges India (GCI)'s
Request for Proposal (RFP)
on**

**Fundamental and Innovative Research in
Cachexia Tuberculosis to Address the
Needs and Gaps in India**

*Jointly Supported by
the Department of Biotechnology (DBT), Ministry of Science and
Technology, Government of India & Bill & Melinda Gates Foundation (BMGF)*

**Cachexia in Tuberculosis
program seeks
consortia-based research
interests with a strong rationale
aiming to explore and address
the unresolved questions
surrounding cachexia
tuberculosis**

**Call Opens
28th November 2023**

*Please visit the BIRAC website at www.birac.nic.in for more information
and online registration and submission of proposal;*

*For queries, please write to us with subject line 'Cachexia Tuberculosis' at
mdpmubmgf.birac@nic.in (Mission Director, GCI, BIRAC),
pmubmgf3.birac@nic.in (Senior Program Manager, GCI, BIRAC)*



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