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the business of Bio & Health Sciences

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How India is Pulling in European Life Sciences Sector

"The ecosystem of Gujarat is ready to promote deep tech areas of biotech product development" - Manish Gurwani, Mission Director, Gujarat State Biotechnology Mission (GSBTM)- **30**

BBC incurs Rs 152 Cr loss as 12 labs gutted in devastating fire - **15**

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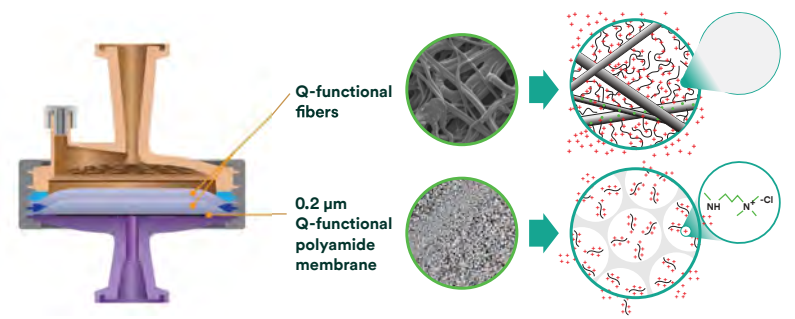

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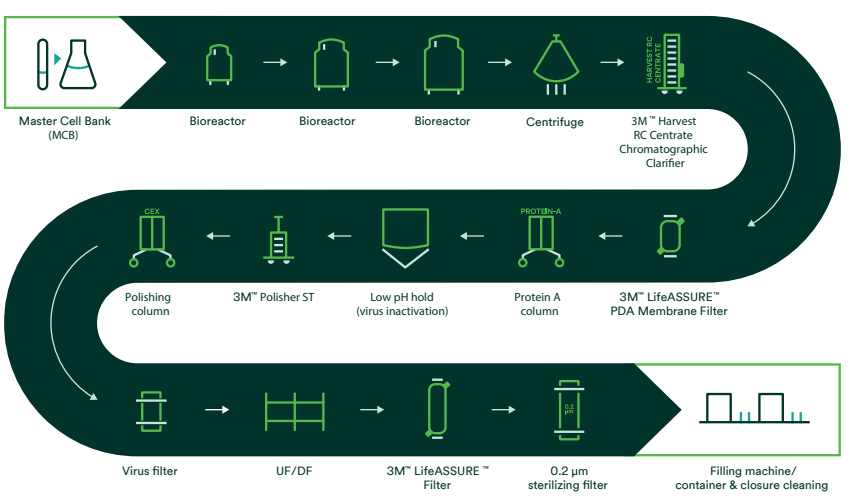

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Acknowledgement/ Feedback

The last five years have witnessed significant shifts in the global job market and in India, particularly in the sector of healthcare and pharma. Technological advancements, economic fluctuations, geopolitical shifts have played a significant role in shaping the dynamics of skill demand and salary trend of the industry. Thank you for publishing the article by Teamlease Digital in your esteemed publication.

- Riya Singh, New Delhi

Ireland stands out as a thriving hub in the life sciences and medtech space. As the only English-speaking country in the EU post-Brexit, Ireland boasts an exceptionally supportive and pro-business government, offering a mature medtech ecosystem and a stable regulatory regime. The write-up by IDA Ireland in BioSpectrum's January 2025 edition looks great. Thank you!

- Poulomy Dey, Mumbai

Thank you so much for publishing the interaction with Novo Medi Sciences focusing on their advancements in vaccines within the Indian pharmaceutical landscape.

- Bhavana Pathak, Mumbai

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Letter from Publisher

Ravindra Boratkar
Publisher &
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MD, MM Activ Sci-Tech
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Dear Readers,

The partnership between organisations in India and Europe emerged as a pivotal success in the global life sciences arena while the world was battling COVID-19 throughout 2020 and 2021. This collaboration resulted in distribution of over two billion doses of the COVID-19 vaccine created by the University of Oxford and AstraZeneca from the United Kingdom, produced by Serum Institute of India (SII) in India, to over 170 nations starting in November 2020. The vaccine self-sufficiency and manufacturing was noted as a major achievement in the worldwide lock step effort against COVID-19. India attained this milestone owing to its economical manufacturing in the biopharmaceutical sector.

India's advantages, including cost-effective manufacturing, a skilled workforce, and a growing but robust research ecosystem, are making it an attractive destination for outsourcing and joint ventures. In the recent past, the life sciences industry witnessed many partnerships between India and Europe and this trend is only going to increase in the coming years. Our lead story captures how significant strides have been made in contract research, academic and research space, vaccine production, and biosimilars; yet there remains potential for greater collaboration in new drug discovery sciences.

With a remarkable yearly growth rate of more than 15-20 per cent, there are already over 10,000 medtech startups in India as of 2024. This growth demonstrates the industry's capacity to tackle important healthcare issues with cutting-edge solutions, such as the integration of AI, IoT, and nanotechnology. Government initiatives like 'Startup India' and 'Make in India' have played a key role in this expansion by motivating entrepreneurs to concentrate on producing high-quality, reasonably priced medical devices. Our correspondent, in an article, highlights the fact that ensuring success of these medtech innovations lately is the presence of cross-functional leadership teams, where one founder can focus on the science and technology, while the other can take the commercialisation aspect forward.

Gujarat is home to over 200 biotechnology firms and a flourishing startup scene that includes prestigious R&D and academic institutions. The state is a well-known centre for biomanufacturing, with a biotech industry that brings in about Rs 12,000 crore annually. The Gujarat State Biotechnology Mission (GSBTM), which has been in operation for 20 years, is playing a significant role in this area. To support the growth of the biotech industry, the Government of Gujarat (GoG) formed GSBTM in April 2004 under the Department of Science and Technology. In our conversation, Manish Gurwani, the Mission Director of GSBTM, who recently assumed leadership, goes into detail about how the organisation's most recent biotechnology policy is revolutionising the Gujarat biotech industry.

India's pharmaceutical sector, valued at about $31 billion in 2023, holds immense promise, evolving rapidly to claim its place as a cornerstone of the global healthcare landscape. India supplies 31 per cent of US pharmaceutical imports and boasts a 15 per cent growth rate in exports, solidifying its position as a leader in affordable medicine. These figures emphasise both opportunities and challenges that demand a sharp focus on operational excellence (OpEx). We have carried an expert article that points out that achieving OpEx is imperative to ensure sustainability and competitiveness in a rapidly evolving market.

I am sure you will find this edition a great read.

Thanks & Regards,

Ravindra Boratkar,
Publisher & Managing Editor

COVER 19

How India is Pulling In European Life Sciences Sector

When the world was struggling with COVID-19 in 2020 and 2021, the partnership between Indian and European organizations proved to be a historic accomplishment in the field of global life sciences. It was able to deliver more than two billion doses of the COVID-19 vaccine, which was developed by the University of Oxford and AstraZeneca, both from the United Kingdom, and manufactured by Serum Institute of India (SII) in India, to more than 170 countries starting in November 2020, marking a significant milestone in the global pandemic response. India's economical production in the biopharma industry allowed it to reach this significant milestone. India's advantages, including cost-effective manufacturing, a skilled workforce, and a growing but robust research ecosystem, are making it an attractive destination for outsourcing and joint ventures. These collaborations have led to the development of innovative healthcare solutions and have expanded market access for both Indian and European firms. The India-Europe collaboration in life sciences has evolved into a dynamic partnership fostering innovation, investment, and shared expertise. While significant strides have been made in contract research, vaccine production, and biosimilars, there remains potential for greater collaboration in new drug discovery sciences. As European companies expand their R&D and manufacturing presence in India, the mutual focus on academic research and healthcare resilience positions this partnership as a global leader in life sciences innovation.

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BBC incurs Rs 152 Cr loss as 12 labs gutted in devastating fire

15

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Top Video

Ayush Jain,
CEO, Mindbowser Inc talks about how wearables' data can be useful for medical interventions.

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Dr Rashika Sharma,
Clinical Psychologist at Emoneeds talks about how virtual reality is transforming anxiety and post-traumatic stress disorder (PTSD) treatment.

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Regulars

Ensuring Drug Availability or Batting for Pharma?

Pricing medicines is quite a delicate issue. The government and regulator try to control the prices at a reduced rate to make them affordable to low-income and poor people. In a welfare state, the government is duty-bound to protect the interests of marginalised groups. However, too much pulling of the string to lower the price poses a danger of non-availability of drugs as companies will not comply.

The drug price regulator, the National Pharmaceutical Pricing Authority (NPPA), was recently faced with a similar situation, drawing flak from the people's representatives. The NPPA has approved a hike of 50 per cent in the prices of drugs required to treat asthma, glaucoma, TB, mental health disorders and Thalassemia.

Not surprisingly, the parliamentary standing committee on chemicals and fertilisers has pulled up the NPPA for this hike impacting 11 drugs, on October 15. The NPPA has, evidently, crossed the limit of hike set in the related statute.

The regulator is expected to monitor drug prices to ensure that manufacturers do not increase them by more than 10 per cent in a year. But in this case, the prices were allowed to increase by 50 per cent in just one go, crossing the 10 per cent bar. To do this, the NPPA seems to have invoked Para 19 of the Drugs (Prices Control) Order (DPCO) of 2013, which authorises the regulator to alter prices under exceptional circumstances.

The parliamentary committee has pulled up the regulator by expressing concern over allowing the disproportionate hike which will hit the poorest of the poor. The committee has also demanded a detailed explanation from the NPPA for the sharp price rise.

However, from the contention of the NPPA, it appears that the regulator has faced a typical dilemma of price versus non-availability. It claimed that the suppliers of the drug formulations had applied for discontinuation of supplies due to unavailability. The NPPA has claimed that its mandate is to ensure the availability of essential drugs at affordable prices. Hence, the price control should not create a situation of unavailability of the drugs. That has compelled the regulator to approve the price rise of 50 per cent.

But affordability is also one of the essential components of price regulation. In March 2024, the government had constituted a high-level committee which was mandated to achieve affordability and accessibility of medicines while fostering innovation and growth of industry. If such steep price hikes are allowed, then it will amount to the non-availability of those drugs to at least certain sections of society, who will not be able to afford them. Though the situation may have improved a bit for some sections due to schemes like Ayushman Baharat, the high price of drugs may remain out of bounds for most economically backward sections of society.

NPPA will have to find a solution to maintain the delicate balance of price and affordability. It is a fact that it cannot ignore the industry's claims of cost. However, one important question is why a situation arose where a steep 50 per cent hike had to be approved to meet the rising cost and whether there has been so much rise in the cost. However, the larger issue is not only restricted to approval of the cost hike of these particular drugs. It is about deciding prices in general in the future also.

Maybe the new committee will have to find an answer to the dilemma of price control, availability and market freedom. It is expected to focus on institutional reforms within NPPA and incentives for the pharma industry to sustain growth and exports. It is good that the industry viewpoint will be represented as the committee comprises even the industry representatives along with the officials. The expectation is both will be able to find a more practical solution to the problem. BS

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CSIR and AIIMS in New Delhi sign MoU for collaborative research in healthcare domain

The Council of Scientific and Industrial Research (CSIR), New Delhi and All India Institute of Medical Sciences (AIIMS), New Delhi have signed a Memorandum of Understanding (MoU), aimed to provide a formal basis for initiating interaction between the two organisations to harness their respective strengths to advance medical research, enhance healthcare delivery, and tackle critical health challenges in India through the collaboration. This strategic partnership marks a significant step forward in leveraging combined expertise and resources to address critical healthcare challenges and innovate solutions for improved patient outcomes. Through the MoU, CSIR and AIIMS strive to establish a synergistic partnership aimed at propelling medical research forward, enhancing healthcare delivery, and tackling pressing health challenges in India through joint research initiatives, knowledge sharing, innovation development, training and capacity building etc., leveraging the combined expertise of CSIR's scientific research and AIIMS's clinical insights. Joint development of new medical technologies, devices, and diagnostics are envisaged.

Centre extends revised Schedule M deadline

The government has extended the deadline for implementing the revised Schedule M of the Drugs and Cosmetics Act, providing much-needed relief to small and medium-sized pharmaceutical companies. Initially set to take effect on January 1, 2025, the new compliance deadline has been extended to December 31, 2025. The Union Ministry of Health and Family Welfare formalised this decision through a draft notification issued on January 4, 2025. This extension is specifically aimed at helping pharmaceutical manufacturers with an annual turnover of less than Rs 250 crore (approximately $29 million). To benefit from this extension, companies must register with the Central Drug Standards Control Organisation (CDSCO) and submit detailed upgradation plans by April 4, 2025. After registration, these companies will have an additional 12 months to comply with the updated Good Manufacturing Practices (GMP) standards, with audits beginning three months after registration to monitor progress.

Health Ministry strengthens services and infrastructure in Assam

Union Minister of Health and Family Welfare Jagat Prakash Nadda recently visited key healthcare facilities in Assam, including the Lokopriya Gopinath Bordoloi Regional Institute of Mental Health (LGBRIMH), Mangaldai District Civil Hospital, and AIIMS Guwahati, to inaugurate new initiatives and review ongoing healthcare projects aimed at enhancing medical services for the people of the region. During his visit to LGBRIMH in Tezpur, the Union Health Minister inaugurated the institute's new Library and Informatics Centre. Expressing his satisfaction with the institute's growth, Nadda emphasised the need to introduce more super specialty departments to better serve the Northeast and the nation as a whole. Nadda also visited Mangaldai District Civil Hospital in Darrang district, where he laid the foundation stone for a state-of-the-art 50-bedded Critical Care Block (CCB). The CCB, to be constructed with a financial support of Rs 23.75 crore, will significantly improve access to advanced healthcare services for the people of Assam.

Anthem Biosciences files DRHP for Rs 3,395 Cr IPO

Bengaluru-based Anthem Biosciences Limited, an innovation-driven and technology-focused Contract Research, Development and Manufacturing Organisation (CRDMO) with fully integrated operations spanning across drug discovery, development and manufacturing has filed the draft red herring prospectus (DRHP) with capital markets regulator, SEBI to raise funds through an initial public offering (IPO). The IPO of the Bengaluru-based company comprises an Offer for Sale (OFS) of equity shares aggregating up to Rs 3,395 crore by the Selling Shareholders. The company which was incorporated in 2006, has two operational manufacturing facilities in India, Unit I (Bommassandra) and Unit II (Harohalli), both in Karnataka, with an aggregate annual custom synthesis capacity and fermentation capacity of 270 kL and 142 kL, respectively, as of September 30, 2024. The third manufacturing facility - Unit III in Harohalli is under construction and is expected to be fully operational in the first half of 2025.

GangaGen secures additional $7.9 M from CARB-X to address infections caused by MDR Klebsiella pneumoniae

GangaGen has secured the third instalment of its phased funding grant from CARB-X (Combating Antibiotic-Resistant Bacteria Biopharmaceutical Accelerator), the global initiative led by Boston University to support the development of antibacterial products aimed at diagnosing, preventing, and treating drug-resistant infections.
The grant follows GangaGen's successful completion of Lead Optimisation milestones within its ongoing CARB-X partnership for its "Klebicin programme," which is designed to address infections caused by multidrug-resistant Klebsiella pneumoniae. CARB-X has already committed $7.9 million to support the pre-clinical development of GangaGen's Klebicin project. Contingent of meeting specific milestones and subject to availability of funds, further funding may be available to advance the pre-clinical phase and demonstrate safety in human volunteers.

Asia Healthcare Holdings receives additional $150 M investment from GIC

Asia Healthcare Holdings (AHH), the single specialty hospitals focused healthcare platform backed by GIC and TPG, has announced that GIC, Singapore's sovereign wealth fund, will invest an additional $150 million in AHH. This follows GIC's first investment of $170 million in AHH in February 2022. AHH, one of South Asia's largest healthcare delivery platforms, has a unique approach to investing in and growing different single speciality healthcare companies under one enterprise. To date,

AHH has invested approximately $300 million across hospital chains in Oncology, Mother & Childcare, Urology & Nephrology, and IVF & Fertility under daycare specialty. AHH's platform today includes Motherhood Hospitals, Nova IVF, and Asian Institute of Nephrology & Urology (AINU) hospitals. Motherhood is a pan-India chain of mother and childcare hospitals offering comprehensive services from pre-conception to post-birthing care for women and a wide range of services under paediatric care, including the largest network of Neonatal Intensive Care Units (NICU). Nova is a leading fertility solutions provider offering best-in-class IVF services across South Asia.

Maxivision Super Speciality Eye Hospital commits Rs 200 Cr for Gujarat expansion

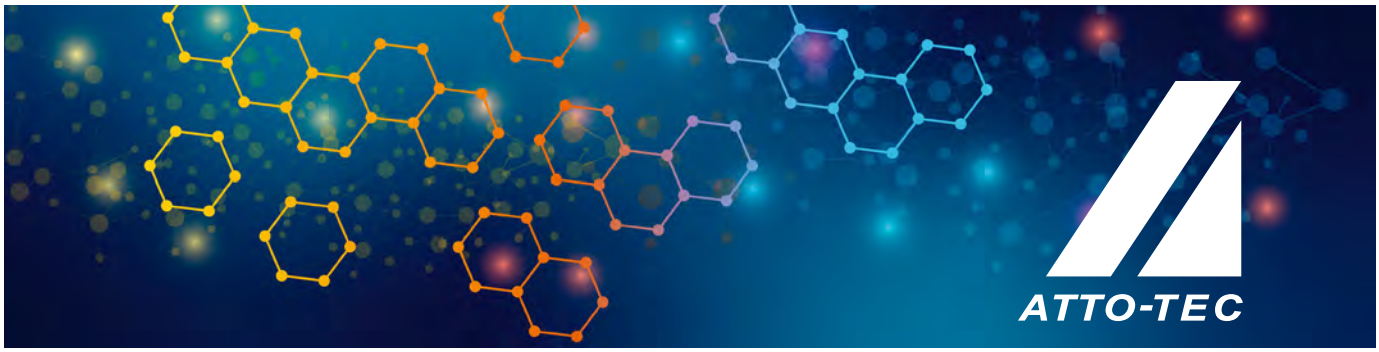
Maxivision Super Speciality Eye Hospital, one of India's leading eye care networks, is gearing up for a major expansion in Gujarat. With an extensive presence across Telangana, Andhra Pradesh, Tamil Nadu, Kerala, and Gujarat, the group aims to strengthen its footprint in the state significantly within the coming year. The ambitious plan includes an investment of Rs 200 crore and the establishment of 25 hospitals, generating over 300 employment opportunities within the next year. Having entered Gujarat in 2023 with four hospitals in Rajkot, one in Jamnagar, and one in Morbi, Maxivision Super Speciality Eye Hospital has partnered with Dr V.V. Sapovadia, a reputed ophthalmic practitioner and the leader of the largest eye care group in the Saurashtra region. The expansion plan includes new facilities in Bhuj, Surendranagar, Porbandar, Upleta, Bhavnagar, and Junagadh. In 2024, Maxivision Super Speciality Eye Hospital expanded to Surat in partnership with Dr R.K. Sachdev, a leading ophthalmologist in the region, established two hospitals. Plans are underway to add two more units in Surat and extend operations to Navsari and Bharuch. The group also aims to collaborate with prominent practitioners in Vadodara, Himmatnagar, and Mehsana. A state-of-the-art super specialty centre is planned in Ahmedabad as a Greenfield project. This facility will feature cutting-edge technology and provide a platform for local surgeons to cater to advanced eye care needs.

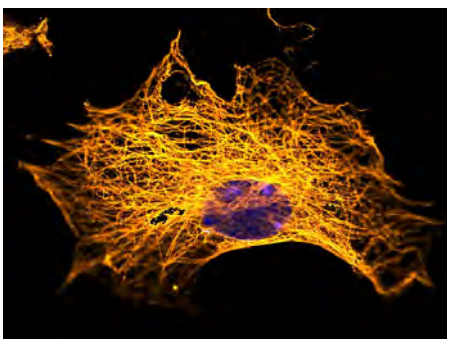
Supriya Lifescience invests Rs 120 Cr in new API production block

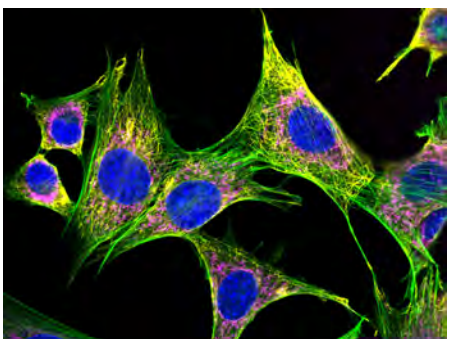
Supriya Lifescience Limited (SLL), a leader in the pharmaceutical industry, has taken another significant step on its ambitious growth trajectory with the inauguration of its new multipurpose Active Pharmaceutical Ingredients (APIs) production block, Module E, at the Lote Parshuram site, in Maharashtra. The facility, developed with an investment of approximately Rs 120 crore, adds a substantial capacity of 335 kiloliters to the company's operations. This expansion boosts the Lote Parshuram capacity by over 55 per cent, increasing it from 597 KLPD (kilo liters per day) to 932 KLPD. The new production block is designed to support SLL's strategic focus on expanding its R&D capabilities and scaling up its pipeline of innovative products. Several new products in niche therapeutic areas are nearing the commercialisation stage. The facility is tailored to support the company's backward integration model, ensuring economies of scale and a competitive edge. It is spread across 5,000 square meters and structured over four levels, the facility enables efficient operations and safe workflows. The facility houses 33 reactors, comprising stainless steel and glass-lined varieties, with capacities ranging from 1.6 KL to 16 KL.

Aster DM Healthcare and Quality Care India ink definitive agreements for merger

AIIMS Delhi to invest over Rs 300 Cr in digital infrastructure
Artificial Intelligence (AI) is revolutionising everything from patient care to health communication and All India Institutes Of Medical Sciences (AIIMS), Delhi, is investing over Rs 300 crore in digital infrastructure to ensure that every stakeholder, patients, doctors, and researchers benefits from this innovation, the premier institute's Director Dr M Srinivas said at a recently held event at AIIMS. Dr Srinivas also emphasised that leveraging AI to simplify and disseminate health information will empower patients and improve their engagement with healthcare systems, ultimately leading to better health outcomes. By addressing long-standing challenges in accessibility and trust, AI promises to empower patients with knowledge, enabling them to make informed decisions about their health.







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NURA plans Kerala foray to launch AI-driven health screening centre in Kozhikode

NURA, an advanced diagnostic venture between Fujifilm Healthcare and Dr Kutty's Healthcare, is all set to foray into Kerala by opening its artificial intelligence (AI)-driven Health Screening Facility in Calicut (Kozhikode). The debut in Kerala marks a significant milestone in NURA's endeavour to provide early detection and comprehensive health screening services to the people of India. This Calicut centre is not just a screening facility, but it is a global training centre and experiential hub where people can experience the advantages of cutting-edge healthcare technologies, which NURA will be expanding globally. With this centre NURA aims its presence across the country and to strengthen its position as a global leader in the preventive healthcare market. The Calicut centre is designed to screen up to 50 people a day, offering world-class screening test experience with advanced technology, to facilitate faster and accurate detection of diseases at very early stages. Currently, the centre offers Cancer and Metabolic syndrome screening but Locomotive syndrome screening and treatment plan for aging society will come up soon. In addition, NURA has an ambitious expansion plan, eyeing new centres in Chennai, Pune, Ahmedabad and other major Indian cities by the next year.

Mankind Pharma, Innovent Biologics to revolutionise cancer care with immunotherapy Sintilimab

Mankind Pharma and Innovent Biologics have announced a groundbreaking partnership to exclusively license and commercialise sintilimab, an advanced PD-1 immunotherapy, in the Indian market. This strategic collaboration aims to address the critical challenges in cancer treatment and improve patient access to innovative therapeutic options in the region. Sintilimab, marketed as TYVYT (sintilimab injection) in China, is a high-quality PD-1 immunoglobulin G4 monoclonal antibody co-developed by Innovent and Eli Lilly. Its mechanism of blocking the PD-1/PD-L1 pathway reactivates T-cells, enhancing the body's natural ability to target and eliminate cancer cells. The drug has demonstrated remarkable efficacy and favourable safety across multiple major cancer types with eight approved indications in China, including non-small cell lung cancer, liver cancer, gastric cancer, oesophageal cancer, endometrial cancer and Hodgkin's lymphoma.

AIIMS signs MoU with Wipro GE Healthcare to establish 'AI Health Innovations Hub'

All India Institute of Medical Sciences (AIIMS), New Delhi, has signed a Memorandum of Understanding (MoU) with Wipro GE Healthcare, a leading global provider of healthcare technologies, to establish an AI Health Innovations Hub. The new hub will focus on the development of products and solutions that enhance healthcare delivery and outcomes through more precise diagnosis, innovative treatment protocols, and real-time patient data tracking. As the technology partner, Wipro GE Healthcare will invest around $1 million over the next five years to co-develop, test, and deploy intelligent systems and workflow solutions in cardiology, oncology, and neurology. As clinical partner for the hub, AIIMS will provide multi-modal clinical inputs, and function as a real-world clinical environment for evaluation, feedback, and deployment of GE HealthCare's AI-enabled solutions.

BBC incurs Rs 152 Cr loss as 12 labs gutted in devastating fire

A massive fire broke out at the Bangalore Bioinnovation Centre (BBC) on January 14 morning, causing extensive damage but fortunately resulting in no casualties. The devastating incident, which occurred at the Helix Biotech Park within the IBAB Campus in Electronics City Phase 1, reportedly destroyed as many as 12 research laboratories and recorded a total estimated loss of Rs 152 crore. BBC, a 50,000-square-foot facility situated on a 10-acre campus, operates under the Karnataka Biotechnology and Information Technology Services (KBITS), Department of IT, BT and Science & Technology, Government of Karnataka.

The fire originated on the second floor of the building, which had recently been revamped to accommodate a greater number of startups. This entire floor was completely gutted, while significant damage extended to the first and ground floors due to interconnected HVAC lines. Critical common infrastructure, including the Bangalore Bio Bank, Cleanroom facility, Flow Cytometry units, HVAC systems, and AC units, was severely affected. Startups housed within the centre also experienced devastating losses, with damage to their consumables, intellectual property products, and proprietary equipment.

Preliminary investigations revealed that the fire was caused by improper management of flammable solvents in one of the laboratories. Despite prior advisories to limit the storage of inflammable chemicals and using a designated open storage area, the mishap occurred, spreading rapidly through the interconnected systems. A security guard noticed the fire and promptly alerted the fire department at around 4.30 am. Four fire engines, including an Aerial Ladder Platform from a private firm, managed

"Join hands with us in shaping the future of innovation. Let's make a lasting difference together!"

What exactly caused the fire?

Preliminary observations indicate that the fire originated in a lab at the second floor, occupied by the startups at an area of 7,000 Sq ft potentially due to improper solvent storage. The exact cause is under investigation by the Forensic Department.

How much damage has been done, both financially and infrastructurally?

The second floor was completely gutted, while extensive damage was also substantial to first and ground floors including startups labs, infrastructure and equipment. The second floor was operational with nine incubation suites occupied by startups which were completely damaged. A fully equipped Biobank Facility, a first-of-a-kind repository centre to store human biological samples required for undertaking R&D for the development of new technologies or therapy supporting academics, startups and corporates got damaged. Electronic health & medical records and DNA bank repository facility "Bangalore Biobank" established at BBC with the exclusive support of Karnataka Innovation & Technology Society (KITS), Dept of IT BT and S&T Government of Karnataka got damaged.

Besides, flow cytometry facility, a high throughput screening facility, 4baseCare Precision Health Private Limited facility and Anabio Microbial Investigation Lab facility essential for immunophenotyping, oncology, cell sorting, cell cycle analysis, apoptosis detection, cell proliferation assays, clinical microbiology, pharmacology, genetics and immunological research, HVAC Units, AC Units among others were damaged completely.

How are your industry partners and the government supporting BBC?

The Government of Karnataka and industry partners are diligently supporting BBC and its startups for navigating the situation. Priyank Kharge, Minister of Electronics, Information Technology & Biotechnology, Government of Karnataka along with Dr Ekroop Caur, Secretary to the Government of Karnataka, Darshan H.V, MD-KITS and Parnika Pavanaram, GM, BT, KITS visited BBC after the fire incident. They held the priority meeting of startups affected by fire to address their immediate concerns and discussed how to help them recover swiftly. The BBC team and Government of Karnataka are working diligently to restore operations and aid affected startups. Additionally, the team is also assessing the procurement of common equipment to support the startup immediate needs. Each startup situation is carefully being examined to understand the extent of the damage and to provide tailored assistance. The department is exploring ways in which current policies, CSR Initiatives and corporate funding can be utilised to mitigate the losses to further support the startup and BBC recovery. Additionally, a separate consultation team of life sciences infrastructure experts also being created to assess the damage to facilities and provide a realistic timeline for reconstruction efforts. G Parameshwara, Home Minister of Karnataka and Prashant Kumar Thakur, Director General of Police & Director General, Fire & Emergency Services also visited BBC.

Appeal to Support Innovation and Entrepreneurship at BBC

We call upon companies eligible for CSR contributions to extend their invaluable support to the Bangalore Bioinnovation Centre (BBC) and its startups. Your assistance can play a pivotal role in helping us recover swiftly from recent challenges and continue our mission of fostering innovation and entrepreneurship. Your support in providing state-of-the-art equipment, infrastructure, and operational facilities will enable startups to rebuild, thrive, and flourish within the vibrant startup ecosystem we are nurturing. Together, we can empower groundbreaking ideas and solutions that drive societal impact and economic growth. Join hands with us in shaping the future of innovation. Let's make a lasting difference together! BS

- Bangalore Bioinnovation Centre (BBC) Team

to bring the fire under control by 8:30 a.m.

The Minister for Information Technology and Biotechnology Priyank Kharge visited the site to assess the damage. The estimated financial losses are staggering, with startups reported damages ranging between Rs 80 crore and Rs 110 crore, while BBC's infrastructural loss is estimated at approximately Rs 42 crore.

The startups most severely impacted include Fermbox and Phyxx 44 (three labs each), Immunitas (two labs) and Galore Tx, Ikesia, Ajitha Prodrug and Yokogawa (one lab each). Besides other affected startups include Anabio, Atrimed Pharma, 4baseCare, Anava Bio, Pandorium, Oxonexe, Zhichu, and Presude Lifesciences, among others.

The BBC and its stakeholders now face a daunting recovery process as they assess the full extent of the damage and formulate plans to rebuild the facility. Despite the significant setback, efforts to restore the infrastructure aim to support and reignite the spirit of innovation within the biotech ecosystem.

After interacting with the affected startups and BBC team, ***Priyank Kharge, Minister for IT & BT, Government of Karnataka*** said, "Karnataka's leadership in biotech innovation, production, and exports is built on the hard work of incubators like BBC and the startups. While the loss of critical innovations and intellectual property is a setback, we are committed to helping them rebuild."

He assured the startups that alternate spaces are already being finalised to ensure they can resume operations as soon as possible. The government is also assessing the procurement of common equipment to meet their immediate needs. A tailored approach will be adopted to understand the extent

Plans to strengthen the infrastructure, to avoid similar accidents in future

- Quarterly basis fire safety training and mock drills will be conducted for BBC staff and startups with support of ELCITA.
- Separate fire safety officers will be recruited from every startup to work with the BBC fire safety team.
- Stringent rules & guidelines for the startups handling chemicals will be made & proper fire safety guidelines and advises will be taken as a precautionary measure from fire department to avoid any future incident.

- Bangalore Bioinnovation Centre (BBC) Team

Startups gravely affected

1. Fermbox Bio Pvt Ltd
2. Phyxx 44 Pvt Ltd
3. Ajitha Prodrug Pvt Ltd
4. Galore Tx Pvt Ltd
5. Ikesia Biologics Pvt ltd
6. ImmunitasBio Pvt Ltd
7. Yokogawa

Startups affected in moderation

1. Atrimed Pharma Pvt Ltd
2. 4basecare Pvt Ltd
3. Anabio Technologies Pvt Ltd
4. Anava BioPvt Ltd
5. Pandorum Technologies Pvt Ltd
6. OxonEx Biologics Pvt Ltd
7. Presude Lifesciences Pvt Ltd
8. Zhichu Foods Pvt Ltd

Industry Response & Support

We at Gene Technologies are deeply saddened by the recent fire at the BBC and the impact it has had on the startups and infrastructure there. As an authorised vendor for Bio-Rad, we stand in full support of the affected organisations during this challenging time. Our team is committed to assisting in any way possible, whether through the supply of critical equipment, facilitating the recovery of lost resources, or providing technical expertise. We understand the importance of innovation in biotechnology and the resilience of the teams at the BBC. Together with the efforts of the Government of Karnataka and the wider industry, we remain hopeful that the affected startups will recover swiftly and continue to drive advancements in the sector. We are here to support the recovery process and will collaborate with all stakeholders to ensure a smooth and successful restoration of operations.

- Gene Technologies
(vendor for Bio-Rad Laboratories)

We will be glad to help. Been involved in restoring a multiuse lab facility that met such an accident personally in Hyderabad.

- Rx Propellant

80 seats day and 80 seats night, I'm happy to share! 7 lacs + 7 lacs = 14 lacs rental at HSR completely free for up to 4 weeks! Disruptive technologies must not get disrupted because of fire. We are ready to hire (welcome) when you are on fire! But pay me (not the rent, but a share of your success) - only if you succeed later!

- Govardhan M Reddy,
Serial, Entrepreneur, CEO & Co-Founder,
TrafficAI Vision

We are offering to provide wet space and access to our R&D labs and pilot plant to a few startups that have been affected by fire at BBC for up to three months. Those interested can visit the R&D center and contact Dr Bhupender Singu for coordination.

- Zenfold Sustainable Technologies

IBioM has started a group for THE BBC INCUBATEES and those who are offering help: to provide wet lab dry lab and access to R&D labs. Repair of equipment / essential supplies of reagents and consumables ... Please join the group and contact Skandan of IBioM for coordination. Our duty as a part of the ecosystem.

- IBioM

of damage faced by each startup, with customised assistance to facilitate recovery.

Kharge emphasized that additional support mechanisms are under review, including leveraging current policies, CSR initiatives, and corporate funding to mitigate losses. Recognising the complexities of navigating insurance claims, he committed to providing necessary support for a smoother claims process. A consultation team comprising life sciences infrastructure experts will also be formed to evaluate the damage and provide a realistic timeline for reconstruction.

Reaffirming Karnataka's commitment to the biotech sector, Kharge concluded, "My government, along with the industry ecosystem, stands firmly with these innovators, and we will do everything possible to ensure they recover quickly."

Sharing her views on the tragic incident ***Kiran Mazumdar Shaw, Executive Chairperson, Biocon & Biocon Biologics and Chairperson, Vision Group on Biotechnology, Government of Karnataka*** said "Tragic to see this happen to a vibrant incubation centre that houses so many innovative biotech startups caused by one irresponsible startup that did not follow the norms. Years of cutting-edge efforts reduced to ashes. Fire is a major risk factor that must be addressed with serious preparedness."

In a statement BBC noted "We regret to inform you about a recent fire incident at our facility, which has caused significant damage to our infrastructure and equipment. We are relieved to share that no injuries were reported, and we remain committed to addressing the situation with resilience and determination. As a result of this incident, we will be temporarily halting operations to ensure a thorough recovery process. Despite this setback, our commitment to supporting startups and fostering innovation remains unwavering. We are working diligently to restore normalcy and resume our activities as soon as possible. During this challenging time, we seek your understanding and support to help us rebuild stronger and continue driving innovation forward. We sincerely thank everyone for standing with us, and we will keep you updated on our progress". BS

How India is Pulling In European Life Sciences Sector

When the world was struggling with COVID-19 in 2020 and 2021, the partnership between Indian and European organizations proved to be a historic accomplishment in the field of global life sciences. It was able to deliver more than two billion doses of the COVID-19 vaccine, which was developed by the University of Oxford and AstraZeneca, both from the United Kingdom, and manufactured by Serum Institute of India (SII) in India, to more than 170 countries starting in November 2020, marking a significant milestone in the global pandemic response. India's economical production in the biopharma industry allowed it to reach this significant milestone. India's advantages, including cost-effective manufacturing, a skilled workforce, and a growing but robust research ecosystem, are making it an attractive destination for outsourcing and joint ventures. These collaborations have led to the development of innovative healthcare solutions and have expanded market access for both Indian and European firms. The India-Europe collaboration in life sciences has evolved into a dynamic partnership fostering innovation, investment, and shared expertise. While significant strides have been made in contract research, vaccine production, and biosimilars, there remains potential for greater collaboration in new drug discovery sciences. As European companies expand their R&D and manufacturing presence in India, the mutual focus on academic research and healthcare resilience positions this partnership as a global leader in life sciences innovation.

The total global pharma market in calendar year 2023 was $1508 billion and is expected to touch $1544 billion in 2024 registering a growth of 2.4 per cent. North America, the leading region with an expected share of $511.79 billion in 2024 is likely to see an increase of 3.73 per cent over previous year's share of $493.38 billion. Asia Pacific is the leading region in terms of percentage growth of 3.86 per cent in 2024 over the previous year's growth rate of 3.14 per cent with a share of $467.04 billion in 2024 as against $449.69 billion in 2023 and $436 billion in 2022. The European region which recorded a growth rate of 4.95 per cent in 2023 with a share of $410.71 billion in 2023 will witness a flat growth in 2024 as its share will be around $410.71 billion, according to the IQVIA report.

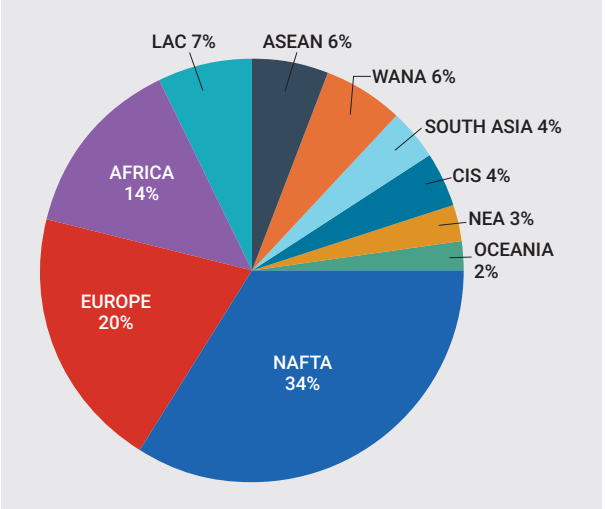
The global generic market that holds 32.65 per cent of the total pharma market as per Fitch Solutions has touched $492.78 billion in 2023. India is predominantly a generic player. Major generic producers in the world besides India, include China producing $100-110 billion, USA producing roughly $ 65-70 billion, Germany producing $ 20-22 billion, Russia producing $14-15 billion. India's generic share in the global generic market is $ 44.78 billion ($21.53 billion exports + $23.25 billion domestic) working out to a percentage share of 9.2 per cent. India's exports of pharmaceuticals during April 2023 till March 2024 has been to the tune of $27.84 billion with a growth of almost 9.66 per cent.

The North American Free Trade Agreement (NAFTA), a trade agreement between the United States, Canada, and Mexico region continues to be the topmost region as an exporting partner for India with share of $9,569.52 million in financial year 2023-24 registering growth of 14.64 per cent over previous year's share of $8,347.24 million. Exports to the region of Europe has grown by 11 per cent and is accountable for more than 20 per cent of India's exports. Europe has a strong and robust pharma industry and in fact, it is the very crucible from which the global modern pharma industry has evolved. Considering this growth, 2371 pharma companies have received Certification of Suitability (CEP) from European regulatory authorities (as of April 2024) and 1943 pharma companies have got accreditation from UK MHRA (The Medicines and Healthcare products Regulatory Agency) and Market authorisations.

This progress has been witnessed due the strong relations between India and European Union (EU) that has a cooperation agreement with India dating from 1994, which allows the setting up of specialised subgroups, including on pharmaceuticals. In 2005, the EU and India adopted a joint action plan for the India-EU strategic partnership, endorsing the establishment of a working group on pharmaceuticals. This working group started its activities in July 2006, with annual meetings ever since.

The European Medicines Agency (EMA) supports India in applying international standards, particularly for good manufacturing practice (GMP) and clinical trial activities, and facilitates capacity building and regulatory contacts. Due to these activities, among the top 10 Indian pharmaceutical export destinations five are from the European region namely UK (second), Netherland (fourth), France (fifth), Belgium (seventh) and Germany (eighth).

India's Pharma exports in FY-24 (by regional percentage)



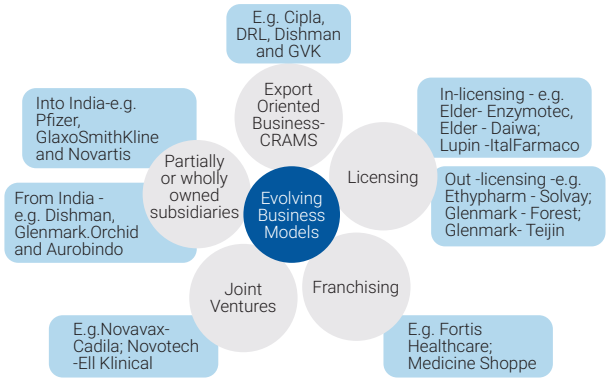
Source: 20th Annual Report 2023-2024 by Pharmexcil

India's Pharma Exports to Top 10 Countries during 2023-24 ($ million)

Rank	Country	2021-22	2022-23	% Change	2023-24	% Change	% Share
1	USA	7108.22	7547.00	6.17	8728.60	15.66	31.35
2	U K	706.00	647.58	-8.28	784.32	21.12	2.82
3	South Africa	612.68	866.97	7.23	718.54	9.37	2.58
4	Netherlands	460.58	594.31	29.04	699.16	17.64	2.51
5	France	513.69	569.80	10.92	667.49	17.14	2.40
6	Brazil	583.75	642.67	10.09	655.57	2.01	2.35
7	Beiglum	449.06	714.92	59.20	574.41	-19.65	2.06
8	Germany	529.28	523.03	-1.18	567.42	8.49	2.04
9	Russia	598.24	573.20	-4.19	518.47	-9.55	1.86
10	Nigeria	588.34	515.92	-12.31	508.12	-1.51	1.82

Source: 20th Annual Report 2023-2024 by Pharmexcil

India's evolving business model



Source: PwC report 'Global pharma looks to India: Prospects for growth'

Taking the advantage of these agreements at the government levels, the European companies have been investing in R&D and manufacturing facilities, as well as opening Centres of Excellence (CoEs) and Global Capability Centres (GCCs) in India. Through these approaches, leading European pharmaceutical and biopharmaceutical companies are actively expanding their footprint in India. Their strategies include fostering research and development (R&D), investing in Contract Research Organisations (CROs) and Contract Development Manufacturing Organisations (CDMOs), and establishing partnerships to enhance large-scale production capabilities. These collaborations focus on areas like healthcare innovation, digital health, biotechnology, vaccine production, biosimilars, and biologics manufacturing, essential for global healthcare resilience.

Many European companies have not only been sourcing products from Indian manufacturers for years, but have been now setting up their own production facilities in India. As many pharma companies turn to more collaborative business models, India having strong IT talent and skill sets in areas like artificial intelligence (AI), machine learning (ML), cloud computing, IoT, big data, analytics and many new areas is likely to play an increasingly important partnering role.

In July 2024, Sanofi, a French multinational pharmaceutical and healthcare company announced a €400 million ($437 million) investment in its Global Capacity Centre (GCC) in Hyderabad, while Denmark's Novo Nordisk, in October 2024, partnered with AI startups and expanded its leadership team, planning an increase in its workforce by 2025 to handle vast clinical trial datasets. UK-based AstraZeneca is investing Rs 250 crore to expand its GCC in India, underscoring its commitment to leveraging India's talent pool and enhancing its global operations.

It may be noted that Sandoz, a Swiss company that focuses on generic pharmaceuticals and biosimilars and now the generics arm of Novartis, has two manufacturing plants and a research centre for developing formulations and processes, based in Thane. GlaxoSmithKline (GSK), a British multinational pharmaceutical and biotechnology company has facilities based in Mumbai and Nashik. The GSK operates in India through its subsidiary, GlaxoSmithKline Pharmaceuticals Ltd, offering a range of prescription medicines and vaccines across various therapeutic areas. GSK has a longstanding presence in India, contributing to the healthcare sector through its products and initiatives. Roche, the Swiss pharmaceutical firm has entered into promotion, marketing, and distribution partnerships with Indian companies Cipla and Entero. These collaborations aim to improve access to Roche's oncology, rheumatology, immunology, and nephrology medicines in India. Mid-tier global pharma companies are present as well – Lonza, and Ethypharm all have manufacturing or research facilities in India.

Healthcare Innovation and Digital Health

The rapidly expanding technological infrastructure in India is creating a strong base for enabling global pharma companies to enhance their operations, drive innovation, and achieve cost efficiencies, earning India a significant competitive advantage. The country's robust IT infrastructure supports various aspects of operations, including R&D, data management, and digital health initiatives. For instance, Swiss giant Roche is harnessing India's robust technology ecosystem to forge ahead in the digital landscape, crafting innovative solutions that resonate on a global scale. Roche has been actively collaborating with India's life sciences industry to enhance healthcare access and innovation.

Roche has expanded its digital pathology open environment through strategic collaborations aimed at supporting pathologists and scientists in cancer research and diagnosis by leveraging cutting-edge AI technologies. Roche initiated its first Digital Center of Excellence in India, in Pune early 2024 - a co-location for Roche Information Solutions, Roche Diagnostics Solutions R&D, and Roche Informatics teams encompassing a diverse team of professionals from data engineers and software engineers to architects and user-experience professionals working to build cutting edge products in digital healthcare. Roche Information Solutions India evolved from Roche's 2017 acquisition of Viewics', a startup with its engineering centre in Pune. To cite

a similar example, AstraZeneca's Global Innovation & Technology Centre (GITC) in Chennai drives the company's digital journey and technology innovation, housing over 50 per cent of its global IT staff. GITC offers services in software engineering, cybersecurity, IT infrastructure, cloud, hyper-automation, AI/ML, extended reality, and IoT. To this end, in July 2024, AstraZeneca India Private Limited (AZIPL), the Global Capability Centre (GCC) of AstraZeneca, announced an investment of Rs 250 crore ($30 million) to expand its GITC in Chennai, Tamil Nadu, which includes close to 1,300 roles focused on driving innovation, enhancing efficiency, and streamlining operations across the company globally.

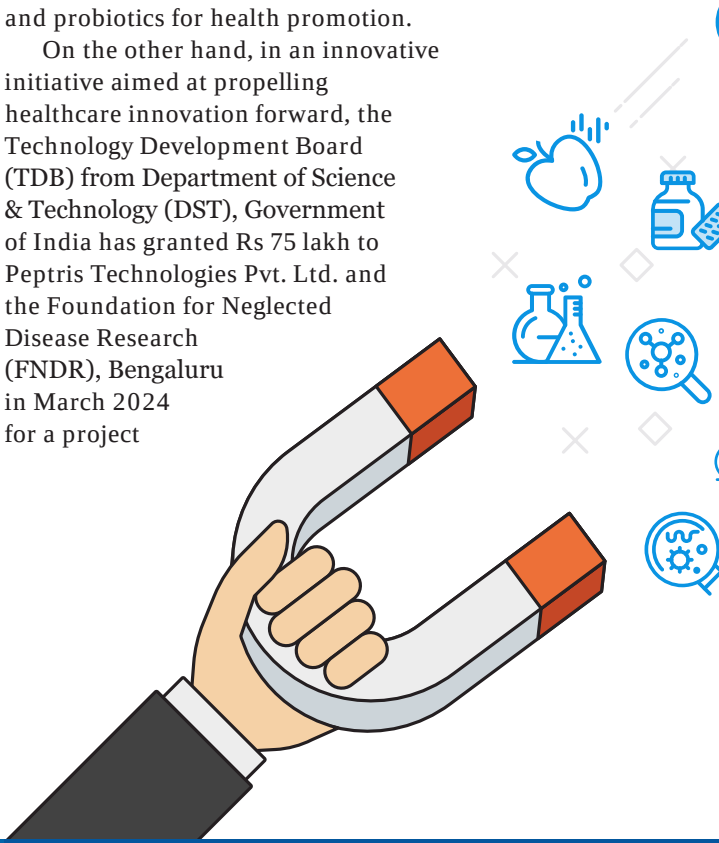
In July 2024, the Startup Incubation and Innovation Centre (SIIC), the technology business incubator of the Indian Institute of Technology Kanpur (IITK), entered into an agreement with Boehringer Ingelheim India, a leading global pharmaceutical company, to foster a partnership for fostering healthcare innovations. Boehringer Ingelheim's grant supports Manastik Technologies, an SIIC-incubated startup focused on developing India's inaugural tele-neurorehabilitation app for multidisciplinary dementia care and diagnosis, focussing on the unmet need for comprehensive mental health strategies to address the growing burden of dementia and other mental health disorders in India. Using DADT (Dementia Application and Diagnosis & Tracking) technology, Manastik caters to the dementia ecosystem by providing those in need with personalised help curated by experienced doctors and neurohealthcare professionals. Boehringer has pledged a grant to Manastik to validate their app, raise awareness, and conduct dementia screening campaigns nationwide in India. Boehringer Ingelheim India has also signed an MoU with RED.Health ambulance services, the emergency care expert, to strengthen emergency pre-hospital stroke care services in India. This collaboration aims to advance emergency healthcare and support timely, life-saving medical interventions, advancing stroke care and adding value to the Stroke Care Eco-system in the country.

Bengaluru-based Ayush Hospital Soukya is set to embark on its first global expansion since its inception in 2002. Addressing the growing global demand for integrative medicine, Soukya will establish its first international unit in Portugal with an investment of Rs 220 crore. The state-of-the-art residential medical institute, expected to be operational by late 2027, will offer its unique treatment approach combining traditional, time-tested natural systems of medicine such as Ayurveda, Homeopathy, Yoga, Naturopathy, and other complementary therapies for treating various chronic and lifestyle conditions.

Biotechnology

When we look at the biotechnology space, Merck Life Science in India has signed a Memorandum of Understanding (MoU) with GeNext Genomics, an emerging biotech company. This collaboration creates a unique competitive edge by combining local expertise with global biomanufacturing capabilities. By partnering with Merck for their world-class expertise in biomanufacturing, Genext Genomics can now offer comprehensive solutions that support the growth of India's biotech ecosystem. Bengaluru-based SKAN Research Trust (SKAN), promoted by Indian entrepreneur Ashok Soota, has announced a joint research project with the UK-based Wellcome Sanger Institute and the University of Newcastle, to study early somatic mutations in blood stem cells that researchers believe drive several cancerous and non-cancerous conditions. SKAN Research Trust, and UK-based Quadram Institute Bioscience have announced a collaborative initiative to apply the cutting-edge TraDIS-Xpress platform to study the action of traditional medical compounds on bacteria, thereby aiding in the reformulation and development of novel antibacterial regimens. TraDIS-Xpress is Quadram's proprietary genetic sequencing platform that is at the forefront of efforts to uncover new antimicrobial agents and develop better prebiotics and probiotics for health promotion.

On the other hand, in an innovative initiative aimed at propelling healthcare innovation forward, the Technology Development Board (TDB) from Department of Science & Technology (DST), Government of India has granted Rs 75 lakh to Peptris Technologies Pvt. Ltd. and the Foundation for Neglected Disease Research (FNDR), Bengaluru in March 2024 for a project



"ANAGRANINF - Development of a Novel Class of Antibiotics Against Gram-Negative Bacterial-Infections." The project is a joint effort between Indian and Spanish companies, with ABAC Therapeutics Sl serving as the Spanish Project Lead.

Miltenyi Biotec, a global biotechnology company headquartered in Germany announced a few strategic collaboration/partnership plans aligning with the Indian industry last year. The German company partnered with the Faridabad-based Translational Health Science and Technology Institute (THSTI) in July 2024. This collaboration aims to enhance research and development in cell and gene therapy, focusing on cancer and sickle cell disease. The partnership encompasses capacity building, technology transfer, training programmes, and joint research initiatives to translate scientific advancements into medical therapies.

Earlier in 2024, Miltenyi Biotec also signed an MoU with BIRAC, a public sector enterprise under the Department of Biotechnology (DBT). This agreement is designed to facilitate the development of chimeric antigen receptor (CAR) T-cell therapies and other CGT services in India.

The collaboration focuses on making advanced therapies more accessible and affordable by promoting local development and manufacturing, aligning with India's 'Made in India' initiative in the CGT sector. These strategic initiatives underscore Miltenyi Biotec's interests in advancing biomedical research and therapy in India through collaboration with local institutions and investment in state-of-the-art facilities. The company plans to catalyze the development of CAR T-cell therapies, with the prospect of implementing centralised and point-of-care CAR T-cell treatments across Indian hospitals. This initiative aligns with Miltenyi Biotec's goal to bring new therapies to patients with high unmet medical needs. These strategic initiatives underscore Miltenyi Biotec's dedication to fostering innovation and collaboration within India's life sciences sector, aiming to enhance healthcare outcomes through advanced cell and gene therapies.

In October 2024, the International Centre for Antimicrobial Resistance Solutions (ICARS) from Denmark has signed a partnership with the Centre for Cellular and Molecular Platforms (C-CAMP), under the aegis of the India AMR Innovation Hub (IAIH), to address the growing threat of Antimicrobial Resistance (AMR) across the One Health spectrum. As part of this partnership, ICARS will provide funding support over the next five years, along with technical expertise and a network for implementation research in collaboration with C-CAMP, aligning with India's National Action Plan on AMR (NAP 2.0). Additionally, ICARS and C-CAMP will work together to mobilise further funding to expand their efforts and create a wider impact. This collaboration can be deemed as a cluster-to-cluster collaboration, between the two independent research and knowledge centres.

CROs and CDMOs

Besides biotechnology, we witnessed partnerships between India and the EU in CRO and CDMO sectors during last year. Akums Group, a Delhi-based CDMO, has announced a strategic long-term agreement with a globally renowned pharmaceutical company to manufacture and supply pharmaceutical formulations in the European market. Under this collaboration, Akums Group will produce and supply multiple SKUs of oral liquid formulations, which the partner company will market across various European countries.

Veeda Lifesciences (earlier called Veeda Clinical Research), an Ahmedabad-based full-service CRO, has acquired Heads, a privately held European CRO, which specialises in conducting clinical trials in oncology. The acquisition provides Heads with a strong operational platform and an opportunity to expand its expertise and capabilities to the Indian and South-East Asian markets. India's diverse

demographic profile provides a unique opportunity to conduct clinical trials, especially in therapeutic areas including oncology, diabetes, hypertension, infectious diseases, and special diseases. With this acquisition, Veeda's global pharmaceutical and biotech clients can now leverage the unique and unparalleled suite of early to late-phase CRO services across Europe, the US, and Asia Pacific. Piramal Pharma Solutions, the CDMO business under Piramal Pharma Limited (PPL), with operations in North America, Europe and Asia announced the opening of an expanded ADC manufacturing facility in Scotland; The commissioning of the facility represents the culmination of a £45 million investment.

Mumbai-based Blockchain-As-A-Service company Qila.io has partnered with global clinical research centre Mascot Spincontrol to bring about transparency in clinical research through blockchain. The collaboration aims to ensure that clinical trial data is secure, transparent, and tamper-proof so that the integrity of research outcomes is maintained. Mumbai-based Mascot Spincontrol is a clinical research centre formed through a joint venture between Mascot Universal and Spincontrol France. The European Company KrKA and Laurus Labs announced a joint investment of Rs 2000 crore in Genome Valley, a high-technology business district located in Hyderabad, for the establishment of finished pharmaceutical products and biopharmaceutical manufacturing in the cluster.

Roche has partnered with Cipla to promote, market, and distribute its oncology and rheumatology/immunology drugs in India. This collaboration aims to improve access to treatments for complex diseases. In collaboration with Entero, Roche focuses on the nephrology segment, ensuring wider availability of its nephrology drugs across the Indian market.

Vaccines

The collaboration is not restricted to CRO and CDMO sectors, but externed to vaccine areas as well. France-based Valneva SE, a specialty vaccine company, and Pune-based Serum Institute of India (SII) announced an exclusive license agreement for Valneva's single-shot chikungunya vaccine that enables the supply of the vaccine in Asia. The companies will work urgently to bring the vaccine to the Indian market, and certain other Asian countries, subject to local regulatory approvals. Under the agreement, the companies will conduct a technology transfer of the current drug product manufacturing process.

Besides, SII is joining a growing Coalition for Epidemic Preparedness Innovations (CEPI) network of vaccine producers in the Global South to support more rapid, agile, and equitable responses to future public health disease outbreaks. The addition of SII to the Norway-based CEPI manufacturing network will be a significant boost to vaccine production efforts in Global South regions and will mean the world is better prepared to achieve the 100 Days Mission to develop new vaccines against known or novel infectious diseases within three months of a pandemic threat being recognised.

India's global pharma leader Dr. Reddy's Laboratories has entered into an exclusive partnership with Sanofi Healthcare India to promote and distribute their vaccine brands across private markets in India. Under the arrangement, Dr. Reddy's will have exclusive rights to promote and distribute Sanofi's well-established and trusted paediatric and adult vaccine brands Hexaxim, Pentaxim, Tetraxim, Menactra, FluQuadri, Adacel, and Avaxim 80U.

Academic research-driven collaborations

The collaboration and partnerships are not restricted to firms but extended to research and academic institutions as well. Horizon Europe, the European Union's flagship research and innovation program for the period 2021-2027, designed to address global challenges and enhance Europe's competitiveness, has established several partnerships with Indian academic and research institutions to promote collaboration in life sciences. Joint projects are aimed to focus on developing rapid vaccine manufacturing pipelines, addressing AMR, and enhancing preparedness for future pandemics. The primary goals of Horizon Europe in the context of EU-India collaboration in life sciences include advancing healthcare research, enhancing researcher mobility and co-funding, and promoting joint research initiatives to tackle global health challenges, including disease prevention, diagnostics, and treatment.

Facilitating the exchange of researchers and innovators between the EU and India to foster knowledge sharing and capacity building is an important factor of the Horizon Europe initiative. For example, Indian researchers are eligible for Marie Skłodowska-Curie Actions (MSCA) fellowships, which support mobility and training for researchers at all career stages. This facilitates Indian researchers' participation in European research projects and vice versa. Indian institutions like Council of Scientific and Industrial Research (CSIR), DBT, and DST are participating in a co-funding mechanism to fund and develop joint research projects and healthcare innovation.

Highlight of India-Europe collaborations 2024

Indian companies with location	Company with European headquarter	Collaboration
Roche Information Solutions India, Pune	Roche, Basel, Switzerland	Digital healthcare, AI in cancer research and diagnosis, digital pathology, IT infrastructure, R&D, and user-experience design.
AstraZeneca Global Innovation & Technology Centre (GITC), Chennai	AstraZeneca, Sweden	Digital innovation, IT services, AI/ML, cybersecurity, cloud, hyper-automation, extended reality, and IoT.
SIIC Incubator at IIT Kanpur (Manastik Technologies), Kanpur	Boehringer Ingelheim, Germany	Healthcare innovation - development of tele-neurorehabilitation app for dementia care
RED.Health Ambulance Services, Bangalore	Boehringer Ingelheim, Germany	Emergency pre-hospital stroke care services and stroke care ecosystem advancements
GeNext Genomics, Nagpur	Merck Life Sciences, Germany	Biomanufacturing and biotechnological solutions to support India's biotech ecosystem.
SKAN Research Trust, Bangalore	Wellcome Sanger Institute and University of Newcastle, England	Research on early somatic mutations in blood stem cells linked to cancerous and non-cancerous conditions.
SKAN Research Trust, Bangalore	Quadram Institute Bioscience, England	Application of TraDIS-Xpress platform for studying traditional medical compounds' action on bacteria, aiding antibacterial regimen development.
Peptris Technologies & FNDR, Bangalore	ABAC Therapeutics Sl, Spain	Antibiotic development (co-funding by DST, India)
Translational Health Science and Technology Institute (THSTI), Faridabad	Miltenyi Biotec, Germany	Research and development in cell and gene therapy, focusing on cancer and sickle cell disease, capacity building, technology transfer, and training.
BIRAC, New Delhi	Miltenyi Biotec, Germany	Development of CAR T-cell therapies and other CGT services, promoting local manufacturing and making therapies accessible and affordable under the 'Made in India' initiative.
Veeda Clinical Research, Ahmedabad	Heads (CRO), Greece	Acquisition to expand clinical trial capabilities in oncology, leveraging operations in Europe, US, and Asia Pacific.
Qila.io, Mumbai	Mascot Spincontrol (joint venture of Mascot University and Spincontrol, France)	Using blockchain technology to ensure transparency, security, and tamper-proof clinical trial data.
Laurus Labs, Hyderabad	KrKA, Slovenia	Rs 2000 crore joint investment for pharmaceutical and biopharmaceutical manufacturing in Genome Valley, Hyderabad.
Serum Institute of India, Pune	Valneva SE, France	Exclusive license agreement for Valneva's single-shot chikungunya vaccine. Includes technology transfer for manufacturing and supply to Asia, including India, subject to regulatory approvals.
Dr. Reddy's Laboratories, Hyderabad	Sanofi Healthcare, France	Exclusive partnership to promote and distribute Sanofi's vaccine brands in private markets in India.
Serum Institute of India, Pune	Coalition for Epidemic Preparedness Innovations (CEPI), Norway	Support equitable vaccine production for Global South

In August 2024, the CSIR in India and the European Union launched a co-funding initiative under the MSCA Staff Exchanges, part of the EU's Horizon Europe programme. This scheme enables CSIR institutes to engage in joint research projects with European partners, facilitating the secondment of scientific and technical staff to European research organisations for knowledge-sharing and collaborative activities. The funding, available from 2025 to 2027, aims to promote balanced researcher mobility and foster long-term collaborations between India and Europe.

Initiated and funded by the French government, the 'Franco-Indian Campus in the Field of Life Sciences for Health' project brings together over 60 French and Indian universities, research institutions, labs, hospitals, startups, and corporates to jointly develop and deliver higher education and research programmes in life sciences for health. The campus aims to become a hub for cutting-edge research, development, and innovation across the 'One Health' paradigm, addressing global health challenges through a multidisciplinary approach. The initiative saw collaborations/partnerships in the past year including several notable Indian educational research institutes like IIT-Delhi, IISER, Asoka University, VIT Vellore, JIPMER Pondicherry, CIMAP Lucknow, NCBS, and Indian Institute of Science (IISc), Bangalore. And, in a nutshell, these Indo-French collaborative initiatives based in the past one to two

years, and continuing into the upcoming year aim to address societal needs and tackle global health challenges by advancing the training of individuals and fostering innovation -

1. Establish a multidisciplinary Franco-Indian virtual campus to address evolving societal needs by integrating research in fundamental biology with engineering, chemistry, physics, applied mathematics, bioinformatics, and social sciences.

2. Tackle global health challenges, such as infectious diseases, neurodegenerative disorders, and cancers, through complex, multidisciplinary approaches encompassing genomics, neurosciences, ecology, and social sciences.

3. Foster innovation via the ILIADE platform, which focuses on analyzing the pharmaceutical properties of plants using advanced techniques like artificial intelligence and offers specialized academic programs in medicinal plants and AI applications for health data.

4. Advance research and training in molecular biology and therapeutic innovation by leveraging cutting-edge tools in bioinformatics and artificial intelligence.

On similar lines, in November 2024, University College London (UCL) and the Indian Institute of Science (IISc), Bengaluru, launched a new phase of their strategic partnership to expand innovative work in healthcare. The collaboration focuses on co-creating significant new research capabilities in areas such as digital health, quantum technology, artificial intelligence, and medicine. The partnership includes plans for collaborative PhDs, faculty exchanges, and research fellowships, aiming to train future physicians and advance healthcare solutions.

A partnership between the European Molecular Biology Organisation (EMBO) and India's DBT offers Indian researchers access to EMBO funding schemes, enhancing opportunities for the Indian scientific community. EMBO and DBT are conducting a nationwide dissemination exercise to raise awareness about these schemes. The CSIR has multiple exchange agreements with DAAD, Germany, enabling annual scientist visits and fostering collaboration.

India has bilateral Science & Technology (S&T) cooperation agreements with 83 countries, actively collaborating with 44 nations, including the EU, France, Germany, and the UK. Three bi-national S&T Centers operate under intergovernmental agreements with France, Germany, and the USA. The Indo-French Centre for Promotion of Advanced Research (IFCPAR/CEFIPRA) facilitates integrative collaborations across Indian science ministries, and the Indo-German Science & Technology Centre (IGSTC) focuses on advanced industrial research partnerships and developing joint knowledge pools to address global challenges. India is engaging in numerous bilateral agreements to promote biomedical research, with partnerships including the Indian Council of Medical Research (ICMR).

No Turning Back

India has signed many agreements with countries of the European Union on a bilateral basis and in consortium. India has been working on a Trade and Economic Partnership Agreement (TEPA) with European Free Trade Association (EFTA) countries comprising Switzerland, Iceland, Norway & Liechtenstein. India- EFTA signed a TEPA in March last year. TEPA will give impetus to "Make in India" and Atmanirbhar Bharat by encouraging domestic manufacturing in the pharmaceutical sectors, among others.

Complementing the above scenario, it is worth mentioning that India's advantages, including cost-effective manufacturing, a skilled workforce, and a growing but robust research ecosystem, are making it an attractive destination for outsourcing and joint ventures. These collaborations have led to the development of innovative healthcare solutions and have expanded market access for both Indian and European firms.

The collaboration between India and Europe in the life sciences sector has emerged as a cornerstone for global healthcare innovation, offering significant advancements in therapeutics, vaccines, and biologics. Over recent years, this partnership has expanded across academic research, contract research and manufacturing, and healthcare resilience efforts, fostering mutual growth and international progress. India and Europe have established robust collaborations in the life sciences sector through academic research partnerships as well. These collaborations encompass joint research initiatives, funding schemes, and institutional partnerships aimed at advancing scientific knowledge and addressing global health challenges.

The India-Europe collaboration in life sciences has evolved into a dynamic partnership fostering innovation, investment, and shared expertise. While significant strides have been made in contract research, vaccine production, and biosimilars, there remains potential for greater collaboration in new drug discovery sciences. As European companies expand their R&D and manufacturing presence in India, the mutual focus on academic research and healthcare resilience positions this partnership as a global leader in life sciences innovation. BS

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When can India become a global gateway for the medtech industry?

Over 70 per cent of innovations by Indian medical technology startups are powered by digital integration, driven by a convergence of factors accelerating the industry's growth, according to a recent report by EY. Additionally, government initiatives are playing a pivotal role in positioning India as a global medtech hub. And the growing US FDA approvals is providing the required recognition to Indian medical technologies. Would these developments eventually lead to import independence for the Indian medtech sector?

The Indian medtech market, valued at $12 billion in 2023-24, is projected to reach $50 billion by 2030, with India's global market share set to grow from 1.65 per cent to 10-12 per cent over the next 25 years. Further, Indian medtech exports reached $3.8 billion in 2023-24, with the US as the primary market. Although India is still import dependent in the medtech sector, the growing number of startups in this space are moving the tailwinds in a global direction.

Over the past few years, medtech startups have emerged as trailblazers, using innovation to bridge gaps, solve pressing challenges, and unlocking new possibilities in healthcare. This growth is particularly crucial in India, where healthcare challenges include vast geographical disparities, increasing disease burdens, and affordability constraints.

For example, artificial intelligence (AI)-driven diagnostic solutions are helping healthcare providers detect diseases at earlier stages, while wearable devices are empowering individuals to monitor their health in real time. As a result, Indian medtech startups are actively integrating digital solutions such as AI, IoT, and cloud computing to democratise healthcare with portable devices, remote monitoring and screening tools.

Taking a few examples, BrainSight AI, a Bengaluru-based deep-tech neuroscience startup, is revolutionising the diagnosis and treatment of complex brain disorders through its technology platform, VoxelBox. Likewise, another Bengaluru-based startup 4baseCare is using advanced genomics and digital health technology to offer cutting-edge precision oncology solutions.

The developer of the country's first indigenous surgical robotic technology, Gurugram-based startup SS Innovations, the visionary force behind Made-in-India SSI Mantra Surgical Robotic System, has recently achieved a historic feat in Indian medical science by becoming the first and only company in India to receive Central Drugs Standard Control Organization (CDSCO) approval for Telesurgery and Teleproctoring, signifying a monumental leap in surgical robotics.

Medprime Technologies, a Thane-based medical device company focused on developing cutting-edge healthcare solutions in diagnostics, has announced the launch of Micalys, first-of-its-kind innovative AI-integrated digital microscopy platform that is set to revolutionise digital pathology in India.

"As of 2024, the number of medtech startups has surpassed 10,000, with an impressive annual growth rate of over 15-20 per cent. This expansion is a testament to the sector's ability to address critical healthcare challenges through innovative solutions, including AI, IoT, and nanotechnology integration. Government programmes such as Startup India and Make in India have been instrumental in fostering this growth, encouraging entrepreneurs to focus on affordable, high-quality medical devices", said ***Dr Vishal Gandhi, Chief Executive Officer, BioRx Venture Advisors.***

The Health Ministry, in early November last year, announced the launch of a scheme to strengthen the medical device industry. With an outlay of Rs 500 crore, this scheme is a comprehensive one which targets critical areas of the medical device industry, covering manufacturing of key components and accessories, skill development, support for clinical studies, development of common infrastructure and industry promotion.

At present, this scheme is providing regulatory support for 6 technology-based startups funded by Pfizer INDovation Programme. These include- Aarca Research (diagnosing Peripheral Artery Disease), Babycue (POC device for childhood diarrhoea), Biolockey Healthworks (at-home test for cervical cancer), Brela Innovations (breast pads for women for early detection of breast cancer), RNT Health Insights (AI-assisted early gastric cancer detection software) and Utopic Tech (POC test for kidney health).

"The government has approved these startups for assistance under the research linked incentive scheme, and also approved their products for support for pre-clinical and clinical studies. We hope to see these innovations entering the market in the next 2-3 years", said Dr Arunish Chawla, the then Secretary, Department of Pharmaceuticals, Ministry of Chemicals and Fertilizers, Government of India while announcing the assistance.

Out of these startups, Chandigarh-based startup RNT Health Insights is gaining global attention as it received second US FDA breakthrough device designation for oesophageal cancer detection tool in January this year. The startup has previously received US FDA breakthrough device designation for its early gastric cancer detection tool.

Touching global heights

Besides RNT Health Insights, there are numerous medtech startups in India that are developing technology integrated products and launching them in the global market. Mumbai-based Qure.ai is transforming radiology with AI-powered medical imaging, providing faster and more accurate diagnoses. Recently it has achieved a major milestone with the 510(k) US FDA clearance for its latest AI-powered chest CT solution – qCT LN Quant. Designed to assist radiologists and pulmonologists, this advanced solution analyses lung nodules on non-contrast chest CT scans and tracks volumetric growth for precise progression monitoring. In addition, the startup has also received breakthrough device designation from the US FDA Center for Devices and Radiological Health (CDRH) for its AI-powered Tuberculosis (TB) solution, qSpot-TB.

Citing another example, Pune-based startup DeepTek's US FDA-approved platform, Augmento Enterprise, has been chosen as the national radiology AI platform, contributing to improved productivity and quality of care across public hospitals in Singapore.

Then there is SigTuple, a Bengaluru-based medtech startup that develops Artificial Intelligence (AI) powered digital microscopy solutions. The startup's path-breaking device AI100 with Shonit (Peripheral blood smear application) has received US FDA 510(k) clearance. This is the first integrated hardware and AI medical device, and the first product in AI assisted digital microscopy from India to obtain the coveted clearance and one of the handful of companies in the world to obtain it.

While the innovation level is touching the sky for our medtech entrepreneurs, these global approvals are making it easier for the products to reach different parts of the world. Simply because developing products as per globally accepted standards ensures smooth export and helps overcome technical or qualitative differences across regions and countries.

In this context, ***Gaurav Agarwal, Managing Director, Involution Healthcare*** is of the opinion, "Any startup with an eye on the future must have global regulatory approvals in its design phase. Today over a dozen Indian medtech companies have strong international presence. I believe in the next 20 years India will corner a large chunk of medtech exports as well. With a favourable investment, regulatory and policy environment, there is an unprecedented surge in medtech startups in the country."

Sharing her perspective, ***Gauri Navalkar Godse, Director and CEO- India, UE LifeSciences*** said, "Indian medtech startups aren't waiting for global nods

before making waves. They're leveraging India's unique strengths i.e. a massive, diverse population of over 1.4 billion, a burgeoning digital landscape with over 900 million internet users expected by 2025, and supportive government initiatives like Startup India and Make in India, to build innovative solutions first for the Indian market. This approach allows them to rapidly iterate, gather crucial real-world data from this vast user base, and scale quickly, all while directly addressing pressing local healthcare needs."

One of the very earlier players in the medtech startup space, UE LifeSciences received US FDA approval many years ago to launch iBreastExam - a handheld, mobile connected and completely wireless device which can detect tumour tissues as small as 3-5 mm while emitting no harmful radiation. For 2025, UE LifeSciences is poised to launch not one, but two groundbreaking solutions. In the first half of the year, the company is unveiling a novel triple cancer screening solution, offering early detection capabilities, and by year's end, the company will empower individuals with an at-home breast cancer screening solution.

Currently, Bengaluru-based startup Niramai has partnered with Goa-based company MolBio Diagnostics to accelerate the adoption of Niramai's AI-based non-invasive breast cancer screening solution in developing countries around the world.

"Niramai is the first Indian company to get an US FDA clearance for a medical device used for women's health. We have also received European CE approval for our Thermalytix Solution. While it is a great learning experience to go through the very rigorous US regulatory process, we have also observed that globally approved products get easily accepted in India. This strengthens the trust factor for an Indian innovation, which can otherwise take time to establish its presence in the market", said ***Dr Geetha Manjunath, CEO and Founder of Niramai.***

Dr Geetha further adds, "As India's healthcare ecosystem embraces digital transformation, startups are pioneering groundbreaking solutions. But there are challenges that persist for medtech startups in India, especially in terms of funding, investments and getting good collaborative opportunities with bigger medtech players."

Still a lot more to be done

Both established entities and burgeoning startups in the Indian medtech sector are introducing innovative products that cater to local demands while aligning with international advancements. Moving forward, a great strategy would be needed for the established players to collaborate with the startups for expediting the path from ideation to market introduction.

"There is a need to connect hospitals, medtech companies, and startups, supporting critical stages such as multi-centric trials, regulatory compliance, securing scale-up funding, and facilitating product launches. For instance, KIIT TBI envisions establishing a Technology Development & Deployment Hub for molecular diagnostics, encompassing translational research, product development, validation, regulatory compliance, and skill development. A significant milestone is the creation of the Centre of Innovation in Molecular Diagnostics, a convergence platform for academia, startups, and industries. This centre, supported by Thermo Fisher Scientific, offers industry-aligned training to biotech scholars while driving product innovation in molecular diagnostics", said ***Dr Mrutyunjay Suar, Chief Executive Officer, KIIT-Technology Business Incubator (TBI).***

Reflecting upon the current funding and investment opportunities in store for the medtech startups, Dr Vishal Gandhi adds, "The funding landscape for medtech startups in India has transformed significantly. Between January and November 2024 alone, venture capital investments across sectors reached $16.77 billion, with medtech being a key beneficiary. This represents a 14.1 per cent increase in value and a 21.8 per cent rise in deal count compared to the same period in 2023." He also mentions that over the past five years, investments in medtech startups have surged, with significant interest in diagnostics, AI-driven healthcare solutions, and telemedicine platforms.

Another important factor that is ensuring success of many medtech innovations in India lately is the presence of cross-functional leadership teams, where one founder can focus on the science and technology, while the other can take the commercialisation aspect forward.

As the sector matures, the focus will likely expand to include more advanced technologies, global collaborations, and regulatory harmonisation to unlock its full potential. India's journey to becoming a global healthcare hub is well underway, and the medtech startup ecosystem stands at the forefront of this evolution. BS

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“The ecosystem of Gujarat is ready to promote deep tech areas of biotech product development”

« **Manish Gurwani,** Mission Director, Gujarat State Biotechnology Mission (GSBTM)

Gujarat has more than 200 biotechnology companies and a thriving startup ecosystem that includes prominent R&D and educational institutes. Gujarat's biotech sector generates more than Rs 12000 crore revenue and serves as an established biomanufacturing hub. Playing a key role in this direction is the Gujarat State Biotechnology Mission (GSBTM) which has completed 20 years. The Government of Gujarat (GoG) had established GSBTM in April 2004 under the Department of Science and Technology to facilitate the development of the biotech sector. In conversation with BioSpectrum, Manish Gurwani, Mission Director, Gujarat State Biotechnology Mission elaborates on how GSBTM's latest biotechnology policy is transforming the sector in Gujarat. ***Edited excerpts:***

How does the GSBTM plan to leverage infrastructure and incentives under the current policy to position the state as a globally competitive biotechnology hub?

Known for its entrepreneurship spirit, Gujarat has continued to be one of the preferred investment destinations for Ease of Doing Business (EoDB), Good Governance Index (GGI), Energy & Climate Index, Startup & LEADS ranking. The state contributes 40 per cent to India's total cargo throughput with ~8.2 per cent in India's GDP (as on FY2022-23 on current price). The state accounts for $12 billion (2023) with 8 per cent share of Bio-economy, way above ~4 per cent state-wise average contribution of Bio-economy, amongst top 5 states of India in terms of Bio-economy contributors. This is the result of its top-class trunk and core infrastructure coupled with a safe and sound social environment in attracting top entrepreneurs from various parts of the country and abroad.

Gujarat showed great foresight, by setting up a dedicated mission office two decades ago, the Gujarat State Biotechnology Mission (GSBTM) followed by eco-system strengthening initiatives like Gujarat Biotechnology Research Centre (GBRC), Gujarat Biotechnology University (GBU) – Asia's first ever dedicated biotechnology university and one of the top 5 public incubators Savli Technology and Business Incubator (STBI) with dedicated biotechnology parks for greenfield and brownfield spaces. These initiatives indicate Gujarat's readiness to attract top biotech players in one of the thriving biotech ecosystems. GSBTM not only operates different schemes for facilitation of biotechnology, but is also the single window clearance office for all purposes, bringing in ease of doing business.

An additional advantage to the biotechnology business in the state is the Biotechnology Policy 2022-27. The policy offers substantial incentives such as 25 per cent capital assistance with a ceiling of Rs 200 crore for mega projects, operational assistance for research initiatives, and employment generation schemes like Aatmanirbhar Gujarat Rojgar Sahay.

Could you elaborate on specific initiatives like the Gujarat Genomics Initiative or the Marine Bioresource Centre, and how they are progressing?

The Department of Science and Technology, in 2017, created GBRC by merging several initiatives including Gujarat Genomics Initiative, Marine Bioresource Centre etc. GBRC is established with a vision to undertake cutting edge translational research in the diverse areas of biotechnology including healthcare, agriculture, marine and industrial biotechnology. Today GBRC is undertaking several international, national and state funded research projects with more than Rs 100 crore outlay. The GBRC team was part of the highly competitive Global Challenge Research Fund programme of UK Research and Innovation, One Health Poultry Hub.

Some of the National flagship research programmes of GBRC include, Genome India Initiative, Genomic Selection Network for Dairy Cattle and Buffalo Breeds in Gujarat, Network Programme on Antimicrobial Resistance, Superbugs and One Health etc. During COVID-19, GBRC team contributed in genome sequencing of SARS-COV-2, establishing waste water epidemiology, understanding host pathogen interaction, identifying the virus from non-human hosts resulting in efficient pandemic management in the state. Recently, the Ministry of Earth Sciences, Government of India has sanctioned a large consortium project under Deep Ocean Mission where GBRC is in lead role, extending the works of Marine Bioresource Centre. GBRC also acts as a shared laboratory facility by extending its existing infrastructure to relevant stakeholders through an online booking system.

The Biotech Policy (2022-2027) aims to attract Rs 20,000 crore in investments and create 1.2 lakh jobs by 2027. What strategies are being implemented to meet these ambitious goals, and what progress has been made so far?

The policy is loud on the strategy, where it has spelled out the Mega Projects, Ecosystem Strengthening and Special Projects. These categories of projects would see a capital support of up to Rs 200 crore and an Operational Expenditure support of up to Rs 125 crore. The interest subsidy on Term Loan @7 per cent on borrowings up to Rs 100 crore and @3 per cent on borrowings above Rs 100 crore, is a strong contribution of the state government to get the economy rolling for the biotech space, eyeing the target investment of Rs 20,000 crore. The past edition of the policy incentives has seen approximately 16 times the investment by the private sector, on the government contribution. GSBTM having dedicated arms for facilitating entrepreneurship and HRD development coupled with handholding support for BT unit establishments showcases the great support system for incoming investments. This feat gives the state government confidence that the goals set in the new policy are attainable.

In July 2023 and December 2023, GoG has inked MoUs worth ~Rs 9000 crore with an expected employment generation of 3000, in the biotech sector. More than 20 companies have committed this investment and will be contributing to the sectors and products, most important for the state.

Employment Generation Incentive, i.e. Aatmanirbhar Gujarat Rojgar Sahay, is a new element added to this edition of the policy, which focuses on engaging local manpower, with a one time incentive of Rs 50,000 per male and Rs 60,000 per female CTC, to the companies establishing base or expanding in the state. The EPF Assistance of the policy also is providing a generous support of 100 per cent EPF support for female employees and 75 per cent EPF for male employees.

Mega biotech projects in Gujarat are pivotal for driving the state's bioeconomy. These involve rDNA vaccines, RNA interference vaccines, fermentation-based APIs and rDNA therapeutic enzymes. Not only the size of these operations, but, the technological leap that these projects could bring to the sector, would be enormous, setting new trends in biotechnology. These projects are expected to generate significant revenue by operating in volumes, create high-value jobs, and establish Gujarat as a global biotech leader. Their multiplier effect on ancillary industries will further boost the state's economic and innovation landscape.

Mega projects are a highlight of the policy. Could you share insights into any ongoing or upcoming mega biotech projects in Gujarat, and their expected contribution to the state's bioeconomy?

Mega biotech projects in Gujarat are pivotal for driving the state's bioeconomy. Some very thoughtful initiatives have come up in this section of applications. These involve rDNA vaccines, RNA interference vaccines, Fermentation based APIs and rDNA therapeutic enzymes. Not only the size of these operations, but, the technological leap that these projects could bring to the sector in the state, would be enormous, setting new trends in biotechnology. These projects are expected to generate significant revenue by operating in volumes, create high-value jobs, and establish Gujarat as a global biotech leader. Their multiplier effect on ancillary industries will further boost the state's economic and innovation landscape.

How do you envision the biotech landscape evolving in Gujarat, particularly in emerging sectors like synthetic biology, gene therapy, and bioinformatics?

The ecosystem of Gujarat to promote these deep tech areas of biotech product development is ready.

The Biotech Park in Vadodara, Savli Technology and Business Incubator and the upcoming infrastructure project to support the sector are all set to support research and developmental activities in these areas. GBRC has developed a comprehensive facility in the bioinformatics space, which serves an end-to-end solution in bioinformatics research. The centre is also the central data repository for One Health Programme and AMR Network Project of the state. The state has also expanded the super-computing abilities by installing 16 super computers in different institutes of the state. These super-computers are spread across the state and contribute to research and capacity building.

The private sector in the biotech space is investing heavily in the areas of synthetic biology and gene therapy, and have already initiated product development which is focused on customised therapeutics. As it is known that these products require a delivery partner to reach the product to the end user, the private sector is playing a pivotal role in doing the same.

The state is ready to embrace these new era technologies, and place Gujarat on the world map with its products. Gujarat is well-positioned to be at the forefront of these transformative sectors.

With the introduction of the Gujarat Biotech Start-Up Venture Fund (GBSVF), what impact do you foresee on biotech startups in Gujarat, especially in terms of funding and scaling up?

The Gujarat Biotech Start-Up Venture Fund is a game-changer for biotech startups and clearly declares the proactive risk taking appetite of the state government. Unhesitant, the state government has contributed approximately 9 per cent to the corpus of the Rs 150 crore fund. The fund is still building up, and is in its investment phase. It provides equity-based financing to early-stage startups and MSMEs, addressing critical funding gaps. By fostering innovation and reducing financial barriers, GBSVF enables startups to develop, validate, and commercialise their technologies.

The fund is supporting startups in upcoming technology areas, making the biotech ecosystem more vibrant and setting up a new league of deep tech startups in the state.

How does the state ensure alignment of its biotech initiatives with national programmes like 'Atal Jai Anusandhan Biotech UNaTI Mission' and global trends in biotechnology innovation?

'Atal Jai Anusandhan Biotech UNaTI Mission' was launched in 2019, for 5 years, which was focused on delivering technologies that are important for the country, like safe child birth, affordable vaccines, nutrition for all, Antimicrobial Resistance (AMR) and Clean Energy. GSBTM with its three pillars of execution, namely, research and development supporting 100+ projects, human resource development, skilling 2000 students annually and business development, is working towards these goals. The network project on AMR is a key catalyst in surveying, identifying and providing control strategies to stop spread of AMR in the environment. The programme aims at continuous surveillance and communicating the same to relevant stakeholders, for better results.

The Biotechnology Policy has identified Biofuels as a special project, providing a special package of grants to propel the sector. The recognition of this technology as an important contributor to Clean Energy, and government initiative to encourage entrepreneurship in this area, falls in congruence with UNaTI mandate. The strength of vaccines to make a society disease free, thus reducing the economic burden of diseases in a society is well understood by the state. State grown Zydus Lifesciences was the first to launch ZyCoV-D, which was a children-safe Corona vaccine to be developed in India. BS

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“Govt should facilitate low-interest loans or VC funding specifically for biopharma startups & small enterprises”

In a recent development, Nagpur-based biotech company GeNext Genomics (GNG) has joined hands with Merck Life Science to support the Indian biotech system, particularly in the area of biomanufacturing, which is garnering more attention after the approval of the BioE3 policy. Supriya Kashikar, Founder & Chief Executive Officer, GeNext Genomics shares her views with BioSpectrum on the growth of biomanufacturing sector in India, and how the company plans to play a relevant role in this aspect. ***Edited excerpts:***

« **Supriya Kashikar,** Founder & Chief Executive Officer, GeNext Genomics

What are the key objectives of your recent collaboration with Merck? How will this partnership foster innovation and strengthen India’s position in the global biotech market?

The partnership combines Merck's biomanufacturing systems with GNG's Clone Development and HIND Antibody Library to drive biopharmaceutical innovation and position India as a hub for advanced R&D. The GNG-Merck collaboration creates a unique competitive edge for both companies by integrating local expertise with global biomanufacturing capabilities. Furthermore, Merck's expertise in both Upstream Processing (USP) and Downstream Processing (DSP) will support us in areas of biologics production, optimising cell culture yields, and refining end products to meet international standards.

This partnership is set to innovate and strengthen India’s biotech landscape:

- **Platform Processes for Novel mAbs and Other Molecules:** With Merck’s advanced bioprocessing systems installed at GNG, we’re positioned to efficiently develop and produce novel monoclonal antibodies (mAbs) and other therapeutic molecules. These processes ensure consistent, high-quality products that meet the highest global standards.
- **Supporting Clone Development Services from India:** With the integration of Merck’s systems into GNG’s Clone Development platform, we’re set to become a go-to provider for scalable clone development services. This will cater to a wide range of biotech firms, both in India and abroad.
- **Infrastructure for Startups:** Our collaboration creates a solid infrastructure for biotech startups, providing end-to-end support—from process development to clinical-phase production. This ensures that biotech startups in India can focus on innovation while we handle the complexities of scaling up.
- **Future Scale-Up and Commercial Manufacturing:** With Merck’s decades of expertise in drug development and manufacturing, GNG is well-positioned to advance its capabilities in scaling up production and preparing for commercial manufacturing. This strategic collaboration enables GNG to explore and pursue the commercialisation of its proprietary New Biological Entities (NBE) and biosimilar candidates, ensuring a robust pathway from development to market readiness.

What other plans are in store at GNG for driving innovation?

We envision GNG as an emerging leader in novel and biosimilar asset development both as its own pipeline as well as contract research in the coming years. In line with this vision, GNG plans to expand its reach and impact across global biopharmaceuticals, diagnostics, and therapeutic antibody discovery and development.

Some of our strategic goals include:

- **Scaling the HIND Antibody Library:** We aim to expand the HIND Antibody Library’s scope to encompass a diverse range of therapeutic targets, positioning it as a vital tool for novel drug discovery and collaborative research from India.
- **Strengthening Biosimilar and Biologic Production:** Leveraging our collaboration with

Merck and seeking strategic partnerships, we look forward to expanding GNG's biosimilar offerings to meet the demand for affordable, high-quality biologics in domestic and global markets. Currently one being in pre-clinical studies supported by the National Biopharma Mission, BIRAC.

• **Expanding Diagnostic and Custom Antibody Solutions:** As precision medicine continues to gain prominence, GNG plans to develop new diagnostic and antibody solutions for emerging diseases and personalised treatments.

Our aim is to be steadfast in our mission to drive innovation and contribute to the future of biotechnology by offering cutting-edge solutions that can transform global healthcare.

Would the new BioE3 policy prove to be a gamechanger for the future of biotechnology in India?

Building a robust biomanufacturing ecosystem in India is crucial for accelerating innovations in bio-based product development. With the nation's bioeconomy projected to reach $300 billion by 2030, the startup community plays a pivotal role in driving this transformation, fostering technological advancements, and addressing industry challenges.

In this context, the BioE3 Policy— 'Biotechnology for Economy, Environment, and Employment'— represents a transformative milestone for India's biotech sector. By fostering innovation-driven R&D and championing sustainable biomanufacturing, this policy not only aligns with global climate goals but also positions India at the forefront of the circular bioeconomy. Furthermore, the BioE3 policy will play a pivotal role in enhancing and amplifying the life sciences sector by building a skilled workforce and creating new employment opportunities, thereby strengthening the country's research capabilities and technological expertise. Additionally, by addressing key infrastructure needs, the policy aims to streamline scaling-up processes, making biotechnology advancements more accessible and cost-efficient.

Overall, this policy is a step in the right direction for India's life science industry. As we continue to support the emerging biotechnology startup community, the advent of this policy will boost our motivation to drive the Circular Economy revolution by 2047.

Though biotech innovation is increasing in our country with technological advancements, innovators still face multiple challenges. What are your views on this and expectations from the government?

In recent years, India's biopharma industry has witnessed significant growth, fuelled by technological advancements, research, and increased manufacturing capabilities. Although the industry holds immense growth potential, it is crucial to tackle challenges that may hinder progress.

Securing adequate funding and managing budgets effectively are significant hurdles for Indian biotech startups. The sector is further challenged by complex regulatory landscapes, high production costs, limited access to advanced technologies, and a shortage of specialised talent in critical domains. Adding to these issues is the urgent need for enhancing the laboratory infrastructure to support research and development. GNG has been grateful to BIRAC for supporting the development of one of our assets through the National Biopharma Mission Grant.

Unlocking the industry's full potential requires strategic policymaking, a stronger focus on research and innovation, and robust public-private partnerships. Recognising these critical challenges and addressing them decisively at both global and local levels is crucial for driving the next wave of advancements.

We believe the government plays a crucial role in unlocking the full potential of the biotech sector. To drive meaningful growth, a proactive approach is needed to strengthen public-private partnerships, advancing research and technologies, skill development, and constant industry/stakeholder initiatives will amplify the potential of the biotech industry.

Additionally, strengthening ties between academia and industry is essential to drive innovation and build valuable partnerships in research and technological advancements. Government policies that prioritise skill development, empower scientists, and promote R&D can help cultivate a culture of continuous innovation within the sector.

When speaking specifically for Biopharma, the government should develop and implement a comprehensive biopharma policy that incentivises research, innovation, and production and streamline regulatory frameworks to reduce bottlenecks in drug approval and manufacturing processes. The government should facilitate low-interest loans or venture capital funding specifically for biopharma startups and small enterprises. Currently, BIRAC is the only body that does it, but we need more and more government bodies to come up with biopharma-focused financial instruments to attract investors. BS

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"Lack of population-specific genomic data is a significant challenge in the field of precision oncology"

Expanding its R&D capabilities to further enhance cancer detection and treatment efficacy, aligning with global efforts to revolutionise oncology care with the world observing World Cancer Day on February 4, Bengaluru-based startup 4baseCare has recently received a significant boost with Infosys investing Rs 8.3 crore to acquire a minority stake in the company. In conjunction with this, BioSpectrum took the opportunity to speak with Hitesh Goswami, Chief Executive Officer (CEO) and Co-Founder, 4baseCare regarding their future plans and advancements in precision oncology. ***Edited excerpts:***

« **Hitesh Goswami,** Chief Executive Officer and Co-Founder, 4baseCare

With Infosys investing in 4baseCare, how do you plan to leverage this partnership to scale your operations, enhance technological capabilities, and drive growth?

At 4baseCare, we drive innovation through two core solutions: Genomics and Digital Health. Our Genomics solutions focus on leveraging advanced genomic testing to identify actionable insights for personalised cancer care, while our Digital Health solutions encompass a comprehensive ecosystem designed to support patients and clinicians alike.

This includes everything from a patient-centric app that provides guidance throughout the cancer journey, to sophisticated tools that generate insights for predictive modeling, enabling personalised treatment strategies.

Collaborating with Infosys, a global leader in IT and digital transformation, we are enhancing the digital backbone of 4baseCare. Their expertise enables us to build a data-driven decision platform and develop pioneering solutions like the Clinico-Genomic Digital Twin (CG Twin)—a revolutionary model that integrates clinical and genomic data to create predictive insights for tailored cancer care. Together, we are bridging the gap between data, technology, and precision oncology to empower patients and healthcare providers with innovative, impactful solutions.

Besides this recent partnership, what were some of the other major developments at 4baseCare in 2024?

The year 2024 has been a year of tremendous growth and significant milestones. We raised $6 million in Series A funding led by Yali Capital, which enabled us to set up a genomics lab at Dubai Science Park in partnership with Innovate Life Sciences. We are also preparing to launch labs in the Philippines and Nepal.

We welcomed two industry leaders to our advisory board this year. Francis deSouza, former CEO of Illumina, and Lip-Bu Tan, Chairman of Walden International, to our advisory board. Their expertise in genomics and technology will play a critical role in our mission to make genomics accessible to all.

Looking ahead to 2025, what are your key goals and initiatives, particularly in terms of expansion, partnerships, and impact on the precision oncology sector, in India and Asia?

Collaborating with hospitals, research institutions, and pharmaceutical companies in Nepal, Bangladesh, and the Philippines remains central to our growth strategy. We aim to strengthen partnerships both in India and globally to bring advanced precision oncology solutions to patients.

In the next 1-2 years, we plan to launch educational initiatives such as workshops, webinars, and training programmes to support oncologists and clinicians in adopting genomic testing for cancer care. We also intend to expand our laboratory infrastructure, enhance bioinformatics

Cancer is fundamentally a genomic disease making it essential to understand its molecular details to improve treatments and achieve better patient outcomes. Precision oncology, which integrates genomic biomarkers into the treatment paradigm, has rapidly emerged as a cornerstone of contemporary cancer care. However, the major challenge to Precision Oncology is that it is mostly based on genomics research and data on Caucasian population which puts our and other non-caucasian populations at a disadvantage.

platforms, and build a multidisciplinary team of experts in genomics, oncology, and data science. This will enable us to handle larger data and sample volumes while maintaining the highest standards of accuracy and quality.

With Series A funding from Yali Capital and Infosys Innovation Fund and the guidance of our esteemed advisors, we are well-positioned to expand our reach, drive innovation, and make precision oncology accessible to more cancer patients.

Are you planning to launch new products/ technologies in India or globally in 2025 or beyond? Please share details.

Cancer is not a single disease- it is a collection of many diseases, each with its own unique complexities. Understanding cancer biology requires addressing the heterogeneity that makes it so intricate and challenging to treat.

At 4baseCare, we believe that a comprehensive and holistic approach is essential to truly unravel the molecular pathways of cancer. This means going beyond traditional core biopsies (solid biopsy) to include insights from cellular evolution by profiling circulating tumor DNA -ctDNA (liquid biopsy).

This innovative approach allows us to capture the dynamic nature of cancer, identifying genomic signatures that evolve over time and enabling precision care at every stage of the disease.

We recently launched our solution SoLiQ—our cutting-edge liquid biopsy technology that integrates genomic insights from both tissue and circulating tumour DNA, paving the way for more informed, personalised treatment strategies. With SoLiQ, we are redefining how cancer is understood and managed, ensuring no aspect of its complexity is overlooked.

What are the current challenges facing the precision oncology market in India & neighbouring areas, and how are you addressing those?

A significant challenge is the lack of population-specific genomic data. Much of the existing research and strategies are based on Western populations, which often fail to address the unique genomic diversity of Indian patients. Precision oncology in India is progressing but still lags behind Western nations.

Cancer is fundamentally a genomic disease making it essential to understand its molecular details to improve treatments and achieve better patient outcomes. Precision oncology, which integrates genomic biomarkers into the treatment paradigm, has rapidly emerged as a cornerstone of contemporary cancer care. However, the major challenge to Precision Oncology is that it is mostly based on genomics research and data on Caucasian population which puts our and other non-caucasian populations at a disadvantage. 4baseCare's vision is to bridge this data gap and push towards more evidence and data backed treatment for cancer patients.

What are your views on the growth of genomics startups in India? What does the future look like?

Precision Oncology has seen steady adoption over the last decade and it is pretty clear that it is set to become a core part of cancer care in India over the next decade. Costs will decrease and more hospitals will adopt it. This change will be primarily driven by startups.

There will be easier access to targeted therapies and immunotherapies as more pharmaceutical companies enter the Indian market with cost-effective options. And with early detection becoming more common, we'll be able to identify high-risk individuals before cancer develops, shifting from treatment to prevention.

Technological advancements like artificial intelligence (AI) and big data integration will enhance genetic profiling, allowing oncologists to make faster and more precise decisions. With increased attention to clinical trials, India has the potential to emerge as a hub for precision oncology research. BS

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Remote diagnostics greatly influence the accessibility and quality of healthcare

The healthcare industry has undergone tremendous change thanks to remote diagnostics. These enable healthcare providers to provide diagnostic services to patients in even the most remote locations by utilising digital tools and telecommunication technologies. The accessibility and quality of healthcare will be significantly impacted by remote diagnostics, but to assure universal use, a few problems must be resolved.

« **Dhrubaa Ghosh,**
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The diagnostics industry in India is growing rapidly, driven by growing healthcare awareness, an increasing prevalence of chronic diseases and lifestyle disorders, and advancements in technology. It encompasses pathology labs, imaging centres, and specialised diagnostic services - all of which contribute significantly to the healthcare sector.

Key trends in this area include the adoption of digital diagnostics, AI-powered tools, point-of-care testing, and a surge in home-based diagnostic services and telemedicine. Despite regulatory hurdles and infrastructure gaps, the Indian diagnostics market is poised for substantial growth, improving accessibility and quality of healthcare across the country.

Recent technology developments, particularly in remote diagnostics, have significantly altered the healthcare landscape. These allow medical professionals to reach patients in even the most remote areas using digital tools and telecommunication technologies to deliver diagnostic services. Remote diagnostics will have a significant impact on healthcare accessibility and quality, but there are certain issues that need to be addressed to ensure widespread adoption.

Impact of Remote Diagnostics on Healthcare Accessibility

One of the most significant benefits of remote diagnostics is improving accessibility of healthcare services to the underserved and vulnerable populations such as elderly people, immobile, disabled individuals, and residents of less economically developed areas. In many rural and remote regions of India, people have limited access to healthcare and specialised doctors. Distant diagnostics bridges the gap by providing patients with timely diagnostic services, eliminating the need to travel long distances in emergent situations.

For instance, telemedicine platforms, driven by strong internet connectivity, can enable patients to consult healthcare professionals on video calls. Real-time transmission of medical images to a trained pathologist or radiologist, and of the test results back to the patient and the doctor is made possible through remote diagnostic tools. This accelerates the diagnostic process and reduces the burden on healthcare facilities, enabling them to allocate resources more effectively.

Enhancing Quality of Care

In addition to accessibility, remote diagnostics may facilitate quality-of-care provision to patients. Through their application of AI and machine learning (ML), remote diagnostic tools become more accurate and efficient in data interpretation, leading to faster and more precise diagnoses. This proactive approach not only improves patient outcomes but also reduces the chance of complications from delayed diagnoses.

Additionally, remote diagnostics facilitate real-time monitoring of chronic care patients. The continuous supervision has led to timely interventions and well-tailored plans to manage the chronic condition of the patients, ultimately providing better health outcomes.

Challenges to Widespread Adoption

Despite the many promising benefits of remote diagnostics, several challenges must be addressed to ensure its adoption in the healthcare system:

Regulatory Framework: Currently, there is no regulatory environment governing remote diagnostics. The absence of guidelines or an enabling framework keeps the benefits of remote diagnostic technologies away from those who need it the most. The current guidelines necessitate clear standards to ensure safety, and security of data, and the quality of services rendered to patients. Policymakers must collaborate with healthcare providers and technology companies to devise a holistic regulatory framework that balances fast-moving tech with patient interests.

Infrastructure and Connectivity: For remote diagnostics to be truly effective, a robust, well-designed technology infrastructure along with reliable internet connectivity, is crucial. To fully leverage digital healthcare solutions, significant expansion is necessary in underserved regions. Increased investment in telecommunications is essential to ensure access for everyone, regardless of their geographic location.

Data Security and Privacy: Data security and privacy concerns are of paramount importance, as remote diagnostics include the sharing of confidential patient information. Healthcare providers must ensure that strong safeguards are in place to prevent breaches or unauthorised access to patient data. Additionally, setting up a single governing body that regulates data security processes in the medical field would significantly increase the patients' confidence in their healthcare providers.

Training and Education: Healthcare workers must be properly trained in the use of digital tools and technologies for remote diagnostics to be successful. Programmes for ongoing education and training are crucial for giving healthcare professionals the know-how to successfully traverse the digital landscape and provide superior remote diagnostic services.

Patient Awareness and Acceptance: Although there are many advantages to remote diagnostics, its effectiveness depends on patient acceptance and awareness. Education can be used to increase adoption, alleviate worries, and educate the patient on the benefits of remote diagnostics and the utilisation of such services.

Potential Solutions

Telepathology: This allows pathologists to examine and even diagnose tissue samples remotely. This can significantly accelerate diagnoses in India, especially in resource-constrained areas. Initiatives like the National Digital Health Mission will be important enablers of data sharing and interoperability between healthcare facilities and help enable seamless telepathology services.

AI-powered Imaging: AI algorithms can analyse medical images (X-rays, CT scans, MRIs) faster and better than humans resulting in quick and accurate medical diagnoses. This is crucial in areas with a shortage of radiologists. Therefore, using AI-based tools for remote diagnostics for image interpretation can significantly improve its quality and speed, particularly in underserved areas.

Public-Private Partnerships: There is a strong need for collaboration between the government, private sector, and tech companies, if remote diagnostics is to be successfully implemented. Such partnerships can encourage infrastructure development, technology deployment, and training programmes for healthcare professionals.

Focus on Patient-centred Care: The provision of remote diagnostics service should be driven by the patient's needs. Availability of open communication channels, comprehensive patient education programmes, and effective ways of addressing patient concerns are essential for building trust in these technologies and ensuring their widespread adoption.

By addressing these considerations and leveraging the power of technology, India can harness the potential of remote diagnostics to transform its healthcare landscape, improve access to quality care, and ultimately improve the health and well-being of its citizens.

Future Potential

This unlocks immense future potential to improve the accessibility and quality of healthcare in a changing world of remote diagnostics. With such technologies cutting across geographies, patients shall have timely diagnostic services, ensuring healthy outcomes. However, for this to be possible, stakeholders must tackle the challenges facing widespread adoption. A supportive regulatory framework, and investments in infrastructure, data security, training, and patient education, will enable the environment to steer the growth of remote diagnostics.

As we look to the future, embracing digital transformation in healthcare is essential to realising the goal of Universal Health Coverage and to making quality healthcare universally accessible regardless of location. The journey to a more inclusive and efficient health system has begun, and remote diagnostics will undoubtedly be one of its defining features. BS

(Disclaimer - The views, thoughts and opinions expressed in the article are solely the author's and are not representative of the author's employer/ organisation.)

Attaining OpEx is crucial for maintaining sustainability and competitiveness

The pharmaceutical industry in India is at a critical juncture, full of enormous promise and substantial responsibilities. The stakes are great and the world stage is prepared. A continual improvement approach, supported by investments in talent, technology, and teamwork, is essential for success. Companies that want to prosper in this changing environment must address operational excellence (OpEx) issues, change supply chains, and promote an innovative culture.

« **Vinod CM,**
Principal,
dss+ India

India's pharmaceutical sector, valued at approximately $31 billion in 2023, holds immense promise, evolving rapidly to claim its place as a cornerstone of the global healthcare landscape. With a projected annual growth rate of 10-12 per cent, the industry aims to reach a market size of approx. $33 billion by 2025. India supplies 31 per cent of US pharmaceutical imports and boasts a 15 per cent growth rate in exports, solidifying its position as a leader in affordable medicine.

These figures emphasise both opportunities and challenges that demand a sharp focus on operational excellence (OpEx). Reflecting on the industry's growth trajectory, one cannot overlook its resilience in addressing domestic demand while expanding its global footprint. Yet, the journey is fraught with systemic challenges. Achieving OpEx is imperative to ensure sustainability and competitiveness in a rapidly evolving market.

The Dual Challenge: Growth and Sustainability

Cost management emerges as a critical priority. Rising expenses for raw materials, labour, and logistics put pressure on profitability. Adopting lean manufacturing principles, optimising asset utilisation, and minimising waste can significantly improve margins. Tailored frameworks help organisations address inefficiencies, enhance asset availability, and streamline operations, transforming cost management from a challenge into a driver of innovation and efficiency.

Regulatory compliance is another labyrinth the industry must navigate with precision and care. Regulatory bodies like the Central Drugs Standard Control Organisation (CDSCO) and the US FDA impose stringent quality and safety requirements. Non-compliance can lead to bans or warning letters, eroding market trust. Investing in robust compliance mechanisms not only mitigates these risks but also enhances operational metrics, translating into better profitability and global credibility. A disciplined, system-driven approach can ensure readiness for inspections, setting Indian firms apart as reliable global suppliers.

The industry's heavy reliance on imported Active Pharmaceutical Ingredients (APIs), particularly from China, exposes its supply chains to geopolitical risks and disruptions. The pandemic amplified these vulnerabilities, highlighting the urgent need for resilient supply chains. Strategies like backward integration—building domestic API manufacturing capabilities—and leveraging technology for real-time supply chain monitoring are gaining traction. These measures can reduce dependencies and bolster operational resilience.

Innovation and Technology: Driving the Future

Innovation, particularly in biosimilars and specialty drugs, is a vital growth driver. The pharmaceutical sector invests 15-20 per cent of its revenue in research and development (R&D). However, this commitment strains resources, especially for smaller firms. Collaboration between

R&D and operations teams, coupled with the adoption of advanced technologies like artificial intelligence (AI) and data analytics, can accelerate drug discovery, optimise clinical trials, and anticipate market demands. Such innovations enable firms to remain competitive in high-value segments while meeting the growing complexity of global healthcare needs.

The cost structures of major pharmaceutical companies reveal critical insights into the industry's priorities and challenges. Manufacturing expenses typically account for 30-40 per cent of total costs, influenced by factors such as production scale and the adoption of advanced technologies. Marketing and sales activities represent another 20-25 per cent, highlighting the intense competition for market share that drives companies to invest heavily in promotional efforts. Administrative expenses, which include governance and compliance overheads, generally account for 10-15 per cent of total costs. However, it is the substantial allocation to R&D—around 15-20 per cent—that underscores the industry's commitment to innovation.

These figures illustrate the balancing act companies must perform to achieve operational efficiency while simultaneously investing in growth-oriented initiatives. The emphasis on R&D reflects a strategic focus on developing new therapies and maintaining a competitive edge in a rapidly evolving market landscape.

The Indian pharmaceutical industry is poised for growth, not just in terms of volume but through sustainable, value-driven expansion. India remains a dominant global supplier of affordable medicines, with exports reaching $27.85 billion in FY 2023-24, targeting markets like the US, Europe, and emerging economies. At the same time, domestic demand is increasing due to rising healthcare awareness and the prevalence of chronic diseases such as diabetes, cancer, and cardiovascular conditions.

The industry is evolving beyond drug discovery, with Indian firms expanding into biotechnology, biosimilars, and niche areas like orphan drugs. Strategic collaborations with global pharmaceutical giants, particularly in fields like gene therapy and precision medicine, are enhancing access to advanced technologies and new markets. This shift from volume-driven to value-driven growth reflects an industry that is maturing and ready to address global healthcare challenges.

Embracing Digital Evolution

While many companies are exploring AI, data analytics, and end-to-end digital solutions, significant gaps remain in adoption. These technologies can do more than just streamline operations; they can redefine supply chain management and decision-making processes.

Digital transformation is pivotal for the industry's future. Many companies are only beginning to explore the potential of AI, data analytics, and end-to-end digital solutions. These technologies can optimise operations, improve supply chain visibility, and facilitate real-time decision-making. At dss+, we've partnered with clients to deploy digital tools that enhance operational efficiency and regulatory compliance. For instance, automating documentation and monitoring quality parameters in real time can streamline processes while ensuring adherence to global standards.

Government initiatives further bolster the sector's growth potential. Programmes like the production-linked incentive (PLI) scheme aim to enhance domestic manufacturing capabilities and reduce dependency on imports. Investments in greenfield pharmaceutical plants and incentives for upgrading manufacturing facilities reflect a concerted effort to strengthen the industry's infrastructure and global competitiveness.

India's pharmaceutical sector stands at a pivotal juncture, marked by tremendous promise and significant responsibility. The global stage is ready, and the stakes are high. Success demands a mindset of continuous improvement, underpinned by investments in technology, talent, and collaboration. Addressing OpEx challenges, transforming supply chains, and fostering a culture of innovation are critical imperatives for companies looking to thrive in this dynamic landscape.

The path forward is clear. By aligning their strengths in manufacturing with an unwavering commitment to quality and compliance, Indian pharmaceutical firms can redefine their role in global healthcare. More importantly, this sector can make a profound difference—not just to India's economy but to global health outcomes. Accessible, life-saving medicines remain a cornerstone of humanity's collective progress, and India is uniquely positioned to lead this charge.

This journey isn't just about industry growth; it's a testament to human ingenuity, collaboration, and perseverance. It's about leveraging every challenge as an opportunity to innovate and excel. This is a narrative worth celebrating and championing—a story of resilience, ambition, and a vision to create a healthier, more equitable world. BS

How AI Innovations at GCCs Solidifying India's Position in Global Life Sciences Industry

India's life sciences sector is undergoing a major transformation, led by the expansion of Global Capability Centres (GCCs). These centres, which serve as strategic hubs for multinational companies in pharmaceuticals, biotechnology, and healthcare, are strengthening India's role in the global life sciences landscape. Currently, there are over 95 life sciences GCCs in India, employing approximately 280,000 professionals. By 2030, this number is projected to reach 160 GCCs and around 420,000 employees. Advancements in artificial intelligence (AI) are central to this transformation, driving innovation across drug discovery and clinical research. India's life sciences GCCs have evolved from operational support centres to world-class R&D engines, leveraging India's robust talent pool, advanced technology adoption, and cost advantages. These GCCs are driving the future of AI-powered drug discovery and clinical research. Let's explore further.

« **Dr Purav Gandhi,**
CEO and Founder,
Healthark Insights

The Indian government has launched several initiatives to support the expansion of GCCs in the life sciences sector. Programmes like the "Make in India" initiative encourage foreign investment in pharmaceutical manufacturing and R&D. The National Health Policy aims to boost healthcare solutions, with a focus on local innovation, driving life sciences companies to establish R&D-focused GCCs. In AI, the $1.25 billion IndiaAI Mission strengthens the country's AI ecosystem, helping GCCs adopt AI for faster drug development and efficient clinical trials. The Ayushman Bharat Digital Mission connects 500 million people to digital healthcare services, enhancing India's healthcare system. Additionally, Special Economic Zones (SEZs) and Biotechnology Parks provide critical infrastructure and tax incentives, facilitating the growth of life sciences GCCs aligning with India's broader vision to lead in pharmaceutical R&D innovation.

State-Level Leadership: Karnataka and Telangana

Among Indian states, Karnataka and Telangana stand out as key locations for the development of life sciences GCCs. Both states have created strong ecosystems that attract global investment and skilled professionals, enhancing the growth of the sector.

Karnataka, particularly the city of Bengaluru, accounts for nearly 32 per cent of all life sciences GCCs in India. Karnataka's GCC Policy 2024-29 is a cornerstone of its strategy to attract and expand GCCs. The policy offers a variety of incentives and provisions like targeted financial incentives such as rent coverage, tax breaks and reimbursements. The state's vision is to double the number of GCC from 500 to 1000 by 2029. Bengaluru has become a favoured destination for companies setting up GCCs due to its vast talent pool in AI, data analytics, and bioinformatics. The state government has also established Centers of Excellence for research and development, offering crucial support for startups and larger firms alike.

Telangana, with Hyderabad as its epicentre, has made significant strides in establishing itself as a global hub for life sciences. Genome Valley, located in Hyderabad, is India's largest biotech and pharmaceutical cluster, home to over 200 companies involved in R&D. In 2024 alone, Telangana attracted more than $850 million in investment to bolster its life sciences capabilities.

A major recent development in Telangana is the creation of the Life Sciences GCC Consortium, which has been in the spotlight. This consortium brings together the Hyderabad-based life sciences GCCs. Its primary aim is to boost collaboration, share knowledge, and address challenges in drug development and digital transformation. The

The future of life sciences GCCs in India looks promising, particularly with the growing integration of AI technologies. At its peak, AI is expected to save the global pharmaceutical industry around $26 billion annually, revolutionising how drugs are developed, trials are conducted, and patient care is managed. As more pharmaceutical companies recognise India's strengths, the number of GCCs is expected to increase, with these centres becoming key players in advancing AI-driven healthcare innovation. India's deep talent pool, including 3.3 million software engineers and 446,000 AI/ML specialists, is a major asset that positions the country as a leader in AI-driven life sciences R&D.

consortium is expected to strengthen Telangana's reputation as a leader in life sciences by facilitating partnerships between GCCs, academic institutions, and the government.

Telangana is home to leading R&D centres like Novartis Biome, Hyderabad's first innovation hub, which focuses on integrating AI into pharmaceutical research. It collaborates with startups, researchers, and academic institutions to drive advancements in drug discovery and clinical trials. Similarly, Bristol Myers Squibb has invested $100 million to establish a GCC in Hyderabad, employing 1,500 professionals and utilising AI to accelerate drug discovery.

Driving AI Adoption

Artificial intelligence (AI) is playing a vital role in streamlining operations in life sciences GCCs, particularly in drug discovery, clinical trials, and supply chain management. With the average cost of bringing a new drug to market exceeding $2 billion and development timelines stretching to 10-12 years, AI is addressing these challenges by reducing costs and accelerating the process. AI-driven solutions can cut drug development costs by up to 70 per cent and shorten timelines by 40 per cent, making it indispensable for the future of pharmaceutical research.

For instance, AI has made a significant impact on protein modelling, where tools like AlphaFold can model proteins in hours instead of months. This allows companies like GSK and Sanofi to speed up R&D by 30-40 per cent, enabling faster identification of drug targets. Indian GCCs are increasingly adopting these AI technologies to improve early-stage drug discovery and contribute to global pharma innovation.

In the realm of clinical trials, AI-powered platforms optimise trial protocols, improve patient recruitment, and predict trial outcomes with greater accuracy. Pfizer, for example, has used AI to streamline clinical trial design, reducing costs and improving timelines. Indian GCCs play a critical role in these efforts, using AI-driven platforms to manage clinical trials more efficiently.

AI is also helping GCCs with regulatory compliance, where automation has reduced the time required for submissions by 30 per cent while increasing accuracy. Indian GCCs have implemented AI tools that make the regulatory process faster and more reliable, keeping up with global standards.

Implementing AI at scale requires overcoming challenges like data fragmentation and aligning strategies with parent organisations. GCCs are excelling by overcoming data fragmentation through structured management frameworks, leveraging India's AI expertise, and aligning with global compliance standards. By utilising effective data aggregation, cleansing, and integration methods, these centres enable seamless AI deployment and innovation.

Future Prospects and AI Integration

The future of life sciences GCCs in India looks promising, particularly with the growing integration of AI technologies. At its peak, AI is expected to save the global pharmaceutical industry around $26 billion annually, revolutionising how drugs are developed, trials are conducted, and patient care is managed. As more pharmaceutical companies recognise India's strengths, the number of GCCs is expected to increase, with these centres becoming key players in advancing AI-driven healthcare innovation.

India's deep talent pool, including 3.3 million software engineers and 446,000 AI/ML specialists, is a major asset that positions the country as a leader in AI-driven life sciences R&D. With scalable infrastructure, lower operating costs, and strong government backing through programmes like the IndiaAI Mission, India is poised to continue its rise as a global hub for life sciences.

As regulatory frameworks evolve to support AI technologies, India's position in the global life sciences industry is expected to strengthen further. Collaboration between government initiatives and private sector innovation will be crucial to maintaining this momentum. Life sciences GCCs will continue to lead in addressing global healthcare challenges, using AI to deliver faster, more effective solutions. BS

DigiNerve introduces enhanced NEET SS preparation module in Paediatrics MD Course

DigiNerve, an innovative EdTech platform developed by the renowned Jaypee Brothers Medical Publishers, is slated to transform paediatric medical education with a strategic enhancement to its Paediatrics MD course. The platform has updated its programme to provide comprehensive preparation for both MD Paediatrics examinations and the competitive NEET SS exam, officially reinforcing its commitment to student success. The course now offers medical professionals an even more robust opportunity

to master paediatric concepts through a multidimensional learning ecosystem. Developed under the distinguished guidance of Dr Piyush Gupta and incorporating insights from over 200 medical experts, DigiNerve's programme transcends traditional learning boundaries by providing students with the essential tools to excel in their super-specialty pursuits. The course continues to offer flexible learning durations ranging from 6 to 36 months, with pricing structures designed to accommodate diverse student requirements. Priced between Rs 14,999 and Rs 58,900, the programme specifically targets paediatric postgraduate students, medical professionals seeking super-specialty qualifications, and ambitious NEET SS candidates.

IIT Ropar opens Tinkerers' Lab for advancements in STEM education

The Indian Institute of Technology (IIT) Ropar has announced the opening of its new Dr Ranbir Singh Tinkerers' Lab (TL), a cutting-edge facility designed to inspire and nurture the next generation of engineers and innovators. This maker space is accessible to all students around the clock and has been made possible by funding from the Maker Bhavan Foundation (MBF) through a donation from philanthropist Dr Ranbir Singh. This event marks a significant step forward in the field of Science, Technology, Engineering, and Mathematics (STEM) education at IIT Ropar. Dr Ranbir Singh Tinkerers' Lab is more than just a workspace; it is a creative hub for aspiring engineers, innovators, and makers. The lab encourages students to view technology not just as a subject in school but as a powerful tool for creativity and future focused skill for young engineers.

IIT-B joins hands with Tohoku University to offer MTech, PhD dual degree programmes

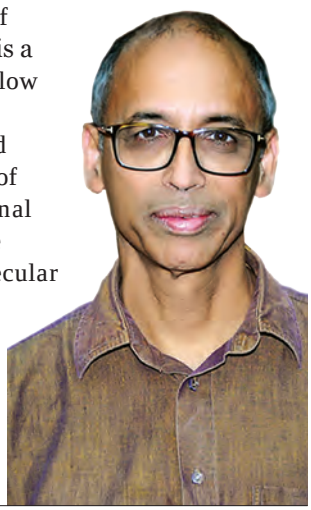
The Indian Institute of Technology, Bombay (IIT-B) has entered into a Memorandum of Understanding (MoU) with Japan's Tohoku University to launch the IIT Bombay-Tohoku University Joint Academic & Research Programme. The initiative will feature collaborative Master's and PhD programmes, providing participants with the unique opportunity to receive dual mentorship from experts at both IIT Bombay and Tohoku University. In addition, students will gain access to world-class research facilities, cutting-edge resources, and the opportunity to immerse themselves in the academic environments of two prestigious universities. This partnership is designed to foster cross-border academic collaboration, enriching the learning journey and advancing research in various fields of study. The programme will initially focus on a dual degree initiative for research purposes, with the potential to evolve into a Joint Institute over time, pending necessary approvals from both the senate and government.

Amit Agrawal steps in as new Pharmaceuticals Secretary

Amit Agrawal, the Chief Executive Officer (CEO) of the Unique Identification Authority of India (UIDAI), has been appointed as the new Secretary of the Department of Pharmaceuticals, Government of India. He takes over the position from Arunish Chawla, who was appointed as the Secretary in November 2023. Chawla has now been appointed as the Secretary of the Department of Revenue under the Ministry of Finance. Agrawal has had a distinguished career in public service. He brings a wealth of experience to the Department, having previously held several key positions in the government. His deep knowledge of policy formulation and regulatory affairs in the pharmaceutical sector makes him an invaluable asset to the nation's efforts to strengthen the pharmaceutical industry. In his new role, Agrawal is expected to lead initiatives that will enhance the accessibility, affordability, and quality of pharmaceuticals in India, as well as drive forward innovation in the industry.

Dr Raghavan Varadarajan wins Tata Transformation Prize of Rs 2 Cr for RSV vaccine development

Raghavan Varadarajan, PhD., from the Indian Institute of Science (IISc), Bengaluru has won the Tata Transformation Prize, of Rs 2 crore (approximately $240,000), in the healthcare category. Dr Varadarajan is working to develop a cost-effective Respiratory syncytial virus (RSV) vaccine that will allow for greater access to wide-spread deployment of vaccination programmes. His scientific advances will surmount the challenges that have hindered RSV vaccine development for decades and will provide broad, longer-lasting protection against RSV infection. Dr Varadarajan is known for his research in the fields of protein structure and protein folding and his contributions in developing vaccines and drugs for treating a type of fatal influenza and HIV-1. He is a former J. C. Bose National Fellow of the Department of Science and Technology and an elected fellow of the Indian Academy of Sciences and the Indian National Science Academy. Holding the position of a professor of Molecular Biophysics Unit, he heads The Varadarajan Laboratory of IISc which has research interests in the design of HIV-1 and influenza immunogens.



Zyla Health on-boards Rohit Boda as Advisor

Gurugram-based Zyla Health, a care management platform, has announced the onboarding of renowned industry leader, Rohit Boda, to the Board of Advisors. His distinguished career and wealth of experience marks a new chapter in Zyla's Health mission to redefine care management globally with data-driven, tech-enabled solutions.

Boda, Group Managing Director at J.B.Boda Group and Founder Chairman of RB Ventures, is a third generation entrepreneur poised as a visionary in the Insurance & Reinsurance sector. He upholds a commitment to service-oriented brokerage and steers the Group's operations. With over a decade of experience in the industry and leadership roles, he brings valuable insights gained from his family's long-standing presence in the Insurance & Reinsurance broking business with trading partnerships in over 90 countries. Boda will help Zyla Health in unlocking global partnerships to implement its clinical risk management solutions with global insurers. A forward-thinking investor, he actively supports innovative startups shaping the future.

International Diabetes Federation elects Dr V. Mohan as Honorary Fellow

Dr V. Mohan, renowned diabetologist and Chairman of Dr. Mohan's Diabetes Specialities Centre & Madras Diabetes Research Foundation, has been elected Honorary Fellow of the International Diabetes Federation (IDF), one of the most prestigious recognitions in the global diabetes community. This esteemed award is presented to individuals who have made outstanding contributions to the field of diabetes care, research and advocacy. Dr V. Mohan is one of only 17 individuals worldwide, and two from India, to receive

this incredible honour, alongside Dr A. Ramachandran. The recognition highlights Dr Mohan's unwavering commitment to advancing the understanding of diabetes and improving the lives of people affected by this chronic condition. With over three decades of experience in diabetes care and research, Dr V. Mohan has been at the forefront of various groundbreaking initiatives, including pioneering research on diabetes in India and working towards establishing comprehensive care programmes for individuals living with the condition. His efforts have had a profound impact on public health policy, medical education and the implementation of innovative treatment strategies

Redcliffe Labs reinforces strategic leadership as Aditya Kandoi steps into CEO role, Dheeraj Jain as Chairman

Redcliffe Labs, a purpose-driven pan-India omnichannel diagnostics service provider, has announced a strategic leadership transition. Its founder, Aditya Kandoi, has stepped in as Chief Executive Officer (CEO), and Dheeraj Jain has taken up the role of Chairman of the Board. As a CEO, Kandoi furthers the purposeful vision of Redcliffe Labs which is focused on giving every Indian the right to quality diagnostics. Recognising the critical-care gap in the healthcare sector, he has made it his mission to ensure that timely and accurate diagnostic services are accessible to all. Under his leadership, Redcliffe Labs has an ambitious expansion strategy that will extend the company's reach to Tier 2, Tier 3, Tier 4 cities and beyond so that everyone across the nation has access to quality healthcare services and does not limit to metro & Tier 1 cities only. In the new position, Dheeraj Jain leads the Board of Directors as Chairman, providing strategic oversight, facilitating governance, and ensuring effective board management. As a Founder & Mentor to the company, he will be crucial in guiding Redcliffe Labs through its next growth phase.

Dheeraj Jain Aditya Kandoi

Claypond Capital appoints Shravan Subramanyam to lead medtech platform

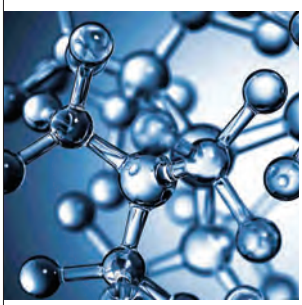
Claypond Capital, the family investment office of Dr Ranjan Pai, has announced the appointment of Dr Shravan Subramanyam as the head of its medical technology platform. The platform will focus on medical equipment and digital solutions for domestic and international markets, with an emphasis on localisation and innovation. Dr Subramanyam has two decades of experience in the life sciences and medical devices sectors, having worked with organisations such as Roche and Novartis across multiple geographies. He has also served as the president of NATHEALTH (Healthcare Federation of India) and co-chaired the Medical Technology Committees of FICCI and CII. Having served as the President & CEO, GE Healthcare India & South Asia and Managing Director, Wipro GE Healthcare.

INST identifies nano-plastics as emerging agents in spread of antibiotic resistance

Nanoplastics derived from single-use plastic bottles (SUPBs) contribute to the spread of antibiotic resistance (AR), shows a new study, underscoring an unrecognised public health risk. Scientists from Institute of Nano Science and Technology (INST) Mohali, an autonomous institution of the Department of Science and Technology (DST), traced how plastic nanoparticles could impact bacteria. Recognising the central role of Lactobacillus acidophilus in the gut microbiota, researchers investigated whether nano-plastics could transform beneficial bacteria into carriers of AR genes and pose a risk to human gut microbiome health. They utilised the used plastic water bottles to synthesise environmentally relevant nanoplastics particles as these polyethylene terephthalate bottle-derived nanoplastics (PBNPs) better represent the actual pollutant nanoplastics generated due to dumping of single use plastic bottles and containers. The scientists demonstrated that PBNPs can facilitate the cross-species gene transfer from E. coli to Lactobacillus acidophilus, a significant bacteria found in human gut microbiota, through a process called horizontal gene transfer (HGT), particularly through outer membrane vesicle (OMV) secretion in bacteria.

IIT Guwahati advances cholesterol & triglyceride detection with advanced nanotechnology

Researchers at Indian Institute of Technology Guwahati (IIT-G) have developed an innovative approach to improve the detection of cholesterol and triglycerides by integrating Surface-Enhanced Raman Scattering (SERS) on the nanoscale objects. The work utilises bimetallic nanostructures that are 10,000 times thinner than the width of a human hair for the high-fidelity detection of the biomarkers in the human blood. The timely detection of any abnormality and a close monitoring of cholesterol and triglyceride levels in the blood is highly sought for. While traditional lipid profile tests of blood are reliable, they often require laboratory settings, are not available as a point-of-care solution, and can take time to provide results. To address these limitations, the researchers have focused on a technique that combines nanotechnology and molecular detection, which can further be translated into a point-of-care device with an enhanced diagnostic precision.



Innovative injectable hydrogel to offer targeted breast cancer therapy

In a multi-institutional research led by researchers from Indian Institute of Technology Guwahati (IIT-G) and Bose Institute Kolkata, an advanced injectable hydrogel has been developed for localised cancer treatment. This innovative hydrogel-based therapy delivers anti-cancer drugs directly to tumour sites, significantly reducing the side effects typically associated with conventional cancer treatments. Hydrogels are water-based, three-dimensional polymer networks capable of absorbing and retaining fluids. Their unique structure mimics living tissues, making them suitable for biomedical applications. This newly developed hydrogel acts as a stable reservoir for anti-cancer drugs and releases them in a controlled manner, responding to specific conditions in the tumour microenvironment. In preclinical trials on a murine model of breast cancer, the hydrogel showcased remarkable efficacy. A single injection of the hydrogel, loaded with the chemotherapy drug Doxorubicin, resulted in a ~75 per cent reduction in tumour size within 18 days. Crucially, the hydrogel remained localised at the tumour site, steadily releasing the drug over time without causing detectable side effects on other organs.

Nano-formulation of darkness hormone to serve as therapeutic solution for Parkinson's disease

Scientists from Institute of Nano Science and Technology (INST) Mohali have proved that nano-formulation of Melatonin, the hormone produced by the brain in response to darkness, showed improved antioxidative and neuroprotective properties and could be a potential therapeutic solution for Parkinson's disease (PD).

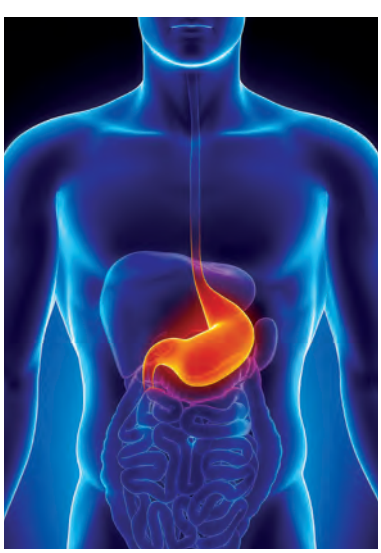
Studies over the last decade have shown the implications of PD-related genes in governing a quality control mechanism called "Mitophagy", which identifies and removes dysfunctional mitochondria and reduces oxidative stress. Among many antioxidants, melatonin, a neurohormone secreted from the pineal gland, an endocrine gland present in the brain, that regulates the sleep-wake cycle and is used to treat insomnia could be a potential inducer of mitophagy to mitigate PD. Researchers at INST used human serum albumin nano-formulation to deliver the drug to the brain and studied the molecular mechanism behind melatonin-mediated oxidative stress regulation. The study unfurls the molecular mechanism behind melatonin-mediated mitophagy regulation.

IASST lays focus on biological protein absorption on inserted implants

A group of scientists from Institute of Advanced Study in Science and Technology (IASST), Guwahati, an autonomous institute of North-East India under the Department of Science and Technology (DST), carried out fabrication of lysozyme bilayers in the presence of ions. It has led to ion-mediated lysozyme adsorption that can mimic the biological adsorption of proteins in a real living body. Lysozyme is a model protein that has four disulfide bonds and is found in human tears, sweat, milk, and saliva. On the other hand, ions are an integral part of the living body and are involved in multiple biological processes such as regulation of electrochemical potential, fluid-electrolyte equilibrium, extra-cellular acid-base equilibrium, muscle contraction and so on. In this context, the introduction of implants inside a living body would undoubtedly lead to ion-mediated protein-surface interactions.

New method for detecting H. pylori can help dyspeptic patients in remote settings

Researchers at CSIR- Institute of Genomics & Integrative Biology (IGIB) have found a way to develop FELUDA as a point-of-care diagnostic service at a minimal cost for detection of H. pylori and its mutations in dyspeptic patients from rural areas of India, with minimal or no access to diagnostic laboratories. Infections with H. pylori affect over 43 per cent of the world's population with a wide range of gastrointestinal disorders, including peptic ulcers, gastritis, dyspepsia and even gastric cancer. Resistance to clarithromycin, primarily attributed to point mutations in the 23S ribosomal RNA coding gene of H. pylori poses a global threat to public health, by necessitating repeated diagnostic tests and use of multiple courses of different antibiotic combinations for eradication of the same. IGIB group explored the potential of en31-FnCas9 to successfully detect the presence and identify the 23S rDNA mutation status of H. pylori in gastric biopsy samples from dyspeptic patients, both by in vitro cleavage studies and lateral flow-based test strip assays (FELUDA).



Thermo Fisher introduces MagMax Sequential DNA/RNA kit to advance blood cancer research

US-based Thermo Fisher Scientific has introduced the Applied Biosystems MagMAX Sequential DNA/RNA kit to enable clinical and translational researchers to conduct comprehensive DNA and RNA genomic analysis and streamline detection of genetic abnormalities found in haematological malignancies. The MagMAX Sequential DNA/RNA kit combines DNA and RNA isolation chemistries into a single kit, simplifying sample extraction for a broad range of downstream molecular applications. This integration merges two separate workflows into one sequential process, accommodating up to 15,000 white blood cells per microliter without the need for an additional red blood cell lysis step. By simplifying the workflow and reducing the need for multiple processes, it enhances overall lab productivity and helps reduce costs. The product is designed for specialty labs, large health system labs, academic medical centres and pharmaceutical and biotechnology companies developing clinical research in personalised medicine, conducting internal development, clinical research or clinical trials.

MilliporeSigma to acquire HUB Organoids, advancing Next Generation Biology portfolio

MilliporeSigma, the US and Canada Life Science business of Merck KGaA, Darmstadt, Germany, has announced that the Life Science business of Merck KGaA, has signed a definitive agreement with the intention to acquire HUB Organoids Holding B.V. (HUB). Organoids are cell culture models that functionally resemble an organ. They have the potential to speed up drug development, improve understanding of disease treatment in diverse populations, and reduce the industry's reliance on animal testing. HUB is a pioneer in the field of organoids. The company is based in Utrecht, Netherlands and employs some 70 people. HUB possesses the foundational patent portfolio on organoids and has a service offering ranging from new model generation to assay development and high-throughput screening. This adds to and enhances Merck KGaA´s Life Science business portfolio of cell culture reagents, tools and benchtop instruments for academia, biotech, and pharma customers

Bio-Techne, Waters ink co-marketing agreement for biotherapeutic characterisation

American life sciences company Bio-Techne Corporation, a leader in automated platforms for biotherapeutic characterisation, has announced a co-marketing and co-promotion agreement with Waters Corporation aimed at expanding the reach of advanced biotherapeutic characterisation and development processes. The companies plan to combine their complementary expertise on charge separation (Bio-Techne's MauriceFlex System) and liquid chromatography mass spectrometry (BioAccord LC-MS System from Waters) to deliver innovative solutions that optimise workflows, improve precision, and accelerate development timelines. Moving forward, application scientists from both companies are working on the analysis of additional classes of biomolecules and plan to exhibit the joint results in a poster at upcoming scientific conferences. This work will guide application notes, webinars, and presentations at upcoming Bio-Techne User Group Meetings to co-market each company's advanced biotherapeutic characterisation and development process capabilities.

Much Ado About A Nothing HMP Virus?

Human metapneumovirus (HMPV), discovered in 2001, most commonly causing upper and lower respiratory tract infections in young children, and also a concern for elderly people and immune-compromised patients, has purportedly emerged as a seemingly new threat in some parts of the world, particularly China and India.

Being termed as a winter bug, HMPV is commonly associated with acute respiratory tract infection (ARTI) which is a leading cause of morbidity and mortality worldwide. Studies have revealed that HMPV is distributed worldwide and has a seasonal distribution comparable to that of influenza viruses and Respiratory Syncytial Virus (RSV). It tends to strike in the late winter and early spring. In young children, HMPV is the second most common cause of lower RTI after RSV, with children less than one year of age showing the highest rates of infection.

Although first identified in 2001, serological evidence has indicated its presence in human populations since the 1950s. HMPV is a lipid-enveloped single-stranded, negative-sense non-segmented RNA, with serotypes A and B identified based on the nucleotide sequence diversity of the fusion (F) and attachment (G) proteins.

Studies characterising severe HMPV-related illnesses have predominantly focused on paediatric populations, leaving data on adult cases that are infrequent and fragmented. For example, one study reported that 12 per cent of hospitalised patients with HMPV required ICU admission, with 11 per cent requiring ventilator support.

Consequently, the prevailing assumption among healthcare providers is that only immunocompromised adults or those with significant comorbidities are vulnerable to severe outcomes.

In general, HMPV infection cannot be distinguished from other respiratory viruses on clinical grounds. Adult patients with an HMPV infection might be asymptomatic or might have symptoms ranging from mild upper RTI symptoms to severe pneumonia. However, the diagnosis of HMPV infection can be done by several techniques, including culture, nucleic acid amplification tests (NAAT), antigen detection and serologic testing, to confirm the infection.

To date, treatment of HMPV infection is mainly supportive. Several treatment regimes have been investigated including therapeutic options based on fusion inhibitors and on RNA interference, that seemed effective in vitro and in animal studies. Taking one example, researchers in Singapore have been working on a potential new route to disabling RSV and HMPV after elucidating the structure of one of its key components.

The HMPV F protein is a promising antiviral drug target due to its multiple roles during various stages of the HMPV lifecycle. But no anti-viral drug has been developed against this virus. Neither there is a vaccine candidate in the pipeline, despite the virus' existence for 24 years. However, the recent success and regulatory approval of RSV vaccines by the US Food & Drug Administration holds promise that development of a protein-based vaccine approach is also possible for HMPV.

British pharmaceutical firm AstraZeneca has recently acquired US-based company Icosavax focused on developing differentiated, high-potential vaccines using an innovative, protein virus-like particle (VLP) platform. Icosavax's lead investigational vaccine candidate, IVX-A12 is a potential first-in- class, Phase III-ready, combination protein VLP vaccine which targets both RSV and hMPV.

Additionally, scientists in the US and Europe are currently working towards developing a vaccine against HMPV with artificial intelligence (AI)-guided engineering methods.

Also, technology is being used to reduce the uncertainties surrounding this situation. For instance, Jivi AI, a startup based in the US and India, has developed the world's first free HMPV Risk Assessment Tool. Designed to reduce panic and enable timely medical interventions, this tool empowers individuals by providing a quick and accurate evaluation of their risk levels, ensuring they can seek medical attention without delay. BS

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Swiss HealthTech Startups Spearheading Innovation

As part of its HealthTech India Cohort 2025, supported by Innosuisse, Swissnex in India, Consulate General of Switzerland introduces four Swiss digital health, biotech and drug discovery companies for potential collaboration with India's health and life sciences ecosystem. These technologies have been developed by entrepreneurs from Switzerland's top universities and are part of our Market Validation and Market Entry Camps, powered by Innosuisse.

This is a unique opportunity for Swiss healthtech startups to scale their products to the Indian market while also collaborating with Indian partners to make healthcare technologies and innovations more accessible. Combining Switzerland's innovation prowess with India's enormous market potential can benefit both countries.

biospectal

Biopectal's OptiBP smartphone app is used for measuring blood pressure. It uses the phone's camera to record a video of the user's fingertip and then analyses it to determine blood pressure in 30 seconds. The cost-effective app is a more convenient alternative to blood pressure cuffs that are bulky and uncomfortable. OptiBP is CE-certified by the EU Medical Device Regulation for safety and effectiveness.

REGENOSCA

Regenosca's core technology—TissueSpan—a novel biomaterial made of self-absorbing mesh that facilitates the repair and regeneration of soft tissues and when implanted, helps in the body's natural healing process. The mesh helps in maintaining the shape and function of the repaired tissue and eventually dissolves in the body, leaving behind regenerated tissue. TissueSpan is a potential alternative to synthetic mesh implants, using tissue from another part of the patient's body and using tissue from a deceased donor, all of which come with their own set of complications. Regenosca currently focuses on applying the mesh in urethral stricture.

ZAAMIGO

Zaamigo's electric toothbrush-like device has a tiny waterproof camera and LED lights instead of bristles. Users can simply place the device in their mouth and the camera will take multiple images of their teeth to help them immediately identify cavities, plaque buildup and areas where brushing has been insufficient. Zaamigo's device aims to make oral care more accessible and convenient, enabling early detection of oral health issues.

NXI Therapeutics

NXI Therapeutics is focused on developing a new generation of immunosuppressive drugs, which selectively suppresses specific responses associated with autoimmune diseases and organ transplant rejection, while ensuring the body's ability to fight infections and diseases is intact. Their drugs could potentially lead to fewer side effects as opposed to the immunosuppressants that are more widely used.
NXI compounds offer T-cell-specific immunosuppressants that target the biology of a protein named coronin 1 with fewer side effects compared to traditional treatments.

Growing healthcare challenges in India opens up opportunities, and the technologies offered by these startups have the potential to transform the healthcare sector and address gaps in preventive care, regenerative medicine and advanced therapeutics.

If you're an investor, healthcare professional or industry stakeholder, please write to us at innovation.india@swissnex.org or atul.kavitake@swissnex.org to explore collaborations.

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