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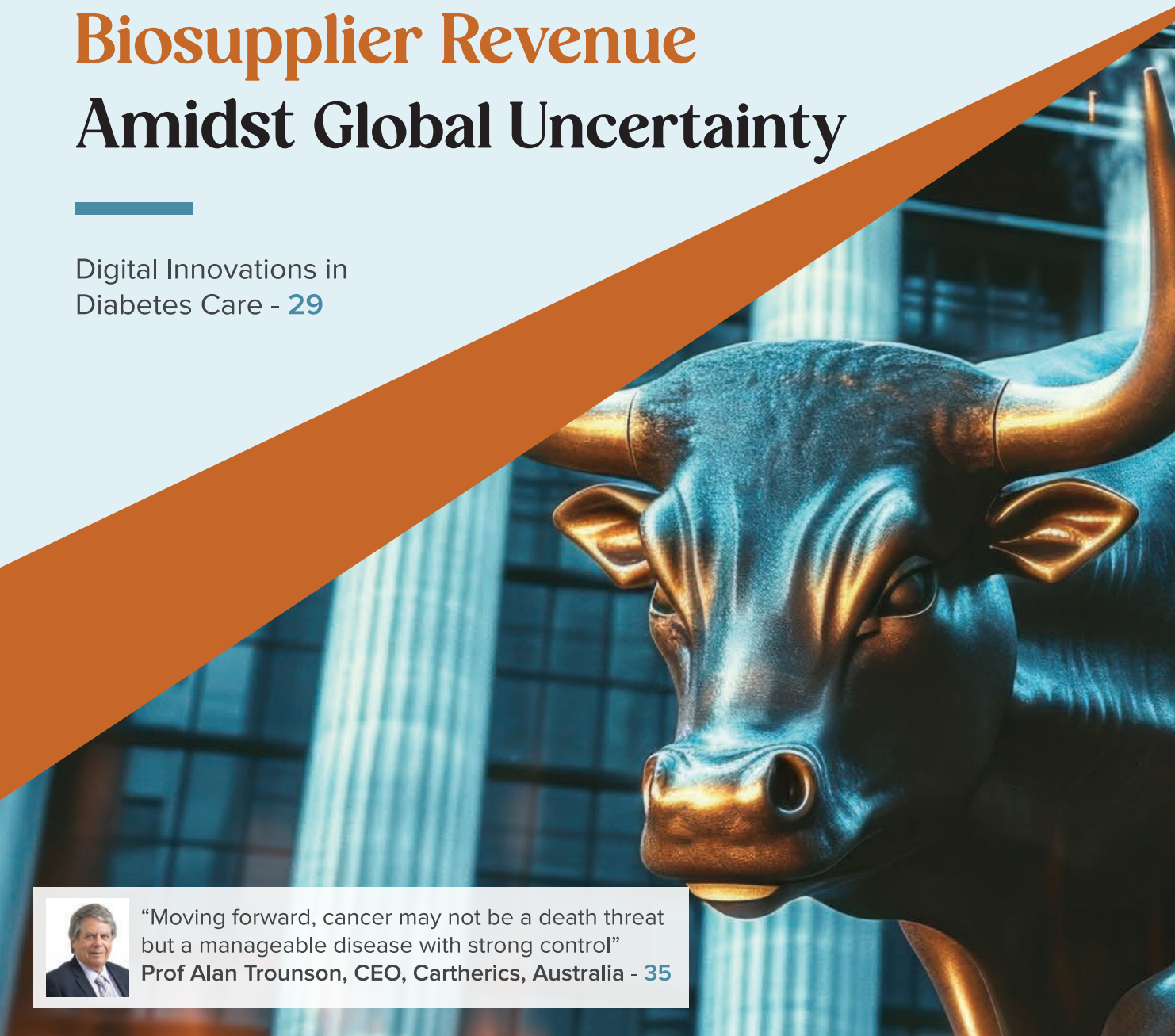
APAC Bullish on Biosupplier Revenue Amidst Global Uncertainty



Digital Innovations in Diabetes Care - 29

"Moving forward, cancer may not be a death threat but a manageable disease with strong control"
Prof Alan Trounson, CEO, Cartherics, Australia - 35

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Executive Chairperson, Biocon Ltd. & Chairperson, VGBt, GoK

Prof. Andrew Tobin
Professor & Director Advanced Research Centre, University of Glasgow

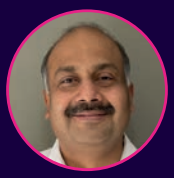
David Ewing Duncan
Author & Journalist

Dr. Sindura Ganapathi
Visiting PSA Fellow, Office of the Principal Scientific Adviser (PSA), Govt. of India

Dr. Claire Mazumdar
CEO
Bicara therapeutics, USA

Ms. Brynne Stanton
Bioeconomy Lead
World Economic Forum

Shreehas Tambe
CEO & Managing Director
Biocon Biologics



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Acknowledgement/ Feedback

Thanks BioSpectrum Asia for interviewing Medidata for your esteemed publication, for the October edition.

- Aisyah, Singapore

Thanks for incorporating comments from GeoVax in your cover story on monkeypox. Loved reading it.

- Dave, USA

Thanks so much for including comments from Intellect in your story on mental health initiatives in Asia. Please get in touch for any future stories.

- Risa, Singapore

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Letter from Publisher

Ravindra Boratkar
Publisher &
Managing Editor,
MD, MM Activ Sci-Tech
Communications Pvt. Ltd.

Dear Readers,

Biosupplier companies in the Asia Pacific (APAC) region are facing challenges after two years of shining performance. Demands driven by COVID-19 proved to be a major contributory factor in its progress. The sector remained focused on developing and delivering the necessities during the height of COVID period. As a result, growing at about 18 per cent annually, biosupplier companies in APAC performed best between 2021 and 2022. Thereafter, however, revenue of several companies started showing a downward trend leading to even flat growth in many cases. It became challenging to find a way out of this situation.

It is important because the APAC market has a major contribution of 15 to 25 per cent in the global revenue. Experts expect the companies to rebound in two years with an annual growth forecast of 9 per cent till 2027. Our content team has analysed the APAC market share of top 10 global biosupplier companies after looking into their annual reports of year ending December 2023 and concluded that the consistent growth in the region signals significant potential for these companies, driven by increasing investment in biotech and healthcare throughout APAC.

Diabetes affects 1 in 11 adults, or about 90 million people in South-East Asia, with this number projected to rise to 113 million by 2030 and 151 million by 2045. Alarmingly, over half of these individuals remain undiagnosed. In 2021, diabetes caused 747,000 deaths in the region, and the economic burden of managing the disease reached $10 billion, as per the 2021 IDF Diabetes Atlas. Technological tools such as continuous glucose monitors (CGMs) and mobile apps are redefining diabetes management. Our team explores how digital health is transforming diabetes care and the challenges associated with its integration into healthcare systems, as we observe World Diabetes Day on November 14.

With one of the youngest populations in the world, India can realise its demographic dividend through a workforce that is trained in 'employable' skills and is industry-ready. As India continues its journey towards becoming the skill capital of the world, various ambitious programmes and policies are steering the nation towards a skilled, employable, and future-ready workforce. We had an opportunity to speak with Jayant Singh Chaudhary, Union Minister of State (Independent Charge), Skill Development and Entrepreneurship, Government of India where he exudes confidence that the new BioE3 Policy will give a new direction to the Indian industry, further grounding its roots and boosting its manufacturing prowess to meet the domestic needs and global demands in key areas of pharma, biotechnology and other sectors.

Donor samples are fundamental to drug development, representing the diversity of human biology to drive research forward. However, securing these samples is fraught with challenges, including the need to recruit diverse donors, manage the logistics of sample collection, and ensure proper storage. Despite these obstacles, the pursuit of targeted, effective treatments continues, although donor retention rates remain around 40-45 per cent. To fully unlock the potential of future medical advancements, industry experts in an article suggest that we must rethink how we approach donor recruitment, engagement, and retention.

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

Thanks & Regards,

Ravindra Boratkar
Publisher & Managing Editor

COVER 18

APAC Bullish on Biosupplier Revenue Amidst Global Uncertainty

The Asia-Pacific (APAC) market plays a crucial role for global biosupplier companies, contributing anywhere from 15 per cent to 25 per cent of their total global revenues. Between 2021 and 2023, the bioprocessing market was one of the strongest performers, growing at about 18 per cent annually due to COVID-19-driven demand. However, 2023 was a challenging year for biosuppliers, with the decline in COVID-19-related spending and various global events impacting business, resulting in plummeting revenue for most firms.

While the bioprocessing sector saw impressive growth between 2021 and 2022, post-COVID-19 normalisation and rising financing costs have led to flat growth from 2022 to 2023. Despite this, the market is expected to rebound over the next two years, with an average growth forecast of around 9 per cent from 2023 to 2027, according to a report from Clearstate.

Let's look into the APAC market share of top 10 global biosupplier companies. Among the major biosuppliers, Japan based Shimadzu Corporation has the highest percentage of APAC revenue at 76 per cent, indicating a regional focus driven by its domestic base in Japan. Waters Corporation, Danaher, and Eppendorf follow, with around 30 per cent of their revenue coming from APAC, reflecting strong demand in life sciences and diagnostics. While giants like Thermo Fisher and Agilent have a smaller percentage of their revenue from APAC, the sheer size of their APAC revenue demonstrates their leading roles in the global life sciences sector. The consistent growth in this region signals significant potential for all these companies, driven by increasing investment in biotech and healthcare throughout APAC. Let's have a detailed look.

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DISPARITIES IN CANCER DRUG ACCESSIBILITY

Dr Milind Kokje
Chief Editor
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Companies in two Asian countries have recently joined hands to develop, produce, and distribute a cancer drug. The companies are GC Cell, South Korea's leading innovator in cell therapy, and PT Bifarma Adiluhung, Indonesia's premier stem cell therapy company. Their partnership began in June, and last month, they signed the licence agreement.

As per the agreement, Bifarma will be granted exclusive rights to develop, manufacture, and commercialise Immuncell-LC for 15 years. Bifarma operates Indonesia's first GMP-certified cell therapy production facility and possesses a comprehensive sales and marketing infrastructure focused on oncology. It also specialises in a cold chain distribution network that spans across Indonesia. Bifarma's facilities are expected to maximise the accessibility and commercial success of Immuncell-LC.

The synergy created by such an arrangement of two entities joining hands to overcome their weaknesses and leverage strengths is significantly important considering the need for cancer drugs in Asia. There is a huge gap in the number of new cancer drugs launched each year in high-income countries, upper-middle-income countries, lower-middle-income countries, and low-income countries.

A detailed report analysing the situation recently published in the British Medical Journal (BMJ) Global Health. It highlighted disparities in the availability and timeliness of these medicines worldwide. It has been pointed out that from 1990 to 2022, the new cancer drugs launched in high-income countries each year increased from 0.5 to over 8. Among upper-middle-income countries, the increase in the same period was just from 0.1 to 1.5 in lower-middle-income and low-income, the launches were minimal. The US was ahead with 345 launches followed by Japan and Canada.

The study has also looked into the delays in launching the drugs in different countries from the point of its launch in the first country. Of the 568 new cancer drugs launched between 1990 and 2022, 35 per cent were launched only in one country by 2022, 22 per cent in 2 to 5 countries, 15 per cent in 6 to 10 countries and 28 per cent in more than 10 countries. The delays ranged from the first launch to the second to the fifth launch were 18 months to 39.5 months respectively. Most of the new drugs were launched in the high-income regions and the fewest were launched in low and middle-income regions. Both factors, particularly the minimal launches, have an impact on cancer mortality.

Price is the third important factor that decides the accessibility to anti-cancer drugs. A recent news report talks about the high drug price issue in Japan. Referring to a drug, it said while it was highly effective in treating multiple types of cancer, its high price has reignited the debate over how to deal with expensive drugs. Another media report has pointed out that a cancer drug developed by Chinese scientists and approved by the US FDA will cost over 30 times more in the US than in China. Two other Chinese cancer drugs are expected to face a similar problem of price hikes in the US market.

India has also tried to address this problem. Hospitals in India have created a national cancer grid for bulk buying of drugs to bring down the costs by over 85 per cent. Another way the Indian healthcare system is trying to overcome the challenge of high prices is by breaking away from its dependence on the developing world. The hospitals have collaborated with the pharma industry to have a steady pipeline of drugs, a research paper has pointed out. Now, in Asia, Indonesia and Vietnam, too, are moving towards public-private partnerships for making the drugs available at lower prices.

Such experiments in Asian countries and their outcomes are important to increase cancer patient's survival rates by making new anticancer drugs available promptly and at affordable rates. Low-income group countries can look at such efforts in Asia to develop their own models for similar objectives. BS

New Zealand introduces new Mental Health Bill

The Health Ministry in New Zealand has announced that a new Mental Health Bill has been introduced and is now publicly available. The Mental Health Bill will repeal the current Mental Health (Compulsory Assessment and Treatment) Act 1992, which is more than thirty years old and no longer fit for purpose. The Bill sets out the regime for when a person can be subject to compulsory mental healthcare without their consent. This is a critical safety net when a person needs urgent intervention as a last resort. It also introduces far greater protections and safeguards than are currently in place, ensuring people understand what is happening to them and what they're entitled to when they are under the legislation. The next step is for the Bill to have its first reading in Parliament where it will be referred to the Health Select Committee for consideration. Once the Bill is referred to the Health Select Committee it will invite public submissions on the Bill, so members of the public will be able to comment on the Bill before it becomes law.

Emirates Drug Establishment and Korea MFDS lay focus on pharma & medtech manufacturing

The Emirates Drug Establishment (EDE) has entered into a Memorandum of Understanding (MoU) with the Korean Ministry of Food and Drug Safety (MFDS) to bolster collaboration in the pharmaceutical manufacturing and medical products sectors. The MoU focuses on exchanging expertise between the UAE and Korea in crucial areas such as drug regulation, best practices, clinical trials, and pharmacovigilance. The goal is to uphold the highest standards of quality and safety in medical products. This MoU aims to expedite the registration process for pharmaceutical products in both nations by introducing a fast-track approval process for early-stage products that have received endorsements from international regulatory authorities, including those from the European Union, the United States, and Japan. This initiative is expected to shorten the timeline for bringing new treatments to market, ultimately benefiting patients by providing quicker access to innovative therapies. Additionally, the agreement seeks to improve post-marketing surveillance systems to identify and address quality defects or safety concerns with medical products. This includes creating early warning mechanisms to detect counterfeit or defective products, ensuring prompt action to mitigate potential public health risks.

Greater Bay Area International Clinical Trial Institute in Hong Kong to initiate full operations in 2024

The Health Bureau (HHB), Hong Kong government, has announced that after months of preparation with full effort since the Chief Executive put forward in the Policy Address last October the establishment of the Greater Bay Area International Clinical Trial Institute (GBAICTI) in the Hong Kong Park of the Hetao Shenzhen-Hong Kong Science and Technology Innovation Co-operation Zone (i.e. the Hong Kong-Shenzhen Innovation and Technology Park), the GBAICTI is anticipated to come into full operation in the fourth quarter of this year at the Central Government-Aided Emergency Hospital in the Hetao area upon completion of the construction of its temporary office and biobank therein. The GBAICTI plans to move into one of the wet laboratory-enabled buildings, which is expected to complete construction later in the Hong Kong-Shenzhen Innovation and Technology Park, with a view to enhancing Hong Kong's innovation and technology ecosystem in a proactive manner.

India's CDSCO becomes Affiliate Member of International Medical Device Regulators Forum

To achieve global alignment in its medical device regulatory system, enhance the competitiveness of the domestic industry, and boost transnational prominence, the Central Drugs Standard Control Organisation (CDSCO), under the Ministry of Health and Family Welfare, government of India, applied for Affiliate Membership in the International Medical Device Regulators Forum (IMDRF) in 2024. After review of India's application for Affiliate membership and meeting discussions by the

IMDRF Management Committee (MC) with the senior officers of CDSCO during the 26thSession of IMDRF held in September

2024 at Seattle, Washington, USA, the CDSCO has received approval from IMDRF as an Affiliate Member of the Forum. As an affiliate member, India will participate in IMDRF Open Sessions to have information exchange on technical topics with other regulators, discussion on latest medical device regulatory strategies and trends, provide feedback on India's experience and perspectives, use IMDRF documents in part or in whole as the basis for India's regulatory framework for Medical Devices.

Singapore seizes opportunity to transform healthcare through technology

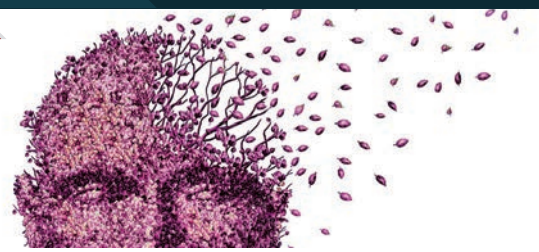
In response to the convergence of three major developments, namely genomics, artificial intelligence (AI) and the focus on preventive care, the Ministry of Health (MoH) in Singapore is seizing the opportunity to transform healthcare through technology. MoH has partnered with the Health Promotion Board (HPB), Synapxe, the public healthcare clusters (National Healthcare Group, National University Health System, and SingHealth), and national clinical translational programmes, to leverage cutting-edge technology while maintaining public trust in and security of Singapore's healthcare system. MoH is injecting about $200 million over five years into the Health Innovation Fund, to support ground-up development and test-bedding of innovations in public healthcare institutions, including innovations in AI. There are plans to scale the use of Gen AI tools to automate repetitive and time-consuming tasks, such as documentation and summarisation of medical records. MoH is also developing predictive preventive care, starting with a national programme for Familial Hypercholesterolemia (FH).

Telangana and Taiwan sign MoU to boost investment in biotech and other sectors

In a strategic move aimed at strengthening trade ties and economic cooperation, the Government of Telangana, India has signed a Memorandum of Understanding (MoU) with the Taiwan Chamber of Commerce (TCC). This partnership is designed to drive investment, infrastructure development, and job creation across Telangana, positioning the state as an attractive destination for Taiwanese foreign direct investment (FDI). One of the primary objectives of the agreement is to attract substantial Taiwanese FDI into Telangana, which is expected to generate considerable employment opportunities for the local population. To further facilitate this engagement, TCC India will establish an office in Hyderabad. The MoU focuses on five key sectors for Taiwanese investment: Biotechnology, Electronics, Artificial Intelligence, Green Energy, and the Creative Cultural industries. Additionally, it includes plans for the development of the India-Taiwan Industrial Park (ITIP) in Hyderabad, a project expected to become a hub for Taiwanese companies operating in India.

Australia's Telix Pharma buys RLS for $230 M to build next gen radiometal production network

Australia-headquartered Telix Pharmaceuticals and RLS (USA) Inc., America's only Joint Commission-accredited radiopharmacy network distributing PET, SPECT and therapeutic radiopharmaceuticals, have announced an agreement by Telix to acquire RLS from its parent company, RLS Group Ltd. The acquisition significantly expands Telix's North American manufacturing footprint and establishes the basis of a next generation radiometal production network to benefit Telix and select strategic commercial partners. Telix will leverage RLS' 31 licensed radiopharmacies located in major metropolitan areas across the US to build a radiometal production and distribution network for key therapeutic and diagnostic isotopes alongside last-mile delivery of finished unit doses in relevant markets.



Japan's Astellas and UK-based AviadoBio ink billion dollar deal for gene therapy targeting frontotemporal dementia

UK-based AviadoBio and Japan's Astellas Pharma Inc. have announced an exclusive option and licence agreement for AVB-101, an investigational, AAV-based gene therapy in Phase 1/2 development for patients with frontotemporal dementia with progranulin mutations (FTD-GRN). FTD is a devastating form of early-onset dementia that typically leads to death within three to 13 years from diagnosis. People with FTD commonly experience a rapid decline in executive function (attention control, working memory, problem-solving etc.), uncharacteristic behaviours, loss of language, apathy, and reduced mobility. It is an important cause of dementia in those under the age of 65 and is often under recognised, and misdiagnosed. Under the terms of the agreement, Astellas will have the option to receive a worldwide exclusive licence for the development and commercialisation rights to AVB-101 in FTD-GRN and other potential indications.

China's CanSino receives over $17 M to accelerate polio vaccine development

China-based CanSino Biologics Inc. has received an additional financial boost, securing a grant exceeding $17 million to propel its recombinant poliovirus vaccine (VLP-Polio) project forward. This new funding, which builds on the initial funding received in October 2023, also encompasses potential related combined vaccine candidates. In addition to the grant, CanSinoBIO has also obtained approval to start phase I/II clinical trials for the VLP-Polio vaccine in Indonesia, focusing on infants and toddlers in certain ages. This marks an important step forward in ensuring VLP-Polio's safety and efficacy for the most vulnerable population. This funding will further accelerate the clinical progress of the VLP-Polio vaccine, while the introduction of this vaccine candidate is expected to fill a gap in the market. Leveraging the company's profound expertise in protein structure design and virus-like particle (VLP) assembly technology, the VLP-Polio vaccine stands as a non-infectious alternative which eliminates the need for live viruses.

SK bioscience invests $3 M in US-based FinaBio specialising in next-gen conjugate vaccine technology

South Korea-based SK bioscience has signed an agreement to acquire a stake in Fina Biosolutions, based in the US, by investing $3 million. With this acquisition, SK bioscience will become FinaBio's first and sole strategic investor. FinaBio specialises in the research and development of conjugate vaccines for pneumoniae, meningococcal, typhoid, and other diseases. Among other assets, FinaBio has developed FinaXpress, a

proprietary E. coli expression system which they use for producing proteins not previously made in these bacteria, including many carrier proteins like CRM197. Marketed as EcoCRM, FinaBio has expanded access to this critical protein. FinaBio is also developing a next-generation conjugation technology that is site-specific and targets the desired location for antigen binding, hence boosting immunogenicity and productivity. SK bioscience, which already manufactures conjugate vaccines such as pneumococcal and typhoid vaccines, will actively utilise FinaBio's CRM197 technology.

Caliway Biopharma raises $206 M in Taiwan's biotech largest IPO

Caliway Biopharmaceuticals has announced the successful completion of its initial public offering (IPO) and up-listing from the Emerging Stock Market to the Taipei Exchange. The round, which concluded on September 24, 2024, raised approximately $206 million (NT$6.4 billion), marking it as the largest IPO in Taiwan's biotech industry history and valuing the company at nearly $3 billion. The IPO utilised a competitive auction mechanism held on September 18, 2024, during which Caliway offered 10.08 million shares through auction and an additional 3.32 million shares for public subscription. This process concluded with all shares sold, underscoring strong investor demand. The success of Caliway's IPO enabled the company to not only advance its leading product, CBL-514, into multi-country, multi-centre Phase 3 Pivotal clinical trials for subcutaneous fat reduction, also propelled its multiple indications as well as other follow up pipeline product developments. The CBL-514 injection, which induces adipocyte apoptosis to reduce subcutaneous fat in targeted areas precisely, represents a groundbreaking advancement in fat-targeted therapy with favourable safety and tolerability profiles.

Piramal Pharma Solutions announces $80 M expansion plan for sterile injectables facility in US

India-based Piramal Pharma Solutions (PPS), a leading global Contract Development and Manufacturing Organisation (CDMO) and part of Piramal Pharma, has unveiled an $80 million investment plan to expand its Lexington, Kentucky facility in the US. The site specialises in sterile compounding, liquid filling, and lyophilisation for sterile injectable drug products, playing a vital role in Piramal Pharma Solutions integrated antibody-drug conjugate development and manufacturing program, ADCelerate. The investment, financed by bank loans and internal accruals, aims to enhance the site's existing capacity and capabilities to meet the demands of a rapidly growing market. With this expansion, Piramal Pharma will strengthen its position as an efficient and reliable global partner for biologic manufacturing, leveraging deep scientific expertise and extensive experience managing complex technical projects. The expansion will create over 40 full-time jobs, contributing to the area's economic development and fostering a diverse, vibrant workforce.

Terumo launches Skill Lab in Singapore

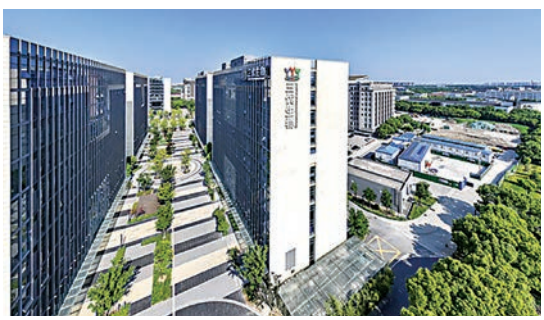
Terumo Asia Holdings has officially relocated and expanded to a new space in its Singapore office, together with the launch of the inaugural Terumo Asia Skill Lab. As the regional headquarters of the Asia Pacific region, this milestone marks a new chapter in Japanese firm Terumo's history as it continues to innovate and redefine the future. The modern, eco-friendly facility is designed to foster collaboration, drive innovation and growth, while honouring its heritage of 50 years in Singapore. Within this new premise is also the inaugural Terumo Asia Skill Lab which aims to bring not only local, but overseas healthcare professionals together in the advancement of healthcare professional expertise. Leveraging Singapore's strategic location, the Terumo Asia Skill Lab invites healthcare professionals, as well as biomedical students from across the region to participate in masterclasses and workshops; and engage in collaborative research initiatives. This Skill Lab fosters cross-border knowledge sharing, standardising best practices and elevating regional healthcare standards.

Cytiva opens first Innovation Hub in Korea

Cytiva, a global life sciences leader, has opened its first Innovation Hub in Korea, located in the Songdo Bio-cluster in Incheon. The new facility is intended to serve as a cornerstone of innovation and excellence, driving advancements in biopharmaceutical manufacturing and meeting the evolving needs of Cytiva customers in Korea and the wider Asia Pacific (APAC) region. Spanning approximately 6 100 square metres, the Innovation Hub features a manufacturing facility to deliver the necessary products used in developing therapeutics, and a customer experience lab for product demonstrations. This new facility is a key component of Cytiva's comprehensive strategy to address the increasing demands of the biopharmaceutical industry in Korea and the broader APAC region. By adopting sustainable building practices, Cytiva aims to provide Korean customers with eco-friendly solutions that drive industry growth, benefit the market, and support environmental goals.

Sanyou Bio opens new 10,000-sqm R&D facility in Shanghai

Sanyou Bio recently announced a move into its new 10,000-square-metre R&D building at Shanghai headquarters. As the core of Sanyou Bio's global strategy, the Shanghai headquarters integrates both an operational centre with a high-level R&D hub. It will lay a solid foundation for attracting top talents, absorbing cutting-edge technology, and expanding into international markets, opening a new chapter in global development. In addition to the R&D building,



Sanyou Bio has established a pilot production base of over 5,000 square metres through both self-construction and integration to accelerate the clinical transformation of innovative molecules. Sanyou Bio has established an integrated R&D laboratory for innovative biologics, which is centred on advanced and comprehensive facilities and equipment, and fully covers the entire process needs of biologic drug development. The highlight of the laboratory is its extensive equipment lineup, with a total of over 1,200 units and an investment of over $15 million in facilities and equipment, ranging from basic to cutting-edge experimental equipment.

Pfizer launches first ever dedicated commercial analytics centre in India

US-based pharmaceutical company Pfizer Inc. has launched the company's first ever dedicated commercial analytics centre in India called, 'the Analytics Gateway'. The Analytics Gateway represents a significant milestone in Pfizer's international commercial strategy and is positioned to be a global capability centre serving all of Pfizer's international (ex-US) markets to bring analytics, and insight breakthroughs that will benefit patients. The Analytics Gateway comprises a talented and experienced pool of data and analytics experts. The centre that is set up in Mumbai, is expected to accelerate data science and artificial intelligence (AI) solutions to meet Pfizer's ambitions in modernising marketing and creating an agile salesforce. It will also drive continuous commercial effectiveness, enabling Pfizer to bring more of its medicines to more patients in India and around the world.

Sunway Healthcare Group inks MoU with Medtronic to advance medical care in Malaysia

Sunway Healthcare Group from Malaysia and Medtronic have officially signed a Memorandum of Understanding (MoU), marking a significant milestone in their collaborative journey to advance medical care, and underscoring a shared vision of developing solutions to tackle some of the most pressing healthcare challenges. Notably, the MoU will further enhance the Centre of Excellence within the existing spine centre at Sunway Healthcare Group's flagship quaternary hospital, Sunway Medical Centre, Sunway City (SMC). The partnership will facilitate knowledge exchange and professional development through scientific and clinical engagements for spine surgeries, robotics and treatments. Sunway Medical Centre-trained consultants will share their expertise in Medtronic technologies with healthcare professionals across the region through clinical immersions, workshops and live-case observations. It will also enable opportunities for collaboration in clinical research and personalised digital healthcare initiatives, aligning with Medtronic's commitment to advancing medical science and improving patient outcomes.

Taiwan's Pharmosa Biopharm expands collaboration with Liquida

Liquidia Corporation, a US-based biopharmaceutical company developing innovative therapies for patients with rare cardiopulmonary diseases, and Taiwan-based Pharmosa Biopharm have amended the current exclusive licensing agreement for the development and commercialisation of L606, an inhaled, sustained-release formulation of treprostinil currently being evaluated in a clinical trial for the treatment of pulmonary arterial hypertension (PAH) and pulmonary hypertension associated with interstitial lung disease (PH-ILD). The amended agreement expands Liquidia's licensed territory beyond North America to include key markets in Europe, Japan and elsewhere. Pharmosa will retain certain territories, including China, Korea, Taiwan, Middle East, North Africa, Turkey and Southeast Asia. Liquidia has also obtained certain rights to Pharmosa's next-generation smart-technology nebulisers for use with its proprietary liposomal drug formulations. Unlike current nebulised treatments for PAH and PH-ILD, these palm-sized, lightweight, virtually silent nebulisers provide portability like a dry-powder inhaler and rapidly deliver a dose using breath-actuated smart technology that adapts to a patient's normal breathing pattern.

India-Australia partnership to build bio innovation corridor

La Trobe University, Australia and India's Biotechnology Industry Research Assistance Council (BIRAC) have signed a Letter of Intent (LOI) to establish a Bio Innovation Corridor to support the development of research and innovation. The Bio Innovation Corridor between India and Victoria will open access and provide landing pad opportunities to entrepreneurs, startups and researchers from both countries. The LOI will enable La Trobe and BIRAC to scale up and foster collaboration with knowledge-based technologies and ideas leveraging biotechnology, with applications in agtech, food tech, medtech, and for human health and wellness purposes. La Trobe University and the Bangalore Bioinnovation Centre (BBC) based in the Indian state of Karnataka have also joined hands to establish a Bio Innovation Corridor paving the way for the sharing of skills, infrastructure and capabilities, under a Memorandum of Understanding (MoU) signed recently. It will enable portfolio companies of BBC and researchers of La Trobe to pilot novel biotechnologies with applications across human health, medical, food and agritech for scale-up, regulatory approvals and customer testing in the two states.

Bayer opens new life science incubator in Shanghai Innovation Park, China

German pharmaceutical company Bayer has announced the inauguration of its new life science incubator, Bayer Co.Lab Shanghai, in the Shanghai Innovation (SH-INNO) Park at the heart of China´s largest biopharma cluster, Zhangjiang, Shanghai. Bayer Co.Lab is a part of the global network of life science incubators situated in key innovation hubs, including Cambridge (USA), Kobe (Japan), and Berlin (Germany). The establishment of Bayer Co.Lab Shanghai represents a major milestone in Bayer's external innovation strategy, aimed at fostering open collaboration within the biotechnology ecosystem. The incubator will provide state-of-the-art laboratories, collaborative working space and tailored support for startups, serving as a crucial pillar in advancing local innovation across the entire biopharmaceutical value chain.

Alpha Fusion accelerates astatine-based drug discovery with Series B funding

Alpha Fusion, Inc., working on research outcomes from Osaka University and the Japan Science and Technology Agency (JST) OPERA QiSS programme, has raised a total of ¥1.02 billion through a Series B funding round. The round was led by SBI Investment Co. and OSAKA University Venture Capital, with participation from several new investors. This funding will enable the startup to accelerate its research and development efforts, enhance its supply chain, and deliver Japan's cutting-edge cancer therapies to the global market as quickly as possible. As a leader

in the clinical development of Astatine-based therapeutics, Alpha Fusion is advancing its pipeline and building a highly efficient supply chain using cyclotrons in collaboration with partners across the globe. Targeted Alpha Therapy (TAT) is highly anticipated to become a foundational drug discovery platform in oncology, offering the potential to create numerous novel treatments.

In the past year, several major pharmaceutical companies in Europe and the US have acquired startups developing Actinium (Ac-225)-based radiopharmaceuticals, signalling a surge of interest in this field. Astatine (At-211) is garnering attention for its short half-life, which anticipates clinical safety, its halogen properties that allow it to be directly labelled into low-mid sized-molecule ligands, its ease of sourcing raw material, and the simplicity of its production using cyclotrons.

Singapore launches accelerator programme for startups in digital health innovation

The National University of Singapore (NUS) Medicine Digital Advanced Technology Accelerator (DATA) has launched its Digital Accelerator Programme for startups in the field of digital health innovation. The DATA Accelerator Programme, developed in collaboration with 22Health Ventures, aims to cultivate the next generation of startups that will bring groundbreaking ideas to the global stage. The DATA Accelerator welcomed five promising startups, each addressing critical challenges in healthcare with innovative solutions: 2Strands is developing a ctDNA-based blood test for detecting cancer recurrence early, empowering oncologists and patients in the fight against aggressive recurrent cancers; Health BETA aims to reduce the high recurrence of heart attacks among heart patients; HealthBridge AI is reducing doctor burnout by 70 per cent through their AI-driven solution that streamlines administrative tasks; Marymount Labs is automating data-driven health campaigns to increase the uptake of preventive care services, contributing to more proactive healthcare management; and TenangAI offers a mental health solution aimed at helping Gen Z and Millennials manage daily stress through a culturally localised approach.

Ahammune Biosciences raises $5 M in series A funding led by pi Ventures

India-based Ahammune Biosciences, a clinical stage therapeutics company working towards creating new ways to treat and cure skin diseases, has raised a Series A funding round of $5 million led by pi Ventures. Others participating in the round include Capital2B, Colossa Ventures, Bipin Agarwal, Unicornus Maximus LLP, and existing investors Ideaspring Capital, Kotak Alternate Assets, Legacy Assets LLP and IAN. The recently raised funding will assist the company in conducting Phase II human clinical trials for its promising drug candidate for vitiligo. Additionally, the funds will be utilised to expand the patent portfolio, and advance Ahammune's R&D efforts for other immune-mediated skin diseases. Since its inception, Ahammune has been working on its vision to advance innovative solutions for chronic skin diseases which are unmet medical needs.

Mediwhale secures $12 M to enhance cardiovascular and metabolic disease management

Mediwhale, an artificial intelligence (AI)-powered health diagnostics startup based in South Korea, has announced $12 million series A2 investment. The financing round was led by Korea Development Bank (KDB), with participation from Woori Venture Partners, IMM Investment, Mirae Asset Securities, and other investors. This investment involves both the issuance of new shares and secondary sales. Mediwhale initially raised $2 million in Series Pre-A funding in 2021, followed by $9 million in Series A funding in 2023. The recent Series A2 investment of $12million further strengthens the company's growth trajectory.

Mediwhale is setting a new standard of care for the early prevention of cardiovascular disease using AI-powered retina scans. The company's flagship product, Reti-CVD, is an AI diagnostic solution that autonomously assesses future cardiovascular disease risk using an eye scan. It is a simple, radiation-free test that provides highly accurate results equivalent to the coronary artery calcium score derived from a cardiac CT scan in predicting cardiovascular risk.

WHO and multilateral development banks kick off $1.5 B primary health financing platform

Execution is starting under the new Health Impact Investment Platform on the first country health investment plans turning original commitment into operational reality. The landmark partnership between Multilateral Development Banks (MDBs), the World Health Organisation (WHO) and low- and middle-income countries (LMICs) is addressing the critical need for coordinated efforts to strengthen primary healthcare (PHC) in vulnerable and underserved communities to build resilience against pandemic threats like mpox and the climate crisis. At a high-level roundtable meeting in New York on the margins of the UN Summit of the Future in New York recently, new funding was signed, and it was agreed that the partners will sit down and start identifying needs and planning health care improvements in 15 countries- Burundi, Central African Republic, Comoros, Djibouti, Egypt, Ethiopia, Gambia, Guinea Bissau, Jordan, Maldives, Morocco, Senegal, South Sudan, Tunisia and Zambia. The platform is a key part of an effort to unlock $1.5 billion in concessional loans and grants to expand and improve primary healthcare services in LMICs, especially in the most vulnerable communities.

WHO launches global plan to fight rising dengue and other Aedes-borne arboviral diseases

The World Health Organisation (WHO) has launched the Global Strategic Preparedness, Readiness and Response Plan (SPRP) to tackle dengue and other Aedes-borne arboviruses. The Plan aims at reducing the burden of disease, suffering and deaths from dengue and other Aedes-borne arboviral diseases such as Zika and chikungunya, by fostering a global coordinated response. The Plan outlines priority actions to control transmission and offers recommendations to affected countries across various sectors, including disease surveillance, laboratory activities, vector control, community engagement, clinical management, and research and development, through a whole-of-society and regional approach. The Plan will be implemented over one year until September 2025, and requires $55 million to support health preparedness, readiness and response efforts. It is aligned with the Global Vector Control Response 2017-2030, a global strategy to strengthen vector control worldwide, and the Global Arbovirus Initiative, launched in 2022, which focuses on tackling mosquito-borne arboviruses with epidemic potential.

WHO adds HPV vaccine for single-dose use

The World Health Organisation (WHO) has announced that a fourth WHO-prequalified human papillomavirus (HPV) vaccine product, Cecolin (developed by Xiamen Innovax Biotech) has been confirmed for use in a single-dose schedule. The decision is made based on new data on the product that fulfilled the criteria set out in the WHO's 2022 recommendations for alternative, off-label use of HPV vaccines in single-dose schedules. A growing number of vaccine

products initially prequalified for use in a 2-dose schedule can now be used in a single-dose schedule. The single-dose use indication for this additional vaccine, Cecolin, is incorporated into the second edition of WHO's technical document on considerations for HPV vaccine product choice.

A further piece of news is the WHO prequalification on August 2, 2024, of an additional HPV vaccine, Walrinvax (manufactured by Yuxi Zerun), making it the fifth product available on the global market. This will contribute to a more sustainable supply of HPV vaccines, enabling more girls to receive the vaccine.

APAC Bullish on Biosupplier Revenue Amidst Global Uncertainty

The Asia-Pacific (APAC) market plays a crucial role for global biosupplier companies, contributing anywhere from 15 per cent to 25 per cent of their total global revenues. Between 2021 and 2023, the bioprocessing market was one of the strongest performers, growing at about 18 per cent annually due to COVID-19-driven demand. However, 2023 was a challenging year for biosuppliers, with the decline in COVID-19-related spending and various global events impacting business, resulting in plummeting revenue for most firms.

While the bioprocessing sector saw impressive growth between 2021 and 2022, post-COVID-19 normalisation and rising financing costs have led to flat growth from 2022 to 2023. Despite this, the market is expected to rebound over the next two years, with an average growth forecast of around 9 per cent from 2023 to 2027, according to a report from Clearstate.

Let's look into the APAC market share of top 10 global biosupplier companies. Among the major biosuppliers, Japan based Shimadzu Corporation has the highest percentage of APAC revenue at 76 per cent, indicating a regional focus driven by its domestic base in Japan. Waters Corporation, Danaher, and Eppendorf follow, with around 30 per cent of their revenue coming from APAC, reflecting strong demand in life sciences and diagnostics. While giants like Thermo Fisher and Agilent have a smaller percentage of their revenue from APAC, the sheer size of their APAC revenue demonstrates their leading roles in the global life sciences sector. The consistent growth in this region signals significant potential for all these companies, driven by increasing investment in biotech and healthcare throughout APAC. Let's have a detailed look. BS

Ayesha Siddiqui

Top Biosuppliers APAC Revenue for 2023

Sr. No	Company	Total revenue (in $ Billion)	APAC revenue (in $ Billion)	Percentage
1	Agilent, USA#	6.833	1.383	20
2	Bio-Rad Laboratories, USA	2.67	563.0 million	21
3	Danaher Corporation, USA	23.89	7.191	30
4	Eppendorf AG, Germany	1.165 (€1.081)	356 million (€329.7 million)	30
5	Merck, Germany	10.2 (€ 9.281)	2.4 (€ 2.263)	25
6	PerkinElmer, USA*	3.3	817.368 million	24
7	Shimadzu Corporation, Japan	2.737 (410.6 billion Yen)	2.073 (311.26 billion Yen)	76
8	Sartorius AG, Germany	3.67 (€3.4)	864 million (€799.4 million)	24
9	Thermo Fisher Scientific, USA	42.86	7.873	18
10	Waters Corporation, USA	2.96	1.01	34

* Year ending January 1, 2023 # Year ending October 31, 2023

Agilent, USA

Total revenue:

$6,833 MILLION

APAC revenue:

$1,383 MILLION*

(China, including Hong Kong)

The company's total net revenue for the year 2023 amounted to $6,833 million, with the United States contributing $2,410 million and China, including Hong Kong, accounting for $1,383 million. The rest of the world, primarily composed of Asia and the rest of Europe, generated $3,040 million.

Agilent has three business segments comprising the life sciences and applied markets business, the diagnostics and genomics business and the Agilent CrossLab business.

Life science and applied markets business revenue in 2023 decreased 4 per cent compared to 2022 from $4,007 million to $3,856 million. Foreign currency movements had an overall unfavourable impact on revenue growth of 2 percentage points in 2023 when compared to the same period last year. Geographically, revenue decreased 4 percent in the Americas with a 1 percentage point unfavourable currency impact, increased 1 per cent in Europe with a 2 percentage point unfavourable currency impact and decreased 7 per cent in Asia Pacific with a 4 percentage point unfavourable currency impact. The revenue decline in Asia Pacific was driven by China with declines in liquid chromatography and gas chromatography mass spectrometry when compared to 2022.

Diagnostics and genomics business revenue increased 1 per cent in 2023 compared to 2022, from $1,389 million to $1,409 million. Foreign currency movements for 2023 had an overall unfavourable impact on revenue growth of 2 percentage points when compared to the same period last year. Geographically, revenue increased 4 per cent in the Americas with no currency impact, increased 2 per cent in Europe with a 1 percentage point unfavourable currency impact and decreased 9 per cent in Asia Pacific with a 6 percentage point unfavourable currency impact. The increase in the Americas was driven by strong growth in its nucleic acid solutions and reagent partnership businesses and growth in its pathology business, which was partially offset by a decline in its biomolecular analysis and genomics businesses. The increase in Europe was driven by growth in its pathology and reagent partnership businesses and was somewhat offset by a decline in its biomolecular analysis business. The revenue decline in Asia Pacific was driven by its biomolecular analysis and genomics businesses and an overall weakness in China.

Agilent CrossLab business revenue increased 8 per cent in 2023 when compared to 2022, from $1,452 million to $1,568 million. Foreign currency movements for 2023 had an overall unfavourable impact on revenue growth of 2 percentage points when compared to 2022. Geographically, revenue increased 12 per cent in the Americas with a 1 percentage point favourable currency impact, increased 10 per cent in Europe with no currency impact and increased 3 per cent in Asia Pacific with a 5 percentage point unfavourable currency impact. During the year ended October 31, 2023, revenue growth in all three regions was driven by contract repair services, per-incident repair services and consultative services, with installation related service in China partially offsetting the overall growth in Asia Pacific.

Agilent has forged several strategic partnerships with leading research institutions in Asia to enhance scientific research and public health initiatives. Notably, the company collaborated with the National University of Singapore to establish a Center of Excellence in Cell Metabolism, focusing on improving population health through innovative research. Additionally, Agilent signed a research collaboration agreement with the National Cancer Centre Singapore (NCCS) to advance genomic profiling techniques tailored to cancers prevalent in the Asian population. The company also joined forces with the Asia Consortium for Cell and Gene Therapy (ACTRIS) to accelerate the development of cell and gene therapies in Singapore. Furthermore, Agilent partnered with the Sarawak Infectious Disease Centre to boost research efforts addressing neglected tropical diseases in East Malaysia, demonstrating its commitment to tackling pressing health challenges in the region. BS

Bio-Rad Laboratories, USA

Total revenue: $2.67 BILLION

APAC revenue: $563.0 MILLION

Bio-Rad operates in two industry segments: Life Science and Clinical Diagnostics. For the year ended December 31, 2023, the Life Science segment accounted for 44 per cent of consolidated net sales, while the Clinical Diagnostics segment contributed 56 per cent. Approximately 42 per cent of total net sales came from the U.S., with 58 per cent from international locations, where Europe represented the largest region. The Asia-Pacific region generated 21 per cent of total revenue, totaling nearly $563 million.

The Life Science segment sales for the year ended December 31, 2023 were $1.18 billion, a decrease of 12.5 per cent compared to the year ended December 31, 2022. On a currency neutral basis, sales decreased 12 per cent compared to the year ended December 31, 2022. The currency neutral sales decrease was mainly in Asia Pacific and EMEA. COVID-related sales were $2.9 million in the year ended December 31, 2023 compared to approximately $105.2 million in the year ended December 31, 2022. Excluding COVID-related sales, sales decreased 4.9 per cent on a currency neutral basis driven primarily by lower process chromatography, qPCR and Western blotting products, as a result of demand constraints from biopharma and small biotech customers, the economic environment in China, and Russia sanctions.

The Clinical Diagnostics segment sales for the year ended December 31, 2023 were $1.49 billion, an increase of 2.6 per cent compared to the year ended December 31, 2022. On a currency neutral basis, sales increased 3.2 per cent compared to the year ended December 31, 2022. COVID-related sales were $0.7 million in the year ended December 31, 2023 compared to approximately $4.0 million in the year ended December 31, 2022. Excluding COVID-related sales, sales increased 3.4 per cent on a currency neutral basis. The currency neutral sales increase was primarily driven by an increased demand for its diagnostic testing systems, primarily diabetes, blood typing, and quality control products, especially in Asia Pacific and EMEA, partially offset by a decline in its infectious disease products and lower sales due to Russia sanctions. BS

"During 2023, biopharma production began to adjust to post- COVID-19 product demand. In biopharmaceutical research, we saw resets in development programmes and reallocations of resources. The emerging biotech sector also hit a rough patch in 2023, with a number of biotech funding sources drying up and higher interest rates combining to dampen investments in research. Looking forward, we expect 2024 to be a year where we begin the return to "normal." It will likely be a slow, gradual recovery given the ongoing challenging geopolitical environment, above-average interest rates, and inflationary pressures. life science and clinical diagnostics markets that we operate in are stable and sustainable for the long term"

- Norman Schwartz,
President and Chief Executive Officer,
Bio-Rad Laboratories

Danaher Corporation, USA

Total revenue:

$23,890 MILLION

APAC revenue:

$7,191 MILLION*

Danaher operates over 15 companies in the biotechnology, life sciences, and diagnostics sectors, divided into three segments: Biotechnology, Life Sciences, and Diagnostics. Biotechnology includes the Pall Life Sciences business and Cytiva. The Life Sciences segment includes Abcam, Aldevron, Beckman Coulter, IDT, Leica Microsystems, Molecular Devices, Pall, Phenomenex, and SCIEX. The Diagnostics segment features brands such as Beckman Coulter, Cepheid, HemoCue, Leica Biosystems, Mammotome, and Radiometer, with manufacturing across North America, Europe, Asia, and Australia.

Total revenue reached $23,890 million. Biotechnology generated $7,172 million, with contributions of $2,454 million from North America, $2,407 million from Western Europe, $329 million from Other Developed Markets, and $1,982 million from High-Growth Markets. The Life Sciences segment brought in $7,141 million, including $2,999 million from North America, $1,519 million from Western Europe, $510 million from Other Developed Markets, and $2,113 million from High-Growth Markets. Diagnostics accounted for $9,577 million, with $4,508 million from North America, $1,542 million from Western Europe, $431 million from Other Developed Markets, and $3,096 million from High-Growth Markets.

*''(Company defines its geographical segments as follows: North America includes the United States and Canada. Other Developed Markets encompass Japan, Australia, and New Zealand. High-Growth Markets refer to developing regions with accelerated growth in GDP and infrastructure, including Eastern Europe, the Middle East, Africa, Latin America (including Mexico), and Asia (excluding Japan, Australia, and New Zealand). Developed Markets comprise all regions not classified as high-growth markets.) BS

"Over the past five years, we have made several, strategic portfolio moves to strengthen our leading positions in life sciences and diagnostics and accelerate our long-term growth and earnings trajectory. We established our Dental and Environmental & Applied Solutions segments as stand-alone public companies in Envista and Veralto. We largely replaced their revenue contribution through the acquisitions of higher long-term growth and higher margin businesses such as Cytiva, Aldevron and Abcam. Cytiva is the industry's premier bioprocessing franchise, and the additions of Aldevron and Abcam expanded our footholds in the highly attractive areas of genomics and proteomics. Additionally, demand for respiratory diagnostics has expanded significantly, and Cepheid's respiratory franchise is more than six times larger today than it was before the COVID-19—a strong position we expect to sustain long-term given Cepheid's differentiated offering and leading presence at the point-of-care."

- Rainer M. Blair,
President and Chief Executive Officer,
Danaher Corporation

Eppendorf AG, Germany

Total revenue:
$1,165 MILLION
(€1,081 million)

APAC revenue:
$356 MILLION
(€329.7 million)*
(China+ Asia/Pacific/Africa (APA))

After a successful business performance during the COVID-19 years from 2020 to 2022, revenue in 2023 fell by €152.3 million to $1,165 million or €1,081.4 million (prior year: $1,333.6 million), reflecting a decline of 12.3 per cent (prior year: +12.1 per cent). The Americas market region experienced a revenue decline of 16.2 per cent in 2023, dropping from $462.8 million to $387.7 million. In Europe, revenue fell from $414 million in 2022 to $393 million in 2023.

Similarly, the Asia/Pacific/Africa (APA) region faced a decline in customer demand following the coronavirus COVID-19, with revenue dropping by 10.3 per cent from $205 million to $184 million, compared to prior year growth of 10.4 per cent. This decline was partially offset by robust revenue growth in the Bioprocess unit and the continued success of separation products in Japan and other countries. Additionally, geographical expansion efforts, including the opening of a new sales unit in South Africa and the launch of a high-quality consumables portfolio under the Excella brand in the mid-price segment, have laid the groundwork for future revenue growth.

In China, revenue fell by 19.2 per cent in 2023, down from $212 million to $171 million, compared to prior year growth of 27.6 per cent. The applied and pharmaceutical industries, particularly in the biopharma and biotech sectors, experienced a significant 30 per cent drop in revenue due to a weak business environment marked by low investment and market confidence. BS

> *"The life science industry will continue to grow in the long term. However, the development of global markets in 2024 will remain subject to uncertainty and volatility as well as a number of specific challenges. As a result, the financial year will again be dominated by cost management, budget discipline and savings to improve profitability. Contrary to expectations, demand for our products is recovering only slowly so far. We expect order intake to stabilise in 2024 and develop- ment for the year as a whole to be at the same level as the previous year."*
>
> ***- Dr Dirk Eric Loebermann,***
> *Chief Operating Officer, Eppendorf SE*

Merck, Germany

Total revenue:
$10.2 BILLION
(€ 9,281 million)

APAC revenue:
$2.4 BILLION
(€ 2,263 million)

In 2023, Merck's Life Sciences business generated a total revenue of $10.2 billion, spread across its three key business units: Process Solutions, Life Science Services, and Science & Lab Solutions. In 2023, the Asia-Pacific (APAC) region played a significant role in Millipore Sigma's Life Sciences business, contributing 25 per cent of the total revenue with $2.4 billion sales. However, the region experienced a challenging year, with a total decline of 10.7 per cent. This decrease was driven by a 5.1 per cent reduction in organic growth, compounded by a 5.6 per cent negative impact from exchange rate fluctuations.

Europe, accounting for 4 per cent of total sales ($3,430 million), saw a total decline of 7.8 per cent, primarily due to a 7.6 per cent reduction in organic growth. North America, the largest region with 36 per cent of sales ($3,639 million), experienced a sharp drop of 14.2 per cent, driven by a 12.0 per cent decrease in organic growth and further impacted by exchange rate effects. Latin America, with 4 per cent of total sales ($380 million), showed more resilience, with organic growth of 10.3 per cent but an overall slight decline of 0.3 per cent due to exchange rate effects. The Middle East and Africa (MEA), comprising 1 per cent of sales ($125 million), remained steady with a marginal 0.1 per cent drop.

The firm announced several strategic investments and initiatives in the Asia-Pacific (APAC) region. In May 2023, it signed a non-binding memorandum of understanding with the Korean Ministry of Trade, Industry and Energy, along with Daejeon City, Korea, to establish a new Asia-Pacific bioprocessing centre. This facility aims to support the region's healthcare ecosystem by facilitating commercial manufacturing for biotech and pharmaceutical customers. In June 2023, the company expanded its production capacity for highly purified reagents at its site in Nantong, China, a major transportation hub in the Yangtze River Delta. This approximately $75.6 million investment will enable large-scale manufacturing of high-purity reagents for quality control and testing in the biopharma sector. In November 2023, the firm completed the second phase of its $31 million Biologics Testing Center in Shanghai, China. This expansion builds on the first biosafety laboratories inaugurated in 2022, allowing for local access to a broad range of testing services, including cell line characterisation and lot release, from preclinical development to commercialisation. BS

> *"In our Life Science business, demand declined as expected in 2023 due to the end of COVID-19. We expect our Life Science business to recover in the course of the year with the expected end of the destocking phase within Process Solutions on the one hand and improving conditions in Science & Lab Solutions on the other."*
> ***- Belén Garijo,***
> *Chair of the Executive Board and Chief Executive Officer, Merck*

PerkinElmer, USA

Total revenue: $3.3 BILLION

APAC revenue: $817.4 MILLION

PerkinElmer operates its business through two segments: Discovery & Analytical Solutions and Diagnostics. For FY2023, the company's revenue was $3.3 billion, a decrease of $0.5 billion, or 13 per cent, compared to $3.8 billion in the previous year. This decline includes an approximate 4 per cent decrease in revenue attributable to unfavourable changes in foreign exchange rates, which was partially offset by an approximate 9 per cent increase in revenue from acquisitions. The total revenue decrease reflects a significant decline in the Diagnostics segment, with revenue falling by $913.0 million, or 31 per cent, due to decreased demand for COVID-19 product offerings. This decline was partially offset by an increase in core product offerings, resulting in a $689.0 million decrease in immunodiagnostics revenue and a $225.8 million decrease in applied genomics revenue. In contrast, the Discovery & Analytical Solutions segment experienced an increase in revenue of $395.2 million, or 44 per cent, driven by growth in the life sciences market, particularly within the pharmaceutical and biotechnology sectors.

The Discovery & Analytical Solutions segment generated $1,292.9 million in revenue for the fiscal year ending January 1, 2023. Geographically, the Americas led with $683.2 million (52.9 per cent of total revenue), driven by strong demand in pharmaceuticals and biotechnology. Asia contributed $312.3 million (24.2 per cent), highlighting growth potential in emerging markets. Europe followed closely with $297.5 million (23.0 per cent), reflecting a competitive landscape focused on compliance and quality assurance. Overall, the segment demonstrates a balanced geographical revenue distribution with significant opportunities for growth, particularly in Asia. The diagnostics sector reported revenues of $979.473 million from the Americas, $534.343 million from Europe, and $505.097 million from Asia, totaling $2,018.913 million across these regions. BS

Sartorius AG, Germany

Total revenue:
$3.67 BILLION
(€3.4 billion)

APAC revenue:
$864 MILLION
(€799.4 million)

In 2023, the company achieved total sales of approximately $3.67 billion (€3.4 billion) with 21 per cent of this revenue coming from the Lab Products & Services Division. The remaining 79 per cent were driven primarily by the Bioprocess Solutions Division.

In terms of regional development, sales revenue declined in all regions due to the normalisation of demand and the COVID-19-related high prior-year base. The reduction in inventories by customers and the reluctance to invest and purchase were even more noticeable in China and led to a significant decline in sales. This development also had a significant impact on business in the Asia Pacific region as a whole, which amounted to $864 million (€799.4 million) (22.1 per cent) and thus accounted for a good 23 per cent of total Group revenue. Sales in the Bioprocess Solutions division fell by 25.1 per cent and in the Lab Products & Services division by 12.4 per cent.

Bioprocess Solutions division: In the EMEA region, which accounted for around 39 per cent of the division's sales, revenues fell by 16.8 per cent to $1,126.8 million compared to the previous year, which was significantly influenced by business with vaccine manufacturers. In the Americas region, sales amounted to $1,131 million (-13.3 per cent) against the backdrop of low investment activity by customers in the USA. The region's share of divisional sales was 39 per cent. The Asia-Pacific region, which accounted for 22 per cent of the division's sales, performed significantly weaker due to a marked reluctance to invest on the part of pharmaceutical customers, mainly in China. At $864 million, sales were down 25.1 per cent on the previous year.

Additionally, geographical expansion efforts, including the opening of a new sales unit in South Africa and the launch of a high-quality consumables portfolio under the Excella brand in the mid-price segment, have laid the groundwork for future revenue growth.

In China, revenue fell by 19.2 per cent in 2023, down from $212 million to $171 million, compared to prior year growth of 27.6 per cent. The applied and pharmaceutical industries, particularly in the biopharma and biotech sectors, experienced a significant 30 per cent drop in revenue due to a weak business environment marked by low investment and market confidence.

The Lab Products & Services division recorded sales revenue of $775 million, a decline of 12.7 per cent in constant currencies (reported: -15.4 per cent) compared to the high level of the prior year. The Asia Pacific region, which contributed 30 per cent to the Lab Products & Services division's business, decreased by 12.4 per cent to $227 million primarily due to a significant drop in sales in China.

North America and Asia are the key focal areas of the regional growth strategy. The USA is the world's largest market for bioprocess equipment and laboratory products. Yet because it is home to the company's main competitors for both company divisions, Sartorius formerly had lower market share in this region than in Europe and Asia. By systematically strengthening its sales and service capacities, Sartorius has gained market share in the USA in recent years. In Asia, one focus is on the construction of a new production facility in South Korea, which offers excellent growth prospects with its dynamically expanding biopharma market. BS

> *"In 2023, for the first time in more than a decade, the Group's sales revenue fell to around 3.4 billion euros. That was mainly due to the after-effects of the COVID-19, in particular the expected, but longer than initially anticipated, reduction in customer inventories throughout the life science sector."*
>
> ***- Dr Joachim Kreuzburg,***
> *Chief Executive Officer, Sartorius*

Shimadzu Corporation, Japan

Total revenue:
$2.737 BILLION
(410.6 billion Yen)

APAC revenue:
$2.073 BILLION
(311.26 billion Yen)

Currently, the Shimadzu Group portfolio includes businesses in four segments, which are analytical and measuring instruments, medical systems, industrial machinery, and aircraft equipment. Of those segments, the analytical and measuring instruments segment is designated as a key business for achieving global growth through additional investments.

In FY 2023, the company reported net sales of $3.414 billion (511.9 billion yen). Of this, the Medical Systems segment contributed 14 per cent, $482 million (72.3 billion yen) and the Analytical and Measuring Instruments segment dominated, accounting for 66 per cent of the total sales of nearly $2.253 (338.3 billion yen.)

The Analytical & Measuring Instruments business demonstrated strong growth in 2023, with net sales reaching ¥338.3 billion, a significant increase from ¥314.7 billion in the previous year. This growth was driven by high demand for key models, including liquid chromatography, mass spectrometer systems, and gas chromatographs, which are critical tools in various scientific and industrial applications. From a regional perspective, Japan continues to be the largest market, accounting for 45 per cent of sales.

However, China also represents a significant portion at 38 per cent, signalling robust demand from this growing market. Other Asian countries and regions contribute 14 per cent, with other regions making up the remaining 3 per cent. This distribution highlights the company's strong presence in the APAC region, with Japan and China being the key drivers of growth.

The company has a total of 14,219 employees, with the majority (57 per cent) based in Japan. China accounts for 15 per cent of the workforce, while Europe and other Asian countries each make up 9 per cent. In the Americas, 8 per cent of the employees are located, and the remaining 2 per cent are distributed across other regions. BS

> *"Despite actively investing in growth during the first year of the medium-term management plan achieved record results due to favourable exchange rates and other factors. Contributions from India and Europe sufficiently offset the impact of worsening market conditions in China, which was not anticipated when the medium-term plan was prepared. Meanwhile, we will increase the profit margin of the medical systems segment by using AI image analysis and other diagnostic imaging transformations based on AI/IoT technologies to offer new solutions with higher added value."*
>
> ***- Yasunori Yamamoto,***
> *President, Shimadzu*

Thermo Fisher Scientific, USA

Total revenue:

$42.86 BILLION

APAC revenue:

$7,873 MILLION

Thermo Fisher Scientific's total revenue of $42.86 billion is spread across four key business segments. Laboratory Products and Biopharma Services lead with 52 per cent of the total, indicating their dominance in supporting bioprocessing and lab operations. Life Sciences Solutions contributes 22 per cent, highlighting its significant role in research and development, especially in the biotech space. Analytical Instruments account for 16 per cent, emphasising the importance of precision tools in various scientific applications. Lastly, Specialty Diagnostics represents 10 per cent of the total revenue, showing its specialised role in medical testing and diagnostics.

From a geographic perspective, North America remains the largest market, with revenues reaching $24,594 million in 2022 before adjusting to $22,764 million in 2023, possibly due to post-COVID-19 market normalisation. Europe has shown stability, with revenues fluctuating slightly between $10,741 million and $11,134 million over the same period. The Asia-Pacific region, considered a growth market, saw a decrease from $8,115 million in 2022 to $7,873 million in 2023, indicating potential challenges or market stabilisation after the COVID-19 surge. Other regions, while contributing smaller amounts, showed consistent performance, with a slight decline to $1,444 million in 2023.

The company employed approximately 122,000 colleagues worldwide, with around 61,000 based in the Americas, 20,000 in the Asia-Pacific region, and nearly 41,000 in Europe, the Middle East, and Africa (EMEA).

Thermo Fisher Scientific has announced several strategic initiatives and investments to strengthen its presence in the Asia-Pacific region. The company is expanding operations in the Philippines with a new global business services centre in Manila, opening its first office in Jakarta, Indonesia, and launching an electron microscopy demonstration centre in Taiwan. A key highlight is the introduction of the Cell Therapy Collaboration Center Program in Singapore, which will serve as a regional hub, offering tailored support to cell and gene therapy (CGT) developers. Additionally, Thermo Fisher has established a Sterile Drug Facility in Singapore.

The company is also partnering with research institutions and universities in the APAC region, including collaborations with Singapore's National University Hospital and Mirxes to advance genomic testing, and a strategic partnership with Australia's Monash University to strengthen research initiatives. BS

> *"During 2023, we made significant advancements in partnerships and collaborations with our customers. In one example, we built on our longstanding relationship with Boehringer Ingelheim. Together, we are collaborating to develop a genomic-testing-based companion diagnostic for non-small cell lung cancer patients in Japan and the United States, where lung cancer is the leading cause of death."*
>
> ***- Marc N. Casper,***
> *Chairman, President and Chief Executive Officer, Thermo Fisher Scientific*

Waters Corporation, USA

Total revenue:
$2.96 BILLION

APAC revenue:
$1.01 BILLION

Waters Corporation, a global leader in analytical instruments and software, has pioneered innovations in chromatography, mass spectrometry and thermal analysis serving life, materials and food sciences for more than 65 years. With approximately 7,900 employees worldwide, Waters operates directly in over 35 countries and has products available in more than 100 countries.

In 2023, the company experienced a slight 1 per cent decline in total net sales, dropping from $2.97 billion in 2022 to $2.96 billion. This decrease was largely driven by a significant drop in sales in Asia, which fell by 11 per cent overall. China, in particular, saw a 22 per cent decrease in sales, from $565.1 million in 2022 to $440.7 million in 2023, highlighting challenges in that market. Japan remained flat year-on-year, with a negligible difference in sales at $167.2 million, but still down 8 per cent compared to 2021. The 'Asia Other' segment showed resilience, with a 7 per cent growth, indicating stability in other Asian markets.

Meanwhile, the Americas region saw solid growth, with total sales increasing by 5 per cent, driven by a 5 per cent rise in the United States and a 7 per cent increase in America's Other. The US continued to be the company's largest individual market, with sales reaching $928 million, up from $886.1 million the previous year. Europe also performed well, with a 7 per cent increase in sales to $840 million, maintaining steady performance.

Overall, while challenges in Asia, particularly in China, contributed to the slight decline in global sales, strong growth in the Americas and a positive performance in Europe helped offset some of the losses.

Waters has inaugurated its new Global Capability Center (GCC) in Bangalore. This strategic investment aims to accelerate technology adoption, innovation, and business efficiencies through a centralised hub of talent. The GCC will create over 300 new roles and replace $16 million in previously outsourced services, transforming it into a global hub for in-sourcing talent and driving technological innovation within the Waters enterprise. BS

> *"In 2021 and 2022, we had a strong performance with double-digit revenue growth each year as our transformation was well underway. We started 2023 with a lot of positive momentum; however, early in the year, Biotech funding diminished, geopolitical tensions increased, and the economy in China weakened at a historic pace in less than a year, going from our fastest growing geography to our slowest. As the year went on, capital spending continued to slow and market conditions remained challenging."*
> ***- Dr Udit Batra,***
> *President and Chief Executive Officer, Waters*

Digital Innovations in Diabetes Care

Diabetes affects 537 million people globally and is a major contributor to the non-communicable disease (NCD) epidemic. Technological tools such as continuous glucose monitors (CGMs) and mobile apps are redefining diabetes management. On this World Diabetes Day (November 14, 2024), we explore how digital health is transforming diabetes care and the challenges associated with its integration into healthcare systems.

Diabetes affects 1 in 11 adults, or about 90 million people, in South-East Asia, with this number projected to rise to 113 million by 2030 and 151 million by 2045. Alarmingly, over half of these individuals remain undiagnosed. In 2021, diabetes caused 747,000 deaths in the region, and the economic burden of managing the disease reached $10 billion, as per the 2021 IDF Diabetes Atlas.

Technological advancements have proven to be a boon for diabetes care, offering various tools to help manage the condition effectively. One of the critical aspects of diabetes management is maintaining optimal glucose levels at all times. Digital health tools, such as continuous glucose monitors (CGMs), connected insulin pens, portable A1C monitors, and mobile apps, are transforming the way patients manage their condition outside of hospitals. Mobile apps enable healthcare providers to create personalised treatment plans based on real-time data.

Another innovation is the automated insulin delivery (AID) system, which integrates CGMs and insulin pumps to adjust insulin delivery continuously based on glucose data. Portable A1C monitors allow patients to measure their A1C levels at home, an essential marker for long-term diabetes management.

"Previously, patients had limited information about their condition, which led to anxiety and a lack of motivation for managing it. Now, with tools like CGMs, personal A1C monitors, and mobile apps, patients can check their levels anytime, anywhere, and easily access professional support through mobile platforms. This not only reduces uncertainty but also empowers them to receive more frequent feedback, stay motivated, and proactively manage their health. Ultimately, this leads to better health outcomes by making diabetes management more accessible and proactive," said ***Yeaseul Park, Co-Founder and Co-President Orange Biomed, USA.*** Orange Biomed is inventor of the world's first pocket-sized, single-cell, micro-electro-mechanical A1C analysis device, agnostic to haemoglobin variants.

Digital health tools provide three key benefits that significantly improve the daily management of diabetes. First, real-time data from CGMs allows patients to track their glucose levels continuously, enabling them to make informed decisions about insulin dosages and diet. Second, mobile apps can analyse CGM data to offer personalised insights, helping patients understand their glucose patterns and manage their condition more effectively. Lastly, these tools enhance adherence by making diabetes management more convenient and engaging, leading to better compliance with treatment plans.

"Effective blood glucose management can reduce the risk of diabetes-related eye, kidney and nerve diseases by 40 per cent and have a positive effect on cardiovascular health. These tools have also been proven to help reduce the incidence and impact of hyperglycemia, lower the risk of night-time low glucose levels, and give more assurance in their day-to-day decision-making. Standards of care today encompass BGM and CGM technology which offer patients the flexibility," said ***Christopher (Chris) Chiam, APAC Digital Insights Value Stream, Lead, Roche Diagnostics Asia Pacific.***

Recognising the crucial role of digital health tools in diabetes management, governments across South-East Asia are actively partnering with digital health companies to enhance healthcare outcomes for patients. For example, Health2Sync is collaborating on several projects with governments to enhance the care of people with glucose-related issues. One such initiative is the DigiCoach program, a three-month engagement run in partnership with the Health Promotion Board in Singapore. This programme showcases Health2Sync's technical capabilities by utilising data and automation to enable self-management and motivate lifestyle changes for better health.

Another notable collaboration is Taiwan–based Health2Sync's partnership with Western Sydney Diabetes, aimed at digitising the workflow within the Western Sydney Local Health District (LHD). By leveraging Health2Sync's solution, this initiative seeks to improve patient outcomes and reduce the strain on healthcare resources.

South Korea-based Kakao Healthcare has signed a memorandum of agreement with Rumah Sakit Universitas Indonesia (RSUI), a state university hospital, to pilot its latest AI-based diabetes management application. Launched in February, the app, named Pasta, leverages AI to assist with blood sugar management. Integrated with a continuous glucose monitor, it displays a user's blood sugar levels in near real-time, while also recording data on diet, exercise, and sleep. This comprehensive information is then used to generate automated lifestyle suggestions, offering a holistic approach to diabetes care.

Challenges in integrating Digital Health

Digital health solutions have huge potential to transform diabetes management through closer monitoring and adjustment to patient's medication and lifestyle for improved blood glucose control. However, use of such technology is still nascent - mainly due to the need for both patients and doctors to change how they deal with diabetes.

"A key factor in successful diabetes management is patient understanding and motivation. A patient who takes the time to understand their condition then tracks blood glucose and manages their lifestyle actively will invariably achieve better outcomes than another who takes a laissez-faire approach. Apps can be wonderful tools to support patient journeys like this. But we still need better communication of the importance of patient self-management, including use of digital health as a supportive tool. Without this, the promise of digital transformation will be lost," said ***Dr Ronald Ling, CEO, ConnectedHealth, Singapore.***

Integrating digital health solutions with existing healthcare systems and workflow can be complex. "The challenge we face is in integrating patient reportable outcomes, data gathered from CGM tools, with the Electronic Medical Records (EMR) of hospitals. Having this level of integration will allow clinicians to have a more holistic picture of their patient's data, empowering them to develop tailored treatment plans. As data privacy and patient safety are paramount, we need to generate evidence demonstrating the feasibility, safety, and value of this integration in providing critical information for clinicians in diagnosing and treating patients," said Chiam.

"The challenge with CGMs lies in handling the large volumes of data they generate, but by standardising key metrics and storing only the essential data, this process can be streamlined. For A1C, the main challenge has been ensuring accuracy in home-based devices," added ***Dr Unghyeon Ko, Co-Founder and Co-President, Orange Biomed, USA.***

The initial cost of CGMs and other digital tools can be a barrier for patients in markets where out-of-pocket expenses are high. Also, ensuring the secure and ethical handling of patient health data is critical, as data privacy concerns remain a key issue in the widespread adoption of these technologies.

To overcome these challenges, ***Ed Deng, Co-founder and CEO of Health2Sync, Taiwan*** suggests that healthcare systems should focus on several key areas. He said, "First, increasing access by implementing reimbursement policies or initiatives that make digital health tools more affordable and accessible. Second, prioritising data security by investing in and adopting robust data protection measures to safeguard patient information. Finally, promoting interoperability by developing standards and guidelines to ensure seamless integration of digital health solutions into existing healthcare systems, enabling more efficient and effective care."

"Regulators and healthcare payers have a big role to play in creating the right environment to encourage adoption and should take a big-picture, long-term view as they develop policies to address one of the most pressing issues in healthcare delivery," said Dr Ling.

While digital health tools offer great promise for people with diabetes, their seamless integration into healthcare systems and robust data privacy measures are paramount for large-scale adoption. Ensuring these technologies are both accessible and secure will be key to unlocking their full potential in improving diabetes care and patient outcomes. BS

Ayesha Siddiqui

Targeted Transformation of Diabetes Care in India

According to the International Diabetes Federation (IDF) about 63 per cent of people with diabetes say that the fear of developing diabetes-related complications affects their well-being. And around 28 per cent of people with diabetes find it hard to remain positive in relation to their condition. Hence the theme for this year's World Diabetes Day (WDD) 2024-26 observed on November 14, the world's largest diabetes awareness campaign reaching a global audience of over 1 billion people in over 160 countries, is Diabetes and well-being. Let's look at ways to reduce or reverse diabetes in India.

« **Vandana Iyer,**
Research Director,
TechVision,
Frost & Sullivan

The Indian Council of Medical Research–India Diabetes (ICMR-INDIAB) study published in 2023 reported that the overall weighted prevalence of diabetes in India was 11·4 per cent, accounting for 101 million people. The study findings also reported an alarming increase in non-communicable diseases (NCDs) such as prediabetes, hypertension, and obesity. Hence, there is a rising need to holistically manage the rising diabetes prevalence by improving awareness, diet, lifestyle, screening, treatment & monitoring practices in India.

Public and Private Campaigns for Improving Awareness

A study of the National Family Health Survey of India (NFHS), 2019–2021 reported that diabetes awareness varied from 14.4 per cent to 54.4 per cent. Not surprisingly, the less educated and poorer sections of the society had lower diabetes awareness. Thus, considering the rising prevalence of the disease, there is a need to improve diabetes awareness in India. Several public and private initiatives are looking to address this concern. However, it is important to ensure that the awareness campaigns have wider outreach.

For instance, mDiabetes, launched in collaboration with the Ministry of Health and Family Welfare, India and the World Health Organization (WHO) aims to provide basic diabetes information to users who dial a missed call to a number. This is likely to ensure a wide outreach as even rural Indian sectors have good mobile connectivity in India. In 2021, the Research Society for the Study of Diabetes in India (RSSDI) launched the Defeat Diabetes Campaign to reach out to over 100 million people in 100 days to 'test, track and treat' diabetes. The campaign was successful and managed to screen over 106 million people in over 10,000 locations in India. There is a need to continue such targeted campaigns with well-defined outcomes and timelines.

Private initiatives such as the Novartis Indian Metabolics team launched 'Prayaas' and currently this programme collaborates with healthcare professionals (HCPs) across 100 camps for diabetes diagnosis of more than 2,000 people every month. The awareness campaigns have demonstrated promising outcomes, but there is still a rising need for increased collaboration between the public and private sectors. Such initiatives can help create wider awareness outreach, especially across remote regions within the Indian landscape. Multichannel outreach, across physical, print, digital and radio campaigns can amplify the awareness impact for improved diabetes management.

Targeted Diet and Lifestyle Changes

Diet and lifestyle changes are crucial for the holistic management of diabetes, especially in emerging economies like India where rising urbanisation has grown proportionately with sedentary lifestyles and unhealthy diets. Fortunately, technological advances, like connected diabetes care devices have enabled improved diet and lifestyle habits of diabetics. For instance, Humrahi is an ISO/IEC 27001:2013 certified digital diabetes patient support programme that provides customised counselling, blood sugar test recommendations, medication adherence, and diet and lifestyle changes to improve health outcomes.

Joyhealth, an AI-powered diabetes management tool, can predict the impact of different foods on sugar levels and offers personalised coaching on how

to reduce their adverse health impact. Exercise-based apps like 7 Minute Workout curate a personalised 7-minute workout routine for effective diabetes management. Smart and connected continuous glucose monitors (CGMs) and associated apps have been crucial for providing real-time feedback for blood glucose spikes and managing diabetes. Leading medical device companies such as Abbott and Medtronic offer clinically approved CGMs in India, allowing for improved diabetes care. However, the cost of a 14-day CGM sensor can range from Rs 5,000 to Rs 10,000, which may hinder access to rural diabetes care, especially for children with type 1 diabetes. Hence, public healthcare support for improving access to continuous diabetes care can positively impact health outcomes across India.

Recent Tech Advances

In 2023, the Ministry of Health and Family Welfare, India, launched a roadmap to scale primary healthcare services for people with hypertension and diabetes. Under this initiative, the Indian government plans to screen and provide standard care to 75 million people with diabetes or hypertension by 2025.

Technological advances in diabetes management have enabled the development of smart glucometers, CGMs, connected insulin pumps and closed-loop insulin delivery systems or artificial pancreas. Clinically approved CGMs such as FreeStyle Libre Pro, advanced insulin pumps such as Tandem T:Slim X2, Omnipod and Medtronic Minimed 640G are currently available in India. Even closed loop insulin delivery systems such as MiniMed 780G and MiniMed 770G are available for diabetes management in India. However, they are not easily accessible to the larger population due to high pricing, which can range from Rs 3 to 5 lakh for an automated closed-loop insulin pump.

While insulin is a mainstay for treating type 1 diabetes, it is now also being used for the treatment of people with type 2 diabetes. Insulin treatment most often needs to be self-administered through daily injections. There are several connected insulin pens available in India that enable convenient administration and tracking via mobile apps. Novo Nordisk's Insulin Icodec, a once-weekly dose, may be approved in India shortly enabling much needed respite from daily insulin injections. Weekly dosing may also improve patient adherence and diabetes care for diabetics on insulin therapy. While oral (Oral-Recosulin) and inhalable (Afrezza) are also available in India they are not as effective as injectable insulin formulations for diabetes management.

The Indian landscape has witnessed new drug approvals for management of obesity and diabetes. Drugs such as Cadila Pharmaceuticals' Jankey M and Glemark's SITAZIT M were launched in 2022. The blockbuster injectable drugs, GLP-1 agonists, for diabetes and obesity treatment, have also been launched in India. Novo's tirzepatide formulations, Zepbound and Mounjaro, function as dual GIP/GLP-1 agonists and are approved for obesity and diabetes treatment respectively. Novo's oral semaglutide, Rybelsus, is also garnering rising popularity in India and has reported rising sales growth since 2023. However, there is growing concern regarding the overuse, off-label use or misuse of GLP-1 agonists as they are often associated with severe gastrointestinal side effects. Indian doctors are urging the government to regulate GLP-1 use amidst the surging demand for this class of drugs.

Outlook

Diabetes care must be a holistic combination of awareness, diet, lifestyle, continuous tracking and timely interventions. India has the second largest population of diabetics in the world and without periodic tracking, diabetes will lead to renal and cardiovascular mortalities. There is a rising need for initiatives and interventions to reduce or reverse the impact of non-communicable diseases such as obesity, hypertension, and diabetes.

The IMPACT India initiative helps address this need. This programme was launched in 2018 and uses a new approach for optimising diabetes care in India. The initiative intends to impact HCPs, diabetes and the Indian society by using the India Diabetes Care Index (iDCI) tool. The iDCI is a quarterly aggregate index of glycated haemoglobin, fasting plasma glucose (FPG), and postprandial plasma glucose (PPG) which is evaluated regularly, and the insights are related to HCPs to optimise diabetes care through timely diet, lifestyle and medical interventions. The initiative is also promoted on social media awareness through periodic iDCI reports.

The goal of the IMPACT India programme is to reduce glycated haemoglobin in Indian diabetics by one per cent within 1000 days. Private sector initiatives, like the Fortis C-DOC (Centre for Diabetes, Obesity and Cholesterol) Foundation and Apollo's Diabetes Management Program will also help improve awareness and timely diabetes care. The rising integration of technology to enable connected and remote care will greatly improve the outlook for diabetes management in India. The public and private initiatives, coupled with rapid technology advancements will drastically help reduce the rising diabetes prevalence in the Indian subcontinent. BS

"To achieve our 'Skilled India' vision, we'll train a large number of individuals quickly and to high standards"

Jayant Singh Chaudhary, Union Minister of State (Independent Charge), Skill Development and Entrepreneurship, Government of India, in an interaction with BioSpecturm in Hyderabad, shares his insights on the various initiatives taken up by the Centre for skill development programmes, boosting self-employment. He exudes confidence that the new BioE3 Policy will give a new direction to the Indian industry, further grounding its roots and boosting its manufacturing prowess to meet the domestic needs and global demands in key areas of pharma, biotechnology and other sectors. ***Edited excerpts:***

« **Jayant Singh Chaudhary,** Union Minister of State (Independent Charge), Skill Development and Entrepreneurship, Government of India

What according to you are the key objectives of the BioE3 policy and how is it going to boost the industrial sector in the country?

The BioE3 (Biotechnology for Economy, Environment, and Employment) Policy aims to position India as a leader in bio-manufacturing and address critical challenges like climate change and resource sustainability. Its main objectives include increasing Research and Innovation, Strengthening Domestic Bio-manufacturing, Promoting AI and Digital Tools, Establishing Facilities and most importantly developing a skilled workforce. I am quite confident that by increasing research and innovation, the industry can focus on solutions to tackle climate change and reduce carbon emissions. Enhancing collaborations among science, technology, engineering and manufacturing sectors will strengthen domestic Bio-manufacturing. I believe this new BioE3 policy is going to put more stress on encouraging the use of advanced technologies alongside biotechnology innovations and this will promote India in Artificial Intelligence and Digital Tools. This policy will also enable the creation of Bio-manufacturing Hubs and Biofoundries to support scalable production. Above all nurturing a skilled workforce is very important. This policy stresses developing a talented workforce which is needed to drive innovation and boost the next level of the Industrial Revolution in the country.

What specific initiatives is the government implementing to foster a skill development ecosystem for startups involved in Active Pharmaceutical Ingredients (APIs), Key Starting Materials (KSMs), and bio-pharma sectors, especially in terms of adhering to sustainable environmental norms?

The government is committed to fostering a robust skill development ecosystem for startups in APIs, KSMs, and bio-pharma sectors. To achieve this goal, we are implementing several specific initiatives. We are launching targeted skill development programmes that focus on the technical skills required for the production of APIs and KSMs. These programmes will incorporate best practices in sustainability and environmental management. In addition, we are partnering with industry leaders to design curricula that meet current market demands, ensuring that startups are equipped with the necessary skills to thrive in a competitive environment. To encourage environmentally friendly practices, the government is providing financial incentives for startups that adopt sustainable methods. This includes grants and subsidies for technologies that reduce waste and enhance energy efficiency. Furthermore, we are establishing mentorship programmes and incubators specifically for bio-pharma startups, offering guidance on regulatory compliance, sustainable production methods, and innovation in product development. We are also allocating funds for research and development in sustainable technologies within the bio-pharma sector, encouraging startups to innovate while adhering to environmental norms. Through these initiatives, we aim to create a dynamic and skilled workforce that not only meets industry needs but also prioritises sustainable development in the pharmaceutical and bio-pharma sectors.

How does the BioE3 policy initiative help existing pharmaceutical and biotechnology companies in India boost domestic production and reduce reliance on imports, particularly from countries like China?

The BioE3 policy initiative significantly supports pharmaceutical and biotechnology companies

in India by enhancing domestic production and decreasing reliance on imports. As I said earlier, it encourages the establishment of Bulk drug and Bio-manufacturing Hubs and Biofoundries, providing essential infrastructure for scaling up local production. Additionally, the policy increases funding for research and development, motivating companies to innovate and develop homegrown solutions, particularly for APIs and KSMs. By promoting the integration of advanced technologies, such as artificial intelligence, the initiative helps improve production efficiency and reduce costs, making domestic manufacturing more competitive. Furthermore, the policy focuses on developing a skilled workforce tailored to the industry's needs, ensuring access to high-quality talent. Most importantly, the policy emphasising sustainable practices also aligns Indian companies with global standards, enhancing their reputation and attractiveness in international markets, and ultimately enabling them to compete effectively and minimise import dependency.

How does the BioE3 policy specifically encourage new startups?

The BioE3 policy encourages new startups by empowering concerned institutions, universities, and industries to collaborate on transformative innovations. By increasing research funding, establishing bio-manufacturing facilities, and promoting the use of advanced technologies, the policy creates an environment that supports the growth of startups in the pharmaceutical and biotechnology sectors. This approach helps foster innovation and enables startups to efficiently address market needs while contributing to sustainable practices.

How is the government addressing the shortcomings in skill development in pharma, biotechnology, and life sciences?

The government recognises the critical need to enhance workforce skill development across all sectors, especially in key areas like pharma, biotechnology, & life sciences. India has already made its mark in the global generic market, but we require deep research skills to succeed in innovation & new drug development. Creating an environment that fosters this kind of expertise is essential, & we are actively working in that direction. Our approach to enhancing skill development focuses on comprehensive coordination of efforts nationwide. The Ministry is committed to bridging the gap between the demand and supply of skilled manpower by establishing a strong vocational and technical training framework and facilitating skill up-gradation. This includes fostering innovative thinking for both current and future job roles. To achieve our vision of a 'Skilled India', we aim to train a large number of individuals quickly & to high standards. Our efforts are supported by several functional arms, including the Directorate General of Training (DGT), the National Council for Vocational Education and Training (NCVET), & the National Skill Development Corporation (NSDC). We also operate 33 National Skill Training Institutes (NSTIs) & around 15,000 Industrial Training Institutes (ITIs), alongside 187 registered training partners. Collaboration is essential, & we work with skill development centres, universities, Central Ministries, State governments, international organisations, and NGOs for impactful implementation of our initiatives.

Could you highlight an initiative from your ministry that makes a difference to an individual?

I'm pleased to share that the Indian School of Business (ISB), Hyderabad, has introduced innovative entrepreneur development courses. Interestingly, candidates are not required to have specific higher education qualifications; instead, we prioritise commitment and determination, especially for those with strong business concepts, like Aryan, who has a 12th-grade pass certificate and yet enrolled in the high-profile ISB to seek a career as an entrepreneur. Every individual has innovative ideas, and it's crucial to provide an environment that nurtures these thoughts and helps scale them up. The government is also focusing on sectors like Green Hydrogen, semiconductors, and the Make in India initiative to create more job opportunities.

What about support to entrepreneurs & MSMEs?

We have established two divisions to cater to the needs of aspiring entrepreneurs and MSMEs: the National Centre for Small Businesses in Haryana and the Indian Institute of Entrepreneurship (IIE) in Gujarat. Under the PM Vishwakarma Yojana, we have trained 900,000 people, helping them gain self-employment through skill development. Over the next three years, our target is to train an additional 1.3 million youth across various sectors.

What initiatives are being taken to inspire innovation among students?

To foster skill development and encourage innovative thinking, we are training over 250 million students in 10,000 schools across India. By investing in our youth today, we are preparing them to tackle tomorrow's challenges. BS

Amguth Raju
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“Moving forward, cancer may not be a death threat but a manageable disease with strong control”

Cartherics Pty Ltd, a Melbourne-based biotechnology company led by renowned stem cell biologist and IVF pioneer Prof Alan Trounson, is , focusing on a portfolio of CAR-T and CAR-NK cell products. The company’s allogeneic (off-the-shelf) cell platform utilises induced pluripotent stem cells (iPSCs) generated from donated cord blood, which can be differentiated into NK cells, T cells, and other immune system cells. Cartherics' lead product, CTH-401, is an investigational allogeneic iPSC-derived chimeric antigen receptor (CAR) natural killer (NK) cell therapy designed to target solid tumours. Following a successful pre-investigational new drug (pre-IND) meeting with the US Food and Drug Administration (FDA), CTH-401 is set to enter clinical trials for ovarian cancer in 2025. Subject to early clinical data, CTH-401 will subsequently enter a basket trial targeting other TAG-72+ solid cancers. Prof. Alan Trounson, CEO of Cartherics, sheds light on iPSCs for CAR-T therapies, the future of immunotherapies, and the CGT landscape in the APAC region. ***Edited excerpts:***

« **Prof Alan Trounson,** CEO, Cartherics, Australia

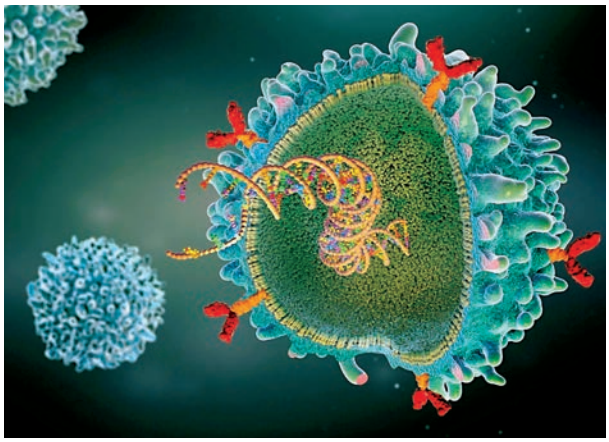
Could you explain more about the advantages of using iPSCs from cord blood for creating your ‘off-the-shelf’ CAR-NK and CAR-T therapies?

Umbilical cord blood contains pristine blood cells that have very few spontaneous or induced mutations, can be selected for homozygosity at the HLA locus, that provide the opportunity for transplant compatibility and can be turned into iPSCs that are immortal and can be directed into any cell of the body. These iPSCs can be easily gene-edited and have exact editing and freedom from genetic changes by clonal derivation as a therapeutic product free of potential oncogenic inducers. The cells produced are exact clones of each other, much like a drug product. This can only be achieved with pluripotent stem cells. Directing the gene-edited iPSCs into CAR-T and CAR-NK products involves a proprietary method as is the manufacturing process. Consequently, we can use CAR-NK cells for allogeneic (off-the-shelf) therapy. CAR-T cells produced this way need further alteration for allogeneic therapy.

Your lead product, CTH-401, targets TAG-72, a well-validated tumour marker. What makes TAG-72 a particularly compelling target for CAR-NK therapy, and how does CTH-401 differentiate itself from other therapies targeting similar markers?

TAG-72 is a pan-adenocarcinoma marker expressed highly on the cell surface by cancers of the internal organs. It is not expressed elsewhere in the adult body except for the secretary uterine endometrium. It is expressed in embryonic tissues during rapid expansion. TAG-72 is found in more than 90 per cent of ovarian cancers and on most other adenocarcinomas (pancreatic, gastric, liver, kidney etc. cancers). CTH-401 is the only natural killer (NK) cell product currently under development that incorporates a CAR that targets TAG-72. It is clonally derived and DNA deep sequenced to ensure safety from secondary cancers and other undesirable mutations. In addition, we have knocked out two genes responsible for inhibiting immune cell killing in solid tumours. This unique combination of features enhances the therapeutic potential of CTH-401, providing a more effective and targeted treatment option for patients with solid tumours.

Are there any strategic partnerships or collaborations that have been crucial to



Immunotherapies will be established as a way to manage cancer and may be a composite of antibodies, and molecular control of immune function (e.g. checkpoint inhibitors, cell therapies, RNA technologies and immunisation). It is possible that cancer may not be a death threat but a manageable disease with strong control. This is likely to take a decade or more but in five years this could well be recognised in medicine. Other applications are almost certain to follow in the areas mentioned above.

Cartherics' advancements? How do you see these partnerships evolving as the company grows?

We work closely with partner universities and medical research institutes in federal and state grants focused on developing the company's products. There are also partnerships established with other companies such as ToolGen Inc. in Korea who have provided rights to gene editing and gene knockout technologies. We have provided rights to some of our products to Shunxi Holdings in greater China. Both Shunxi and ToolGen own equity in Cartherics.

Beyond CTH-401, what other products or therapies are in your pipeline that you are most excited about, and what therapeutic areas are they focused on?

Many opportunities can evolve off the Cartherics platform technology, including many new cancer targets that include triple-negative breast cancer, brain cancer (glioblastoma), pancreatic, prostate and gastric cancers. We are also exploring other diseases such as endometriosis. Further opportunities exist in other conditions such as autoimmunity, fibrosis and neurological conditions. We will remain focused on cancer applications as a priority but opportunities for entry into these other conditions are being explored in collaboration with other institutions.

With the growing global demand for immunotherapies, do you have plans to expand beyond Australia, particularly into markets like the US, Europe, or Asia?

We're open to expanding beyond Australia and already have a partnership in greater China. Logically, Cartherics will develop collaborations and partnerships in the US and Europe but is focused on developing and testing our initial products in Australia under FDA licensing.

In five years, where do you see Cartherics and the field of cell-based cancer immunotherapies? What breakthroughs do you hope to achieve?

Immunotherapies will be established as a way to manage cancer and may be a composite of antibodies, and molecular control of immune function (e.g. checkpoint inhibitors, cell therapies, RNA technologies and immunisation). It is possible that cancer may not be a death threat but a manageable disease with strong control. This is likely to take a decade or more but in five years this could well be recognised in medicine. Other applications are almost certain to follow in the areas mentioned above. We expect Cartherics to take a leadership position in these advances in medicine.

How do you see the current trends in CGT shaping the future of cancer immunotherapies, and where exactly does Cartherics fit?

The ability to design cell and gene therapies using pluripotent stem cells and accurate gene editing tools such as CRISPR Cas9 has revolutionised cell and gene therapy. The potential is incredible and will be determined by adaptation and innovation in the research sector. We have a strong research base and deep collaborations in the academic and medical research sectors. We would expect to bring new and novel therapies continuously through the pipeline into clinical development and therapeutic application. We expect to remain in Australia to take advantage of the strong research and government support available to outcome-driven biotechnology. BS

Ayesha Siddiqui

"Australia is a great place to do business as we have a superb research community, great partners and very experienced clinical trial units"

Noxopharm Limited, an Australian biotech company, is making strides in the fight against cancer and inflammation with its innovative technology platforms, Chroma and Sofra. Currently, the company is focused on developing new treatments for pancreatic and brain cancers, as well as autoimmune conditions like cutaneous lupus erythematosus (CLE), it is leveraging in-house expertise and strategic partnerships to build a robust drug pipeline. In an interview, CEO & Managing Director Dr Gisela Mautner sheds light on Noxopharm's platform, RNA research landscape, and how Australian biotech is drawing international interest. ***Edited excerpts:***

« **Dr Gisela Mautner,** CEO & Managing Director, Noxopharm, Australia

Tell us about Noxopharm and its portfolio of innovative treatments.

We are an Australian biotech with two highly innovative and proprietary technology platforms – Sofra for inflammation, autoimmunity, and mRNA vaccine enhancement, plus Chroma for oncology. We have a strong team of experienced leaders with over 100 years of combined pharma experience, as well as very talented scientists who are progressing our research on both fronts. We also work closely with research institutions and academia and take a very collaborative approach to our business.

How have the Chroma and Sofra platforms shaped the company's approach to cancer and inflammation therapies?

Our Sofra platform has been developed from our close relationship with the Hudson Institute of Medical Research, based on over 20 years of research there into inflammation and related diseases. We are now seeing some very promising assets emerge from the platform, which is based on short nucleic acid sequences known as oligonucleotides. These provide a novel treatment approach, acting on specific cells to modulate inflammation at its source, and can therefore be applied in many different areas such as vaccines and autoimmune diseases where inflammation plays a central role.

In addition, our Chroma platform is based on a scaffold structure known as functionalised benzopyrans, and through it, we are generating a library of unique drug candidates that share novel bioactive properties to enhance anti-cancer activity in areas such as pancreatic cancer and glioblastoma.

What are the most promising drug candidates in your pipeline based on the Chroma and Sofra platforms, and what therapeutic areas do you see offering the most immediate potential?

Along with SOF-VAC, from the same Sofra platform, we are also developing SOF-SKN, a topical treatment for autoimmune diseases, specifically skin diseases that are caused by cutaneous lupus erythematosus (CLE). It is based on a proprietary oligonucleotide with the specific ability to block TLR7/8 inflammatory sensors, which are overactivated in numerous autoimmune diseases. We see CLE as a proof of concept for numerous other autoimmune diseases like rheumatoid arthritis and even diabetes.

Currently, there is no cure for CLE and treatment of symptoms is usually required on an ongoing basis, often for life, representing a significant commercial opportunity for any effective medication.

We are taking SOF-SKN to a clinical trial

next year that will be known as HERACLES, for 'Harnessing Endogenous Regulators Against CLE Study'. It will be the first-in-human trial from our Sofra platform and we are currently very active with all the preparations. For example, we have just completed our formulation, which enables an even release and delivery of the active drug ingredient into the skin in a consistent manner.

Turning to the Chroma platform, our lead candidate is CR0-67, which has demonstrated a unique dual-cell activity against pancreatic cancer and the surrounding barrier cells in preclinical studies using cells from patient tumours. Our most recent study results showed a significant decrease in tumour volume growth rate, a significant decrease in barrier cells, and a significant reduction in cancer spread. As your readers will surely know, pancreatic cancer is highly aggressive with very low survival rates, so there is an unmet need in this area.

mRNA vaccines are a significant area of interest globally. How does your technology aim to enhance mRNA vaccines?

We have developed a novel mRNA vaccine enhancer from our Sofra platform. Known as SOF-VAC, it is designed to minimise inflammatory side effects from these vaccines. When an mRNA vaccine is given, the mRNA triggers an immune response to the target virus, like COVID-19 for example. However, the body breaks mRNA down into fragments which then bind to inflammation sensors like Toll-like receptor 7 (TLR7), switching on an inflammatory response that can result in undesirable side effects.

SOF-VAC is built around a proprietary oligonucleotide that is designed to block TLR7 receptors and reduce vaccine-related inflammation at its source. It therefore gives the mRNA vaccine industry the opportunity to enhance existing vaccines. SOF-VAC could also support an increasingly broad range of mRNA technologies – not just vaccines but also mRNA therapeutics and, in fact, other RNA-based therapeutics now being developed for new treatments.

As such, we think there is real potential for our technology to help reduce inflammation, especially as it works in a very different and more efficient way than today's most well-known approach using pseudouridine, which won the Nobel Prize last year but is not easily available to industry participants looking to solve the inflammation challenge.

As an Australian biotech, how does Noxopharm plan to expand its global reach, particularly in major markets like the US and Europe?

Australia is a great place to do business as we have a superb research community, great partners and very experienced clinical trial units. However, it is also a long way from other centres of excellence and that represents a challenge for many Australian biotechs. We take a strategic approach to expanding our reach, with our primary method being to attend carefully selected events throughout the year. Going to the right conferences, for example, enables us to present to influential audiences and meet with other companies who might be interested in our technologies in one-on-one scenarios.

This has paid off as we have recently signed Material Transfer Agreements with several companies from around the world who want to evaluate the potential of various assets from our Sofra platform.

We are also building awareness in other areas, such as joining the Alliance for mRNA Medicines earlier this year. The Alliance is rapidly becoming the key international group and unified voice for the global mRNA industry, and its members are leading companies in the field to whom we now have greater exposure.

What emerging trends in cancer and inflammation treatments do you see shaping the industry, and how is Noxopharm positioning itself to stay at the forefront of these innovations?

Right now we are most encouraged by the rapid development of the wider RNA field – from small biotechs developing promising technologies to huge partnerships between governments and global companies. The number of different RNA approaches appears to be growing exponentially, and we are confident this will ultimately result in positive public health outcomes. In addition, our collective understanding of cancer and the development of tailored therapies is very interesting indeed.

We will continue to develop our two platforms as rapidly as possible, especially as they represent new and different approaches in both fields that put us at the forefront of innovation. We will also build on the great exposure we have gained as more companies become aware of our technologies. It's certainly an exciting time for us, and we're eagerly looking ahead to 2025 and beyond. BS

Ayesha Siddiqui

"The Vietnam Institute is set to play a key role in fostering regional collaborations as a hub for knowledge exchange & partnerships"

The University of Sydney Vietnam Institute, officially launched in June 2024, aims to enhance Vietnam's scientific capacity and contribute to the country's economic and social development. The Institute will foster multidisciplinary research across fields such as health, agriculture, arts, social sciences, business, and Net Zero initiatives. Australian researchers will collaborate closely with Vietnamese counterparts on vital projects, including advancing public health efforts, combating tuberculosis, developing technologies for breast cancer diagnosis, and exploring Vietnam's potential as a media innovation hub. In an exclusive interview, Institute Director Professor Thu-Anh Nguyen, a renowned infectious diseases and public health researcher, shares insights into how the Vietnam Institute will elevate the country's research landscape and drive impactful collaborations. ***Edited excerpts:***

« **Prof Thu-Anh Nguyen,** Institute Director, The University of Sydney Vietnam Institute, Vietnam

What was the rationale behind choosing Vietnam as the location for this institute, and how does the country's academic and research landscape complement the University of Sydney's goals?

Vietnam was chosen as the location for the Sydney Vietnam Institute (SVI) because of the strong, long-standing relationship between the University of Sydney and Vietnam. Since the 1990s, over 240 University of Sydney academics have visited Vietnam to work on important shared issues like climate change, health, food security, agricultural technology transformation, ageing populations, urban development and regional economic growth. This history of collaboration made Vietnam an ideal place to deepen academic ties. The SVI's multidisciplinary research focuses on improving the well-being of communities in Vietnam and beyond through multidisciplinary collaboration. By fostering partnerships between Australian and Vietnamese researchers, the Institute promotes sustainable and mutually beneficial cooperation across all levels of higher education and research engagement.

How does the institute plan to address Vietnam's unique challenges in public health, such as the ongoing battle against tuberculosis and other infectious diseases?

Ten years ago, while conducting research at a tuberculosis hospital, I encountered a heartbreaking case: a two-year-old girl, the daughter of a patient with multidrug-resistant tuberculosis. This devastating diagnosis meant that conventional treatments were ineffective, and the patient would require a lengthy 24-month course of antibiotics with severe side effects. Despite Vietnam's high success rate in treating multidrug-resistant tuberculosis, only two out of three patients recover fully. The young girl's prognosis was particularly grim, as she had contracted the disease from her mother at a tender age. I could not bear to look into her innocent eyes.

At that time, we collaborated with the Vietnam National TB Program to conduct the V-QUIN trial, which investigated a preventive treatment regimen for individuals exposed to the potentially deadly multidrug-resistant tuberculosis bacteria. Today, the research has been completed, leading to new WHO guidelines on preventive treatment for TB household contacts, with an impact extending beyond Vietnam and Australia. This is one of many examples of how our research could bring about impact and change people's lives. We have successfully developed interventions to prevent antimicrobial resistance at grassroots health facilities, enhanced the capacity to use evidence in decision-making for vaccination programmes, and improved the quality of care for people suffering from chronic lung diseases. Through partnerships with local researchers and healthcare providers, the SVI is helping to develop innovative solutions for public health challenges in Vietnam. We provide training programmes for Vietnamese

healthcare workers and involve affected communities, like TB survivors, in designing health interventions. By working together, we aim to reduce the burden of TB and other infectious diseases, improving the health and well-being of individuals and communities.

What opportunities will the institute provide for Vietnamese students and researchers to engage in cutting-edge research and academic exchange?

The University of Sydney Vietnam Institute offers several opportunities for Vietnamese students and researchers. Vietnamese students and researchers can team up with Australian counterparts on joint research projects. For example, we have recently launched the SAPPHIRE project (Sydney Asia-Pacific Partnership for Health Innovations and Resilient Ecosystems), funded by DFAT. This project provides a platform for researchers from both countries to work together to tackle shared challenges in the region, such as the high burden of infectious diseases, antimicrobial resistance, and inadequate quality of care for chronic lung diseases.

We also organise conferences and workshops. These events give Vietnamese students and researchers a platform to present their work, network with peers, and learn from experts. For example, the annual Sydney Vietnam Innovation Symposium brings together researchers from both countries to share their latest findings in fields like healthcare, agriculture, and business. SVI facilitates exchange programmes that allow Vietnamese students and researchers to visit Australian universities and research institutions. These programmes offer valuable experiences in different research environments and cultures. An example is the Australia Awards Fellowship programme on Health Security, which helps Vietnam tackle health challenges like antibiotic-resistant infections and food safety.

In what ways will the Vietnam Institute foster knowledge exchange between Australian and Vietnamese researchers to promote long-term benefits for both nations?

The University of Sydney Vietnam Institute prioritises joint research projects that address pressing needs on the ground, promote long-term impacts on health and well-being, and yield practical, scalable solutions applicable in real-world settings. Academic exchanges and fellowships promote researchers to share expertise and foster a collaborative environment. Additionally, we host international conferences and workshops that bring together researchers, practitioners, and policymakers to discuss findings and share best practices. Our specialised training programmes will build capacity for Vietnamese researchers and research institutions, equipping them with the latest skills and knowledge. By fostering a culture of research and innovation within the community, we encourage ongoing exploration and problem-solving beyond the initial project.

What role do you foresee the Vietnam Institute playing in shaping Vietnam's long-term educational or technological growth, especially in STEM fields?

Vietnam's Strategy for Science, Technology, and Innovation Development to 2030 emphasises the critical role of science and technology in driving economic growth, bolstering national competitiveness, and improving the quality of life. Within this context, the University of Sydney Vietnam Institute (SVI), with its established strengths and promising potential, is poised to be a key catalyst in shaping the future of education and technology in Vietnam. By partnering with international academic and research institutions, SVI will serve as a collaborative research hub, tackling global challenges through multidisciplinary research. It will facilitate the transfer of technology and knowledge, boosting the skills and capabilities of Vietnamese researchers. SVI will also attract and nurture scientific talent, contributing to Vietnam's advancement in science and technology. Additionally, it will provide expert advice on policy and system development, fostering an environment conducive to innovation.

What role do you see the Vietnam Institute playing in fostering regional collaborations across Southeast Asia, beyond Vietnam itself?

The Vietnam Institute is set to play a key role in fostering regional collaborations across Southeast Asia by acting as a hub for knowledge exchange and partnerships. By working with universities and research institutions throughout the region, the Institute can lead joint research projects, conferences, and workshops that tackle shared challenges like climate change, health issues, and economic development. For example, the SAPPHIRE project promotes regional collaboration on health innovations and resilient ecosystems in Vietnam, Cambodia, Fiji, and Kiribati. In September 2024, the Vietnamese and Cambodian components of this research were officially launched, bringing together leading collaborators from the two countries to begin the next phase of work and develop research plans for the coming three years (2024-2027). BS

Ayesha Siddiqui

Managing Delicate Role of Donors for Drug Development and Research

« **Shannon Richey,** Vice President & General Manager, Detroit Operations, BioIVT

« **Wini Luty,** Senior Director, Biologic Operations, BioIVT

A sustainable, active, and diverse donor pool is more important than ever as the frontiers of medical research continue to push the envelope. Innovation—using new technology, enhancing communication, and customising the donor experience—is needed to address the issues of donor recruitment and retention.

In today's medical landscape, every breakthrough in treatment, from cancer therapies to rare genetic disorder solutions, often starts with a generous donation—whether it's cells or tissues. Donor samples are fundamental to drug development, representing the diversity of human biology to drive research forward. However, securing these samples is filled with challenges, including the need to recruit diverse donors, manage the logistics of sample collection, and ensure proper storage. Despite these obstacles, the pursuit of targeted, effective treatments continues, although donor retention rates remain around 40-45 per cent. To fully unlock the potential of future medical advancements, we need to rethink how we approach donor recruitment, engagement, and retention.

Overcoming Barriers to Donor Recruitment and Collection

One of the most significant hurdles in donor recruitment is the limited pool of eligible individuals, especially for diseases that have highly specific sample requirements. For instance, research into conditions like pancreatic cancer faces low donor availability due to the rarity of the disease and the stringent need for samples. This limitation makes it difficult for researchers to gather sufficient viable samples for study.

For many studies, researchers require both diseased and normal (healthy) samples to make meaningful comparisons. Normal donor samples, representing healthy tissues or cells, provide essential baselines in research. These healthy samples allow scientists to compare how diseases progress in contrast to normal biological processes. Without these comparisons, it would be impossible to distinguish the unique mechanisms of disease from typical cellular behaviour.

In many cases, specific disease state research relies heavily on the availability of donors with particular conditions, adding another layer of complexity. For example, research into autoimmune diseases, certain cancers, and genetic disorders often requires donors who are currently undergoing treatment or are in advanced stages of illness. These donors not only help scientists understand disease progression but also allow researchers to identify biomarkers critical for developing targeted therapies.

Geographic constraints also add to the challenges. Potential donors who are willing to contribute may be located far from collection centres, limiting their ability to participate. Furthermore, patients' availability may fluctuate based on their treatment schedules, adding to the uncertainty of timely donations. However, creating extensive networks across multiple regions can help bridge these gaps, making it easier to access a reliable and diverse pool of donors, both healthy and diseased. These networks are especially crucial for supporting disease state research, where timely and specific sample collection is vital for progressing treatments and diagnostics.

Optimising Donor Engagement and Retention Strategies

What if the donor experience felt less like a sterile clinical exchange and more like becoming part of a mission? Engaging donors on a deeper level can significantly improve recruitment and retention rates. Providing regular updates about the research their samples contribute to and sharing the progress made thanks to their participation can help donors feel more connected to the cause. Recognition programmes for repeat donors, such as offering tokens of appreciation or public acknowledgement, can also encourage ongoing involvement.

Another key strategy for improving retention is offering flexibility in how donations are collected. Some donors may only qualify for standard clinical specimen collections, while others may qualify for donor centre-collected specimens and can donate additional collections like leukapheresis, which gathers concentrated white blood cells (leukocytes) from a donor's blood. For disease state research, having options that accommodate the health and treatment schedules of patients is essential. For donors providing normal (healthy) samples, flexibility can include convenient times and locations that ensure minimal disruption to their daily lives. By providing a variety of options, researchers can ensure that the collection process aligns with the donor's preferences and comfort level. Additionally, technology can streamline the process—from scheduling appointments to direct communication with donors—reducing the administrative burden on both sides and minimising drop-off rates.

Personalising the donor experience is equally important. Tailoring communication based on a donor's history, preferences, and the impact of their specific contributions can make donors feel valued and appreciated. When donors see the tangible results of their involvement—such as advancements in drug development or successful clinical trials—they are more likely to stay engaged. This is especially impactful in disease state research, where donors can witness the direct effect of their contributions in developing new treatments for the conditions they face. Personalised outreach, highlighting the difference they're making, fosters a stronger connection to the research cause and encourages continued participation.

The Role of Donor Samples in Advancing Research and Personalised Medicine

Donor samples play a pivotal role in both basic research and personalised medicine. These samples are not only essential for studying diseased tissues but are equally important for providing normal (healthy) control samples. Control samples serve as a baseline, allowing researchers to compare diseased tissues with healthy counterparts, which is crucial for validating scientific findings and ensuring the accuracy of research results.

Healthy donor samples are especially critical in many research scenarios. For example, in studies that seek to understand how cancerous cells differ from normal cells, researchers must rely on healthy samples to act as a reference. Similarly, in personalised medicine, these normal (healthy) samples can help identify what deviations in the body's biological processes are contributing to disease. Healthy donors often provide blood, tissue, and other specimens that are fundamental to shaping treatments tailored to individual patients.

In disease state research, donor samples are even more essential. Researchers rely on these samples to track the progression of diseases, study the cellular mechanisms involved, and test new therapies. For example, in oncology, donors with different stages of cancer are needed to assess how tumours evolve and how treatments impact them at various stages. This type of research cannot progress without consistent and reliable donor samples that represent the specific diseases being studied.

In personalised medicine, donor samples are even more critical. They help identify key biomarkers, enabling researchers to tailor treatments to the unique characteristics of a patient's disease. By leveraging these biomarkers, scientists can develop therapies that are more precise, improving treatment outcomes and reducing side effects. The continuous contributions of both normal and disease-state donors have already led to several successful therapies, demonstrating their indispensable role in driving both general medical research and the advancement of personalised treatments.

As the boundaries of medical research expand, the need for a sustainable, engaged, and diverse donor pool has never been more crucial. Addressing the challenges in donor recruitment and retention requires innovation—leveraging new technologies, improving communication, and personalising the donor experience. Each donation has the potential to lead to life-saving treatments and revolutionary medical discoveries. Donors are not just participants in the research process—they are partners in the journey toward medical innovation, playing a critical role in shaping the future of healthcare. BS

National University of Singapore and Imperial College London establish major research partnership

National University of Singapore (NUS) and Imperial College London have announced a new partnership to strengthen research collaborations. The three-year partnership will see the two universities explore cooperation in early-stage research and ideas that might not otherwise be pursued. The universities will explore potential research projects in areas such as health, sustainability, artificial intelligence (AI) and the digital economy. NUS has long-standing

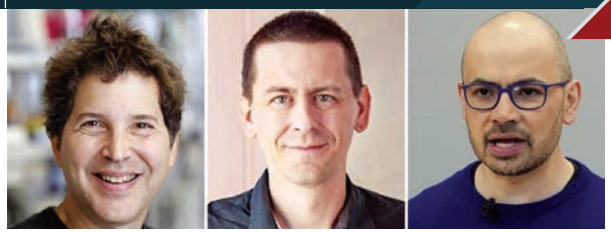
links with Imperial, and the two universities' new partnership will strengthen links between London and Singapore. The new agreement will help fund exploratory research and see increased mobility of scientists and students between NUS and Imperial, with researchers spending time in each other's laboratories in Singapore and London working on joint projects and sharing knowledge and data. NUS and Imperial have worked together successfully on many previous projects including successfully engineering common baker's yeast to produce a key ingredient for dementia medicines.

University of Hong Kong to establish Global Innovation Centre

To consolidate Hong Kong's leading position in basic research, the University of Hong Kong (HKU) is planning to establish the Global Innovation Centre (GIC), an upstream technology research facility, in Pokfulam. The GIC aims to provide an enabling environment for scholars and academics to engage in transdisciplinary frontier research, which is crucial to developing Hong Kong into an international innovation and technology (I&T) hub. The GIC will also serve to promote I&T advancement and long-term economic growth, aligning with the national and local macro development strategy. The GIC proposal is undergoing statutory town planning procedures under the Town Planning Ordinance (TPO). Over the past few months, HKU has received constructive comments for the GIC development from different stakeholders. After carefully considering the public views collected, HKU has decided to take some time to strategically amend the development plan of the GIC, e.g. reducing the density of the proposed development and bulk of the building(s), increasing the setback area from neighbouring buildings, designating more green spaces, etc., to address stakeholders' opinions as much as practicable.

University of Melbourne launches Global Centre in Delhi, India

The Premier of Victoria, Jacinta Allan recently opened the University of Melbourne's first Global Centre in Delhi, marking a significant expansion of its global presence. This milestone was part of a major delegation visiting India to enhance partnerships and engagement with local students, alumni, government officials, and educational partners. The Centre will facilitate collaboration and knowledge exchange across education, research, industry, and the community, serving as the University's central hub in India. It will enable the University to showcase its extensive educational offerings, cutting-edge research, and community engagement programmes. The Centre will feature cultural performances, art exhibitions, and lecture series, serving as a platform to connect research with Indian corporations, industry partners and academic institutions. As a centralised hub for collaboration, the Centre will lay the foundations for future generations of scholars and researchers, forging new bilateral connections and facilitating meaningful educational and cultural exchanges well into the future.



David Baker John Jumper Demis Hassabis

Nobel Prize in Chemistry 2024 to trio for cracking code for protein structures

The Royal Swedish Academy of Sciences has decided to award the Nobel Prize in Chemistry 2024, with one half to David Baker, University of Washington, US for computational protein design; and the other half jointly to Demis Hassabis, Google DeepMind, London, UK; and John M. Jumper, Google DeepMind, London, UK for protein structure prediction. Proteins generally consist of 20 different amino acids, which can be described as life's building blocks. In 2003, David Baker succeeded in using these blocks to design a new protein that was unlike any other protein. Since then, his research group has produced one imaginative protein creation after another, including proteins that can be used as pharmaceuticals, vaccines, nanomaterials and tiny sensors. On the other hand, in 2020, Demis Hassabis and John Jumper presented an AI model called AlphaFold2. With its help, they have been able to predict the structure of virtually all the 200 million proteins that researchers have identified. Since their breakthrough, AlphaFold2 has been used by more than two million people from 190 countries. Among a myriad of scientific applications, researchers can now better understand antibiotic resistance and create images of enzymes that can decompose plastic.

Bora Pharma names J.D. Mowery as First Division President of CDMO biz

Taiwan-based Bora Pharmaceuticals Co. has announced the appointment of J.D. Mowery to the newly created position of Division President of Bora's CDMO business. Mowery joins Bora Group from KBI Biopharma, a JSR Life Sciences company, where he served as President and CEO and led global CDMO operations. He serves as a board member of AST, a technology leader specialising in advanced aseptic filling and closing systems, and was previously an Officer of JSR Corporation. Mowery has also held roles of increasing responsibility at innovators such as Genentech, Treadwell Therapeutics, Juno Therapeutics, Celgene, and executive-level roles with CDMOs including Lonza and AGC Biologics. His extensive experience includes operations, manufacturing, tech transfer, facility construction, business development, and investor relations, across North America, Europe, and Asia.

Victor Ambros and Gary Ruvkun win 2024 Nobel Prize in Physiology or Medicine for discovery of microRNA

The Nobel Assembly at Karolinska Institutet has decided to award the 2024 Nobel Prize in Physiology or Medicine jointly to Victor Ambros and Gary Ruvkun for the discovery of microRNA and its role in post-transcriptional gene regulation. This year's Nobel Prize honours two scientists for their discovery of a fundamental principle governing how gene activity is regulated. Victor Ambros received his PhD from Massachusetts Institute of Technology (MIT), US where he also did postdoctoral research 1979-1985. He became a Principal Investigator at Harvard University, Cambridge. He was Professor at Dartmouth Medical School from 1992-2007 and he is now Silverman Professor of Natural Science at the University of Massachusetts Medical School, Worcester. Gary Ruvkun received his PhD from Harvard University. He was a postdoctoral fellow at Massachusetts Institute of Technology (MIT), Cambridge. He became a Principal Investigator at Massachusetts General Hospital and Harvard Medical School in 1985, where he is now Professor of Genetics.

Victor Ambros Gary Ruvkun

Dr Makoto Sugita steps in as President of Nxera Pharma Japan

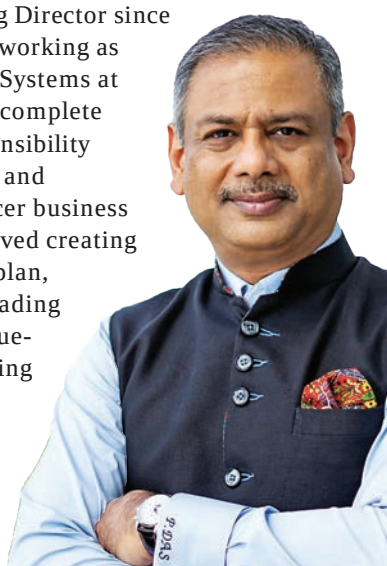
Nxera Pharma Co., formerly known as Sosei Group or Sosei Heptares, has announced the appointment of Dr Makoto Sugita, as President of Nxera Pharma Japan, and Executive Officer, Executive Vice President and Chief Medical Officer (CMO) of Nxera Pharma. Dr Sugita is the former Vice President, and Head of R&D at Bristol Myers Squibb in Japan, a leading global biopharmaceutical company. He is a highly experienced medical professional having spent the past 20 years in R&D and commercial leadership positions within the Japanese businesses of global biopharmaceutical companies, including Johnson & Johnson/ Janssen Pharmaceutical K.K. and AstraZeneca K.K., and Parexel, the global Contract Research Organization (CRO). Nxera employs over 350 people at key locations in Tokyo and Osaka (Japan), London and Cambridge (UK), Basel (Switzerland) and Seoul (South Korea) and is listed on the Tokyo Stock Exchange.

Clarity Pharma promotes Michelle Parker to CEO

Australia-based Clarity Pharmaceuticals has announced the appointment of Michelle Parker as Chief Executive Officer (CEO), effective from October 11, 2024. Michelle brings more than 20 years of industry experience to the role of CEO, spanning nuclear medicine, positron emission tomography and pharmaceuticals in Australia and internationally. She previously held the position of Clarity's Chief Clinical Officer and is a long-time member of its Senior Executive Team. Most recently, Michelle has joined the Company's Board as an Executive Director in September 2024. During her six years at Clarity, Michelle has served in the roles of EVP, Global Clinical Operations and Head of Clinical Operations. She has led the company's rapidly advancing clinical strategy and programme with seven ongoing trials. Michelle also heads the company's largest division, Clinical Operations, working closely with the Executive Chair and other members of the Senior Executive Team. Prior to joining Clarity, Michelle held the position of Head of International Clinical Research Operations at Novartis Australia, a global pharmaceutical company, where she led a multi-disciplinary, high performing team responsible for end-to-end clinical trial execution.

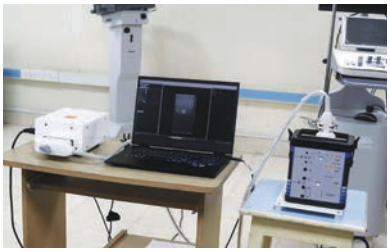
Integris appoints medtech veteran Probir Das as new CEO

Integris Healthcare, a global diversified medical technology company, has announced the appointment of Probir Das as Chief Executive Officer (CEO). He will join effective November 2024 and will be based in New Delhi. With over three decades of global medtech experience, he will lead the next phase of growth and innovation for the company. Das joins Integris from Terumo Asia Pacific, where he has served as Chairman & Managing Director since 2019. Das was earlier working as Director- Diagnostics Systems at BD, where he had the complete P&L & Strategic responsibility for BD's microbiology and women's health / cancer business vertical. His role involved creating a long-term strategic plan, driving investment, leading marketing, sales & issue-based advocacy, building an organisation and kick starting locally relevant product development.



India develops portable ultrasound scanner for sports injury diagnosis

A team of researchers at the Indian Institute of Technology Madras (IIT-M) has developed an indigenous portable Point-of-Care-Ultrasound (POCUS) Scanner for sports injury diagnosis and management. They have already been granted several patents for technologies that went into this device and are working towards productisation. This research from the Center of Excellence in Sports Science and Analytics (CESSA) at IIT Madras could potentially allow for on-field diagnosis of injuries, immediate assessment



of the extent of injury that will allow for medical professionals to take a call on whether to permit the sportsperson to continue playing. This Artificial Intelligence-powered POCUS scanner has a wide range of applications in sports medicine, and it has the benefits of safety (no radiation) and sufficient resolution compared to other modalities. A working POCUS prototype for Musculoskeletal (MSK) imaging, developed at the Biomedical Ultrasound Imaging Lab (BUSi) is currently ready. The researchers are targeting to complete the product prototype development by 2024. Subsequently, testing and collection of pilot data from the field are also being planned in coordination with Sports Authorities.

Spider venom heart drug moves to clinical trials in Australia

A University of Queensland (UQ)-led project in Australia to develop the first-ever drug to treat heart attack and protect donor hearts will move to human clinical trials, after receiving $17.8 million in funding from the Medical Research Future Fund (MRFF). The 4-year trial would assess the potential of Hi1a, a peptide in the venom of the K'gari funnel web spider, as a treatment to prevent heart damage during a heart attack or donor heart procurement. The team includes researchers from UQ, the Victor Chang Cardiac Research Institute and the Baker Heart & Diabetes Institute as well as clinicians at St Vincent's Hospital in Sydney, the Alfred Hospital in Melbourne and The Prince Charles Hospital in Brisbane. The clinical trial is the culmination of years of work by the research team investigating the use of Hi1a as a treatment for heart attack and stroke, and to increase the viability of donor hearts. The project will also involve Brisbane-based biotech company Infensa Bioscience.

HKU pioneers metallodrug-antibiotic combination strategy to combat superbugs

A research team at the Department of Chemistry at The University of Hong Kong (HKU), in collaboration with the University of Groningen (Netherlands) and Nankai University (China), has made a breakthrough in solving the challenging problem of antimicrobial resistance (AMR). The team's work has shown the combination of different types of antibiotics with bismuth-based drugs (such as bismuth subsalicylate, commonly known as Pepto-Bismol) disrupting bacterial iron homeostasis, effectively restoring the bactericidal function of multiple antibiotics. This combination therapy leads to the elimination of multi-drug resistant bacteria Pseudomonas aeruginosa. Their efficacy has been demonstrated in both bacterial-infected cells and in mouse models, providing crucial strategies for combatting the global threat of AMR and offering potential clinical applications. In a mouse lung infection model, the treatment significantly reduced bacterial colonisation in the lungs and improved the survival rate of mice.

New Zealand to improve treatment of right heart failure

A team from the Auckland Bioengineering Institute, New Zealand will use cutting-edge equipment to test whether increasing the efficiency of the heart could improve or even prevent right-heart failure. Funding from the Heart Foundation will enable the team to research the energy of the heart and test three medications that could help increase heart efficiency and potentially improve and even prevent right-heart failure. The rationale is that using energy more efficiently could lead to better heart performance. Currently there are limited options for treating patients with right heart failure. Often called 'the forgotten ventricle', the right ventricle is one of the heart's four chambers and it pumps blood to the lungs for fresh oxygen. Severe lung diseases and other conditions can lead to high blood pressure on the right side, called pulmonary hypertension, which may affect the right ventricle and lead to right heart failure. Right heart failure is more common in New Zealand than the worldwide average. This is partly due to the higher rate of rheumatic fever and rheumatic heart disease, and also the higher prevalence of pulmonary hypertension.

Korea changes paradigm of drug discovery with world's first atomic editing

In pioneering drug development, a new technology that enables the easy and rapid editing of key atoms responsible for drug efficacy has been regarded as a fundamental and 'dream' technology, revolutionising the process of discovering potential drug candidates. Researchers at Korea Advanced Institute of Science and Technology (KAIST) have become the first in the world to successfully develop single-atom editing technology that maximises drug efficacy. Professor Yoonsu Park's research team from the Department of Chemistry successfully developed a technology that enables the easy editing and correction of oxygen atoms in furan compounds into nitrogen atoms, directly converting them into pyrrole frameworks, which are widely used in pharmaceuticals. Many drugs have complex chemical structures, but their efficacy is often determined by a single critical atom. Atoms like oxygen and nitrogen play a central role in enhancing the pharmacological effects of these drugs, particularly against viruses.

Singapore designs novel gene therapy offering hope for epilepsy patients

Researchers from the Yong Loo Lin School of Medicine, National University of Singapore are working on a therapy that holds potential in treating patients with epilepsy, a neurological disorder defined by recurring seizures due to abnormal brain activity. The team has trialled a novel gene therapy approach for a rare genetic form of epilepsy linked to a mutation in the KCNA2 gene in the human brain, which is associated with recurring seizures. A specialised treatment

called a Gapmer antisense oligonucleotide (ASO) is designed to specifically target and break down faulty ribonucleic acids (RNA) while keeping normal gene function intact. Using this RNA therapy led to a notable decrease in a problematic potassium channel protein encoded in the KCNA2 gene, which helped restore normal potassium flow and reduce excessive neuron activity linked to epilepsy. Since the therapy has shown promise in targeting a specific gene mutation causing epilepsy, researchers hope to eventually pioneer new treatment options for patients suffering from this condition, and other similar gene mutations.

Thermo Fisher Scientific launches ambient shipping solution for Invitrogen antibodies

Thermo Fisher Scientific Inc has introduced more sustainable packaging for 125,000 of its Invitrogen antibodies. Transitioning from cold-chain packaging to ambient temperature shipping from distribution centre to customer reduces package material mass, improves the customer experience and supports the company's global sustainability efforts. Through functional and stability testing, US-based Thermo Fisher has demonstrated that a significant portion of its Invitrogen antibody portfolio can be maintained at ambient temperature conditions during transport. By eliminating the use of cold gel packs and introducing a new 100 per cent curbside recyclable paper packaging for customers, Thermo Fisher expects to eliminate more than 216,000 pounds of paper and 440,000 pounds of gel ice packs per year. This new packaging represents a 90 per cent reduction in shipment mass, improves freight density and reduces carbon emissions.

Waters introduces new bioseparations tools to improve development of RNA-based vaccines using LC-MS analysis

US-based Waters Corporation has introduced a comprehensive set of sample preparation enzymes, reagents, and waters_connect software that simplify sequence and modification confirmation of large molecule RNA therapeutics using liquid chromatography-mass spectrometry (LC-MS) analysis. When used together in a workflow, these bioseparations tools help accelerate and improve the development of innovative large molecule RNA-based pharmaceuticals, such as CRISPR sgRNA and mRNA therapeutics. Large molecule RNA (ribonucleic acid) therapeutics represent some of the most exciting and potentially life-saving developments in pharmaceuticals today. They include new and more effective vaccines for diseases like COVID-19, personalised cancer treatments, as well as emerging CRISPR RNA therapies that address challenging genetic conditions, such as sickle cell anaemia.

Eppendorf brings CO2 incubator shaker with integrated 180 °C sterilisation routine

Eppendorf has announced the launch of a CO2 incubator shaker with integrated 180 °C sterilisation routine. Produced in Hamburg, Germany, the CellXpert CS220 is the first shaker to apply the established contamination protection standards of CO2 incubator-based cell cultivation—180 °C sterilisation. In addition, the device expedites disinfection by having no drive wheel, cover sheets, cables, or heating fins inside the stainless-steel chamber. The CellXpert CS220 also features up to 40 per cent higher flask capacity and the highest platform size to footprint ratio in the market. Expression of complex recombinant proteins, the production of viral vectors in mammalian cells, or the production of bioreactor starter cultures is primarily done in shake flask cultures inside CO2 incubator shakers. A major risk factor for reliable budget- and time-planning of these projects is contamination, especially with viruses or Mycoplasma. The new CellXpert CS220 is developed specifically to speed up mammalian shake flask culture projects and to meet the industry's increasing need for higher contamination prevention standards.

Singleron and Bioscreen to enhance access to single cell multi-omics solutions for Indian researchers

Singleron Biotechnologies, a leading innovator in single cell multi-omics solutions, has announced a strategic partnership with Bioscreen, a renowned distributor of advanced life science products in India. Under this agreement, Bioscreen will become the exclusive distributor of Singleron's cutting-edge single cell multi-omics solutions in the Indian market. Chennai-based Bioscreen will distribute Singleron's comprehensive suite of single cell multi-omics solutions, which cover the entire single cell analysis workflow, including tissue dissociation, library preparation, and bioinformatics analysis. The comprehensive support provides a smooth experience for researchers regardless of their prior experience in single cell analysis. The collaboration highlights the growing demand in the Asia-Pacific (APAC) region for innovative single cell analysis solutions.

Promega unveils GloMax Galaxy Bioluminescence Imager for illuminating protein dynamics in real time

US-based Promega Corporation, a life-sciences research partner dedicated to providing intuitive tools that empower scientists to innovate, has unveiled the new GloMax Galaxy Bioluminescence Imager. The GloMax Galaxy Bioluminescence Imager provides researchers the opportunity to observe the dynamics and cellular physiology of low expression protein targets in real time. This advanced microscope is developed for the visualisation of Promega NanoLuc luciferase chemistries, eliminating the complex process of translating bioluminescent reporter assays into fluorescence. GloMax Galaxy Bioluminescence Imager is a benchtop instrument developed for the visualisation of all NanoLuc technologies, including HiBiT, NanoBiT and NanoBRET. The technology allows researchers to use the same bioluminescent reporter used in other parts of their workflow.

Qiagen expands automated liquid biopsy portfolio

Qiagen has announced key updates to its sample technologies solutions for non-invasive liquid biopsy applications for use in research and clinical applications such as oncology, prenatal care and organ transplantation. These updates, designed for use on the QIAsymphony and EZ2 Connect instruments, are built to enable research and molecular diagnostics laboratories to efficiently improve results when processing larger sample volumes that are crucial for oncology research and diagnostics. The upgraded EZ1&2 ccfDNA Kit now supports fully automated simultaneous processing of 24 samples with up to 10 mL of serum or plasma – up from the previous 8 mL – along with a new urine protocol; the newly introduced QIAsymphony DSP Circulating DNA Kit (96) and the QIAsymphony DSP Circulating DNA Maxi Kit (192) are fully automated kits, optimised for the extraction of ccfDNA from up to 10mL sample volume; and the new QIAsymphony Kits complete QIAGEN's automated DSP Circulating DNA product family, offering research and molecular diagnostics labs a comprehensive solution for ccfDNA isolation that supports a wide range of sample volumes and throughput needs.

Turning the Tide on AMR with Vax

Antimicrobial-resistant (AMR) pathogens kill more people annually than any single infectious disease. Nearly 5 million deaths were linked to AMR, including 1.4 million in South Asia and 1 million in Sub-Saharan Africa in 2019. Of the 5 million deaths linked to AMR — more than 1 million are in children aged under 5 years. If unaddressed, AMR could impose up to $3.4 trillion in gross domestic product (GDP) losses per year by 2030, according to a World Bank report.

Supporting worldwide efforts to address AMR, a new report by the World Health Organization (WHO) finds that vaccines against 24 pathogens could reduce the number of antibiotics needed by 22 per cent or 2.5 billion defined daily doses (DDDs), every year, worldwide. While some of these vaccines are already available but underused, others would need to be developed and brought to the market as soon as possible.

Globally, if current vaccines were used optimally and vaccine coverage reached 90 per cent, vaccines could avert: up to 106,000 deaths; 9.1 million Disability-adjusted life years (DALYs); $861 million in hospital costs annually; $5.9 billion in productivity losses annually, all associated with AMR and reduce antibiotic use by 142 million DDDs annually. Vaccines in late-stage clinical development could avert annually up to 135,000 deaths, 5.0 million DALYs, $1.2 billion in hospital costs and $2.2 billion in productivity losses, all associated with AMR. They could also reduce antimicrobial use by 1.9 billion DDDs annually. Vaccines in early clinical development could avert annually up to 408,000 deaths, 23.0 million DALYs, $30.0 billion in hospital costs and $17.7 billion in productivity losses, all associated with AMR. They could also reduce antimicrobial use by 548 million DDDs annually. While significant, this is a small fraction of the 5 million annual deaths linked with AMR. Thus, existing vaccines are not sufficient to combat AMR, and additional new vaccines are critically needed.

Globally, the hospital costs of treating resistant pathogens evaluated in the report are estimated at $730 billion each year. If vaccines could be rolled out against all the evaluated pathogens, they could save a third of the hospital costs associated with AMR. A comprehensive, people-centred approach applied across health systems is needed to prevent, diagnose and treat infections. This approach recognises vaccination as core to preventing AMR and is especially impactful when combined with other interventions.

The experts also recommended that the impact of vaccines in reducing AMR needs to be recognised by stakeholders in AMR and immunisation. Global, regional and national AMR and immunisation strategies and implementation frameworks should include vaccines as interventions to reduce AMR, advocating for their broader implementation and integration. The introduction of existing vaccines should be accelerated and their coverage increased. All existing paediatric vaccines should reach the immunisation targets of the Immunisation Agenda 2030 (IA2030), and the use of vaccines in older age groups should be considered. The impact of existing vaccines on AMR should be monitored to inform policy decisions.

Creating research roadmaps for vaccines facing significant development challenges can guide efforts to overcome obstacles and expedite the availability of vaccines, particularly in Low- and Middle-Income Countries (LMIC). Understanding the role of vaccines alongside other approaches for reducing AMR is crucial for a comprehensive strategy. The WHO report emphasizes that vaccines should be integrated into broader AMR containment efforts (e.g. infection prevention, access to essential health services, accurate diagnosis and appropriate treatment). Enhancing surveillance platforms to collect data on the burden of resistant pathogens will inform the development and implementation of effective vaccination strategies and other AMR interventions.

Vaccines are a vital, yet underused, tool in the fight against AMR, and can reach millions of children through existing immunisation programmes. Recognising their full potential requires concerted efforts to integrate vaccine strategies into AMR policies, enhance collaboration between stakeholders, and prioritise research and surveillance. Addressing AMR starts with preventing infections, and vaccines are among the most powerful tools for doing that. As noted by the Dutch philosopher Desiderius Erasmus in around 1500, 'prevention is better than cure', increasing access to existing vaccines and developing new ones for critical diseases, like tuberculosis, is critical to saving lives and turning the tide on AMR. BS

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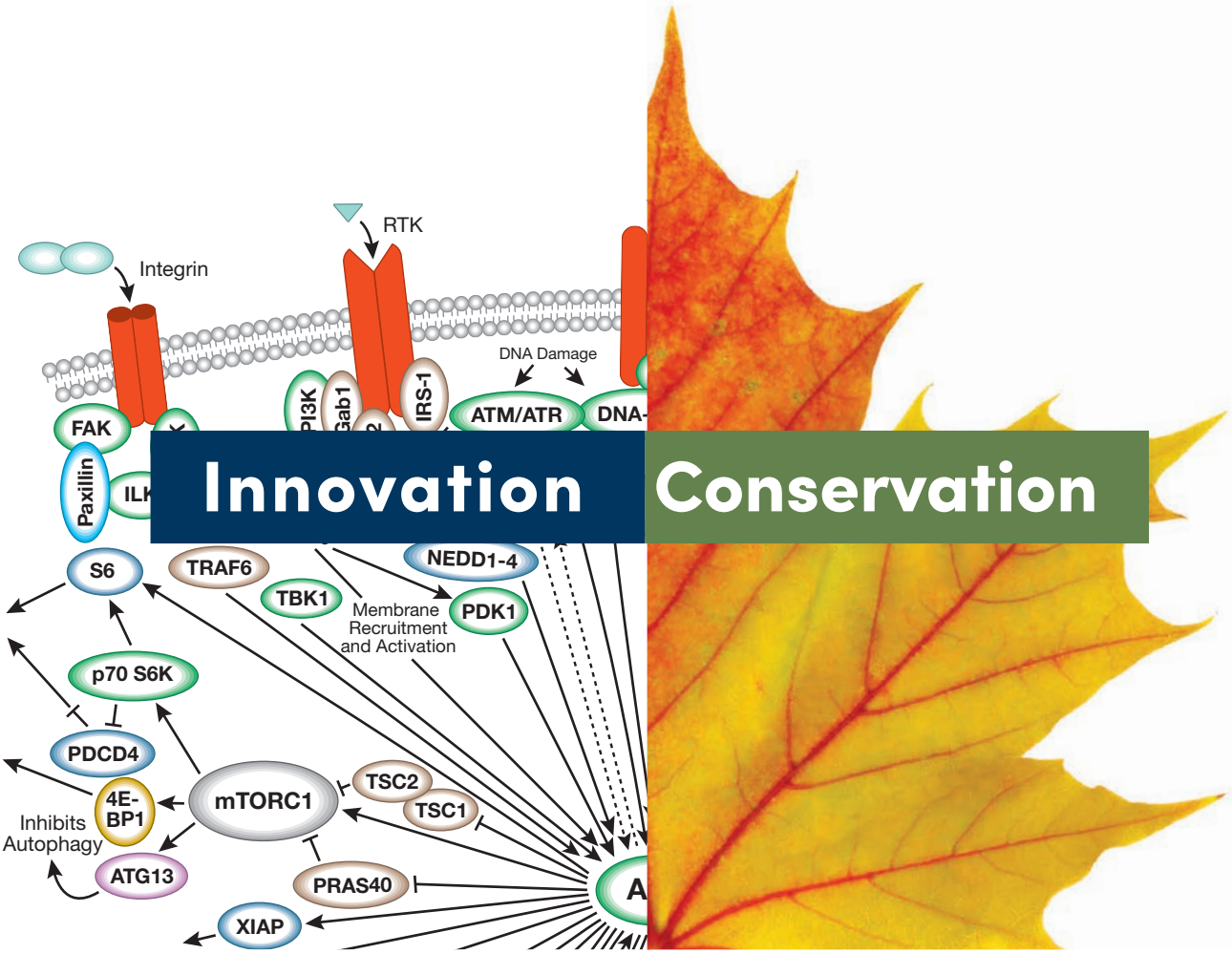

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