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Volume 19 | Issue 3 | March 2024

ASIA EDITION

ENGENDERING INCLUSIVITY & DIVERSITY IN Life Sciences

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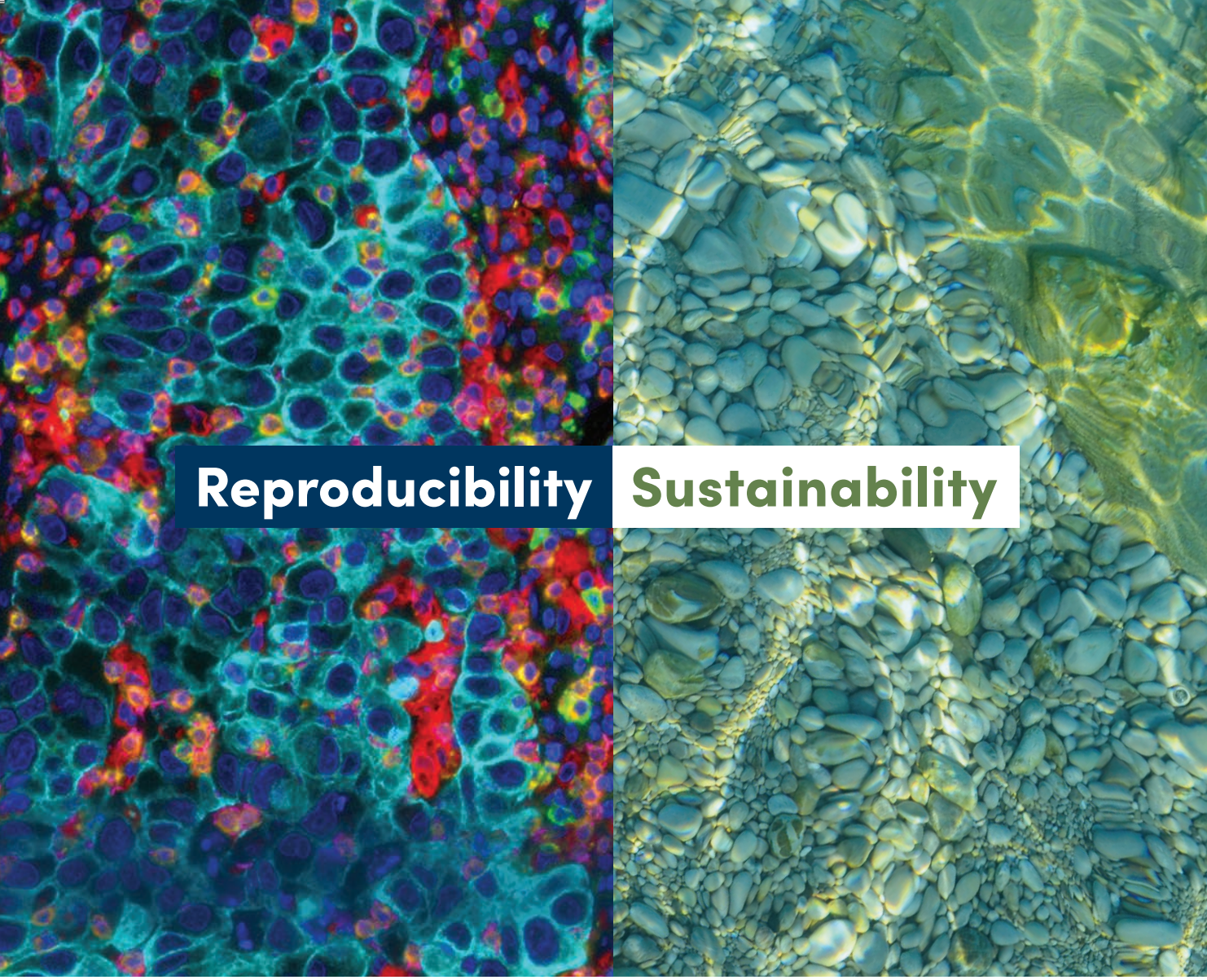

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Above left: Multiplex IHC analysis in non-small cell lung cancer tissue indicating CD8α (#70306, magenta) T cells with three immune checkpoint receptors: PD-1 (#43248, green), LAG-3 (#15372, orange), and TIM-3 (#45208, yellow). Pan-Keratin antibody (#4545, cyan) shows tumor cells and CD68 (#76437, red) represents macrophages.

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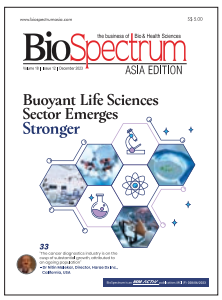

Acknowledgement/ Feedback

The interview feature on VinBrain and its CEO in the February edition looks great. Thank you BioSpectrum Asia for your support. Hoping to have further collaboration in the future.

- Phuong, Vietnam

Thank you BioSpectrum for processing the article 'How Biotech Sector Can Capitalise on AI' at such a fast pace, in the February edition.

- Dr Rajneesh Gaur, India

Really enjoyed reading the article on Antibody-drug conjugates. Thank you for including Oxford BioTherapeutics.

- Sandi, UK

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Letter from Publisher

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

Women, worldwide, make up 46 per cent of the public sector workforce. However, they make up 33 per cent of the private sector personnel. According to World Bank data, women now outnumber men in 55 countries when it comes to the public sector, although men still outnumber women in 130 countries when it comes to the private sector. This report highlights a fundamental shift in the demography of the workforce by illuminating the growing representation of women in the public sectors of high- and upper-middle-income countries.

There's Prof. Yu-Kyoung Oh, a distinguished pharmaceutical expert, who was appointed as a Minister in the Ministry of Food and Drug Safety (MFDS), South Korea in 2022. In addition, Dr Choong May Ling, who serves as the chief executive for Singapore's health regulatory body, or China's leading epidemiologist Prof. Li Lanjuan, who was instrumental in the country's fight against COVID-19. We have Dr Diana Siew, who is taking New Zealand's medtech sector to greater heights, along with many other inspiring women. Exceptional women like them are pioneers and inspiration for the next generation of leaders and pave the way for inclusive and equitable practices in the life sciences sector.

As we are celebrating 'International Women's Day' on March 8, our team is spotlighting the remarkable achievements of women who are leading the public sector organisations in life sciences in the APAC region. Besides, the team will be delving into the persistent issue of pay parity in the sector with regard to the female employees and also the need for active participation of women in clinical trials and research.

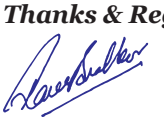
Singapore has become a major player in the global deep tech space. Based on the Sparkmate report, the government has spent approximately S$19 billion on deep tech research and development over the last 10 years. Through their combined efforts, government organisations, business leaders and academic institutions have established Singapore as a premier centre for deep tech innovation. The reporting team has covered an article on how Singapore achieved the milestone of becoming one of the key players in the global deep tech space.

The scourge of tuberculosis (TB) is not abating, even though nations have made audacious pledges to eradicate the disease by 2030 in the form of the Sustainable Development Goals (SDGs), the WHO End TB Strategy, and the 2018 political statement on the war against TB. In 2022, the fatal illness took the lives of 1.3 million people. In 2022, 410,000 individuals had multidrug-resistant TB infections, indicating the increasing threat of drug-resistant tuberculosis. In an effort to combat TB, which kills countless people worldwide, the World Health Organization (WHO) has recently introduced shorter medication regimes. The critical need for more effective therapies is addressed by this novel strategy, particularly in areas where the prevalence of TB is highest.

With traditional therapies often posing risks to liver health, these shortened regimens offer a ray of hope, minimising such concerns while enhancing treatment adherence. Our team has put together a story on how this new shorter drug regimens, aiming to improve treatment outcomes, can reduce the burden on patients.

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

Thanks & Regards,



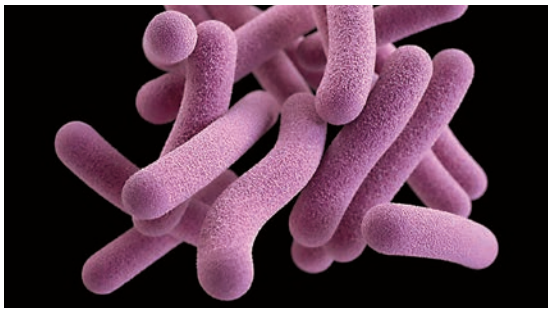
Ravindra Boratkar
Publisher & Managing Editor

COVER 20

ENGENDERING INCLUSIVITY & DIVERSITY IN LIFE SCIENCES

We are celebrating International Women's Day this time around by spotlighting women's roles and challenges in life sciences, spanning leadership, clinical trials participation and pay parity issues. Section I of the story highlights remarkable women leading public sector organisations in life sciences in APAC. Section II discusses the persistent issue of pay parity in the sector, while the final section tackles issues related to women in clinical trials. Let's delve deeper.

Tuberculosis



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Juggling Healthcare & Climate Change

Dr Milind Kokje
Chief Editor
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There are reports of major transformation in healthcare with regard to adoption of cutting edge technologies like artificial intelligence (AI) in healthcare in the near future. However, a lack of assured power supply, the most essential factor in healthcare, is also a reality. A large proportion of the healthcare sector in South Asia and Sub-Saharan Africa is powered by diesel or petrol generators in the absence of continuous electricity supply. Added to that is the relation between climate change and healthcare.

A report released at COP28 in December 2023, points out that nearly 1 billion people in the world are served by healthcare facilities without reliable electricity access or without any electricity access. This is the ground reality when electric supply for various healthcare and diagnostics related gadgets is crucial. The report 'Climate Finance for Powering Healthcare' by 'Sustainable Energy for All' and 'Oxford Policy Management' examines how climate finance for mitigation of greenhouse gas emissions can help provide power for healthcare facilities with renewable energy. It estimates that if all energy deficient facilities were to adopt clean energy solutions it would result in annual cost savings of $173-263 million and 0.68-0.98 MT Carbon Dioxide in the areas.

Just a month after that Bain and Company's annual Global Healthcare Private Equity and M&A report was released. It said that Asia Pacific's share of global healthcare private equity deals continued to rise from 26 per cent in 2022 to a projected 34 per cent in 2023. Though in actual terms, it declined from $17.1 billion in 2022 to $14.2 billion in 2023, it increased compared to other regions, indicating exactly the opposite picture where lots of funds are available for development of the healthcare sector.

In Asia, most of the investment is happening or will happen in the near future in very modern AI supportive gadgets. By 2027, 60 per cent of Asia Pacific healthcare organisatons are expected to double their investments in Generative AI (GenAI). International Data Corporation in its Asia Pacific report said GenAI is emerging as a transformative force in healthcare.

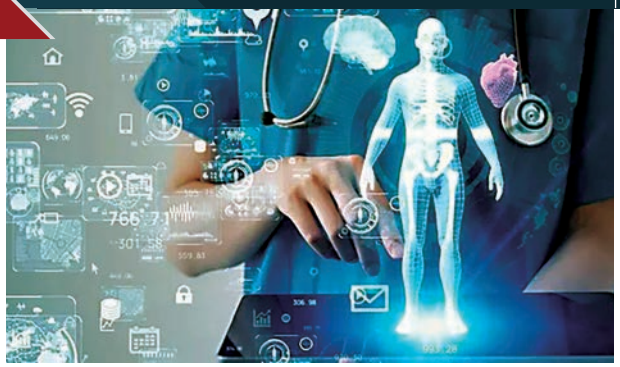
In case of diagnostics, APAC is expected to see a 60 per cent increase in AI adoption by 2026 for better diagnostic accuracy, speed and workflow efficiency. Regarding AI care, the 50 per cent healthcare industry in APAC will leverage GenAI by 2027. GenAI technology is expected to free up 10 per cent of clinicians' time leading to an estimated $100 billion saving in annual healthcare in APAC by 2025. In all, 40 per cent healthcare organisations will adopt industry clouds by 2025. With all this comes the focus on data security, as per the IDA report. Among the several reasons for this spurt in use of advanced technology, demand to scale hyper-personalised patient experiences and for home caregiving are prominent. Hospital at home (HaH) patients will double by 2026, resulting in 55 per cent growth in investments for tech-enabled integrated care services.

While the healthcare scene is expected to change in APAC, climate change is another aspect to be factored-in. Singapore-based Duke-NUS Medical School has set up SingHealth Duke-NUS Global Health Institute (SDGHI). One of the areas it is focusing on is planetary health. It's based on the concept that the health of both people and the planet can be taken care of in an integrated way. The institute has appointed the key advocate of this concept to set up a new Asia-wide network focused on advancing collaboration on healthcare research and advocacy. Asia is the right place to start such an initiative since it is the heart of many planetary health crises.

While all the tech related efforts are ongoing for better healthcare services in Asia Pacific region and to think about climate change and healthcare in an integrated manner, inadequate power supply for over one billion people, including Asia, also needs to be addressed on a war footing. BS

US CDC opens new East Asia and Pacific office in Tokyo

The national public health agency of the United States (US), Centers for Disease Control and Prevention (CDC) Director Mandy Cohen announced the opening of the new CDC East Asia and Pacific (EAP) regional office in Tokyo, Japan, at a ceremony that included US Ambassador to Japan Rahm Emanuel, Japan Minister of Health, Labour and Welfare Keizo Takemi, diplomatic and health leaders from countries in the region, international organisations, and academic institutions. CDC's EAP regional office will further strengthen the United States government's global health impact by working with Japan, partner countries and regional organisations to prevent, detect and respond to health threats. Priorities for the new regional office include expanding CDC's core global health security capacity by building stronger collaboration and partnerships in the East Asia and Pacific region; the ability to detect public health threats and respond quickly, and knowledge and information exchange between CDC and the region. Through this office, CDC will focus on identification, response, and mitigation of health threats in international settings to rapidly respond to outbreaks at their source and prevent spread to and within the US.



Australia establishes new task force to guide use of AI in public health system

New South Wales (NSW) Health in Australia has established a new taskforce to inform and guide the use of artificial intelligence (AI) in the public health system. The taskforce, whose membership comprises senior leaders and subject matter experts from across NSW Health, held its first meeting recently. Several AI initiatives are already in place throughout NSW Health, including integrated electronic medical records, wound care management, data engineering for complex data analysis, coding automation support, and storeroom stocking and detailing. The taskforce will play an important role in overseeing the creation of an AI Framework that ensures the safe and successful use of AI within NSW Health. The framework will aim to embrace the potential of AI to have a significant impact on healthcare and drive transformative change in how we provide and manage healthcare and in further accelerating many aspects of clinical research.

Ministry of Health in New Zealand inks MoU with University of Waikato to build medical school

The Ministry of Health, government of New Zealand, and the University of Waikato have signed a Memorandum of Understanding (MoU) as a first step towards establishing a new medical school. Director-General of Health, Dr Diana Sarfati and University of Waikato Vice-Chancellor, Professor Neil Quigley signed the MoU. The Ministry and the University will now begin working through the initial steps to ensure that a new medical school meets the health

system needs. The two parties will work together on an outline of the approach, which will include a cost-benefit analysis and other key milestones and timeframes, for the Minister of Health Dr Shane Reti and Cabinet to consider in the months ahead. The MoU is a part of the government's commitment to training more doctors in New Zealand. As chief steward of the health system, the Ministry of Health sets the strategic direction for the workforce, to support health agencies to address long-standing workforce challenges. This includes setting the strategic policy direction for the workforce, determining funding priorities, and ensuring New Zealand has the right legislation in place.

NITI Aayog releases report for senior care reforms in India

NITI Aayog has released a position paper titled 'Senior Care Reforms in India: Reimagining the Senior Care Paradigm'. The report was released by Suman Bery, Vice Chairman, NITI Aayog, in the presence of Dr Vinod K. Paul, Member (Health); B. V. R. Subrahmanyam, CEO; and Saurabh Garg, Secretary, Department of Social Justice and Empowerment (DoSJE), Government of India. The recommendations in this position paper categorise the specific interventions needed in terms of empowerment, service delivery, and their inclusion under four core areas: Health, Social, Economic/ Financial, and Digital. It strives to push the frontiers of senior care by recognising the evolving medical and non-medical needs of seniors, thus envisioning a multi-pronged strategy for designing an effective and synergised senior care policy. The report is a call for action on what needs to be done to bring a greater focus on senior care. The broad focus of DoSJE is on ageing with dignity, ageing at home, and productive ageing, which will encompass social, economic, and health aspects.

Korea invests KRW 910 B to raise more venture capital fund for startups

The Ministry of Small and Medium Enterprises (SMEs) and Startups in Korea has recently announced its plans to invest KRW 910 billion in order to raise a venture capital (VC) fund of KRW 1.7 trillion through the public announcement for the first round of regular investment in a Fund of Funds. The first round of regular investment involves a record-breaking KRW 150 billion investment in the Global Fund to create over KRW 1 trillion fund. The Global Fund aims to support attracting overseas investment in domestic startups. Further, a record-breaking KRW 100 billion will be invested in the 'Regional Venture Capital Fund,' which specialises in supporting startups and venture businesses outside the capital region. By investing over KRW 100 billion into the Rookie League Fund exclusive to the newly established small and medium-sized VCs, the investment project revamps its operational method to ensure that Rookie Venture Capitals directly propose challenging investment areas.

Singapore boosts national palliative care capabilities

To meet the urgent need of upskilling healthcare professionals in end-of-life care, Nanyang Technological University, Singapore (NTU Singapore) and the National Healthcare Group (NHG) have launched a new academic programme in Holistic Palliative Care (HoPE). The programme is developed and delivered by the Palliative Care Centre for Excellence in Research and Education (PalC), a collaboration between NTU's Lee Kong Chian School of Medicine (LKCMedicine), NHG and Dover Park Hospice to spearhead palliative care research and education. To create a programme attuned to Singapore's evolving healthcare system and the learning needs of the healthcare community, the curriculum has been developed by PalC in consultation with Singapore's Ministry of Health, Agency for Integrated Care, Singapore Hospice Council and an international expert, along with focus group discussions with 60 healthcare professionals. Their feedback formed the basis of the programme's multidisciplinary focus on psychosocial aspects of palliative care as well as its flexible structure.

VBI Vaccines sells manufacturing capabilities to China's Brii Biosciences for $33M

US-based VBI Vaccines Inc., a biopharmaceutical company driven by immunology in the pursuit of powerful prevention and treatment of disease, has announced agreements whereby China-based startup Brii Biosciences, subject to certain activities, is expected to acquire the intellectual property for VBI-2601, VBI's hepatitis B immunotherapeutic development programme, and eliminate payment obligations from the July 2023 agreements between VBI and Brii Bio; acquire manufacturing capabilities and certain related assets at VBI's Rehovot, Israel manufacturing facility, and enter into an exclusive license to develop and commercialise VBI-1901, VBI's glioblastoma (GBM) immunotherapeutic candidate, in the Asia Pacific region (APAC), excluding Japan. Additionally, subject to certain approvals, VBI and Brii Bio will work together to transfer the manufacturing technologies of VBI-2601 to a site designated by Brii Bio.

Takeda Pharma inks haematology deal worth $300M with US-based Protagonist Therapeutics

Japan-based pharmaceutical firm Takeda and US-based Protagonist Therapeutics have inked a global license and collaboration agreement for the development and commercialisation of Rusfertide, an investigational injectable hepcidin mimetic peptide designed to mimic the natural hormone hepcidin. Rusfertide is currently undergoing a pivotal Phase 3 trial, VERIFY, for the treatment of Polycythemia Vera (PV), a rare chronic blood disorder characterised by the overproduction of red blood cells, affecting approximately 160,000 patients in the US and a similar number in Europe. As per the agreement's terms, Protagonist will receive an upfront payment of $300 million, along with potential additional payments linked to global development and regulatory milestones, as well as commercial milestones and royalties on ex-US net sales.

I-Mab divests China business to become US-based biotech firm

I-Mab, a global biotech company exclusively focused on bringing highly differentiated immunotherapies and biologics for cancer treatment to patients around the world, has announced that as part of its strategy to become a US-based biotech, its Chinese subsidiaries have entered into definitive agreements with I-Mab Biopharma (Hangzhou), an unconsolidated affiliate of the company, and a group of China-based investors to divest the company's assets and business operations in China. Pursuant to the definitive agreements, the company will transfer 100 per cent of the outstanding equity interest in I-Mab Biopharma Co. (I-Mab Shanghai), a wholly owned subsidiary of the company that operates the company's business in China, on a cash-free and debt-free basis, to the Hangzhou Company for an aggregate consideration of the RMB equivalent of up to $80 million, contingent on the Hangzhou Company group's achievement of certain future regulatory and sales-based milestone events. The company also retains a right of first negotiation outside of Greater China related to three future investigational new drug candidates.

Eris Lifesciences expands footprint in sterile injectables with acquisition of 51% stake in Swiss Parenterals

India-based Eris Lifesciences has announced the expansion of its sterile injectables footprint through the acquisition of 51 per cent equity stake in Swiss Parenterals for a consideration of Rs 637.5 crore. This deal also marks the entry of Eris into the RoW (rest of the world) export markets. Out of the deal consideration of Rs 637.5 crore for Eris' 51 per cent stake, Rs 200 crore will be paid at closing

and the remainder will be paid 12 months from closing. The transaction is expected to achieve financial closure before March 31, 2024. Eris' Promoter group will concurrently acquire an additional 19 per cent in Swiss for Rs 237.5 crore, thereby bringing the total equity stake of Eris and its Promoter Group in Swiss to 70 per cent. With a 25+ year legacy, Swiss Parenterals is a leading player in the sterile injectables business in 80+ emerging markets across Africa, the Asia Pacific and Latin America.

Australia invests $35M to build manufacturing facility for artificial corneas

The University of Sydney will receive $35 million through the Medical Research Future Fund of the Australian government to establish a manufacturing facility that can produce, store and ship bioengineered corneas across Australia and the world. The funding is part of $700 million over 10 years the government has allocated to ensure Australia remains a world leader in medical research. BIENCO is a world-first consortium of clinical, scientific and governance experts from the University of Sydney, University of Wollongong, University of Melbourne, Queensland University of Technology (QUT), the Centre for Eye Research Australia, and the NSW Organ & Tissue Donation Service (OTDS). It is developing a bioengineered corneal replacement tissue by incorporating cells and tissue generously donated by deceased donors. Corneal disease is the third most common form of blindness and over 10 million are on a waiting list for a corneal transplant.

Jubilant Pharma sells entire 25.8% stake in Sofie Biosciences for $139.43M

Jubilant Pharma Limited, Singapore (JPL), a wholly owned subsidiary of Jubilant Pharmova Limited (formerly Jubilant Life Sciences Limited) in November 2020 invested $25 million in Sofie Biosciences Inc., US and currently holds 25.8 per cent stake. JPL plans to sell its entire 25.8 per cent equity stake in Sofie for aggregate proceeds of about $139.43 million, including certain preferred returns. Of this, $113.63 million (subject to certain customary adjustments at closing) is expected to be received upon completion of the merger while receipt of a balance sum of $25.8 million is contingent upon achievement of certain future milestones. JPL plans to use these proceeds to reduce leverage and for capex and other corporate purposes. Sofie Biosciences is engaged in developing and delivering molecular diagnostics and therapeutics (theranostics). It has radiopharmaceutical production and distribution network, mature contract manufacturing services and high value theranostic intellectual property. Sofie has now entered into a definitive merger agreement with certain private equity funds managed by Trilantic Capital Partners, North America, a US-based private equity firm. The merger transaction is expected to close by June 30, 2024, subject to customary conditions and regulatory approvals.

Prenetics initiates new project to focus on accelerated ageing in space

Prenetics Global Limited, a leading genomics-driven health sciences company from Hong Kong, has announced the signing of a Memorandum of Understanding (MoU), that paves the way for a strategic investment in Metavisionaries and a pioneering five-year research agreement with them and their partners Space Application Services through their Metaspace Venture. The parties will also establish a Space Innovation Lab within the UAE Space Agency. As space exploration ignites a new era of discovery, the first endeavour by Prenetics will be with the Botnar Institute for Musculoskeletal Sciences at the University of Oxford, NDORMS (Nuffield Department of Orthopaedics, Rheumatology and Musculoskeletal Sciences), led by Dr Ghada Alsaleh. The joint project will be to research cellular solutions that promote rejuvenation and vitality to combat the phenomenon of accelerated ageing in space due to its zero-gravity environment. The potential of this research could lead to new advances in healthcare, enhancing cellular health and longevity for all ages on earth.

Sysmex and Hitachi High-Tech to collaboratively develop new genetic testing systems

Japan-based Sysmex Corporation and Hitachi High-Tech Corporation are collaborating to develop novel genetic testing systems based on capillary electrophoresis sequencers (CE sequencers). Maximising the use of the individual technologies and know-how, the two companies aim to achieve the spread of new genetic testing systems that provide shorter measurement times and reduced running costs. The initiative is backed by a joint research finding of a feasibility study (FS) agreement in August 2023 aimed at developing new genetic testing systems. To achieve widespread clinical realisation, Sysmex and Hitachi High-Tech will develop more efficient genetic testing systems at a lower cost, aiming at expanding optimal genetic testing for individual diseases. Genetic testing reagents using next generation sequencers (NGS) have been actively developed in recent years. However, challenges such as shortening measurement times and reducing running costs have emerged, necessitating the development of new genetic testing systems that can be widely adopted in the clinical setting.

Biocon Biologics partners with Sandoz Australia for cancer biosimilars

Indian firm Biocon Biologics Ltd (BBL), a fully integrated biosimilars company and subsidiary of Biocon, has announced a five-year partnership with Sandoz AG which provides Sandoz the exclusive rights to promote, sell and distribute biosimilar Trastuzumab (market value of AUD$35 million) and biosimilar Bevacizumab (market value of AUD$45 million) in Australia. Under the agreement, Sandoz will distribute the Biocon Biologics' brands, OGIVRI (bTrastuzumab) and ABEVMY (bBevacizumab), and facilitate the sustained access of these medications that were previously distributed by another pharmaceutical company to patients in Australia. Trastuzumab is a biosimilar of Herceptin and Bevacizumab is a biosimilar of Avastin – both biosimilars are available on the PBS and utilised for the treatment of various cancers. Following the recent establishment of Biocon's strategic partnership with Sandoz in Japan, its agreement with Sandoz in Australia marks another important milestone of global partnership and growth strategy.

Merck establishes first digital hub in Singapore

Science and technology company Merck has announced the opening of the Merck Digital Hub in Singapore, representing its first digital hub outside of the US and Europe. Supported by the Singapore Economic Development Board (EDB), the Digital Hub aims to propel advancements within the healthcare and semiconductor industries. Singapore is recognised globally for driving innovation and digital excellence, particularly in key areas such as digital health, semiconductor technology, and artificial intelligence (AI). The Merck Digital Hub brings in the expertise of Syntropy and Athinia, both of which enable secure data collaboration among participants in the healthcare and semiconductor industries. These platforms help data owners integrate and curate their data across their organisations, maintaining the high-quality standards required by both sectors. Syntropy and Athinia have been built under the premise that high-quality data must be traceable to the source and governed appropriately to enable experts and scientists to uncover novel insights. The secure AI-enabled data flow can help unlock efficiencies while ensuring stakeholders maintain control of their intellectual property.

Samsung Biologics & LegoChem Biosciences team up for ADC development

South Korea-based Samsung Biologics, a global contract development and manufacturing organisation (CDMO), has signed a partnership agreement with LegoChem Biosciences, a Korean biotech company pioneering the research and development of antibody-drug conjugate (ADC) programmes. Under the terms of the deal, Samsung Biologics will provide antibody development and drug substance manufacturing services as a part of LegoChem Biosciences' ADC programme designed to treat solid tumours. LegoChem Biosciences aims to submit an Investigational New Drug application to the US FDA in the first half of 2025, with non-clinical data showing promising efficacy results. The company is also on track to adding ADC to its pipeline, with the construction of a standalone, dedicated ADC facility expected to be operational within 2024.

Glenmark partners with Pfizer to launch drug for atopic dermatitis treatment in India

American pharmaceutical giant Pfizer and Mumbai-based Glenmark Pharmaceuticals have joined hands to launch abrocitinib, a first of its kind oral advanced systemic treatment for moderate-to0severe atopic dermatitis (AD), in India. Developed by Pfizer, abrocitinib has received marketing authorisation from the Central Drugs Standard Control Organisation (CDSCO) in India and is approved by the US Food and Drug Administration (FDA), European Medicines Agency (EMA), and other regulatory agencies. When launched in India, it will be co-marketed under the brand names JABRYUS and CIBINQO by Glenmark and Pfizer respectively. Abrocitinib (CIBINQO) is available in over 35 markets globally, including the US, Japan, and China.

Singapore's Mesh Bio raises $3.5M to make digital twin technologies available at scale

Mesh Bio, a Singapore-based health deep tech startup transforming chronic disease management through predictive analytics, has raised $3.5 million in Series A financing led by East Ventures, a pioneering and leading sector-agnostic venture capital firm focusing on Southeast Asia. This round of investment also saw participation of Elev8, Seed Capitals, and other existing shareholders. The funding will allow Mesh Bio to offer its digital twin technologies to healthcare providers and scale the deployment of these solutions across Hong Kong and Southeast Asia, mainly Indonesia and the Philippines. This new investment comes three months after Mesh Bio secured historic regulatory approval and an implementation pilot with public health systems for one of its digital twin technologies in Singapore, which represents a major opportunity to improve patient outcomes from chronic diseases. In October 2023, it received approval from Singapore's Health Sciences Authority (HSA) to market its HealthVector Diabetes as a Software Medical Device (SaMD).

Korean startup AIRS Medical take AI-powered MRI solutions to Australia & New Zealand

South Korea-based startup AIRS Medical Inc., a leading provider of artificial intelligence (AI)-powered healthcare solutions, has announced a strategic partnership agreement with ParagonCare, provider of healthcare technology, devices, software, and consumables in Australia, New Zealand, and across Asia. AIRS Medical will leverage ParagonCare's extensive distribution network and sales process, significantly boosting the sales of its flagship product, SwiftMR, in Australia. SwiftMR enhances MRI image quality through advanced deep learning technology. It can reduce MRI scan times by up to 50 per cent, while simultaneously enhancing image quality using AI-powered denoising and sharpening techniques. US FDA-510(k)-cleared, SwiftMR is compatible with all body parts, pulse sequences, and MRI scanners of 3.0 T or lower, from all manufacturers. It also improves MRI productivity without requiring changes to the conventional workflow or the purchase of new MRI scanners. Currently, SwiftMR has expanded into over 15 countries, accumulating over 1.1 million processed exams in more than 300 institutions.

Taiwan's Anbogen secures $12.5M for advancing precision oncology drug development

Taiwan-based startup Anbogen Therapeutics, a clinical-stage biotechnology company specialising in groundbreaking cancer drug development, has announced the successful completion of its Series A funding round. The lead investor is China Development Industrial Bank (CDIB), with significant contributions from Taian Venture Capital, Maxpro and the National Development Fund (Business Angel Investment Programme, and Implementation Project for

Strengthening Investment in SMEs), with a total investment of approximately $12.5 million. The raised capital will be directed towards the ongoing development of Anbogen's two main drug candidates, ABT-101 and ABT-301. Both of these candidate drugs were supported by the National Research Programme for Biopharmaceuticals (NRPB) before Anbogen took over. ABT-101, a HER2-targeting tyrosine kinase inhibitor (TKI), has exhibited substantial potency and safety during its pre-clinical and phase 1b clinical trial. During the pre-clinical study, ABT-101 demonstrated superior selectivity against HER2 exon20 insertion mutation.

Australia assists startups and SMEs in digital health and med tech sectors with new programme

Australia's national science agency, Commonwealth Scientific and Industrial Research Organisation (CSIRO), is calling on startups and small to medium-sized enterprises (SMEs) looking to drive innovation in digital health and medical technologies to apply for its upcoming Innovate to Grow programme. The free 10-week online programme is specifically designed to assist Australian SMEs operating in critical sectors advance their innovative technologies, solutions and ideas through research and development (R&D). Programme participants will collaborate with a mentor from CSIRO or a university to address technical and business challenges, while exploring R&D opportunities, gain insight into partnering with research organisations and craft compelling R&D funding applications.

TruDoc acquires Wellthy Therapeutics to deliver digital health services in Gulf and expand to India

Dubai-based TruDoc Healthcare has announced its acquisition of Indian health tech startup Wellthy Therapeutics. The acquisition of Wellthy Therapeutics' advanced behavioural science and digital therapeutic solutions with TruDoc's extensive virtual and in-home healthcare services marks the dawn of a transformative healthcare era. This integration ensures round-the-clock access to high-quality care, tailored treatment plans, and innovative care delivery methods for patients. These advancements hold the potential to greatly enhance health results and streamline healthcare expenditures. The combined vision is rooted in patient-centric care, aiming to deliver a seamless, integrated healthcare experience that places the patient at the heart of every decision. With TruDoc's leadership in the Gulf Cooperation Council (GCC) and Wellthy's proven track record in Asia, this alliance is poised to reinforce TruDoc's leading position in the region as a tech-enabled primary care provider.

Japanese startup RevolKa to create highly functional proteins by using AI-driven platform

RevolKa, a venture-backed biotech startup providing a game-changing protein engineering technology platform, based in Japan, has signed a contract research agreement with Sekisui Chemical. RevolKa will create and deliver highly functional proteins by using its proprietary protein engineering platform technology, called aiProtein which is a robust directed protein evolution technology integrated with artificial intelligence (AI). Proteins have evolved to

biologically functional molecules over hundreds of millions of years. The relationship between protein sequence, structure, and function in those highly crafted molecules remains poorly understood to rationally design a protein sequence for a particular function. The AI engine is trained with sequence-function relationship data to statistically predict sequences for an evolved protein function. Furthermore, aiProtein can evolve more than two functions simultaneously. This technology is a powerful and cost-effective tool for the creation of novel and highly-optimised proteins for pharmaceutical and industrial uses.

WHO enables greater patient access to multiple essential diagnostics

The World Health Organization (WHO) and the Medicines Patent Pool (MPP) have announced a license agreement with SD Biosensor (SDB), a global in-vitro diagnostic company, to provide sublicensees with the right, know-how and material to manufacture SDB's rapid diagnostic testing (RDT) technology. The transparent, non-exclusive license agreement, negotiated under the auspices of the COVID-19 Technology Access Pool (C-TAP), represents an important milestone in the evolution of the C-TAP initiative as it enables the manufacture of diagnostics for COVID-19 as well as other diseases such as HIV, malaria and syphilis. The technology offered through the license is ideal for low and middle-income countries as it is easy to use, with no equipment requirements and has high sensitivity. Furthermore, a number of the company's RDTs are Prequalified and Emergency Use Listed by WHO.

WHO calls for renewed global efforts to eliminate neglected tropical diseases

The World Health Organization (WHO) is calling on everybody, including leaders and communities, to unite and act to address and eliminate the inequalities that drive neglected tropical diseases (NTDs) and to make bold, sustainable investments to free the estimated 1.62 billion people, in the world's most vulnerable communities, from a vicious cycle of disease and poverty. NTDs continue to disproportionately affect the poorest members of the global community, primarily in areas where water safety, sanitation and access to health care are inadequate. In 2023, remarkable progress was made in the global fight against NTDs, bringing us closer to our goal of controlling, eliminating and eradicating these diseases worldwide. In a landmark achievement for global health, 50 countries have now eliminated at least one NTD, bringing us half way point towards the ambitious target set in the WHO NTD 2021-2030 road map. Also in 2023, Bangladesh became the first country in the world to be validated for the elimination of visceral leishmaniasis, thanks to a wide collaborative effort.

WHO introduces the Health Technology Access Pool

The World Health Organization (WHO) has announced the Health Technology Access Pool (HTAP) as the successor to the COVID-19 Technology Access Pool (C-TAP). C-TAP was launched in May 2020 by WHO, the Government of Costa Rica and other partners to facilitate equitable and affordable access to COVID-19 health products for people in all countries. The platform provided a much-needed forum for technology partners to voluntarily share intellectual property, knowledge, and data in order to accelerate technological innovation

and expand access to COVID-19 tools. HTAP will promote access to health products that respond to public health priorities including pandemic preparedness and with relevance during and outside health emergencies. This approach will amplify the public health value of HTAP investments as well as the attractiveness of licensed technologies to recipient manufacturers by realising greater market opportunities and financial sustainability. The announcement on the licensing of a rapid diagnostic test platform technology serves as an example of such an approach. Later in the first quarter of 2024, WHO will publish further details on how HTAP will operate and the technologies it will target. The official launch of HTAP is planned for the second quarter of 2024.

Africa CDC hosts Vaccine Manufacturing Supply Chain Forum

The Africa Centres for Disease Control and Prevention (Africa CDC) and the Coalition for Epidemic Preparedness Innovations (CEPI) recently hosted the African Vaccine Manufacturing Supply Chain Forum, in Nairobi, Kenya, to discuss about the sustainable supply of input materials to support vaccine manufacturing as the continent witnesses a surge in vaccine manufacturing. Vaccine demand in Africa is expected to rise from approximately 1.4 billion doses to over 2.1 billion doses by 2040. Africa CDC identified a range of roadblocks for urgent interventions to support local vaccine manufacturers in establishing strong and resilient supply chains to enable the African vaccine manufacturing industry to develop, produce, and supply around 60 per cent of the total vaccine doses required by 2040. Africa CDC's framework for action on local manufacturing aims to develop a robust and reliable continent-wide reach vaccine manufacturing ecosystem aimed at localising the supply of critical input materials and harmonising trade regulations.

PAHO improves access to medicines for childhood cancer in Latin America and the Caribbean

The Pan American Health Organisation (PAHO) has announced a new partnership agreement with St. Jude Children's Research Hospital to strengthen equitable access to cancer medications for children in Latin America and the Caribbean. The four-year agreement will focus on the provision of quality medicines through the PAHO Strategic Fund and support technical cooperation with member states to strengthen childhood cancer care services and medicine management systems. It aims to improve outcomes for childhood cancer, which affects more than 47,000 children and takes over 12,000 lives each year in the region. Under the new agreement, the PAHO Strategic Fund will work on the implementation of the World Health Organisation-St Jude Global Platform for Access to Childhood Cancer Medicines in Latin America and the Caribbean. This global initiative will provide a supply of quality-assured childhood cancer medicines to low- and middle-income countries. The platform will provide end-to-end support for medicine delivery; assist countries with the selection of medicines; develop treatment standards, and build information systems to drive evidence-based innovation. Approximately 120,000 children all over the world are expected to benefit in this first phase until 2027.

SAHPRA signs MoU with Medicines Control Authority of Zimbabwe

The South African Health Products Regulatory Authority (SAHPRA) has signed a Memorandum of Understanding (MoU) with the Medicines Control Authority of Zimbabwe (MCAZ). The MoU between SAHPRA and MCAZ will allow the regulators to develop a cooperative partnership towards ensuring access to safe, quality, and effective health products in the respective countries. SAHPRA and MCAZ will cooperate in joint product reviews and inspections to enable efficient access to health products. This partnership will also focus on detection and curbing of substandard and falsified health products moving between the two countries, which has of late been a major challenge that the two regulators have identified.

US FDA approves first medication to treat severe frostbite

The US Food and Drug Administration (FDA) has approved Eicos Sciences Inc's Aurlumyn (iloprost) injection to treat severe frostbite in adults to reduce the risk of finger or toe amputation. Frostbite can occur in several stages, ranging from mild frostbite that does not require medical intervention and does not cause permanent skin damage, to severe frostbite when both the skin and underlying tissue are frozen and blood flow is stopped, sometimes requiring amputation. Iloprost, the active ingredient in Aurlumyn, is a vasodilator (a drug that opens blood vessels) and prevents blood from clotting. Iloprost's efficacy in treating severe frostbite was primarily established in an open-label, controlled trial that randomised 47 adults with severe frostbite, who all received aspirin by vein and standard of care, into one of three treatment groups. Aurlumyn received Priority Review and Orphan Drug designations for this indication. Iloprost was originally approved in 2004 for the treatment of pulmonary arterial hypertension.

US HHS releases health strategy to control Vector-Borne Diseases in People

The US Department of Health and Human Services (HHS) has released the National Public Health Strategy to Prevent and Control Vector-Borne Diseases in People (VBD National Strategy). As directed by the 2019 Kay Hagan Tick Act, named after the US Senator who died due to complications from a tickborne illness, HHS led a four-year process with civilian agencies and defence departments to deliver this strategy. Co-led by the HHS Office of the Assistant Secretary for Health and the Centers for Disease Control and Prevention, the strategy identifies and describes federal priorities to detect, prevent, respond to, and control diseases and conditions caused by vectors in the United States. This VBD National Strategy represents the largest formal federal coordination effort focused on vector-borne disease prevention and control with contributions by over 50 representatives across 17 federal agencies. This collaborative effort will help address the significant public health challenges related to vector-borne diseases; incorporate a One Health approach to enhance coordination and communication across human, animal, and environmental areas; and reverse the upward trends in illness, suffering, and death.

Scientists seek out best on-the-spot diagnostics for Nipah and Lassa

Scientists who specialise in viral detection are embarking on a search for the most reliable on-the-spot tests for two viral diseases that have the potential to cause deadly epidemics- Nipah and Lassa. In a four-year project funded by Norway-based Coalition for Epidemic Preparedness Innovations (CEPI) and led by Switzerland-based health organisation FIND, the team will examine and evaluate all available point-of-care testing options for the two diseases. They will work to advance the best performing ones for further testing, approval and widespread use down the line. CEPI has agreed to grant up to $14.9 million to the project, which will run from February 2024 through January 2028. FIND researchers will identify the criteria for an optimum rapid diagnostic test and select rapid tests for Lassa and Nipah to test against those criteria. Successful diagnostics will be progressed to licensure for widespread use. Nipah is a zoonotic disease first identified in 1999 in Malaysia. Nipah outbreaks have until now been confined to South and Southeast Asia. Lassa fever is a rat-borne viral disease which causes acute haemorrhagic disease in many countries across West Africa.

ENGENDERING INCLUSIVITY & DIVERSITY IN LIFE SCIENCES

The public sector maintains a higher representation of women as employees compared to the private sector as per data from the World Bank. Globally, women constitute 46 per cent of the workforce in the public sector, whereas in the private sector, they represent 33 per cent. While men outnumber women in the private sector across 130 countries, the trend is shifting in the public sector, where women outnumber men in 55 nations. This data sheds light on the increasing presence of women in high- and upper-middle-income countries' public sectors, highlighting a significant shift in workforce demographics.

In the realm of the public sector in life sciences, remarkable women are at the helm, steering initiatives and shaping policies that impact millions. From regulatory bodies to research institutions, these leaders exemplify excellence and resilience.

There's Dr Choong May Ling, who serves as the chief executive for Singapore's health regulatory body, or China's leading epidemiologist Prof. Li Lanjuan, who was instrumental in the country's fight against COVID-19. There's Dr Diana Siew, who is taking New Zealand's medtech sector to greater heights, along with many other inspiring women. These women, among many others, inspire the next generation of leaders and pave the way for inclusive and equitable practices in the life sciences sector.

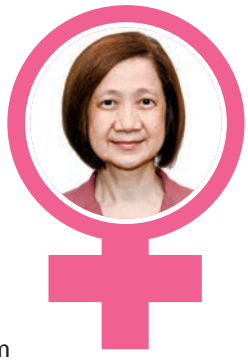
We are celebrating International Women's Day on March 8, by spotlighting women's roles and challenges in life sciences, spanning leadership, clinical trials participation and pay parity issues. The story is divided into three parts. The first part highlights the remarkable achievements of women leading the public sector organisations in life sciences in APAC. In the second section, we will be discussing the persistent issue of pay parity in the sector, while the final section tackles issues related to women in clinical trials. Let's delve deeper. BS

Ayesha Siddiqui

SINGAPORE

Leader par excellence

Dr Choong May Ling,
Mimi, CEO, Health Sciences Authority (HSA)



Dr Choong May Ling, Mimi, was appointed as Chief Executive Officer of the Health Sciences Authority (HSA), Singapore in 2014. She oversees HSA's broad public health responsibilities, including health products regulation, the national blood service, and national analytical and forensic sciences and forensic medicine services.

Dr Choong began her civil service career as a doctor in the Ministry of Health and has worked at Singapore General Hospital, Kandang Kerbau Hospital, and Ministry of Health Headquarters. She has also served in various capacities in many ministries, including the Ministry of Finance, the Ministry of Health, the former Ministry of Communications and Information Technology, and the Ministry of Information, Communications and the Arts. She was Deputy Secretary (Security) in the Ministry of Home Affairs from December 2003 to April 2010, and Deputy Secretary (Services) in the Ministry of Education from May 2010 to May 2014 before joining HSA.

Under her leadership, HSA was recognised by the World Health Organization (WHO) as a WHO-Listed Authority (WLA) in October 2023. This designation signifies HSA's advanced regulatory performance, ensuring high standards of safety, efficacy, and quality for medicines in Singapore. HSA had also achieved WHO Maturity Level 4 in January 2022 for operational efficiency. BS

Trailblazing advocate of diversity

Dr Shuwen Koh,
Director, Technology Transfer and Innovation, NUS Enterprise

Dr Shuwen Koh stands at the intersection of technology, innovation, and healthcare, wielding her expertise to revolutionise the landscape of biomedical sciences. With over 15 years of experience in technology commercialisation roles, Dr Shuwen is a trailblazer in fostering collaboration, driving breakthroughs, and advocating for diversity within the industry. As the Deputy Group Chief Technology Officer and Director of Innovation at the National University Health System (NUHS), Dr Shuwen is instrumental in propelling Singapore's innovation and startup ecosystem forward.

In an Experimental Drug Development Centre (EDDC) grant review, a project on pre-eclampsia faced scepticism from male reviewers unfamiliar with the condition's implications. Women on the panel challenged this oversight, emphasising the urgency: 'Why has this condition been overlooked for so long?' Their advocacy shifted the discussion, focusing on the project's scientific merit and clinical importance.

"That moment brought home the point that diversity and inclusivity, at every step of healthcare innovation, is key to the long road ahead for equitable access to healthcare. I was struck by the privilege of having a seat at the table. The power and concomitant responsibility reinforced my resolve to speak up on issues which matter to me, as well as being a voice for others who are under-represented," she said.

At NUS Enterprise, Dr Shuwen's strategic initiatives focus on fostering collaboration between researchers, entrepreneurs, and investors to translate cutting-edge research into practical solutions. Through public-private partnerships and patient capital investment approaches, she paves the way for groundbreaking discoveries to reach fruition.

Giving young entrepreneurs a heads-up and an important piece of advice, she says, "I believe in 'we for she'. Find your voice, tribe, cheerleaders, and sponsors. Know and engage your key stakeholders. There are different seasons in life, there will be trade-offs, so know your non-negotiables. And enjoy the ride!" BS

AUSTRALIA

Uprooting gender bias

Jaala Pulford,
Chair, MTPConnect

Jaala is Chair of MTPConnect, Australia's Growth Centre for the medical technology, biotechnology and pharmaceutical sector.

She enjoyed a distinguished career as a senior minister in the Victorian state government, including serving as Minister for Innovation, Medical Research and the Digital Economy until her retirement ahead of last year's state election. In this key portfolio, she led the establishment of mRNA Victoria and, working with the Australian Government, secured pandemic-scale manufacturing capability for Australia through the partnership with Moderna. She was also instrumental in bringing BioNTech to Australia to deliver further R&D and manufacturing capabilities. One of Australia's leading women, she's at the forefront when it comes to promoting gender diversity and has been an inspiration to many.

"My first Ministerial appointment broke over a century of tradition when I was appointed the state's first female Minister for Agriculture. Early on the Government decided that all board appointments would be gender balanced, within a year. This came from a commitment to have those boards look more like the communities they serve or represent. This caused women all over the state to consider that perhaps they did have something to offer - on the water board, the hospital board or the local further education board. Many of these people have since gone on to private sector leadership and governance roles. Both the government and cabinet are now gender-balanced, quite the achievement given that when I was elected in 2006, only 77 women had sat in the Victorian Parliament in its first 100 years," she said.

Throughout her career, she has supported greater gender equality, and this role at MTPConnect, is no different.

"We have countless talented women in our life sciences institutions and universities, in computing, engineering and research but they remain underrepresented in leadership roles and underrepresented in entrepreneurship. Some of this is caused by gaps in knowledge by investors - think about femtech with its massive potential markets and the dispiriting low levels of investment. Our health system undeniably suffers from gender bias and so too, does our life sciences sector," she concluded. BS

Determined warrior against HIV

Prof. Sharon Lewin,
Director, Doherty Institute

Prof. Sharon Lewin is a world-renowned infectious diseases expert known for her groundbreaking work in HIV research. As the inaugural Director of the Doherty Institute and a Professor of Medicine at The University of Melbourne, she leads pioneering research aimed at finding a cure for HIV and understanding its interaction with the hepatitis B virus. She serves as the President of the International AIDS Society (IAS) and holds a National Health and Medical Research Council (NHMRC) Practitioner Fellowship.

One of Prof. Sharon's notable contributions to HIV research was her early discovery of HIV latency, revealing that the virus can 'hide' at low levels in infected individuals even during effective antiviral therapy. Her research on HIV latency models has been instrumental in developing new treatments for HIV.

She is a distinguished figure in the field of HIV research, with over 360 publications and 100 international talks to her name. Notable achievements include co-chairing the International AIDS Society Towards an HIV Cure initiative and leading the National COVID Health and Research Advisory Committee. Recognised for her impactful contributions, she received the Officer of the Order of Australia (AO) in 2019 and the Melbourne Achiever Award in 2020. In 2022, she was honoured with the Australian Academy of Health and Medical Sciences Outstanding Female Researcher Medal.

"As a woman in science, I look forward to the day when having two consecutive female presidents isn't remarkable – but today it is, and I'm proud to be a part of this new era," Prof. Sharon said in a statement while accepting the presidency of IAS from Prof. Adeeba Kamarulzaman. BS

CHINA

Fearlessly fighting epidemics

Prof. Lanjuan Li,
Director, State Key Laboratory for Diagnosis and Treatment of Infectious Diseases

Prof. Lanjuan Li, serves as the director of the State Key Laboratory for Diagnosis and Treatment of Infectious Diseases, distinguished as an academician of the Chinese Academy of Engineering. Renowned for her groundbreaking work on the development of artificial liver and the formulation of infectious microecology theory, Prof. Lanjuan has led her team to achieve comprehensive breakthroughs in virology, including advancements in molecular structure elucidation, rapid detection methods, virus culturing techniques, vaccine development, and clinical therapies.

Throughout her career spanning over five decades, she has demonstrated unwavering dedication to preventing and controlling emerging epidemics and infectious diseases. Fearlessly venturing into the forefront of outbreaks, she has selflessly volunteered to combat various infectious diseases, including SARS, HFMD, earthquake-related epidemics, and H1N1 influenza. Lanjuan played a critical role in advising the government's response to the COVID-19 outbreak in Wuhan. Leading a panel of senior experts representing the National Health Commission, she advocated for timely and stringent measures, including the controversial decision to quarantine Wuhan. BS

World-renowned 'Batwoman'

Dr Zhengli Shi,
Director of the Center for Emerging Infectious Diseases, Wuhan Institute of Virology

Dr Zhengli Shi, a prominent virologist affiliated with the Wuhan Institute of Virology, Chinese Academy of Sciences, serves as the director of the Center for Emerging Infectious Diseases. Revered as a top Chinese virologist, she gained international attention as the 'batwoman' amid the Wuhan lab leak controversy.

Her research is primarily focused on molecular epidemiology and interspecies infection mechanisms of emerging zoonotic viruses, particularly those originating from bats. Her pioneering work includes the discovery and characterisation of significant bat-borne viruses, marking her as a trailblazer in the field. Notably, she played a pivotal role in identifying the bat origin of Severe Acute Respiratory Syndrome (SARS), contributing immensely to the prevention and control of zoonotic emerging infectious diseases in China.

Due to her exceptional contributions in understanding the SARS virus and her passionate dedication to researching bats and viruses, Dr Zhengli earned the moniker 'batwoman'. BS

INDIA

Boosting indigenous & affordable tech

Dr Alka Sharma,
Adviser, Department of Biotechnology, Ministry of Science & Technology, Government of India

Dr Alka Sharma currently serves as an adviser in the Department of Biotechnology, Ministry of Science & Technology, Government of India. Her role primarily involves addressing research and policy issues in the emerging field of biotechnology. Dr Alka has been actively engaged in med-tech innovation, collaborating with national and international partners. She focuses on translational research concerning stem cells, regenerative engineering, and the establishment of bioclusters across the country. Dr Alka's efforts have significantly contributed to the commercialisation of indigenous and affordable technologies, benefitting patients in both urban and rural areas. She has facilitated the creation of several startups, developed functional biomedical device prototypes, and facilitated technology transfers. Her involvement extends to formulating various legislations in the biotech sector and overseeing COVID-19-related activities as the Nodal Officer for Management in the Department of Biotechnology/BIRAC. BS

KOREA

Committed to ensuring public health & safety

Prof. Yu-Kyoung Oh,
Minister, Ministry of Food and Drug Safety

Prof. Yu-Kyoung Oh, appointed as the Minister of Ministry of Food and Drug Safety (MFDS) in 2022, is a distinguished pharmaceutical expert. Before her ministerial role, she was the Dean of the College of Pharmacy at Seoul National University. Her research focuses on the delivery of nucleic acid-based drugs and the innovative design of functional nanomaterials. She has over 220 SCI papers published and 26 patents. Under her leadership, the MFDS achieved the highest regulatory status, Maturity Level Four (ML4), recognised by the World Health Organization (WHO). This distinction sets MFDS apart as the only regulatory authority among 33 countries to attain ML4 for both locally produced and imported medicines and vaccines. Prof. Yu-Kyoung's leadership exemplifies a commitment to excellence, innovation, and ensuring public health and safety. BS

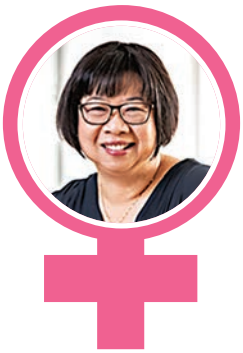
Squashing infectious diseases

Dr Youngmee Jee,
Commissioner of the Korea Disease Control and Prevention Agency (KDCA)

Dr Youngmee Jee stands at the forefront of infectious disease control and prevention as the Commissioner of KDCA. With over two decades of dedicated service in the field of international infectious diseases, she brings a wealth of expertise and leadership to her role. A distinguished infectious disease specialist, she has been actively engaged in pivotal positions across major Korean and international health and medical research institutes. Notably, she served as the head of the National Institute of Health's Center for Infectious Diseases Research and Immunopathology Center and held the position of president of the Korean Society of Infectious Diseases. She served as a member of the WHO-Korea Joint Mission on MERS-CoV Outbreak in Korea. In recognition of her outstanding service and leadership, Dr Youngmee was bestowed with the President Medal of Distinguished Service in 2017. BS

NEW ZEALAND

Drawing women to Medtech



Dr Diana Siew,
Strategy & Partnerships - Auckland Bioengineering Institute; Co-founder, Consortium for Medical Device Technologies (CMDT) and Co-lead Te, Titoki Mataora MedTech Research Translator

One of the leading forces in New Zealand's medtech sector, she has been instrumental in shaping the country's medtech ecosystem. Dr Diana, has successfully co-founded strategic initiatives to help connect and grow New Zealand's medical devices and digital health sector through collaborative partnerships nationwide. Some of these national initiatives include the Consortium for Medical Device Technologies (CMDT) a national industry-research network (co-lead with Peter Hunter), the MedTech CoRE (as Associate Director), the Trans-Tasman BioBridge, Women in HealthTech and Te Titoki Mataora MedTech Research Translator (co-lead). Special focus on activities supporting translational research and early-stage startups. She contributes to the medtech community through advisory and governance roles and is on the Return on Science Medical Devices Investment Committee.

Her current, most exciting project is the development of Medtech-iQ, a national medical devices and digital health innovation hub led by the University of Auckland and the Auckland Bioengineering Institute in conjunction with the CMDT.

"There are some fantastic women leaders in medtech but the sector can do with still more women founders, entrepreneurs, innovators and investors - and certainly more bioengineers and engineers. Having more women in Medtech and other technology fields brings a diversity of perspectives and skills which can only enrich innovations. "

Diana is hopeful that the growing awareness and focus on gender diversity will propel more women in the medtech sector.

"Men and women have different styles of working and leading and there is no right or wrong. With the growing awareness that diverse thinking is a must for companies and a growing cohort of women leaders in Medtech, I am hopeful that environments will be created to support and women succeed in Medtech."

Her advice to young entrepreneurs; "I'll reinforce having faith in yourself. If you don't believe in yourself, who will? However, this needs to be part of a bigger picture - add in understanding what you stand for, integrity and decisiveness. Identify your strengths and know where you should bring in expertise. Bring in people who share your vision and passion; build a team around you and the venture. Make sure that people have a shared sense of ownership and pride in the venture as well." BS

JAPAN

Inspiring next-gen female scientists

Dr Noriko Osumi,
VP, Tohoku University

Dr Noriko Osumi, a distinguished Japanese neuroscientist, holds multiple prestigious positions at Tohoku University, Japan's oldest university, serving as Vice President responsible for public relations and diversity promotion, Director of the Tohoku University Library, and Director of the Center for Neuroscience. Additionally, she is a professor in the Department of Developmental Neuroscience at the Tohoku University School of Medicine.

Dr Noriko is Japan's foremost female scientist, recognised for her remarkable contributions to developmental biology and neurosciences. Her research interests span brain development, evolution, and disease, with a particular focus on understanding the molecular mechanisms underlying these processes. Notable ongoing projects in her laboratory include investigations into the molecular mechanisms of brain development and evolution, lipid biology of astrocytes, and the use of animal models to study neurodevelopmental disorders.

Beyond her scholarly pursuits, Noriko is a fervent advocate for gender equality in academia. Since 2006, she has been instrumental in spearheading the Tohoku University Science Ambassadors programme, formerly known as the Science Angels programme. This initiative aims to empower and inspire the next generation of female scientists, serving as a cornerstone of Tohoku University's efforts to promote women's participation in science and technology. BS

Championing PAY PARITY

Despite women's significant strides and contributions in the healthcare field, they are paid less than men. Unfortunately, as is the case in most spheres, persistent pay disparities plague the life sciences sector. How big is the gender pay gap in the pharma industry? Are companies and the industry doing enough to address this issue? *Let's find out.*

GlaxoSmithKline's (GSK) appointment of Emma Walmsley as CEO in 2016 made headlines for more than one reason. Notably, she became the first woman to lead a major pharmaceutical company in big pharma history. Her appointment also drew attention because she was paid less than her male predecessor. Her starting base salary of £1.0 million for 2017 was still lower than that of her predecessor, Andrew Witty, who earned £1.11 million in 2016. An EP Vantage analysis finds that her starting base salary is the lowest awarded to the existing generation of global big pharma chiefs. GSK defended the decision to pay her less based on her experience, pointing out that this would be her first chief executive role.

Years later, she remains the only woman CEO of a big pharma company and the issues of pay parity persist. This highlights the sad affairs of women's representation in leadership roles and unequal pay.

There have been numerous reports highlighting the lack of pay parity in the life sciences sector. According to a report from the World Health Organization, women worldwide still face a 24 per cent salary differential compared to men across the healthcare sector. This figure hasn't budged much since the early 2000s. The report examined data from 54 countries across all geographic and income regions. The study found a 24 per cent gap after factoring in age, education, and number of working hours.

Another report by Arjuna Capital and Proxy Impact highlighted that the healthcare industry is reported to have the fifth widest adjusted gender pay gap out of 22 industries, at 5.7 per cent as reported by Glassdoor. That gap has improved by 1.5 per cent since 2015. Biotech and pharma are reported to have the smallest adjusted gender pay gap at 2.2 per cent improving 0.8 per cent since 2015.

"As a global advocate for women in the healthcare ecosystem workforce, the Healthcare Businesswomen's Association (HBA) is increasingly alarmed by data indicating that the gender pay gap is not only persisting but, in many instances, worsening. We acknowledge the complexity of this issue, recognising that the global gender pay gap is influenced by various factors such as geographical location, company policies, and individual roles," said Nancy White, Senior Director, Communications, Healthcare Businesswomen's Association (HBA), USA.

Fair Play

Efforts to narrow the gender pay gap have gained momentum globally, with recent legislation and directives promoting transparency on pay. Japan and Australia have enacted laws to address gender pay gaps. Australia's legislation mandates firms with over 100 employees to disclose their gender pay gap from next year, part of efforts by the Labor government to enhance working conditions for women. Similarly, Japan's gender pay gap disclosure law requires larger corporations to report gender balance and overall pay gaps within three months of the fiscal year's end. Companies must also submit evidence of workplace initiatives supporting work-life balance. These measures aim to increase female workforce participation and enhance opportunities for advancement, with Japan targeting 30 per cent of

women in managerial and executive roles by 2030.

Australia is recognised for its leading efforts in closing the gender pay gap, particularly within the pharmaceutical sector. The average gender pay gap, standing at 14 per cent, is lower than the general market average. In 2017, Australia initiated the Pharma Australia Gender Equity (PAGE) special interest group under Medicines Australia, to strengthen the industry's talent development approach to ensure equal opportunities for advancement and recognition for all individuals. It is worth noting that 75 per cent of employers within the sector provide flexible working provisions, which further contribute to gender equity in the workplace.

Big pharma companies are taking steps to address pay disparities. Pfizer received an A rating from Arjuna Capital and Proxy Impact's fifth Racial and Gender Pay Scorecard. Notably, Pfizer excelled in quantitative disclosures for closing racial and gender pay gaps. In 2022, Pfizer UK garnered recognition for its remarkable achievements through the implementation of its 'Closing the Gender Pay Gap' strategy. This strategy comprised five impactful initiatives aimed at achieving gender balance by recalibrating the distribution across various business levels. The strategy's effectiveness is evident in Pfizer UK's significant reduction of the gender pay gap from 15.9 per cent in 2018 to 7.5 per cent in 2021. Since the strategy's inception, Pfizer UK has observed a notable increase in female applications for senior roles, and the number of women in senior positions has experienced double-digit growth.

"This success story exemplifies one of the best practices currently being implemented to bridge the inequality gap for women in the pharmaceutical industry. Numerous other leading companies are also actively engaged in programmes aimed at eliminating outdated policies, with the ultimate goal of achieving equal pay, bonuses, and leadership opportunities for women in the future," said Nancy,

Companies can emulate Pfizer's approach by prioritising strategies such as ensuring a balanced gender candidate slate, fostering a trusting and flexible workplace, providing returner support for colleagues rejoining after a long-term absence, offering career progression support, and implementing family-friendly practices to accommodate the diverse needs of employees at every stage of the family life cycle.

Gender pay disparity stems from the

"Globally, women are paid about 20 per cent less than men. Achieving equal pay for work of equal value thus requires a range of approaches, from implementing transparency laws and pay audits to promoting collective bargaining and the equal sharing of caregiving and domestic work."

- Jocelyn C. Chu,
UN Women's expert on
Women's Economic Empowerment, USA

"As a global advocate for women in the healthcare ecosystem workforce, the Healthcare Businesswomen's Association (HBA) is increasingly alarmed by data indicating that the gender pay gap is not only persisting but, in many instances, worsening. We acknowledge the complexity of this issue, recognizing that the global gender pay gap is influenced by various factors such as geographical location, company policies, and individual roles."

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Role model to emulate

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underrepresentation of women in managerial roles and disparities in childcare leave duration and the utilisation of short-time work systems. Data from Mantell Associates reveals that less than 10 per cent of CEOs in the biopharma industry are women, and women constitute only 25 per cent of leadership teams in the broader pharmaceutical sector. These statistics underscore significant obstacles to career advancement and development for women, particularly those aspiring to enter the C-suite.

Experts argue that improving gender disparity in boardrooms is key to addressing pay disparity. Many companies have initiatives for gender parity. In 2018, HBA established its Gender Parity Collaborative (GPC), a consortium of healthcare and life science companies dedicated to accelerating gender parity systematically. Starting in 2024, the GPC will transform into the Gender Equity Think Tank (GETT), focusing on data-driven action and accountability. GETT aims to accelerate gender equity in the life sciences industry.

"With women comprising 70 per cent of the global healthcare workforce, it is crucial for the pharmaceutical industry to champion pay equity. The HBA takes pride in the fact that a significant number of our 150 corporate partners have implemented tangible plans to address and eliminate the gender pay gap," said Nancy.

Japan's leading pharmaceutical company, Chugai, is also actively promoting women in leadership roles. Women now account for 35 per cent of Chugai's total workforce and 26 per cent of career employees (Chugai and its affiliates in Japan). In its annual report for the year ending December 2022, Chugai noted that to increase gender diversity, it has set a goal to raise the percentage of women in all roles to equal the overall percentage of women in its workforce by the end of 2030. To achieve this, the company is working to increase the visibility of all aspects of its employees and help them grow while improving their work environments.

Chugai has also implemented measures to support the career formation and development of women within the company. Chugai offers a specialised female leader programme designed for female employees at the managerial level, aiming to nurture and empower women leaders within the organisation.

The pharmaceutical major Bristol Myers Squibb (BMS) boasts its own Network of Women (B-NOW), which celebrates women's achievements worldwide while advocating for equal opportunities and gender diversity.

Research highlights the significant benefits of workplace diversity. Diverse teams correlate with better financial performance, increased innovation levels, and higher profitability. Studies, including one by Researchers at North Carolina State's Poole College of Management, affirm that diversity fosters innovation. McKinsey's findings underscore this, showing that the most diverse companies tend to outperform less diverse peers financially. Specifically, companies in the top quartile for gender diversity on executive teams were 25 per cent more likely to achieve above-average profitability.

"Over the years, some progress has been made in women's economic empowerment, but the gender pay gap remains a systemic and persistent issue in and even beyond the pharmaceutical industry. Globally, women are paid about 20 per cent less than men. Achieving equal pay for work of equal value thus requires a range of approaches, from implementing transparency laws and pay audits to promoting collective bargaining and the equal sharing of caregiving and domestic work," Jocelyn C. Chu, UN Women's expert on Women's Economic Empowerment, USA.

'It takes a village to raise a child,' and similarly, it requires a collective effort to ensure women's participation in gender-balanced workforces. The challenging issue of work-life balance often leads many women to either leave the workforce or accept positions beneath their qualifications and experience. To empower women to reach greater heights, we require a multifaceted approach. BS

Ayesha Siddiqui

How pharma is finally researching issues that primarily affect women

Pharma is now concentrating on problems that impact women. Female participation will now directly contribute to cures for diseases that affect them, since more studies specifically targeted at women are planned.

« **Cara Brant,**
CEO,
Clinical Trial Media

Until recently, clinical trials largely focused on catering to men's and men's health issues; focusing less on conditions that affected women alone, or even primarily. This dynamic has resulted in a lack of treatments and knowledge about women-specific diseases, as well as clinical trial practices that aren't typically tailored to women's unique needs.

The good news is that we're seeing pharma shifting focus towards issues that affect this half of the population. With more women-focused trials on the horizon, female participation will now directly contribute to therapies for diseases that exclusively or disproportionately affect them (think: breast cancer, menopause, thyroid disease, to name a few).

This creates new urgency for sponsors to address challenges that keep women from completing the full duration of studies, to ensure these studies can bring meaningful treatments to the public with minimal delays.

Be considerate of scheduling

Many women are still the chief caregivers in their families, responsible for their kids, maintaining their homes, and sometimes even caring for their parents. Between these roles, as well as obligations like work, it can be almost impossible to find a moment for themselves, not to mention, take part in a clinical trial. If a woman has a standing appointment to check in for a trial, but her child is sick, she may be unable to participate that day. Sponsors need to be prepared to address these nuanced needs and coach sites on ways to be flexible.

Knowing that childcare can be a limiting factor, for instance, we provided activities to keep kids occupied in the waiting room during one trial we worked on. Even if the kids didn't play the games, their mothers felt more comfortable knowing their children could attend with them and had something to do while waiting. Perhaps most importantly, they appreciated that sites were considering their families as part of the process.

Women value being heard

Healthcare is personal and intimate, and when receiving care, people want to be listened to. A core tenant of trial recruitment is taking this into account. In addition to connecting participants with skilled nurses who act as one-on-one guides throughout the process, one approach we've seen a high degree of success with is conducting participant surveys. Through these surveys, we can understand their experiences to better accommodate trials going forward.

For some women, showing appreciation for their participation and acknowledging the obstacles they had to navigate to join goes a long way. For others, learning about their burdens–and connecting with them around their challenges–is enough to keep them engaged and involved.

These small acts are not only insightful for researchers, they make women feel heard, which can directly influence their willingness to move forward with research.

As more studies that focus on women or include them as prioritised populations emerge, the industry needs to be prepared to listen and adapt to their unique journey. This will require going beyond focusing on how therapies impact them, and influence the very structure of clinical trials and trial sites. BS

Evolution of Women's Representation in Clinical Trials

« **Camila Matheny,** VP, Adoption and Change Management, Medable

The percentage of women participating in trials has doubled from only 20 per cent to over 41 per cent in 2024, according to data. This encouraging trend is a result of the medical community's growing recognition of the need to address historical injustices and evaluate the effects of treatments on women.

Across the history of medical research, a longstanding issue has persisted: underrepresentation and misrepresentation of women in clinical trials. This historic disparity traces back to pivotal moments, such as the 1970's era U.S. Food and Drug Administration's policy recommendation, which excluded women of childbearing potential and those using contraception from Phase I and early Phase II trials. The recommendation came from various factors, including concerns about potential risks to women of childbearing age, hormonal fluctuations, and limited understanding of gender-specific differences in medication efficacy and safety, but it only resulted in inadvertently skewing trial data towards men.

This exclusion resulted in a significant void in knowledge regarding how drugs specifically impact women. Despite the National Institutes of Health's (NIH's) recommendation shift in 1985, urging the inclusion of women in clinical trials, subsequent data revealed persistent imbalances, with trials often comprising as much as 80 per cent male participants and 20 per cent female, which is far from representative of the world population.

Thankfully, we've seen progress in the clinical trial landscape. Data from 2024 shows a substantial uptick in the inclusion of women in trials, doubling from a mere 20 per cent to approximately 41 per cent. This positive trend reflects an evolving understanding within the medical community of the imperative to study treatment effects on women alongside concerted efforts to rectify historical inequities.

One key factor driving this shift is the recognition of women's unique health needs and responses to treatment. For example, certain diseases, such as autoimmune disorders and certain cancers, are more prevalent in women. Understanding how these conditions manifest and respond to treatment in women is essential for developing effective therapies that cater to their specific needs. Additionally, there is a growing awareness of the importance of considering factors such as hormonal fluctuations, metabolism, and other biological differences between genders when designing clinical trials.

Furthermore, regulatory agencies have increasingly emphasised the importance of diverse representation in clinical research, as shown in changes in policies and recommendations. Guidelines now stress the necessity of including adequate numbers of women in trials to ensure that findings can be generalised across different demographic groups. This emphasis on inclusivity has prompted researchers and pharmaceutical companies to actively recruit and enroll more women in their studies, resulting in a more balanced representation of genders in clinical trials.

Overall, the increased participation of women in clinical trials represents a significant step towards achieving more equitable and effective healthcare outcomes for all.

Medable is excited to be a part of the solution offering technological capabilities to help overcome these hurdles. Incorporating digital and remote capabilities into trials can help remove barriers that may prevent women from being able to participate, such as caring for family, or taking off precious time from work or other community commitments. BS

3 Practical Ways to Encourage Women's Clinical Trial Participation

We must always remember that people are at the core of everything we do. If we want faster, more efficient, cost-effective research, we need to recruit and retain the right patients for every study. These steps help make that possible.

« **Alyssa Greiner,** Program Lead and Spokesperson, Clinical Trials For All

Clinical trial recruitment and retention remain pressing issues industry-wide even as the research landscape undergoes ongoing changes to become more accessible for patients — from on-site to at home. Women in particular face a unique set of challenges to participation, but the good news is that feasible solutions are available. All they require is a commitment to action. Here are three easy yet too often overlooked ways to make clinical trial participation better for female participants.

Create an atmosphere of trust

The unfortunate truth is that women face an uphill battle in having their medical concerns taken seriously by medical professionals. They are used to having their pain dismissed, their discomfort overlooked, and their conditions misdiagnosed. Ensuring that site staff and primary investigators are aware of this implicit bias trend and actively working to mitigate it is essential to creating an atmosphere of trust so women can feel comfortable participating in the clinical trial.

Offer childcare options

Not all women who sign up for clinical trials have young children to care for, of course, but many do. Even elderly female patients in the study may be serving as a primary caregiver. Ensure that they are not barred from trial participation if they can't find child care. Build on-site child care options into any study involving women, and/or offer decentralised trial options when possible so they don't need to disrupt their typical caretaker schedules to participate.

Staff-supported study travel

For study participants of all genders who need to travel to participate in the research, the question of whether they will need to give up their jobs to participate is a very real one. So naturally, financial and travel support for study participants is essential. However, there is another aspect of study travel support that is frequently overlooked: personal support.

For patients suffering from chronic debilitating illness or disease, travel can be emotionally, mentally, and physically overwhelming. Not everyone has someone from their community with the time, resources, and ability to travel with them to study and support them in simply getting from point A to point B. A study-assigned travel companion who can help the patient get to and from the airport, the train station, the bus, or even just the parking lot can make a world of difference. Women in particular may feel vulnerable traveling alone. Providing staff-supported study travel helps them participate with more confidence and ease.

Being proactive about meeting the female patients' needs from day one of the studies — and ensuring that potential participants understand the full scope of such efforts — will make recruitment and retention of women in the study much easier and more sustainable. At the end of the day, we must always remember that people are at the core of everything we do. If we want faster, more efficient, cost-effective research, we need to recruit and retain the right patients for every study. These steps help make that possible. BS

Surmounting Gender-based Obstacles in Clinical Trials

« **Vera Zheng,**
Senior Vice President, Asia/Pacific Strategy and Head of Greater China, Parexel

We can only build a truly diverse and empowering drug development sector by working together, giving women and people of all genders equal chances to have a long-lasting influence on clinical research and patient care.

As we consider the presence of women in the drug development industry, data reveals a remarkable statistic - approximately 61 per cent of the global workforce are women. However, this figure stands in stark contrast to the broader STEM industry, where women only constitute 29.2 per cent of the total workforce. Although progress related to female representation in the workforce still needs to be made for STEM industries at large, the drug development industry - which includes pharmaceutical, clinical research and other industries - provides an empowering environment where women can flourish in their careers.

While the clinical research industry prides itself on this unique gender representation (for example, 70 per cent of Parexel's global workforce are women), it's crucial to acknowledge that we share a common challenge with other sectors in terms of women holding top leadership positions. According to one study, less than 10 per cent of CEOs in the biopharmaceutical industry are women, and overall, women constitute a mere 25 per cent of leadership roles within the pharmaceutical sector. Gender representation is particularly important in clinical research given it's scientifically and ethically important for investigative therapies to reflect the patient populations who will ultimately use those treatments.

The pharmaceutical industry, particularly clinical research, holds great opportunities for professionals seeking to forge meaningful careers - including women. It affords employees with the unique opportunity to directly impact the lives of countless patients worldwide. For example, at Parexel, many colleagues cite the dedication and passion in this industry, prioritising patient-guided drug development and striving to ensure clinical research becomes universally accessible - regardless of gender, gender identity, race or ethnicity, sexual orientation, disability, or socio-economic status - to be inspiring.

However, some of the barriers to leadership facing women are more apparent than others. Social and corporate stereotypes, unconscious bias, imposter syndrome, and balancing work and family responsibilities are among the well-known obstacles they encounter. Besides, there are other less-evident challenges such as limited access to higher education, lack of advancement opportunities, a lack of sponsorship and poor career advancement programmes. Without deliberate efforts from companies to foster inclusion and create pathways for women in leadership, the industry will continue to encounter these inequities in organisational leadership roles. Our industry must take proactive measures - harnessing the power of diversity within businesses and ensuring every individual, regardless of their gender - has the chance to thrive and succeed.

In summary, while the pharmaceutical industry has made significant strides in creating an environment where women can excel, there is still work to be done to achieve true gender equality, particularly in leadership roles. Women face both visible and hidden barriers that hinder their career progression, and organisations need to address these challenges head-on. By implementing diversity initiatives and creating opportunities for all, we can ensure that women have the chance to thrive and reach their full potential. Only through collective efforts can we create a truly inclusive and empowering drug development industry where women - and individuals of all genders - are given equal opportunities to make a lasting impact on patient care and clinical research. BS

Can Shorter Regimens Eliminate Drug-Resistant Tuberculosis?

The World Health Organization (WHO) has taken a significant stride in the battle against Tuberculosis (TB) by introducing shorter drug regimens, aiming to curb a disease that claims countless lives globally. This innovative approach addresses the urgent need for more efficient treatments, especially in regions where TB's toll is highest. With traditional therapies often posing risks to liver health, these shortened regimens offer hope, minimising such concerns while enhancing treatment adherence.

Despite countries making bold commitments to end TB by 2030, in the Sustainable Development Goals (SDGs), the WHO End TB Strategy and the 2018 political declaration on the fight against TB, the epidemic shows no sign of slowing down. The deadly disease claimed 1.3 million lives in 2022. Drug-resistant TB is a growing threat – about 410,000 people had multidrug-resistant TB infections in 2022. In response to this pressing crisis, the WHO has been exploring various strategies to combat this deadly disease. Among these efforts is the development of shorter drug regimens, aiming to improve treatment outcomes and reduce the burden on patients.

Pretomanid and the Bedaquiline, Pretomanid, and Linezolid (BPaL) regimen, developed by the non-profit TB Alliance, have transformed the treatment for drug-resistant TB and move us closer to achieving these goals, especially as they relate to the types of TB cases that have traditionally been most difficult and resource-intensive to treat.

"The six-month, all-oral BPaL regimen drastically reduced the time it takes to cure drug-resistant TB, with fewer side effects. Previously, drug-resistant TB treatment lasted up to 18 months or longer, required people to take up to 14,000 pills over the course of treatment, and the success rate barely crept past 50 per cent, depending on the type of TB. With BPaL, the success rate is above 90 per cent, while the pill burden is reduced by roughly 95 per cent," said Dr Maria Beumont, Chief Medical Officer at TB Alliance, USA.

In May 2022, WHO recognised TB Alliance's advancements and released new guidelines for treating drug-resistant tuberculosis (DR-TB) that relied on BPaL and BPaLM (BPaL + moxifloxacin). A year later, WHO Director-General Dr Tedros Adhanom Ghebreyesus noted that 109 countries have adopted all-oral, six-month, BPaL-based regimens (BPaL with or without moxifloxacin)—in less than four years from the regimen's first approval (by the United States Food and Drug Administration approval in 2019).

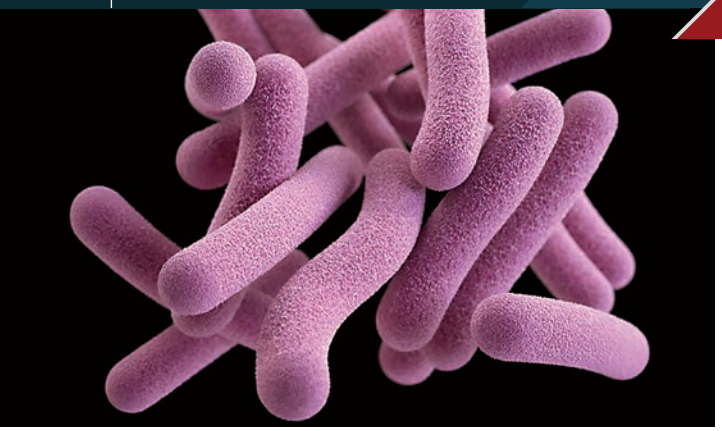
"In total, 70 countries have already procured pretomanid. This is the fastest global roll out of a new TB drug in the modern era, and in many ways outpaced even the global availability of COVID-19 vaccines," added Dr Maria.

Scaling up shorter drug regimens

The new regimen is shorter, easier on patients, and improves treatment adherence, resulting in better outcomes compared to previous drug regimens.

"The existing regimen is lengthy and includes injectable agents that cause serious adverse effects that often lead to treatment being interrupted and poor treatment outcomes as well as complicate the management of TB in resource-limited settings. Based on the available data, the new regimen containing all oral drugs shortens the duration of treatment with fewer adverse effects and better outcomes, and, therefore improves the quality of life for patients. This is imperative for meeting the WHO's End TB Strategy and SDGs. The new regimen is shorter and simpler and could be suitable for diverse clinical settings, including both resource-limited and -rich environments," said Dr Htin Lin Aung, Rutherford Discovery Fellow and Associate Dean Pacific Research at the University of Otago, New Zealand.

Several studies have demonstrated the effectiveness of the new regimen. Interim operational research results from five Central and Southeast Asian countries indicate that the BPaL regimen achieved a remarkable 94.5 per cent cure rate in regions burdened by drug-resistant TB (DR-TB). Operational research in these countries was part of the LIFT-TB programme, which provided funding, resources, technical assistance, and wide-



Interim operational research results from 5 Central and Southeast Asian countries indicate that the BPaL regimen achieved a remarkable 94.5% cure rate in regions burdened by drug-resistant TB (DR-TB). Operational research in these countries was part of the LIFT-TB programme, which provided funding, resources, technical assistance, and wide- ranging expertise from multiple partners for 7 countries with high burdens of DR-TB (Indonesia, Kyrgyzstan, Myanmar, Philippines, Ukraine, Uzbekistan, and Vietnam) to advance the implementation and rollout of the BPaL regimen. India is also likely to roll out the new regimen soon.

ranging expertise from multiple partners for seven countries with high burdens of drug-resistant TB (Indonesia, Kyrgyzstan, Myanmar, Philippines, Ukraine, Uzbekistan, and Vietnam) to advance the implementation and rollout of the BPaL regimen. All seven countries have established plans to scale up use of the regimen on a national programmatic basis, and programmatic use is underway in four of the seven countries. By the end of 2023, the governments of Kyrgyzstan, Myanmar, Ukraine, and Uzbekistan updated their DR-TB treatment guidelines to enable programmatic use of the BPaL regimen for most forms of DR-TB. India is also likely to roll out the new regimen soon.

"Pretomanid, the BPaL and BPaLM regimens have already made significant impact on the global TB burden. With projections that more than 78 per cent of people with drug-resistant TB will be treated with these regimens by 2026, the impact of these new regimens is only set to grow," said Dr Maria.

The goal now is to urge high-burden DR-TB countries to update guidelines and offer shorter treatments to all patients in need. Only 40 per cent of the 410,000 people with DR-TB in 2022 had access to the shorter regimen, as per a WHO report. Efforts are underway to boost the adoption of this new regimen.

Viatris, a global healthcare company, MedAccess, and TB Alliance announced a new agreement to reduce the price of pretomanid, a drug used to treat multidrug-resistant tuberculosis and is a part of the new drug regimen, by 34 per cent. The WHO has also issued a call for an action urging countries to accelerate the rollout of new WHO-recommended shorter all-oral treatment regimens for DR-TB, which remains a public health crisis.

Various other studies are underway for even shorter regimens, such as the groundbreaking study spanning Asia and Uganda, researchers from the Yong Loo Lin School of Medicine, National University of Singapore (NUS Medicine), National University Hospital (NUH), and Singapore Clinical Research Institute (SCRI), led by Prof. Nicholas Paton, Department of Medicine and Infectious Diseases Translational Research Programme (NUS Medicine), found a novel TB treatment strategy. The trial, named TRUNCATE-TB, involved 675 people diagnosed with pulmonary TB. Participants were randomly assigned to either the standard six-month treatment or the TRUNCATE strategy. This approach featured an initial 8-week treatment period, followed by potential extension and early retreatment for non-cured individuals, effectively halving the average treatment duration.

"Pretomanid is now under further investigation, in a trial called NC-009 as part of another new regimen that includes a second generation diarylquinoline (TBAJ-876), which could have favourable efficacy, safety, and resistance profiles compared to bedaquiline. This new regimen may also have the potential to further shorten treatment duration," said Dr Maria.

UNITE4TB's innovative phase 2B/C trials will test 14 combinations of nine existing drugs, as well as two newly developed candidates (GSK656[2] and BTZ-043[3]). The ultimate aim is to create shorter regimens that can further improve multidrug-resistant (MDR) treatment, and also be effective for drug-sensitive TB.

Shorter drug regimens are revolutionising the fight against TB, yet efforts are needed to ensure universal accessibility. BS

Ayesha Siddiqui

Effectively Eliminating Drug-resistant TB

India's fight against tuberculosis (TB) has made significant strides, earning recognition from the World Health Organization (WHO). With less than two years left to achieve its 2025 TB elimination target, the country must embrace new strategies. Let's look at how far the country has progressed in its elimination programme and what still remains to be done.

India has the highest burden of TB, with two deaths occurring every three minutes from the disease. The country recorded a staggering 28 lakh cases in 2022, accounting for 27 per cent of the global cases, according to WHO.

India initiated the TB Free India campaign with the ambitious goal of eradicating TB by 2025, a milestone set five years earlier than the target outlined by the UN's Sustainable Development Goals. Despite facing setbacks due to COVID-19, the nation doubled down on its efforts, resulting in notable progress. The India TB Report 2023 heralded 2022 as a pivotal year in TB surveillance, noting a significant achievement with a record-high notification of 24.2 lakh TB cases, representing an increase of over 13 per cent compared to 2021.

The latest WHO Global TB Report 2023 acknowledged and praised India's efforts in its fight against TB, particularly highlighting the effectiveness of its case detection strategies. The report emphasised that India's intensified case detection strategies led to the highest-ever notification of cases in 2022, surpassing pre-COVID levels. The government's key initiatives, such as specialised active case finding drives, the scaling up of molecular diagnostics to block levels, decentralisation of screening services through Ayushman Bharat Health and Wellness Centres, and private sector engagement, have significantly reduced the gap in missing cases.

Road to elimination

While the country has made remarkable progress in its fight against TB, the adoption of additional strategies such as shorter treatment regimens, the development of vaccines, and a renewed focus on nutrition could prove to be game-changers in its goal of eliminating TB for good.

The BPaL regimen, composed of Bedaquiline, Pretomanid and Linezolid, presents a promising alternative for a shorter, safer and more tolerable treatment option for drug-resistant tuberculosis (DR-TB). Lasting only 26 weeks, it contrasts sharply with conventional DR-TB treatments, which can span 18 to 21 months and entail the consumption of over 4,000 to 5,000 tablets. Endorsed by the US FDA (United States Food and Drug Administration) in 2019 and the WHO in 2022, the BPaL regimen has been implemented in more than 70 countries, including South Africa, Ukraine, Indonesia, the Philippines and Vietnam.

"The older, conventional regimen for drug-resistant TB included prolonged use of injections with other drugs. This was associated with increased incidence of adverse drug reactions (ADRs), implementation challenges under the programme and inconvenience to the patients. The new TB drug regimen uses the newer oral drugs like Bedaquiline, Delamanid or Pretomanid, or the repurposed drugs such as linezolid, clofazimine, etc. These regimens are injection free and have lesser pill burden leading to more acceptance among the TB patients besides reducing the implementation challenges due to the use of injections. They have the ability to kill the actively multiplying drug-resistant TB bacteria faster and a sustained killing of the bacteria to prevent the recurrence of the TB disease among the patients. These regimens have shown improved treatment success rates under field conditions under the national programme," said ***Dr Rupak Singla, Head of Department, National Institute of TB & Respiratory Diseases, New Delhi.***

Dr Singla further said "To combat the adverse drug reactions of these regimen, specially due to drug linezolid, various regimens using

different dosages and durations of linezolid have demonstrated reduced incidence of ADRs maintaining the efficacy of the regimen. Hence, these newer treatment drug regimens could reduce the global burden of drug-resistant TB. However, the requirement of a good quality laboratory network, availability and higher cost of the drugs continue to pose a challenge."

The new regimen is shorter, easier on patients and improves treatment adherence, resulting in better outcomes compared to previous drug regimens.

Talking about the potential implications of the new TB drug regimen on India's TB control efforts, Dr Singla stated, "The cure rate for previous conventional TB regimen for multidrug resistant TB (MDR-TB) was to the tune of around 50 per cent and for Extensively drug-resistant-TB (XDR-TB), less than 30 per cent. The new TB drug regimen has the potential for significant improvement in treatment success rates for MDR-TB as well as XDR-TB."

In India the national data shows that more than 36,000 drug-resistant TB patients have been initiated on shorter oral Bedaquiline-containing regimen and more than 92,000 patients have been initiated on longer oral regimen till date. Treatment success rates of shorter oral regimen for the cohort April-September 2022 (around 12,000 patients) is 69 per cent and of longer oral regimen for the cohort January-September 2021 (around 15,000 patients) is 71 per cent. The improved success rates of new drug regimens is likely to translate into less number of deaths due to TB, reduced period of infectiousness of TB patients and reduced transmission of TB to others in the community leading to reduced incidence of TB.

Studies at the 2023 Union World Conference on Lung Health affirm WHO-endorsed regimens' effectiveness, surpassing traditional 18- to 24-month treatments. The goal is to urge high-burden DR-TB countries to update guidelines and offer shorter treatments to all patients in need. Only 40 per cent of the 410,000 people with DR-TB in 2022 had access to the shorter regimen, as per a WHO report.

A group of experts in the country have stressed the need for introducing the BPaL regimen in the TB control programme of the country. ***Blessina Kumar, CEO, Global Coalition of TB Advocates, New Delhi*** emphasised the potential cost savings associated with its adoption, citing studies estimating a global annual savings of $740 million. With India accounting for a significant portion of global multi-drug, rifampicin-resistant (MDR/RR-TB) treated patients, she suggested that the country could save nearly $250 million per year through the implementation of this regimen. India will likely roll out the new regime soon.

TB Vaccine

Vaccination holds promise as a game-changer for TB elimination. The Indian Council of Medical Research (ICMR) is conducting phase III trials to evaluate the efficacy and safety of two vaccines: VPM1002 and MIP (Mycobacterium indicus pranii). VPM1002 is a live vaccine based on recombinant BCG, modified for better safety and efficacy. MIP or Immuvac, originally developed for leprosy, is a whole-cell TB vaccine candidate. The trial aims to assess the effectiveness of these vaccines in preventing TB disease, among 12,721 individuals exposed to TB at home (referred to as household contacts). Enrollment for the study is complete, with participant follow-up currently ongoing, according to the pipeline report 2022 by the Treatment Action Group.

Bharat Biotech is partnering with the Spanish firm BIOFABRI to develop, manufacture, and distribute a new tuberculosis vaccine across over 70 countries in Southeast Asia and sub-Saharan Africa. The TB vaccine candidate by Bharat Biotech is set to enter phase-III trials soon.

A Lancet study highlighted the pivotal role of nutrition in TB management. The Reducing Activation of Tuberculosis by Improvement of Nutritional Status (RATIONS) trial demonstrated that providing food baskets to TB patients and their households reduced all forms of TB by nearly 40 per cent and infectious TB by almost 50 per cent. In 2018, the Indian government launched the 'Nikshay Poshan Yojana,' a direct benefit transfer (DBT) scheme to offer nutrition support to TB patients. Since its inception, the scheme has disbursed approximately Rs 2613 crore to over 95 lakh TB patients.

India has indeed made significant strides in addressing TB; however, the battle against the disease is far from over. Despite enhanced detection and surveillance efforts, there's a need to adopt newer strategies to combat TB effectively. Advances in R&D of vaccines, access to newer drug regimens, enhanced focus on nutrition will all help in propelling TB elimination goals. BS

Ayesha Siddiqui

Tuberculosis profile: India

Population 2022: 1 417 million

Estimates of TB burden*, 2022

	Number	(Rate per 100 000 population)
Total TB incidence	2 820 000 (2 390 000-3 280 000)	199 (169-231)
HIV-positive TB incidence	48 000 (40 000-55 000)	3.4 (2.8-3.9)
MDR/RR-TB incidence**	110 000 (89 000-140 000)	8 (6.3-9.6)
HIV-negative TB mortality	331 000 (237 000-440 000)	23 (17-31)
HIV-positive TB mortality	11 000 (8 100-14 000)	0.76 (0.57-0.99)
Estimated proportion of TB cases with MDR/RR-TB*, 2022		
New cases	2.5% (2.3-2.7)	
Previously treated cases	13% (12-14)	
Universal health coverage and social protection*		
TB treatment coverage (notified/estimated incidence), 2022	80% (69-94)	
TB patients facing catastrophic total costs		
TB case fatality ratio (estimated mortality/estimated incidence), 2022	12% (8-17)	
TB case notifications, 2022		
Total new and relapse	2 255 641	
- % tested with rapid diagnostics at time of diagnosis	33%	
- % with known HIV status	96%	
- % pulmonary	75%	
- % bacteriologically confirmed ^	64%	
- % children aged 0-14 years	5%	
- % women (aged ≥15 years)	37%	
- % men (aged ≥15 years)	58%	
Total cases notified	2 402 024	
TB/HIV care in new and relapse TB patients, 2022		
	Number	**(%)**
Patients with known HIV status who are HIV-positive	37 578	1.70%
- on antiretroviral therapy	37 216	99%
Drug-resistant TB care, 2022**		
% of bacteriologically confirmed TB cases tested for rifampicin resistance-New cases ^	76%	
% of bacteriologically confirmed TB cases tested for rifampicin resistance - Previously treated cases ^	80%	
Laboratory-confirmed cases - MDR/RR-TB (without pre-XDR-TB/XDR-TB) ^^	52 029	
Patients started on treatment - MDR/RR-TB (without pre-XDR-TB/XDR-TB) ^^^	48 801	
Laboratory-confirmed cases - pre-XDR-TB or XDR-TB ^^	12 382	
Patients started on treatment - pre-XDR-TB or XDR-TB ^^^	11 620	
MDR/RR-TB cases tested for resistance to any fluoroquinolone	23 611	
Treatment success rate and cohort size		
	Success	**Cohort**
New and relapse cases registered in 2021	87%	1 905 759
Previously treated cases, excluding relapse, registered in 2021	84%	147 747
HIV-positive TB cases registered in 2021	78%	33 029
MDR/RR-TB cases started on second-line treatment in 2020	69%	40 168
Pre-XDR-TB/XDR-TB cases started on second-line treatment in 2020	64%	8 950
TB preventive treatment, 2022		
% of HIV-positive people (newly enrolled in care) on preventive treatment		
% of household contacts of bacteriologically-confirmed TB cases on preventive treatment	22% (22-23)	
Funding for TB		
Funding for TB, 2022 ($ millions)	301	
- % domestic funding	61%	
- % international funding	39%	
National TB budget, 2023 ($ millions)	671	
- Funding source, domestic	81%	
- Funding source, international	19%	
- Unfunded	0%	

* Estimates of TB burden are produced by WHO in consultation with countries. Ranges represent uncertainty intervals.
** RR is TB resistant to rifampicin (R); MDR is TB resistant to R + isoniazid; pre-XDR is TB resistant to R + any fluoroquinolone
^ Calculated for pulmonary cases only
^^ Includes cases with unknown previous TB treatment history
^^^ Includes patients diagnosed before 2022 and patients who were not laboratory-confirmed

Source: WHO (as of February 18, 2024)

Why Singapore is Deep Tech Innovation Frontrunner

Move over Artificial Intelligence (AI) and Machine Learning (ML), there's a new technology on the block - Deep Tech. This latest technology holds immense potential for the life sciences industry, and Singapore is leaving no stone unturned in becoming a deep tech hub. From strategic investments to collaborative initiatives and a supportive regulatory environment, read on to find out about the country's initiatives in becoming a deep tech superpower.

Singapore has emerged as a significant player in the global deep tech landscape. Over the past decade, the government has committed more than S$19 billion to advance research and development in deep tech, according to the Sparkmate report.

There are several initiatives aimed to strengthen the startup landscape in this sector. One key initiative driving Singapore's deep tech agenda is the Singapore Deep-Tech Alliance (SDTA), which facilitates partnerships and provides avenues for companies to create new startups, bring existing ones to market, find solutions to challenges, and access protected technologies. This initiative enhances collaboration and accelerates the growth of deep tech ventures within Singapore's ecosystem.

In addition, Singapore launched A*StartCentral (A*SC) in 2016, a first-of-its-kind open innovation platform by the Agency for Science Technology and Research (A*STAR). It aims to incubate and accelerate the growth of deep tech startups, and serves to bolster the startup ecosystem, including areas such as medtech and life sciences. Now it has over 150 deep tech startups.

"A*StartCentral (A*SC), a key player in Singapore's deep tech ecosystem, empowers early-stage startups in their entrepreneurial journey. By providing guidance and support, A*StartCentral enables startups to expand beyond Singapore and tap into global markets, fostering innovation and entrepreneurship on an international scale," said Emily Liew, Assistant Chief Executive Officer, Innovation & Enterprise Services, Enterprise Singapore.

A*SC builds upon the foundation of an open innovation community to foster cross-pollination and interaction amongst researchers, corporates, startups, investors and entrepreneurs across diverse disciplines. A*SC will continue to inspire, innovate with, and empower researcher-entrepreneurs in building successful, deep technology enabled ventures.

To accelerate the creation of successful deep tech startups from the pipeline of research, Temasek, a global investment company owned by the Government of Singapore in September last signed a Memorandum of Understanding (MoU) with National University of Singapore (NUS) and Nanyang Technological University (NTU) to embark on a joint S$75 million pilot programme.

In this initiative Temasek will invest S$65 million, through Xora Innovation (Xora), an early-stage deep tech investing platform of Temasek, into the deep tech startups, while NUS and NTU will each invest S$5 million in this effort. Temasek and Xora will collaborate with the two universities to launch and build globally competitive ventures with strong potential to address large global market opportunities in areas such as Energy Transition, Biotechnology, and the Future of Compute and Cognition.

According to a report released by SGInnovate, the number of biotech companies in Singapore is expected to grow by more than 60 per cent over the next 10 years, but a talent shortage continues to pose challenges for organisations in this sector.

To address the talent crunch issue, SGInnovate launched Deep Tech Central (DTC), Singapore's only one-stop gateway addressing talent and startups needs in this fast-growing emerging tech ecosystem. In January last SGInnovate started another initiative called Deep Tech Talent Central (DTTC), an integrated strategy for solving talent challenges across emerging tech sectors.

DTTC serves as Singapore's premier talent gateway, fostering skill development and catalysing the growth of the deep tech job market. Furthermore, SGInnovate opened the Helix Immersion Programme (HIP) that aims to train and place over 100 candidates with biotech startups

and companies by 2025, providing invaluable industry experience and addressing skill gaps in the workforce.

These efforts seem to be paying off. Between January 2020 and June 2023, 86 per cent of the total deep tech deals in the region happened in Singapore, attracting 96 per cent of the overall proceeds. Notably, one in four deep tech deals was in health tech, absorbing over half of the total investment value, according to a new report from DealStreetAsia.

"We are seeing early encouraging signs. While our funding landscape has not been completely spared by the funding winter, Singapore saw a 36 per cent year-on-year increase in deep tech deals (January-September 2023), which accounted for three quarters of the total deep tech deal volume in Southeast Asia. To ensure continued liquidity, partners such as SEEDS Capital will anchor and partner more global VCs to co-invest in promising startups," said Emily.

Although deep tech has gained momentum in recent times, Singapore has been focusing on it for the past few decades.

"Deep tech is not new to Singapore. The Singapore Government has put in sustained investment in Research, Innovation and Enterprise (RIE) domains over the past three decades, building a pool of deep scientific capabilities and talent in our research-intensive universities and A*STAR research institutes. Singapore has nearly 40,000 research scientists and engineers in our ecosystem today, working in fields spanning quantum engineering, precision medicine and renewable energy," said Emily.

Looking forward

There is still vast untapped potential in deep tech. Startups are inherently dynamic and agile, unencumbered by the rigid structures and processes of larger firms, and can be laser-focused on developing novel technologies.

"We have done well to set up an ecosystem that supports startup agility and development. In 2023, Singapore placed eighth in the world in Startup Genome's Global Startup Ecosystem Ranking. Similarly, in Startup Blink's Global Startup Ecosystem Index, Singapore ranked first in Southeast Asia, and sixth worldwide," said Emily.

But deep tech venture building is a wholly different game. Such technologies require a long gestation, significant amounts of patient capital, and deep expertise from scientific research to business leadership.

"There is strong recognition at the policy level that Deep Tech – and our wider research, innovation and enterprise activities – remain crucial to Singapore's continued development, with an additional S$3 billion committed to the RIE2025 plan in our latest Budget announcements. Beyond financial measures, this acknowledgement of the importance of science and research also underpins effective public-private partnerships, with different players in the ecosystem allowed to contribute efficiently to the overall growth of the ecosystem."

- Dr Vanessa Ding,
Director, Talent (Health & Human Potential), SGInnovate

"Deep tech is not new to Singapore. The Singapore Government has put in sustained investment in Research, Innovation and Enterprise (RIE) domains over the past three decades, building a pool of deep scientific capabilities and talent in our research-intensive universities and A*STAR research institutes. Singapore has nearly 40,000 research scientists and engineers in our ecosystem today, working in fields spanning quantum engineering, precision medicine and renewable energy."

- Emily Liew,
Assistant Chief Executive Officer, Innovation & Enterprise Services, Enterprise Singapore

"Because of the considerable resources needed, our approach must be targeted and deepen Singapore's strengths. We need VCs and investors who understand deep tech and have the expertise to help the startups make breakthroughs and scale their business. Biotech is one such area,"

Innovative deep tech startups

Several innovative deep tech startups in Singapore are addressing a range of challenges, including precision medicines, cancer diagnostics, and novel drug delivery platforms. Some of the prominent ones include;

Mesh Bio is revolutionising chronic disease management with predictive analytics. Recently, it secured undisclosed funding from East Ventures to enhance its digital twin technologies and expand services across Southeast Asia, focusing on Indonesia, Malaysia, and the Philippines.

E3A specialises in innovative healthcare devices and management solutions for newborns and women. Its YSJ series smart newborn jaundice metres have received Class II medical device clearance from the National Medical Products Administration (NMPA). The firm pioneered the rental model for at-home jaundice monitoring and currently serves over 120 hospitals across China, covering over 500,000 newborns annually. Additionally, E3A plans to launch its first women's health device in 2024.

MireXS, leads in RNA technology, specialising in accurate, non-invasive, and affordable blood-based miRNA test kits for early disease detection, notably cancer. The company recently concluded its Series D funding round, securing $50 million. Its flagship product, GASTROClear, a PCR-based in vitro diagnostic test for early gastric cancer detection, has attained Breakthrough Device Designation from the US regulator. This marks the first instance globally where a blood miRNA test, an IVD test for early gastric cancer detection, and a molecular IVD test from Southeast Asia have received such designation from the US FDA.

ACM BioLabs is utilising its proprietary thermostable polymer-based nanoparticle delivery platform to develop new formulations across various therapeutic fields. Their Tunable Platform (ATP) is a polymer/lipid hybrid, non-viral delivery system offering flexibility to deliver oligonucleotides, small molecules, proteins, and mRNA payloads.

KYAN Technologies received licensing approval for its advanced clinical laboratory facility. The approval enables the offering of Optim. AI, a functional precision medicine test, aiding oncologists in treatment decisions. The lab will conduct Laboratory Developed Tests (LDTs) for lymphoma initially, expanding to other cancer types like colorectal and breast cancer. Additionally, the platform will support biopharma services, fostering the development of novel biopharmaceutical assets.

Aproxy is a medtech company dedicated to decentralising healthcare diagnostics with its point-of-care detection platform. The company aims to bring lab quality diagnostics closer to the patient via its patented immunoassay technology, SimpleProx. Using just a single drop of blood, specific immune biomarkers can be quantified with lab-level accuracy in 15 minutes and a single-step operation. The company is currently finalising its prototype.

StratifiCare is dedicated to advancing personalised medicine through innovative diagnostic solutions. Leveraging predictive protein diagnostics and AI, the company aims to enhance patient outcomes. Its pipeline includes tests for severe dengue complications and the efficacy of internal radiation therapy for liver cancer. Collaborating with a Singaporean national clinical laboratory, StratifiCare plans to introduce the world's first severe dengue prediction test to the market in late 2024.

said Emily. Singapore's deep tech ecosystem benefits from the support of a growing, closely interconnected network of stakeholders, including founders, researchers, investors, government partners and more.

"There is also strong recognition at the policy level that Deep Tech – and our wider research, innovation and enterprise activities – remain crucial to Singapore's continued development, with an additional S$3 billion committed to the RIE2025 plan in our latest Budget announcements. Beyond financial measures, this acknowledgement of the importance of science and research also underpins effective public-private partnerships, with different players in the ecosystem allowed to contribute efficiently to the overall growth of the ecosystem," said Dr Vanessa Ding, Director – Talent (Health & Human Potential), SGInnovate.

The collective efforts of government agencies, industry players, and academic institutions have positioned Singapore as a leading hub for deep tech innovation. BS

Ayesha Siddiqui

"One example of success is the development of a potential new paediatric treatment for schistosomiasis"

Japan-based Global Health Innovative Technology (GHIT) Fund is a prominent international public-private partnership fund dedicated to advancing global health R&D. GHIT mobilises Japan's industry, academia, and research institutes to develop groundbreaking drugs, vaccines and diagnostics for prevalent diseases like malaria, tuberculosis and neglected tropical diseases, in collaboration with global partners. Mina Ohata, Senior Manager of Brand Communications, GHIT Fund, shares insights into the organisation's mission, strategies and future plans. ***Edited excerpts:***

« **Mina Ohata,** Senior Manager of Brand Communications, GHIT Fund

Could you give us an overview of the GHIT Fund's mission and how it originated?

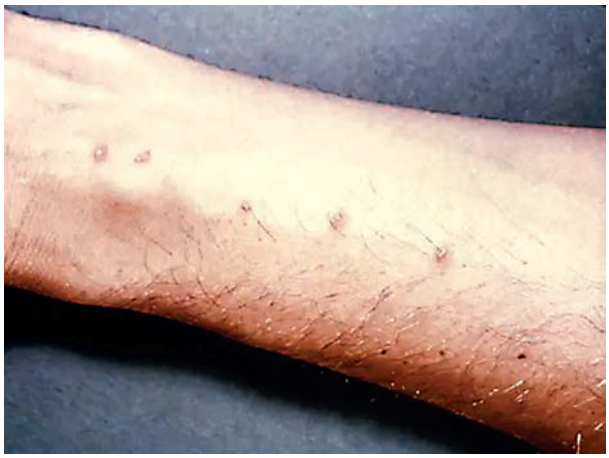
The idea for the GHIT (Global Health Innovation Technology) Fund was conceived by Tachi Yamada (former President of Global Health, Bill & Melinda Gates Foundation and, at that time, Chief Scientific & Medical Officer at Takeda Pharmaceutical Co., Ltd) and BT Slingsby (at that time, Director of Global Access Strategies at Eisai Co., Ltd. and eventual founding GHIT CEO) at a Japanese soba restaurant in Tokyo in the fall of 2011. The question was how do we leverage Japan's untapped technology, innovation, and insights to address infectious diseases, such as tuberculosis, malaria, and neglected tropical diseases (NTDs), affecting millions in low- and middle-income countries? The solution they sketched on the back of a paper napkin was a matching fund designed to catalyse global health R&D from and with Japan.

The Government of Japan, Japan's leading pharmaceutical companies and international foundations then came together to establish the GHIT Fund: an R&D fund to invest in Japanese innovation for global health product development.

Can you share some specific successes or breakthroughs that have resulted from the GHIT Fund's initiatives in terms of drug development, vaccines, or diagnostics for the targeted diseases?

One example of success is the development of a potential new paediatric treatment option by the Paediatric Praziquantel Consortium – the first investigational drug among GHIT's investments to receive a European Medicines Agency's Committee for Medicinal Products for Human Use (CHMP) positive scientific opinion. The opinion was adopted in 2023 for this new paediatric treatment option to treat schistosomiasis in preschool-aged children. Schistosomiasis affects more than 240 million people, about fifty million of whom are preschool-aged children. Japan's Astellas Pharma Inc., as a founding member of the Pediatric Praziquantel Consortium, played a pivotal role by utilising its proprietary technology to lead a potential new paediatric treatment option's initial formulation development, resulting in water dispersible, climate-stable, child-friendly tablets, through improving the taste of the tablets. The formulation was optimised by Merck in Germany; the manufacturing process served to produce clinical trial supply from Merck and Farmanguinhos in Brazil. GHIT is inspired to see Japanese innovation and knowhow join forces with incredible partners worldwide to make a transformational impact on global health.

A second example is that the world's first double-blind, randomised clinical trial to find a treatment for the fungal form of mycetoma, a chronic disabling disease, has demonstrated that fosravuconazole, a new oral treatment which GHIT has invested in since 2017, is safe, patient-friendly, and effective in treating the disease. Drugs for Neglected Diseases initiative (DNDi) coordinated the trial in Sudan in partnership with the Mycetoma Research Center (MRC) in Khartoum, Erasmus MC in the Netherlands, and the Japanese pharmaceutical company Eisai Co., Ltd.



The project is now in preparation for the application for approval in Sudan.

Given the importance of public-private partnerships, how does the GHIT Fund foster collaboration and coordination among diverse stakeholders, including Japanese entities and global organisations?

In addition to incentivising collaboration by making collaboration a prerequisite for funding (development partnerships are required to include both Japanese and non-Japanese entities), GHIT has championed a mindset shift for stakeholders worldwide. Our mechanism enables Japanese pharmaceutical companies to combine their R&D expertise and capabilities with those of governments, international organisations, and nonprofits, with negligible risk; conversely, we provide a pathway to collaboration with Japan that many global health stakeholders could not previously access. Finally, we actively bring together innovative previously unconnected partners across borders and sectors, creating an innovation hub to help stakeholders learn from each other while leveraging their unique experience and technologies.

How does the GHIT Fund navigate challenges related to cross-border collaborations, regulatory differences, and varying healthcare landscapes when working on global health solutions?

The first key to effective collaboration is clear and ongoing communication. Additionally, our network of global partners, including companies, international funding agencies, and more, provide important perspectives and insights that facilitate a multitude of creative approaches to collaboration. Our focus on open innovation and transparency is another critical component of effective development partnerships.

How has the GHIT Fund adapted its strategies and priorities in response to emerging global health threats, such as pandemics or the spread of infectious diseases with pandemic potential?

Our investment focus on malaria, TB, and NTDs has been consistent since our founding, but we understand and very much appreciate that the world faces threats beyond our core scope of work and that our diseases of focus do not spread in a vacuum. For that reason, we maintain constant dialogue with global institutions and experts to align our strengths and capabilities with global needs. Our partnership with the Coalition for Epidemic Preparedness Innovations (CEPI) exemplifies our involvement in the area of pandemic preparedness through partnerships and we continue to look for ways to repurpose familiar technologies for diseases of pandemic potential.

Looking ahead, what are the GHIT Fund's future plans and ambitions?

We launched our third five-year strategic plan in April 2023, with an overarching objective to expedite global health R&D to make essential products available and accessible to those who need them most. The three key pillars of the plan are: galvanise innovation, catalyse partnerships, and maximise impact. To deliver drugs, vaccines and diagnostics to the field more quickly, we will proactively collaborate with product development partners to help them develop robust launch strategies and establish strategic, product-focused partnerships to create an environment for effective access and delivery.

We announced two new partnerships to enhance the strategy with exciting aims. First, GHIT and the Institut Pasteur de Dakar (IPD), a Senegalese non-profit foundation, will foster the development of cutting-edge solutions to combat infectious diseases in Africa and beyond, particularly by strengthening collaboration to support low-cost vaccine and diagnostics manufacturing in LMICs through technology transfer and know-how sharing from/with Japanese pharmaceutical companies and academia. Second, GHIT and the Medicines Patent Pool (MPP), a United Nations-backed public health organisation with expertise in licensing and technology transfer for essential health products, will support effective global health technology transfer in global health and will share knowledge and perspectives on access-oriented licensing and other issues relating to affordable access medical technologies in LMICs. BS

Ayesha Siddiqui

Samsung signs MoU with IIT Kanpur to conduct joint health research

South Korea-based firm Samsung's R&D Institute in Noida has signed a Memorandum of Understanding (MoU) with the Indian Institute of Technology Kanpur (IIT-K) for a period of five years to focus on key growth areas that will include joint research projects by IIT-K students, faculty and Samsung engineers, helping students become industry-ready. These research projects will span areas such as health, visual, framework and B2B security, and cutting-edge technology areas

such as Generative AI and Cloud. Apart from research projects, the MoU seeks to provide opportunities for upskilling Samsung engineers in key technology areas such as artificial intelligence (AI), Cloud and other emerging technologies. As part of the joint research projects, students and faculty of IIT-K will work on real-world industry challenges, aligning themselves with actual market needs. They will also work on Digital India related solutions, along with Samsung engineers. Students and faculty of IIT-K will also be encouraged to publish joint research papers with Samsung engineers.

NTU Singapore launches new college of computing and data science to propel AI ambitions

Nanyang Technological University (NTU) Singapore is launching a new college to deepen the university's investment and efforts in artificial intelligence (AI), computing, and data science. The new college of Computing and Data Science will serve as a platform to deliver industry-relevant degree programmes that will train students to not just be comfortable but also fluent in AI. It will also accelerate interdisciplinary collaboration between computing and other disciplines in NTU Singapore. NTU's new College of Computing and Data Science will combine the strengths of the University's School of Computer Science and Engineering (SCSE) with other related disciplines at NTU to form the University's sixth academic college. The new college is expected to be home to more than 4,800 students in the new academic year that begins in August 2024. In line with the university's commitment to lifelong learning, the college will ramp up its continuing education and training (CET) efforts in AI and computing by 30 per cent every year.

Sydney and HEX announce School of Record partnership

The University of Sydney and multi-award-winning EdTech startup, HEX, have entered into Australia's first School of Record partnership, a five-year agreement that goes into effect this year. Known for bridging the fast-moving world of work with the tertiary and high school system, HEX delivers innovation, entrepreneurship and 'exponential skills' programmes. Their online and 'innovation gap year' programmes are designed alongside industry leaders like Atlassian, in response to increasing demand for short skills-based learning. This new agreement is intended to help address Australia's digital skills gap and serve as a stepping stone into higher education, entrepreneurship and employment. After successful completion of selected HEX Ed Pro Programmes, the University of Sydney will issue certificates of completion that provide graduates with a graded academic record of their learning.

Singapore's healthcare startup Plano names new CEO

The Board of Directors at Plano, the first spin-off from the Singapore Eye Research Institute (SERI)-Singapore National Eye Centre (SNEC) Ophthalmic Technologies Incubator Programme and the winner of Galen Growth's World's Most Innovative Healthtech Startup 2020 Award, has announced that Yongqiang (John) Cao will succeed Associate Professor Mohamed Dirani as the company's new Chief Executive Officer (CEO). Cao was previously holding the position of General Manager of Plano in China, where he established a diverse and talented team, localised Plano's products to meet China's consumer needs, and successfully initiated the commercialisation of Plano's myopia management solutions. Under his leadership, the company was awarded two competitive government grants from the Hangzhou government- the 115-innovation project award and the 115-Foreign Talent award. Associate Professor Mohamed Dirani, who is the founding Managing Director of Plano and adjunct Associate Professor at Duke-NUS will uphold his position as Chair of the Plano Board & will take on the role of Advisor on Plano's Science & Innovation Advisory.

Takeda announces Chief Financial Officer succession

Japanese pharmaceutical company Takeda has announced that Costa Saroukos, chief financial officer (CFO), has decided to leave Takeda to return to his home-country of Australia to be closer to family. Saroukos will step down as CFO, effective April 1, 2024 and will remain with the company as a board director until June 28, 2024. Milano Furuta, president of Takeda's Japan Pharma Business Unit (JPBU), will succeed Saroukos, effective April 1, 2024. Furuta will report to Christophe Weber, president & CEO, and will be based in Tokyo, Japan. As CFO, Furuta will be proposed to the board of directors as a candidate for election to the board. Prior to joining Takeda in 2010, Furuta worked as an equity research analyst at an investment management firm in the United States. He began his career in 2000 in banking and private equity investment in Japan, where he was involved with several types of financial transactions, including leveraged buyouts and debt restructuring. Before becoming JPBU president, Furuta served as corporate strategy officer and chief of staff at Takeda, and has held multiple leadership roles with the company around the world.

Boston Scientific appoints Madan Krishnan to lead India subcontinent

US-based medtech firm Boston Scientific has announced the appointment of Madan Krishnan as vice president and managing director, India Subcontinent and Commercial Operations / Excellence APAC, effective February 1, 2024. In this role, Krishnan will be responsible for the commercial business across India, Bangladesh, Bhutan, the Maldives, Nepal and Sri Lanka, as well as commercial operations and excellence across Asia Pacific. Krishnan is an international business leader with more than two decades of progressive leadership experience in emerging and developed healthcare systems. He was previously with Medtronic, where he led the India business, and AstraZeneca where he held leadership roles based in Turkey, South Korea and Singapore. He takes over leadership of the India Subcontinent for Boston Scientific from Manoj Madhavan, who is relocating to the US to assume a global role within the company.

Srinath Venkatesh steps in as MD- India and South Asia at Thermo Fisher Scientific

Srinath Venkatesh has stepped in as the Managing Director (MD), India and South Asia, Thermo Fisher Scientific, as the company embarks into another transformative year of growth and making a meaningful impact with its purpose-driven mission. Venkatesh's proven record of over 30 years has been pivotal in driving sustained growth and success across businesses. Under his visionary leadership, Thermo Fisher will continue its legacy of excellence and steer its operations in India to greater heights. Previously, Venkatesh was serving as the President- Danaher India, and prior to that, business leadership roles including Managing Director- India & South East Asia for Cepheid; Country Leader and Chief Executive Officer for GE in Bangladesh. He started his professional career in 1993, and has held several sales, commercial and business leadership positions across the industrial and capital businesses.

Astellas adds Chief Digital & Transformation Officer to top management

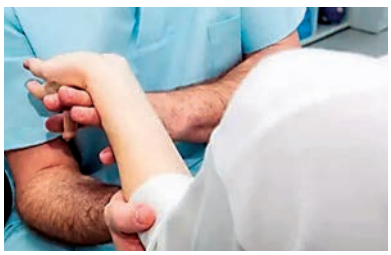
Digital initiatives and investments are critical in every part of Japanese pharmaceutical firm Astellas business for transformation and to create value creation for patients. Considering that digital and business transformation must be built into management strategy formulation and execution, Astellas has decided to establish the Chief Digital & Transformation Officer (CDTO) as a new member of Top Management. The company will appoint Nick Eshkenazi to the CDTO position as of April 1, 2024. He joined Astellas as Chief Digital Officer on November 1, 2023. He brings to Astellas experience driving complex business transformation, and many digital and technology in various industries. He has already made a great impact in terms of enhancing its digital capabilities, and has really helped to think differently about digitalisation and transformation. He will be based in Australia. He is an award-winning, globally recognised digital and technology executive with 30 years of technology, data, and operations experience. During the last 20 years, he has held various executive level roles.

Saima Wazed steps in as WHO Regional Director for South-East Asia

Saima Wazed has taken charge as the World Health Organisation (WHO) Regional Director for South-East Asia. Saima began a five-year term on February 1, 2024. She is the first from Bangladesh and the second woman Regional Director of WHO South-East Asia Region. She was nominated as the next Regional Director in a vote by the Regional Committee for South-East Asia on November 1, 2023 in New Delhi, India. She has been an Advisor to the WHO Director-General on Mental Health and Autism and has been a member of WHO's Expert Advisory Panel on Mental Health since 2014. Saima was designated Goodwill Ambassador for Autism in WHO South-East Asia in 2017. She co-authored WHO South-East Asia Regional Strategy on Autism Spectrum Disorder the same year. She is an Associate Fellow at the Global Health Programme Chatham House, UK, Chairperson of the National Advisory Committee on Autism and Neurodevelopmental disorders (NDDs), Dhaka Bangladesh, and Chairperson of the Shuchona Foundation, Dhaka.

Korea designs sweat resistant wearable robot sensor

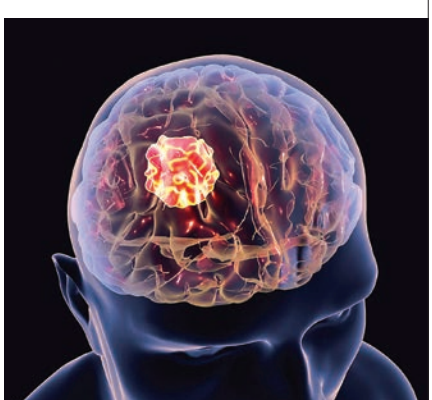
New electromyography (EMG) sensor technology that allows the long-term stable control of wearable robots and is not affected by the wearer's sweat and dead skin has gained attention recently. Wearable robots are devices used across a variety of rehabilitation treatments for the elderly and patients recovering from stroke or trauma. A joint research team from the School of Electrical Engineering (EE) and Department of Mechanical Engineering (ME), at Korea



Advanced Institute of Science & Technology, has developed a stretchable and adhesive microneedle sensor that can electrically sense physiological signals at a high level without being affected by the state of the user's skin. The recently developed technology is expected to allow long-term and high-quality EMG measurements as it uses a stretchable and adhesive conducting substrate integrated with microneedle arrays that can easily penetrate the stratum corneum without causing discomfort. It can be used to control wearable robots with higher precision and stability, which will help the rehabilitation of patients who use robots.

Hong Kong develops potential new treatment for brain tumours and Parkinson's disease

A joint multi-disciplinary team from The Chinese University of Hong Kong (CUHK)'s Faculty of Medicine (CU Medicine) and The University of Hong Kong (HKU)'s Department of Mechanical Engineering has developed an interactive, multi-stage robotic positioner for stereotactic neurosurgery, guided by intra-operative magnetic resonance imaging (MRI). Through close collaboration between clinicians and engineers, the team proposed an interactive, multi-stage robotic positioner for cannula or needle instruments used in stereotactic neurosurgery, with the goal of providing more accurate and effective treatment of many neurological diseases, such as brain tumours and Parkinson's disease. The system was validated through cadaver studies and skull model testing. Initial results have laid a solid foundation for future studies that could lead towards clinical applications. The first intraoperative MRI (iMRI) system in Hong Kong will come into service in the third quarter of 2024. Two to three more iMRI systems will be set up in Hong Kong in the coming five years.



Singapore, China explore use of spider-silk inspired electrode to shape future of medical devices

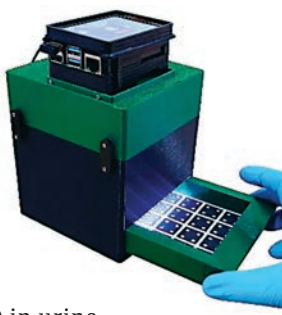
An international team of scientists from Singapore's Nanyang Technological University, Chinese Academy of Sciences, Nanjing Medical University has developed a flexible electrode that wraps around muscles, nerves and hearts to deliver electrical stimulation to tissues or record electrical activity. Inspired by spider silk, the electrode contracts to conform to biological tissues, is non-toxic and performs better than conventional stretchable electrodes. Mimicking the properties of spider silk, the electrode contracts when wet to wrap around biological tissues. It is also non-toxic and more sensitive than conventional stretchable electrodes. The scientists showed that the electrode could detect electrical signals from abnormal heart rhythms in rats. The innovation could shape the next generation of medical devices that monitor irregular heartbeat, repair nerves, close wounds and reduce scarring. It could open the door to biomedical devices for monitoring irregular heartbeat, nerve repair, wound closure and scar reduction.

India devises strategy to link proteins with chemical tags for facilitating drug development

Researchers at the Indian Institute of Science Education and Research Bhopal (IISER Bhopal) have developed a technology named 'BHoPAL' for attaching chemical tags to proteins, an important process in the development of drugs. Through this technology, necessary chemical moieties can be linked to specific sites of a protein without harming the protein's efficacy. This process is essential for two main purposes: Attaching proteins to fluorescent chemical tags for their visualisation inside cells enabling studies focused on understanding how they perform cellular functions; and linking drugs to antibody proteins for selective drug delivery to diseased cells such as cancerous cells preventing undesirable side-effects of these drugs. Proteins are extremely prone to loss of function when treated with chemical reagents. However, for the first time, IISER Bhopal's novel technique eliminates this problem. This technology is called 'Baylis Hillman orchestrated Protein Aminothiol Labelling' (BHoPAL) which efficiently tags chemicals to proteins without compromising their function.

Indonesia develops biosensor-based tool for detecting neurological disorders

A team of students from Institut Teknologi Sepuluh Nopember (ITS), Indonesia has created an innovative Rapid Diagnostic Microfluidic Biosensor detection tool called NeuroCube which is capable of detecting neurological disorders or disorders of the central nervous system and peripheral nervous system. This biosensor is inspired by the concept of litmus paper which can change colour when it reacts with acids or bases. This concept was then applied to neurotransmitter compounds such as dopamine, glutamate, and Nicotinamide Adenosine Dinucleotide Hydrogen (NADH) in urine samples. From the samples that have been obtained, there will be a colour change which can provide an indication of the concentration level of compounds that can detect six neurological disorders. These disorders include dementia, obsessive–compulsive disorder (OCD), Attention Deficit Hyperactivity Disorder (ADHD), bipolar disorder, schizophrenia and Alzheimer's. In its development, the team was able to combine four important components, namely microfluidic biosensor paper, Raspberry Pi miniprocessor, Liquid Crystal Display (LCD) touch screen, and LED lights into a tool called NeuroCube. This innovation is ultimately claimed to be able to detect neurological disorders in a person using a simple method, namely colorimetry.

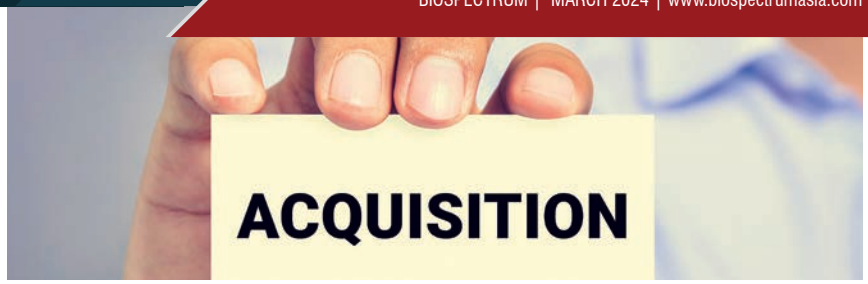


Australia uses machine learning to study COVID-19 bacterial co-infection

The University of Queensland researchers have used machine learning to help predict the risk of secondary bacterial infections in hospitalised COVID-19 patients. The machine learning technique can help detect whether antibiotic use is critical for patients with these infections. The technique is known as the 'least absolute shrinkage and selection operator' – or LASSO for short. Blood samples of COVID-19 patients from six countries were analysed using the LASSO technique. The team found that the expression of seven genes in a COVID-19 patient can predict their risk of developing a secondary respiratory bacterial infection after 24 hours of hospital admission. These seven genes can now guide clinicians to making a more informed choice when it comes to antibiotic use.

Eppendorf Group opens site in South Africa

German firm Eppendorf Group is expanding its presence by opening a new location in South Africa. The branch office is located in Johannesburg's economic centre Waterfall City and offers attractive office workplaces for sales and service activities, a modern pipette calibration laboratory including a service workshop and a customer experience centre showcasing Eppendorf instruments. The centre offers quality laboratory services, customer training and instrument maintenance services. Eppendorf's new location is in the economic centre of Johannesburg. Waterfall City is home to numerous international companies from leading sectors, including the life science industry. In addition to 650 square meters of modern office space, the new location offers a service centre equipped for repairs of all Eppendorf devices. Calibrations and validations are also offered in the state-of-the-art calibration laboratory. Customers and partners throughout the region will now receive scientific and technical support in the specially equipped Customer Experience Centre.



Bruker Corporation acquires Nanophoton

US-based Bruker Corporation has announced the acquisition of Nanophoton Corporation, a pioneer focused on advanced research Raman microscopy systems. Headquartered in Osaka, Nanophoton offers a broad portfolio of advanced Raman microscopes, serving academic and industrial research customers, primarily in Japan. This acquisition fills a gap in Bruker's molecular microscopy portfolio, and Bruker intends to offer fast, flexible and sensitive Nanophoton Raman microscopy systems worldwide for research and development in the life sciences, biopharma, advanced materials, semiconductors and polymers. Nanophoton augments the molecular microscopy portfolio of the Bruker Optics division with a broad range of state-of-the-art Raman microscopy systems, which offer exceptional speed, sensitivity and spatial resolution, combined with user-friendly workflows designed for outstanding user experience.

Thermo Fisher Scientific launches new ion chromatography instrument

To support a wider range of ion chromatography analysis with one instrument, American firm Thermo Fisher Scientific Inc. has launched the Thermo Scientific Dionex Inuvion Ion Chromatography (IC) system, helping to make ion analysis simpler and more intuitive for labs of all sizes. The new analytical instrument is designed to be easily reconfigurable, providing those who require determination of ionic and small polar compounds with a one stop shop for consistent, reliable ion analysis. Aligned with Thermo Fisher's mission to enable customers to make the world healthier, cleaner and safer, the Dionex Inuvion IC system equips environmental, industrial, municipal water, and food and beverage labs with the necessary equipment to determine ionic contaminants in water. The technology also helps identify corrosive contaminants in oil and gas, as well as provide quality assurance and quality control of small ionic compounds in food, beverage, and pharmaceuticals. The Dionex Inuvion system helps meet labs' needs to operate more efficiently with easily configurable workflows and a small footprint.

Sciex expands high-throughput screening solutions with Echo MS+ system

Sciex, a US-based firm in life science analytical technologies, has launched the Echo MS+ system. It couples proprietary Acoustic Ejection Mass Spectrometry technology and Open Port Interface (OPI) sampling with the capabilities of either the Sciex ZenoTOF 7600 or Triple Quad 6500+ system to deliver precise qualitative and quantitative results, through an expanded panel of robust high-throughput screening workflows. The system addresses key challenges in high-throughput screening applications for drug discovery without the need for extensive method development. This is achieved through the introduction of new, flexible workflows for small and large molecules that leverage the capabilities of high-resolution mass spectrometry for improved selectivity and sensitivity compared to other analytical tools. Through a combination of high speed of analysis, high data quality and minimal sample and reagent consumption, the system has the potential to reduce the time, cost and risk in making critical decisions during the early phases of the drug development pipeline.

Qiagen offers ultra-fast NGS analysis for somatic cancer

Qiagen Digital Insights (QDI), the bioinformatics business of Qiagen, has announced an enhanced Qiagen CLC Genomics Workbench Premium with LightSpeed technology now supports next-generation sequencing (NGS) for somatic cancer secondary analysis. The software accelerator converts raw sequencing data in FASTQ files to interpretable lists of genetic variants in VCF files at unprecedented low cost and high speed. Qiagen's LightSpeed technology is a game-changer for research and clinical labs performing high-throughput NGS for somatic applications. The software accelerator is much faster, more accurate, greener and cheaper than previous data-analysis and visualisation solutions. Using less power and requiring no investments in new hardware or software licenses beyond CLC, LightSpeed can analyse a 275-gene comprehensive cancer panel at 3377x coverage in just 6 minutes for less than $0.72 per test within standard cloud environments. Alternatively, labs can efficiently run the Qiagen CLC LightSpeed technology on existing local hardware with similar performance.

Beckman Coulter unveils DxC 500 AU chemistry analyser

Beckman Coulter Diagnostics unveiled its new DxC 500 AU Chemistry Analyser, an automated clinical chemistry analyser, at Medlab Middle East in Dubai, that took place on February 5-8, 2024. The DxC 500 AU Chemistry Analyser is one of several recent Beckman Coulter solutions designed to address the complete needs of healthcare systems that are looking to complement central hub laboratories by advancing the technology and capabilities of satellite and independent hospital laboratories. The product features advanced automation technology, onboard guided workflows, and standardised reagents for use across healthcare networks. Its menu of over 120 assays has been independently and objectively verified for high quality Six Sigma performance, supporting confidence in clinical results, reducing QC troubleshooting and lab operational costs. The DxC 500 AU Chemistry Analyser is for in vitro diagnostic use only. It is available throughout North America and the Middle East. Global commercial availability is planned for March 2024.

Averting Global Cancer Crisis

From the projected 20 million cases in 2022, over 35 million new cases of cancer are expected in 2050, representing a 77 per cent increase. Both population growth and aging, as well as shifts in individuals' exposure to risk factors—many of which are linked to socioeconomic development—are contributing factors to the rapidly rising global cancer burden. According to a report released by the International Agency for Research on Cancer (IARC), the cancer arm of the World Health Organization (WHO), on February 1 ahead of World Cancer Day, air pollution continues to be a major driver of environmental risk factors for cancer. Other major factors contributing to the rising incidence of cancer include tobacco, obesity and alcohol.

There is a continued decline in tobacco consumption from 1 in 3 adults worldwide consuming tobacco in 2000 to 1 in 5 adults in 2022. Still globally there are 1.25 billion adult tobacco consumers, according to the latest WHO tobacco trends report released in January 2024. Currently the WHO South-East Asian region has the highest percentage of population consuming tobacco at 26.5 per cent with the European region not far behind at 25.3 per cent.

In terms of the absolute cancer burden, high Human Development Index (HDI) countries are expected to experience the greatest absolute increase in incidence, with an additional 4.8 million new cases predicted in 2050 compared with 2022 estimates. Yet the proportional increase in incidence is most striking in low HDI countries (142 per cent increase) and in medium HDI countries (99 per cent). Likewise, cancer mortality in these countries is projected to almost double in 2050.

According to the January 2024 Statista report, Switzerland had the highest level of the HDI worldwide in 2021 with a value of 0.962. With a score of 0.961, Norway followed closely behind Switzerland and had the second highest level of human development in that year. Iceland, Hong Kong and Australia were the next to follow with a scope of 0.959, 0.952 and 0.951 respectively.

Global estimates reveal striking inequities in the cancer burden according to human development. This is particularly true for breast cancer. In countries with a very high HDI, 1 in 12 women will be diagnosed with breast cancer in their lifetime and 1 in 71 women die of it. By contrast, in countries with a low HDI; while only one in 27 women is diagnosed with breast cancer in their lifetime, one in 48 women will die from it.

In its Global Cancer Observatory (GCO) report, IARC estimates that there were an estimated 20 million new cancer cases and 9.7 million deaths in 2022. The estimated number of people who were alive within five years following a cancer diagnosis was 53.5 million. About 1 in 5 people develop cancer in their lifetime, approximately 1 in 9 men and 1 in 12 women die from the disease. According to the GCO report 10 types of cancer collectively comprised around two-thirds of new cases and deaths globally in 2022. Data covers 185 countries and 36 cancers.

According to the GCO report, Asia has 9.8 million new cancer cases and witnessed 5.5 million deaths in 2022. The number of prevalent cases wherein people were alive within five years following a cancer diagnosis was 23.4 million. Compared to Asia, Oceania has less number of new and prevalent cases with just 269,088 new cancer cases in 2022, while the prevalent cases were 921,116. The number of deaths due to cancer in the region was 73,776 in 2022.

Globally, the cancer burden is still rising, placing a great deal of physical, psychological, and financial pressure on people, families, communities and health systems. Many low- and middle-income nations' health systems are ill-equipped to handle this load, and many cancer patients, worldwide, lack access to prompt, high-quality diagnosis and treatment. Strong health systems in nations have increased the survival rates of many types of cancer through early detection that is easily accessible, high-quality treatment and survivorship care. Globally, disparities in cancer incidence must be addressed. Experts believe that political will is just as important in this situation as resource allocation. BS

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