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# Trends shaping the Healthcare and Bioscience industries in 2025

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**Raymond Chow, Vice President, Asia Pacific, Cytiva**



The year 2025 is set to be a pivotal year for the health, bioscience, and biopharma sectors, as emerging trends shape healthcare landscapes globally and regionally. Stakeholders are gearing up for the accelerated evolution of the healthcare ecosystem through collaboration and innovation to resolve pressing challenges. Healthcare crises underscore the need for a resilient network infrastructure and collaborative approaches, enhancing innovation and transforming healthcare delivery. Although in Asia Pacific, a robust Health and bioscience investment and funding climate exists, the region faces unique challenges, including regulating and coordinating policies, unmet evolving trends, ensuring equity of access to life-saving medicines, insufficient funding, and a lag in implementing digital operations to last thousand miles. Asia-Pacific is striving to develop strategies to position itself at the forefront of the healthcare ecosystem with robust policies and infrastructure upgrading.

Biospectrum Asia spoke with **Raymond Chow, Vice President, Asia Pacific, Cytiva,** about 2025 trends from a global and regional perspective. The key topics of discussion include; Trends in cell and gene therapy, Global regulatory harmonization and its impact on Asia, and Increased use of digital tools and AI to drive efficiency, agility, and innovation.

- **What are some of the biggest trends shaping the biopharma and life sciences industry in 2025?**

In my view, 3 trends are shaping the industry for the better.

**AI and ML integration in biopharma**

The integration of AI across the biopharma value chain has accelerated dramatically. Companies are leveraging AI for drug discovery, clinical trial optimization, and personalized medicine development. The application of artificial intelligence in drug discovery has transformed how pharmaceutical companies identify and develop new therapies. Rather than the traditional approach of screening thousands of compounds through time-consuming lab work, AI algorithms can now predict which molecules will likely interact with specific disease targets. AI is quickly becoming an important tool in the advancement of personalized and genomic medicines, particularly nucleic acid-based therapeutics. Scientists and researchers have more potential therapeutics for clinical pipelines than at any other time in history.

Think of it like this: traditional drug discovery was similar to searching for a needle in a haystack by examining each piece of hay individually. AI-driven approaches can now analyze the entire haystack at once, recognizing patterns that suggest where needles are most likely to be found. This has reduced early discovery timelines from years to months. Companies are now using AI not just for initial discovery but throughout the development pipeline.

**Regulatory changes and policy shifts**

Regulatory frameworks have evolved to keep pace with scientific advances while maintaining rigorous safety standards. Agencies like the FDA and EMA have implemented more adaptive approaches that accommodate novel therapeutic modalities and development paradigms.

According to a recent analysis published in Nature Biotechnology, AI-powered drug discovery startups raised over $12 billion in funding between 2022-2024, with several AI-discovered compounds now in Phase II and III clinical trials. The FDA has responded to this trend by establishing dedicated AI review teams and publishing guidance on validation requirements for AI-based drug discovery tools. This regulatory clarity has further accelerated adoption across the industry.

This modernization is similar to how traffic systems have evolved from simple stop signs to sophisticated networks of sensors and signals that adapt to changing conditions. Rather than applying the same rigid assessment criteria to all therapies, regulatory agencies now employ flexible frameworks tailored to different modalities and risk profiles.

**Advanced cell and gene therapy manufacturing**

Cell and gene therapies have matured beyond specialized treatments for rare diseases to become mainstream therapeutic options. This expansion has been enabled by manufacturing innovations that have reduced production costs by approximately 70% since 2022. The Journal of Advanced Manufacturing and Processing documented how continuous bioprocessing and automated cell culture systems have addressed key bottlenecks in cell therapy production. Standardized platforms for viral vector production have similarly improved efficiency and reduced costs for gene therapies.

According to a report from the Alliance for Regenerative Medicine, over 25 cell and gene therapies were approved between 2023-2024, treating conditions ranging from genetic disorders to certain forms of cancer. Manufacturing innovations were cited as a key factor enabling this wave of approvals.

- **How does Asia-Pacific compare to other regions in terms of innovation in biopharma?**

APAC's innovation landscape shows interesting patterns of regional specialization that differ from the more broadly distributed innovation seen in North America and Europe.

According to Nature Biotechnology's 2023 analysis "The Rise of Asian Biopharma," different APAC countries have developed distinctive specializations. For example, Japan excels in small molecule drug discovery and precision medicine and South Korea leads in biosimilars and regenerative medicine. Singapore has become a hub for biomedical research and clinical trials while India remains dominant in generic drug manufacturing but is increasingly moving into biosimilars and even novel drug development. In addition, there are bright spots in innovation throughout Southeast Asia, though at nascent stages.

This contrasts with the United States, where innovation clusters like Boston and San Francisco demonstrate excellence across multiple therapeutic modalities and technologies simultaneously and remain hubs for biopharma research and development, with significant investments in AI, gene editing, and personalized medicine. Europe is focusing on sustainability and green chemistry, alongside advancements in AI and digital health.

Overall, while North America and Europe have established themselves as leaders in biopharma, the Asia-Pacific region is rapidly catching up and, in some areas, leading the way with its dynamic market and innovative approaches.

- **How is global regulatory harmonization evolving, and what impact will it have on Asia’s biotech industry?**

Regulatory harmonization has evolved significantly from early standardization efforts into more sophisticated alignment approaches. The International Council for Harmonisation of Technical Requirements for Pharmaceuticals for Human Use (ICH) has been the cornerstone of these efforts since its founding in 1990. According to the Regulatory Affairs Professionals Society (RAPS) State of Regulatory Harmonization Report (2023), ICH membership has expanded from its original members (US, EU, and Japan) to include 20 regulatory authorities and 32 industry organizations. This expansion has been particularly noteworthy in Asia, with China, South Korea, Singapore, Chinese Taipei, and India joining as members or observers. Project Orbis, for example, initiated by the FDA, enables concurrent submission and review of oncology products across multiple countries, including Singapore and Australia in the Asia-Pacific region.

Asia presents a unique and complex regulatory landscape with significant diversity in industry maturity, healthcare systems, and regulatory frameworks. Within APAC, we have Association of Southeast Asian Nations (ASEAN) has implemented the ASEAN Common Technical Document (ACTD) and ASEAN Common Technical Requirements (ACTR) to standardize submission formats across member states. The APEC Harmonization Center, hosted by South Korea, has been instrumental in promoting regulatory convergence across Asia-Pacific economies.

Global regulatory harmonization will open significant opportunities for Asia’s biotech industry. For one, regulatory convergence is reducing the time between global and Asian industry approvals. According to the IQVIA Institute's 2024 report "Global Trends in R&D," the median lag time between FDA approval and availability in major Asian markets decreased from 36 months in 2013 to 11 months in 2023. This trend is particularly pronounced for innovative therapies. Dr. Akihiro Tohkin, Director of Japan's Pharmaceuticals and Medical Devices Agency (PMDA), noted in a 2024 interview with BioCentury that "for breakthrough therapies addressing serious conditions, we're now seeing nearly simultaneous approvals across major regulatory jurisdictions".

Perhaps most significantly, regulatory harmonization is nurturing indigenous innovation across Asia. The Asian Development Bank's 2024 report "Innovation Ecosystems in Asia" found that countries with regulatory agencies actively participating in international harmonization efforts experienced 2.3 times faster growth in biotech patent applications than those with more isolated regulatory systems.

This effect is particularly visible in South Korea and Singapore, where clear regulatory pathways aligned with international standards have supported vibrant biotech startup ecosystems. The Korea Biotechnology Industry Organization reported that the number of biotech startups in South Korea increased by 157% between 2019 and 2024, coinciding with MFDS's increased participation in global harmonization initiatives.

- **Are there any notable policy shifts in 2025 that could reshape the industry in Asia?**

There are several exciting policy shifts that could continue to shape our industry in APAC. I’ll touch on a few here.

**India** has begun implementing key components of its ambitious **Pharma Vision 2030** plan, which aims to transform the country from primarily a generic drug manufacturer to a significant contributor to global biopharma innovation. The Economic Times' 2024 special report "India's Pharmaceutical Transformation" shares that the government has established three new biomedical innovation districts with special economic zone status, providing tax incentives, streamlined regulatory processes, and dedicated infrastructure for biopharma R&D and manufacturing. Companies establishing operations in these zones receive significant tax benefits for the first ten years of operation. The policy includes substantial reforms to India's clinical trial framework, addressing previous concerns about regulatory clarity and lengthy approval timelines. According to BMJ Global Health's analysis, average clinical trial approval times have decreased from 180-240 days to 60-90 days under the new system.

Additionally, the government has established a $3 billion fund to support the development of a domestic biologics manufacturing infrastructure, with particular emphasis on advanced therapy medicinal products (ATMPs) like cell and gene therapies. This represents a significant shift from India's historical focus on small molecule generics.

**Singapore's BioHub 2025 Initiative,** an expanded version of its successful biomedical sciences initiative, seeks to position the country as the coordinating hub for ASEAN region biopharma development. The initiative includes regulatory harmonization efforts designed to create a more unified regulatory approach across ASEAN markets. Under Singapore's leadership, participating countries have adopted common standards for clinical trial applications, manufacturing inspections,

and pharmacovigilance requirements. This significantly reduces the complexity of operating across multiple Southeast Asian markets.

Singapore has also established the Asian Medicines Agency (AMA), modeled after the European Medicines Agency, which allows for coordinated reviews of new drug applications across participating countries. According to Health Policy and Technology's analysis, this has reduced the time to multi-approvals in the region by approximately 45%.

**South Korea** has implemented a comprehensive policy framework designed to solidify its position as a global leader in biologics manufacturing and biosimilar development. According to a Korea Biomedical Review's analysis "Korea's Biologics Manufacturing Ascension" (2024), the government has introduced attractive tax incentives specifically for companies investing in next-generation biologics manufacturing capabilities. Companies establishing facilities for continuous bioprocessing, cell therapy manufacturing, or advanced biologics can receive tax credits covering up to 50% of their capital investments.

As these policy developments continue to unfold throughout 2025 and beyond, they collectively signal Asia's strengthening position as both a critical region in the global biopharma landscape, supporting how companies approach their research, development, and commercialization strategies.

- **What are some challenges in adopting digital solutions, and how can they be overcome?**

The biopharma industry faces significant challenges in digital transformation across the Digital Plant Maturity Model (DPMM) stages. Primary obstacles include legacy systems integration, regulatory compliance concerns, and organizational resistance to change. Companies struggle with data silos that prevent seamless information flow between manufacturing, quality control, and supply chain operations. Organizations should prioritize establishing robust data infrastructure before implementing advanced analytics or AI solutions. According to a 2022 study by McKinsey Digital of 150+ biopharma facilities, those following a staged approach achieved 15-30% greater operational efficiency gains than those attempting simultaneous implementation across all areas.

The BioPhorum Operations Group framework recommends overcoming these challenges through: (1) developing clear digital roadmaps aligned with business objectives, (2) implementing change management programs focusing on workforce upskilling, and (3) establishing cross-functional governance structures that balance innovation with compliance requirements. Companies that succeeded in digital transformation typically dedicated 3-5% of their operational budgets to digital initiatives and established centers of excellence to standardize implementation approaches.

- **How is Cytiva positioning itself to support the evolving needs of the biotech and pharmaceutical sectors?**

Cytiva supports the demand for biotherapeutics across Asia-Pacific with our innovative technologies, products, and services that advance the work of our customers, collaborators, and the local biotechnology industry. This in-region, for-region strategy helps us deliver for our customers with better efficiency, shorter lead times, and agile implementation.

In APAC, we have key sites in Korea, Japan, India, Singapore, Australia, and New Zealand, and China, as well as Fast Trak training centers in China, Korea and India. In 2023, we announced a customer experience center and manufacturing facility and customer experience center in Pune, India. In 2024, we launched our innovation hub in South Korea.

We continue to do our part to foster young talent in the region with leading universities including the University of Tokyo and University of Osaka in Japan, Seoul National University and Yonsei University in Korea, University of Queensland and University of Adelaide in Australia, as well as the Bangalore Bio-innovation Centre in India.

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