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Bridging Academic Innovation And Biomanufacturing Strategy To Accelerate Advanced Therapies In APAC

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Lucas Chan, Principal Consultant at Lucas Chan Consulting and Adjunct Professor at NUS, discusses regulatory alignment, AI driven manufacturing insights, and the strategic planning needed to translate cell and gene therapy breakthroughs from laboratory discovery to clinical reality.



On the sidelines of the **APAC Biomanufacturing Leadership Summit 2026 in Singapore, organised by Charles River, BioSpectrum Asia spoke with Lucas Chan, PhD, Principal Consultant at Lucas Chan Consulting and Adjunct Professor at the National University of Singapore (NUS).** With experience spanning academic research, translational development, and biomanufacturing strategy, Chan provides insights into how emerging therapies are moving from laboratory discovery to clinical application. In this conversation, he discusses the challenges of translating academic breakthroughs into regulated pharmaceutical products, the growing role of artificial intelligence in optimising biomanufacturing processes, and the need for stronger regulatory alignment and strategic planning across the Asia Pacific region.

Q: Your work spans academia and industry consulting. How does this dual perspective help advance advanced therapy development across APAC?

The development of advanced therapies, particularly cell and gene therapies, is a rapidly evolving field and many of the core innovations originate in academic laboratories.

Maintaining an academic affiliation allows me to stay closely connected to emerging scientific developments and new therapeutic concepts. At the same time, my experience in translational development, clinical research, and viral vector manufacturing allows me to understand the practical challenges involved in bringing these discoveries into the clinic.

This dual perspective allows me to guide researchers and developers as they move from early stage scientific discovery toward clinical development. Ultimately, the development of advanced therapies requires collaboration across many

stakeholders including academic researchers, manufacturers, consultants, regulators, and developers. It is truly a collective effort.

Q: What is one major misconception about the journey from discovery to commercial manufacturing in cell and gene therapies?

A common misconception is that once a promising scientific discovery has been made, the transition to pharmaceutical development will be straightforward.

In reality, there is a long and complex journey between early discovery and the development of a clinically viable therapeutic product. While the underlying science may be highly innovative, translating these concepts into safe, effective, and manufacturable products requires extensive development work.

Developers must address issues such as product consistency, manufacturing scalability, regulatory compliance, and patient safety. Ensuring that the product maintains its intended characteristics while meeting regulatory expectations is a critical part of the development pathway.

Q: Regulatory diversity across the APAC region is often discussed as a challenge. What progress still needs to be made?

Asia Pacific is an extremely diverse region with countries operating under different economic environments, technological capabilities, and regulatory frameworks.

When developing advanced therapies such as cell and gene therapies, greater harmonisation of regulatory expectations across the region would significantly benefit developers.

Innovation is occurring across many countries in APAC, but aligning regulatory pathways and development expectations will be essential to accelerate the translation of these innovations into clinical therapies.

Q: Artificial intelligence is increasingly influencing drug discovery and manufacturing. Where do you see its greatest impact in advanced therapies?

Artificial intelligence is already being applied extensively in drug discovery, and its role in biomanufacturing is becoming increasingly important.

Cell and gene therapies involve highly complex biological systems. AI has the potential to analyse large datasets from clinical trials and manufacturing processes, helping developers better understand key parameters that influence product performance.

In manufacturing, AI driven insights could help optimise process control strategies, improve efficiency, and reduce the cost of goods without compromising product quality or safety.

Q: What capabilities do companies often underestimate when developing cell and gene therapies?

One area that is often underestimated is the level of pharmaceutical development knowledge required when transitioning from academic research to clinical manufacturing.

Many developers originate from academic environments where the focus is on scientific discovery rather than pharmaceutical development or regulatory compliance.

This is why early engagement with regulatory authorities and experienced development partners is extremely important. Transparent communication and collaboration can help developers navigate the complexities of regulatory expectations and accelerate the development pathway.

Q: What separates companies that successfully scale advanced therapies from those that struggle?

One key differentiator is strategic planning, particularly around chemistry, manufacturing, and controls (CMC).

Companies often face pressure to move quickly toward clinical trials. However, taking the time to carefully plan manufacturing strategies and allocate the appropriate resources for translational development can make a significant difference later in the product lifecycle.

Early investment in CMC strategy and manufacturing planning often pays dividends as companies move into later stage clinical development and commercialisation.

Q: Looking ahead, what developments in advanced therapies excite you most?

We are entering an exciting era in the development of cell and gene therapies.

Several therapies have already demonstrated strong clinical efficacy and received regulatory approvals. The next stage of innovation will focus on improving manufacturing efficiency and scalability.

We are also seeing promising developments in in vivo gene therapies, which could potentially transform how these treatments are delivered. Continued advances in both therapeutic modalities and manufacturing technologies will play a critical role in expanding patient access to these treatments.

Q: Why are industry forums such as the APAC Biomanufacturing Leadership Summit important for the sector?

The development of advanced therapies requires collaboration across many different stakeholders.

No single organisation can address every aspect of the development pathway. We need contributions from CROs, CDMOs, academic researchers, consultants, developers, and regulators.

Events like the APAC Biomanufacturing Leadership Summit create opportunities for these stakeholders to connect, exchange ideas, and share best practices. This collaborative dialogue is essential for accelerating innovation and expanding access to advanced therapies across the APAC region.