Session 3	Artificial Intelligence in service of biomanufacturing
Pitch Title	Streamlining the path to scale with AI-enhanced R&D
Company	New Wave Biotech
Speaker	Zoe Yu Tung Law
Keywords feedstock	yeast, bacteria, algae, fungi
Keywords technology	AI, machine learning, downstream processing, technoeconomic analysis (TEA), scaling, sustainability modelling, life cycle analysis (LCA), simulation, optimisation, precision fermentation
Keywords End-Product	Software, process simulation, process modelling, optimisation

Abstract:

Overcoming the 'valley of death' is one of the biggest challenges with 90% of SynBio technologies failing to scale. This is because R&D for biomanufacturing is expensive and slow – it typically takes 3-10 years to go from lab to market, at US$10,000-100,000 per experiment. Many biotechnology companies run out of money before they are even viable, let alone optimal.

At New Wave Biotech, we've developed AI Downstream Process Optimisation software that can simulate thousands of processes to predict yield, quality, cost and sustainability; recommend the ones with the highest potential to experimentally test; and learn from that experimental data to further improve the process. With our industry-first scaling functionalities, we are also able to analyse the impact of scale on production costs, and adjust operational settings for scaling. This brings R&D into the AI age, reducing cost, increasing effectiveness, and reducing risk from lab to production.

In this talk, we demonstrate how AI is becoming an essential part of the toolkit for alternative protein companies aiming to bring their products to the masses, sustainably and affordably. With the inherent complexities and interdependencies in synthetic biology, AI tools can help users navigate the huge web of decisions and possibilities to uncover where opportunities lie. Data-backed decisions allow the targeting of precious budgets and experimentation where it will be most effective. Thereby reducing costly trial and error, and streamlining the path to scalable production.

By doing this, we can leverage AI to revolutionise bioprocess R&D, making bioproduction quicker, cheaper and more sustainable.