

LOW-FOOTPRINT, INTENSIFIED, SINGLE-USE PLATFORM FOR THE PRODUCTION OF VIRAL VACCINES

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Key Words: Single-use, end-to-end processing, perfusion culture, vaccines.

The world is facing an under-supply of some key vaccines due to poor synergies between growing market demands, the need for global epidemic preparedness and aging production models. In this light, funded by a grant from the Bill & Melinda Gates Foundation, Univercells has developed an affordable, ultra-low footprint platform designed to produce up to 40M doses per year of sIPV vaccines. The process makes use of a reduced footprint, single-use perfusion cell culture as well as chained filtration and clarification steps in order to (a) reduce batch time, (b) increase equipment utilization and ultimately (c) intensify operations. The result is a drastic reduction in Cost of Goods (CoGs) by taking advantage of a single-use bioprocessing architecture.

One of the key challenges in achieving this goal is the industrialization and subsequent intensification of adherent cell cultures for the production of viruses. Perfusion cell cultures in stirred tanks are typically associated with a large number of operations and complexity in process development. Addressing these challenges, Univercells has developed a single-use fixed bed bioreactor which addresses the latter. The other key challenge is in reducing the footprint required to clarify and purify the resulting concentrated product stream.

This talk will demonstrate how Univercells has optimized single-use technologies to design a fully continuous and automated production process, integrating both USP and DSP steps within a confined and contained low-footprint facility. Based on sIPV as a case study, we will present how this micro-facility is aiming to achieve up to a 10-fold reduction in CoGs while delivering high robustness, quality and safety.