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# Lipidomics for robust high performance process development

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## **Lipidomics for robust high performance process development**

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**Key Words:** lipidomics, metabolomics, harvest, resin re-use, chemically-defined protein-free lipid-free cell culture media.

As the biopharmaceutical industry reduces the risk of potential contaminations by adventitious agents and increases process yields, high performance cell culture processes have been developed that rely on animal-free peptide-free, protein-free chemically defined and lipid-free media. These processes rely on cell lines that have been adapted to these lipid-free production conditions and have developed very effective lipid production capacities. These lipid-production capacities result in new challenges in the harvest and purification steps such as filterability, ability to clean resins and resin reuse. This oral presentation will show case how lipidomics can provide insights and opportunities to control the interactions between high performance bioreactor production processes, harvest conditions and purification. Results obtained across large scale production processes of three different monoclonal antibodies will be displayed. The importance of controlling lipid biosynthesis and the presence of lipids in the cell culture fluid prior to affinity capture chromatography will be discussed. Three different control strategies will be showcased and their pros and cons in terms of process yields, robustness of the harvest and impact on the purification process post-harvest explained.