Continuous biomanufacturing
- Platform alternatives for scFv and mAb

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Stratified and personalized medicine approaches begin to have an increasing impact on manufacturing scenarios of therapeutic drugs. The increasingly smaller and in the future even decreasing number of blockbuster candidates, which used to justify metric tons per year manufacturing capacities in large scale batch plants is not an efficient option for a time and cost effective production of many stratified drug candidates in the 10-100 kg scale. This induces a paradigm shift towards the design of continuously operating smaller scale dedicated plants – with or without disposable technology [1–4].

Up to now, the platform process for monoclonal antibodies (mAb) heavily depends on protein A chromatography as the main working horse. The ongoing trend for continuous manufacturing therefore demands sequential chromatography regardless of better alternatives.

On the other side, there are an increasing number of antibody fragments (e.g. single chain variable Fragment scFv) which cannot be captured with protein A chromatography.

Hence, this talk will address a total process integration of continuous upstream and downstream. [5] The aqueous two phase liquid liquid extraction [6] is presented as a new capture step for both, scFv and mAb, followed by an integrated counter current chromatography combining two separation mechanisms [7] in one chromatographic unit operation. The advantages of this combination are based on the extreme flexibility of the ATP-LLE that allows adapting the capture step for several different products and host cells without changing the LLE equipment.

Furthermore, the online process analytic problems for continuous manufacturing are addresses by presenting a new online concentration identification method based on diode array uv detection.

Literatur

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