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Materials design enabling upstream continuous biomanufacturing

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Upstream continuous biomanufacturing is supported by a number of new approaches to perfusion culture. This includes continuing developments in single-use systems and cell-culture media design. SU perfusion-capable systems support a high degree of flexibility in process flow and configuration, component types, physical location and production mode. Continuous biomanufacturing through bioproduction in a high-cell density perfusion culture is an exciting potential. Data from a structured approach to developing a perfusion medium from a combination of commercially available medium and feeds will be presented. Insights as to how this methodology can be applied to other cell culture media will be outlined. Optimization of culture media and process fluids for such intensified processes also includes such new ideas as heightened process understanding, the relative value of powder vs. bulk liquid and in-line fluids conditioning. Employment of such is enabled by higher specific productivities, regional manufacturing and improved shipping/packaging technologies. These activities support the ultimate goal of real-time, continuous quality and process verification in pre-engineered, modular multi-product manufacturing facilities.

Biography

William G Whitford is Sr. Manager, Cell Culture, GE Healthcare in Logan, UT with over 20 years experience in biotechnology product and process development. He joined the company 12 years ago as a team leader in R&D developing products supporting biomass expansion, protein expression and virus secretion in mammalian and invertebrate cell lines. Products he has commercialized include, defined and animal product-free hybridoma media, fed-batch supplements, and aqueous lipid dispersions. An invited lecturer at international conferences, he has published over 250 articles, book chapters and patents in a number of fields in the bioproduction arena. He now enjoys such industry activities as serving on the editorial advisory board for BioProcess International.

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