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New directions in upstream biomanufacturing materials

New approaches in upstream bioproduction include applications of intensified biomanufacturing in both batch and continuous culture. Such high cell-density perfusion-supported formats can significantly change basic culture parameters resulting in altered culture media circuits as well as production-cell demands and performance. And, there are a number of distinct high cell-density, perfusion-based process and instrumentation styles available. Brand new manufacturing approaches including 3D bioprinting are creating entirely new demands for their inks, media and matrices. The advanced production platforms of multiply recombinant null CHO cells and new avian lines are requiring their own specialized SFM formulations. These, as well as such new therapeutic products as stem and CAR T-cell therapies all contribute to growing biologic, business and physicochemical demands upon culture media and buffers. Media development strategies must consider such new product and culture mode-unique demands upon primary metabolites and growth factors; media volumes, schedules and storage; materials cost and even definitions of quality attributes. Beyond this, heightened standards for raw and ancillary materials (including single-use product-contact plastics) in biomanufacturing are rising from a number of factors. These include improved assays and testing equipment; model risk-based approaches adapted from other fields and developing specifications from consortiums and standards-setting bodies.

Biography

W 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 13 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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