

Meeting the manufacturing challenge

The challenge of providing a contract manufacturing resource for new therapeutics is being met through attention to facility requirements and the processes, technical expertise and scale considerations required.

The broad array of new recombinant protein products, DNA plasmid products and DNA vaccines, as well as synthetic, small-molecule, peptide and combinational products, are all expected to be manufactured in facilities meeting stringent standards for quality and compliance. This diversity of product types and the wide range of specialised equipment and processing requirements have highlighted the fact that much of the available contract manufacturing capacity is aligned with traditional products and large-scale processes for the manufacture of recombinant proteins and monoclonal antibodies derived from mammalian cells.

Logically, the rigours of consistent processing within these sites for primary products exclude significant alteration of process unit operations. Yet, new therapeutic products, vaccines and traditional biological products entering clinical trials must also be manufactured in a manner that permits process development and an economical scale-up to commercially viable processes as they advance through clinical trials towards market introduction. Contract manufacturing facilities to support new therapeutics must, therefore, be capable of accommodating the specialised requirements of this product array while meeting the standards for compliance and process economy applicable to commercial products.

New manufacturing facility

Althea Technologies, a contract service organisation located in San Diego, California, USA, is meeting this challenge through a new manufacturing facility in the Sorrento Valley area, a major hub of the San Diego biotech industry. Design of the new 30,000ft² (2800m²) facility accommodates both the specialised processes required for recombinant proteins, DNA therapeutics and vaccines, as well as the formulation and final filling capabilities required for these product types. In addition to manufacturing operations, significant testing capabilities are required to support the quality control and analysis of these product types; the new site also provides for significant good laboratory practice (GLP) testing operations. Good manufacturing practice (GMP) operations were launched in July 2003. Following equipment and process validation, Althea began vial and syringe filling operations in the fourth quarter of 2003.

The facility includes dedicated GLP testing laboratories, fully compliant GMP plasmid DNA and protein manufacturing suites, and fully compliant aseptic vial and syringe filling suites. Within the facility, an area of 12,000ft² (1100m²) is devoted to the GMP manufacturing and fill/finish operations.

This area contains a dedicated cell-banking production suite, 30L and 100L fermentation and purification suites, dedicated fill-and-finish suites including fully automated and semi-automated vial and syringe filling, and a formulation suite.

The facility incorporates several important regulatory and safety requirements, including multiple air-handling systems and a water-for-injection water purification system. All facilities have been custom-designed for optimal material and personnel flow to minimise the risk of cross-contamination. Moreover, future capacity expansion has been anticipated and the production processes and unit operations employed are capable of supporting scale-up to commercially viable levels. The GLP testing area includes dedicated laboratories for the wide range of gene quantification and gene expression services, including separate laboratories for biodistribution studies, adventitious virus testing and integration studies.

While highly demanding, the challenge of providing a contract manufacturing resource for today's new therapeutics from Phase I to commercial production is being met through careful attention to facility requirements and the diverse processes, technical expertise and scale considerations these products require. ■



Althea began vial and syringe filling operations in the fourth quarter of 2003

COMPANY PROFILE

Althea Technologies Inc is a leading provider of contract services to the pharmaceutical and biotech industries.