

Series Editor: John M. Walker

Downstream Processing of Proteins

Methods and Protocols

Edited by

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In *Downstream Processing of Proteins: Methods and Protocols*, Mohamed A. Desai and a team of experienced biotechnologists review both conventional and novel isolation techniques used in industrial applications for the downstream processing of protein molecules. These techniques include primary and secondary separations during the isolation of biomolecules, as well as unique laboratory-scale research methods with a potential for scale-up. Also treated are the various strands of the downstream biological process essential for a successful product license application, including both the validation of DSP stages, and the design and validation of viral clearance stages during the purification process.

Downstream Processing of Proteins: Methods and Protocols provides scientists everywhere, but particularly in the biopharmaceutical and biotechnology industries, with a much-needed introduction to this critical technology. Every bioprocess scientist and engineer working to design and validate biological processes for novel proteins—and successfully apply for their new product licenses—will find this important book an eminently practical resource.

Features

- Provides a basic understanding of common downstream processing techniques
- Presents protein purification from an industrial perspective
- Explores the use and validation of DSP stages in a typical biopharmaceutical process
- Addresses the most common issues of process validation in industry

Contents

Downstream Processing in the Biotechnology Industry: *An Overview*. Microbial Cell Disruption by High-Pressure Homogenization. Protein Concentration and Buffer Exchange Using Ultrafiltration. High-Performance Tangential Flow Filtration for Protein Separations. Large-Scale Recovery of Protein Inclusion Bodies by Continuous Centrifugation. Application of Density Gradient Ultracentrifugation Using Zonal Rotors in the Large-Scale Purification of Biomolecules. Application of Chromatography in the Downstream Processing of Biomolecules. Affinity Ligand Technology: *Optimal Protein*

Separations for Downstream Processing. Immunoaffinity Adsorption in the Large-Scale Isolation of Biomolecules. Expanded Bed Adsorption in the Purification of Biomolecules. Application of HPLC in the Purification of Biomolecules. Countercurrent Chromatography of Proteins with Polymer Phase Systems. Practical Aspects and Applications of Radial Flow Chromatography. Sterile Filtration and Virus Filtration. Design and Interpretation of Viral Clearance Studies for Biopharmaceutical Products. Validation of Sterilizing Filters in the Biotechnology Industry. Index.

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