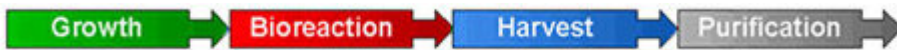


Sample Processes

This section introduces a number of processes used in industry and provides details of typical manufacturing routes.

At each stage the possible applications of single-use disposable technologies are highlighted. Where possible process flowsheets have been organised to highlight the different stages of the production. In addition to the typical growth, recovery, and purification stages additional reactions and biotransformations are illustrated in Red.



These three sample processes illustrate the utilisation of Sartorius Stedim Biotech technology within the biomanufacturing industry.

1 [Monoclonal Antibodies:](#)

The market for therapeutic proteins is growing exponentially every year, and contract manufacturers are using single-use disposable bag technology to meet the multiproduct demand.

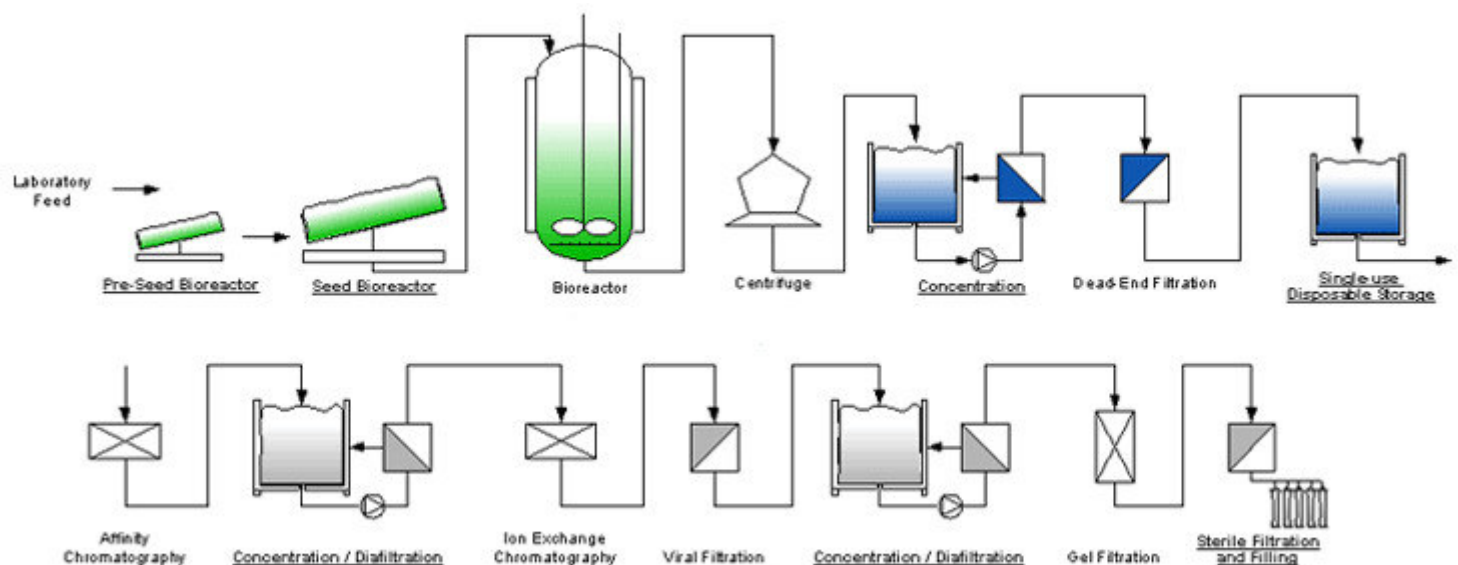
2 [Vaccines:](#)

New vaccine technology and established processes benefit from the application of single-use disposables which are particularly suited to this process scale. This example process for *Bordetella pertussis* vaccine requires fractionation and blending of many components.

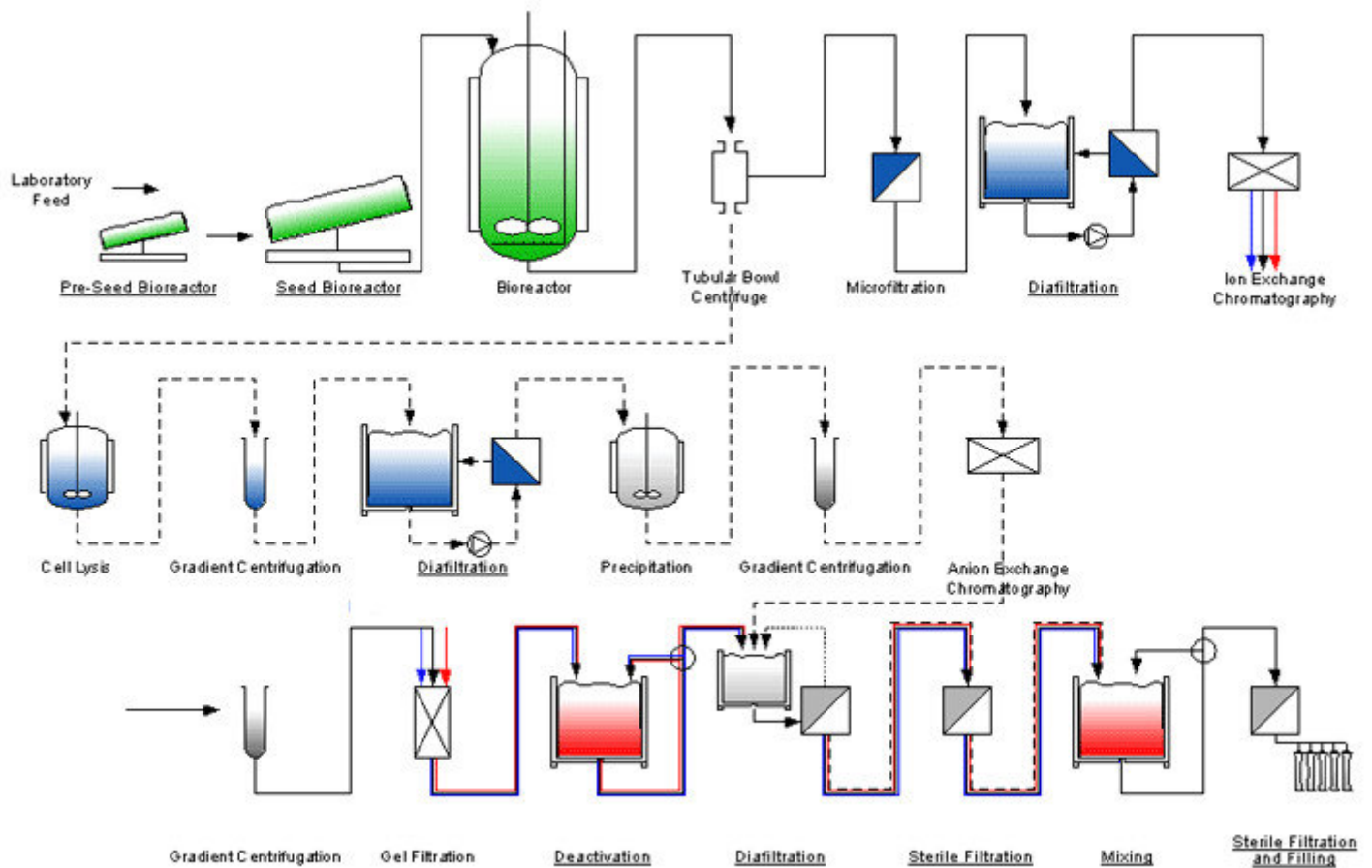
3 [Gene Therapy:](#)

Gene therapies have been under investigation for over a decade and the world is awaiting the release of the first commercial application. The multitude of new therapies in the clinic has provided a great demand for reduced manufacturing and product handling costs.

Monoclonal Antibodies Process Flowsheet



Bordetella Pertussis Vaccine Process Flowsheet



Gene Therapy Process Flowsheet

