FAQ

What is upstream processing?

Upstream processing typically refers to the production of biologics using bioprocesses such as large-scale cell culture or fermentation. Upstream processing begins with the preparation and inoculation of the smallest bioreactor in the seed train of bioreactors that eventually seed the final production bioreactor. For example, the first bioreactor in the seed train is typically in the 2 to 10-liter range, while the final production bioreactor is often in the 1000 to 4000-liter range. Each step in the seed train is typically a 4x to 5x scale-up. A 10-liter bioreactor may be used to seed a 50-liter bioreactor which, in turn, can seed a 250-liter bioreactor. The 250-liter bioreactor can then seed a 1000-liter bioreactor which, in turn, can seed a 4000-liter bioreactor. Typically, upstream processing includes the harvest of the final production vessel as well as the initial clarification of the harvested media that contains the desired biologic.

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Broadley James
Manufacturers of Sensors for Science and Industry

North America and Pacific
Email: sales@broadleyjames.com
Web: www.broadleyjames.com
19 Thomas, Irvine CA, 92618 USA
Phone: 949-829-5555
Tollfree: 800-288-2833
Fax: 949-829-5560

United Kingdom and EU Countries
Email: sales@broadleyjames.co.uk
Web: www.broadleyjames.com
Phone: +44 (0)1525 862518
Fax: +44 (0)1525 862811
Wrest Park, Silsoe Beds MK45 4HS, UK