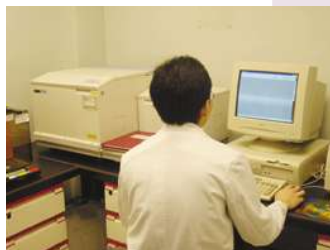




Fact Sheet (Biologics)

GMP Production Plant

Scale (Fermentation)	Process	Equipment
3 to 15-L	Fermentation / Cell Culture	<ol style="list-style-type: none"> 1. Bioengineering NLF Fermenters (max.working volume: 2 X 15-L) 2. NBS Bioflo 3000 Batch / Continuous Flow Bioreactor (max. working volume: 3.5-L / 10-L)
	Isolation & Extraction	<ol style="list-style-type: none"> 1. Microfluidics 110Y Microfluidizer 2. Du Pont Sorvall Super T21 Centrifuge 3. Millipore M12 Tangential Flow Filtration System
	Purification	<ol style="list-style-type: none"> 1. Amersham Biosciences ÄKTA[®]PLC Chromatography System
70 to 350-L	Fermentation	<ol style="list-style-type: none"> 1. B. Braun Biotech BioStat D100 Pilot Scale Fermenter (max. working volume: 100-L) 2. B. Braun Biotech BioStat D500 Production Scale Fermenter (max. working volume: 350-L)
	Isolation & Extraction	<ol style="list-style-type: none"> 1. Alfa Laval Sharples AS26SP Tubular Bowl Centrifuge 2. Millipore Proflux M60 Tangential Flow Filtration System
	Purification	<ol style="list-style-type: none"> 1. Amersham Biosciences BioPilot Pilot-Scale Chromatography System
	Supporting Equipment	<ol style="list-style-type: none"> 1. B. Braun Biotech Clean-in-Place 2. Getinge Clean-steam Autoclave 3. Kendro Heraeus Hot Air Sterilizer 4. DI / RO Water Supply System 5. Yellow Spring Instruments Biochemistry Analyzer 6. Thermo Electron Spectrotronic Genesys 5 Spectrophotometer 7. Nuair Class II Biological Safety Cabinet 8. Nuair Horizontal Laminar Flow Cabinet 9. B. Braun Biotech 300L Harvest Tank (temp control)



Process Development Laboratory

Scale (Fermentation)	Process	Equipment
1 to 10-L	Fermentation / Cell Culture	<ol style="list-style-type: none"> 1. B. Braun Biotech BioStat B Benchtop Fermenters (max. working volume: 3 X 2-L, 2 X 5-L, 1 X 10-L) 2. Bioengineering KLF Small Scale Fermenters (max. working volume: 3 X 1.5-L) 3. Thermo Forma Model 3961 Reach-in Environmental Chamber with Wheaton Scientific 4868 Roller Apparatus (for up to 35 X 850cm² cell culture)
	Isolation & Extraction	<ol style="list-style-type: none"> 1. Millipore Labscale TFF System with Pellicon XL Device 2. Beckman Coulter J2-21M Centrifuge 3. Sorvall Super T21 Benchtop Centrifuge 4. Sonics Vibra Cell Sonicator
	Purification	Amersham Biosciences ÄKTAexplorer Chromatography System
	Others	Labconco Freezezone 12 Lyophilizer

Quality Control Equipment

1. Waters Alliance 2690 HPLC with 996 Photodiode Array Detector and 474 Scanning Fluorescence Detector
2. Agilent Technologies 1100 HPLC System
3. Waters Pico Tag Amino Acid Analysis System
4. Applied Biosystems Procise 491 Protein Sequencing System
5. O-I-Analytical Total Organic Carbon Analyzer with Model 1051 Autosampler
6. Li-Cor Biosciences 4200 Automated DNA Sequencer
7. Perkin-Elmer Spectrum GX2000 FT-IR System
8. Molecular Devices Spectra Max GEMINI Fluorescence Microplate Reader

Class 10,000 Clean Rooms

1. Autoclaving suite
2. Media & buffer prep suite
3. Seed culture suite
4. Fermentation suite
5. Ultra-filtration suite
6. Purification suite