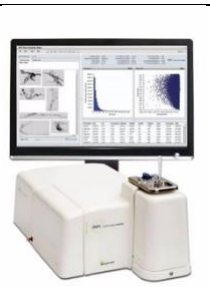
Available Specialized Equipment

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Equipment	Applications
Cell and Microbial Culture	
Bioreactor Minifors 2 (Cell culture and microorganism culture versions) INFORS HT	• Compact benchtop bioreactor enabling cell and microbial culture with simple and reproducible bioprocess control. • Development and optimization of biological processes. • Three vessel sizes available: • 1.5 L (0.3–1.0 L working volume, cell culture, n=2) • 3 L (0.6–2.0 L working volume, cell culture, n=2) • 6 L (1.1–4.0 L working volume, microorganisms, n=4) 
Multitron Incubator/ Shaker INFORS HT	• Incubator shaker equipped with all the functionalities required for microbial applications. • Features a programmable cooling system that can lower the temperature down to 4°C at the end of biomass production. • Adhesive mat system that eliminates the need for Erlenmeyer flask clamps, allowing for high-capacity operation (compatible with 5 L Erlenmeyer flasks). • Connected to a software platform that enables bioprocess planning, monitoring, control, and analysis. 
Homogenization & Cell Lysis	
EmulsiFlex-C3 and EmulsiFlex-C5 Avestin	• High-pressure homogenization equipment enabling cell lysis and particle size reduction for the production of biological and nanoparticle-based formulations. • Efficient and reproducible lysis of cells (bacteria, yeast, etc.). • Particle size reduction and homogenization.   • Production of liposomes, solid lipid nanoparticles (SLN), and emulsions. <u>Available accessories:</u>

	- Automatic pressure controller allowing stable pressure maintenance even when product properties change during the lysis process. - Heat exchanger coupled with a cooling system to control sample temperature during lysis.
Fisherbrand™ Bead Mill 24 Homogenizer Fisher Scientific	• Simultaneously homogenizes up to 24 samples using glass beads. • Sample types: yeast, cells, bacteria, spores. 
Purification & Filtration	
ÄKTA pure 25 Cytiva	• Chromatography system for protein purification and analysis. • System capacity: - Small-scale purification (**1–40 mL of resin**, used for training purposes) - 2 mm UV flow cell - 0.5 mm tubing - 4 buffer lines 
ÄKTA Avant 25 Cytiva	• Chromatography system for protein purification. • System capacity: - Medium-scale purification (40–800 mL of resin) - UV flow cell: 2 mm - Tubing: 0.5 mm - Buffer line : 14 

Tangential Flow Filtration System ÄKTA flux 6 Cytiva	• Semi-automated tangential/crossflow filtration system with an integrated computer for the concentration and diafiltration of various products (e.g., viruses, proteins, etc.) or for cell harvesting and clarification. • Multiple cartridge types available (1 kDa to 0.65 µm). • System capacity: • Reservoir volume: 8 L • Minimum volume: 108.5 mL • Hold-up volume: 78.5 mL • Feed flow rate: 100–6000 mL/min • Permeate flow rate: 20–1000 mL/min	
Tangential Flow Filtration System µPULSE Formulatrix	• Automated tangential flow filtration system for the concentration and diafiltration of various products (e.g., nanoparticles, proteins, etc.). • Requires disposable cartridges that can be used up to 6 times (5, 10, 30, 50, 100, and 300 kDa). • System capacity: • Reservoir volume: 100 mL • Minimum volume: 1 mL • Hold-up volume: 0.65 mL • Minimum final sample volume: 1.15 mL	
Tangential Flow Filtration System SARTOFLOW® Smart Sartorius	• Semi-automated tangential flow filtration system with an integrated computer for the concentration and diafiltration of various products (e.g., nanoparticles, proteins, RNA, etc.) or for cell harvesting and clarification. • Multiple cartridge types available (1 kDa to 0.45 µm). • System capacity: • Reservoir volume: 1 L • Minimum volume: 20 mL • Feed flow rate: 1 to 100 L/h	

Analytical & Physicochemical Characterization	
Zetasizer Ultra Red Malvern Panalytical	• Measurement of nanoparticle and colloid size (DLS – Dynamic Light Scattering). • Analysis of surface charge and particle stability (zeta potential via ELS). • Estimation of the molecular weight of particles in solution (SLS – Static Light Scattering).  <u>Available accessories:</u> - Capillary sizing cell. - Disposable cell offering high-performance non-destructive analysis with low sample volumes. - MPT-3 autotitrator enabling the study of pH change effects.
MFI 5200 Flow Microscope System Bio-techne	• Detects, quantifies, and differentiates particles present in samples with increased accuracy. • Generates high-resolution images of particles, allowing differentiation between protein aggregates and air bubbles. 
Endosafe nexgen-PTS™ Charles River	• Portable spectrophotometer using disposable cartridges for real-time and accurate testing of endotoxin levels, glucan concentration, and Gram identification. • FDA-approved cartridge available. 
ÄKTA pure 25 M1 Cytiva	• Chromatography system coupled with a Superdex™ 200 Increase column for the analysis and characterization of proteins, nanoparticles, and nucleic acids. Enables the assessment of sample size, aggregation state, purity, and homogeneity. • Applications: quality control, analytical characterization, and bioproduct development. • System capacity: • Analysis only, no purification • UV flow cell : 10 mm • Tubing: 0.25 mm • Buffer line : 4 

Portable 4-Channel Surface Plasmon Resonance (P4SPR) Affinité Instruments	• Real-time, label-free analysis of molecular interactions (e.g., protein-ligand interactions, etc.). • 4 independent channels. 
Immunological and Biological Analyses	
MESO® QuickPlex SQ 120MM Meso Scale Diagnostics (MSD)	• New molecular assay technology for biological samples, enabling the profiling of biomarkers such as cytokines and intracellular signaling proteins. • Ability to quantify multiple analytes simultaneously using minimal sample volumes. • Simplified workflow and high assay flexibility. • The combination of electrochemiluminescence and MULTI-ARRAY technology provides higher accuracy and sensitivity compared with similar technologies currently available on the market. 
Multimode Cell Imaging Reader – BioTek Cytation 7 Agilent (Bio Tek)	• Combines automated upright and inverted wide-field digital microscopy with conventional multimode microplate reading. • The inverted microscopy module enables sample visualization at magnifications ranging from 4X to 40X in fluorescence, brightfield, and color brightfield modes. • The upright microscopy module with reflected light imaging enables additional applications such as ELISpot analysis or rapid slide scanning. • Temperature, gas, and shaking control allow kinetic studies. 
CTL ImmunoSpot® S6 Ultimate M2 Analyzer CTL	• Multifunctional ELISpot/FluoroSpot analyzer that also enables other common laboratory assays, such as PBMC counting, cytotoxicity assays, neutralization assays, etc. 

Countess 3 Automated Cell Counter Invitrogen	• Automated Cell Counter and Viability Analyzer: Automated system for rapid cell counting and viability assessment. The instrument performs illumination, focusing, image acquisition, cell counting, and result recording in a fully automated workflow. • Specifications: - Disposable or reusable counting slides - Analysis time: < 30 s - Counting range: 1×10^4 to 1×10^7 cells/mL - Cell diameter range: 4 to 60 µm • Applications: Cell culture, quality control, and sample preparation.
Azure Cielo™ Real-Time PCR system Azure Biosystems	• Quantitative PCR technology based on fluorescence detection proportional to amplicon amplification. • The system uses simultaneous excitation and detection across 16 wells with uniform LED illumination to ensure reproducible and sensitive data acquisition. • Its advanced optical system captures a very high number of pixels per well, improving measurement accuracy and eliminating the need for normalization dyes. • Amplification results can be visualized individually by target or by sample. 
Seahorse Extracellular Flux Analyzer (XFe96 and HS Mini) Agilent Technologies	• Enables real-time measurement of living cell metabolism by simultaneously assessing mitochondrial respiration (oxygen consumption rate, OCR) and glycolysis (extracellular acidification rate, ECAR) within the same sample. • Analysis can be performed directly on living cells (adherent or suspension), isolated mitochondria, or three-dimensional models such as organoids without disturbing the culture medium or compromising cellular integrity. • The system features an automated injection platform with four ports per well, allowing sequential addition of chemical compounds, targeted inhibitors, or drug candidates during an experiment to monitor cellular responses in real time. • Two instruments are available: the XFe96 and the HS Mini. The XFe96 uses 96-well plates and is well suited for higher-throughput studies. The HS Mini offers greater sensitivity and requires fewer cells per assay but is limited to 8 wells (each with the same dimensions as a standard 96-well plate well).  

In Vivo Aerosol Exposure to Rodent Lungs	
Nose-Only Inhalation Tower System for mice DSI	• Enables controlled aerosol exposure to rodent lungs. • Accessories: • Nebulizer (Aerogen, 2.5–4 µm) • Nose-only plethysmograph enabling respiratory parameter measurements to calculate accumulated inhaled aerosol (AIA) and control compound deposition in the lungs for all subjects. 
Nose-Only System inExpose for mice SCIREQ Scientific Respiratory Equipment Inc.	• Enables controlled aerosol exposure to rodent lungs. • Accessories: • Ultrasonic nebulizers (Aeroneb, 2.5–4 µm) • Unrestrained plethysmography (whole-body chamber) enabling the measurement of respiratory parameters. 