



Advanced Therapy Bioreactor™

Overview

ABEC's novel Advanced Therapy Bioreactor (**ATB™**) brings unprecedented precision, scalability, and automation to cell therapy processing. Developers can utilize the same platform from initial research & development through clinical and commercial manufacturing, ensuring consistent, reproducible, and high-quality cell expansion. The **ATB™** reduced developmental cost and time to market, while enabling the production of life-saving Advanced Therapy Medicinal Products (ATMPs).

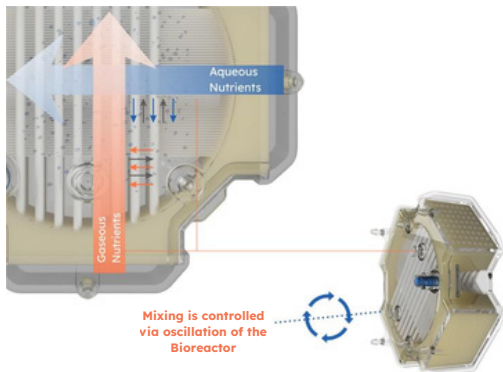
Full Process Closure and Turn-Key Automation

Closed and fully-automated processing reduces manual interventions and contamination risks

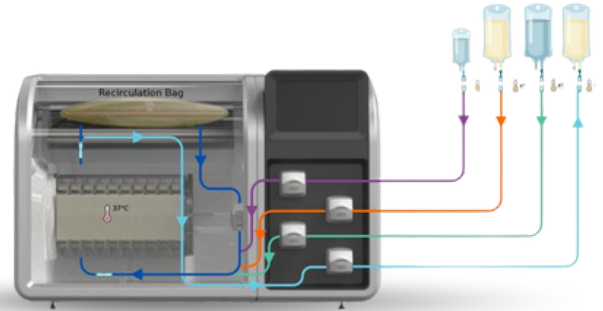
In process control allows for reliable, consistent, and **highly reproducible performance**

One platform from early-stage development through commercial manufacturing allowing for **seamless scalability**

cGMP and 21 CFR part 11 compliance



ABOVE: Bioreactor Consumable (BC) showing internal perfusion membranes allowing passive nutrient transfer



ABOVE: Environment & Process Controller (EPC) showing fluid flow paths

The Ideal Cell Expansion Environment

Hollow fiber membrane networks allows for **efficient oxygen and nutrient diffusion** creating a stable environment

Perfusion-ready system designed to support optimal cell growth and high cell densities

Oscillation-based mixing provides uniform, **low shear** environment suitable for **sensitive cell lines** (T-Cells, iPSCs, MSCs, NK, HEK293, etc..)

Bioreactors Designed for Scalability

Bioreactors designed to preserve **consistent cell culture conditions** from early-stage development through commercial manufacturing

Reduced COGs and Time to Market

All product contact components certified to USP Class VI and/or ISO 10093-5



ABOVE: Consistent ratio of perfusion membranes surface area to vessel creates seamless scalability



Specifications

Working Volumes	0.2L, 1.0 L, 5.0 L, and 10.0 L
DO Control	Via Air, O ₂ , and N ₂
pH Control	Acid: Via CO ₂ , Base: Via Addition Pump through membranes
Mixing	Via rotational oscillation of side-mounted Bioreactor
Mixing Oscillation Rate	0 - 30 RPM
Mixing Oscillation Travel	0 - 270°
Temperature Control	Ambient to 40 c°
Perfusion	Perfusion ready for 0 - 10 Vessel Volume per Day (VVD)
Liquid Flow (Peristaltic Pumps)	Media: 0.47 - 285mL/min Waste: 0.47 - 285mL Dosing: 0.14 - 84mL/min Base: 0.14 - 84mL/min
Gas Flow (MFCs)	Air: 0-2 L/min O ₂ : 0-2 L/min CO ₂ : 0 - 0.5 L/min N ₂ : 0-2 L/m
Process Sensors	Dissolved Oxygen (DO), pH, Total Cell Density, Temperature
End Connections	Sterile connectors or tube welding
Materials of Construction	All products contact materials are certified to USP Class VI and/or ISO 10993-5
Process Controller	Open architecture via Rockwell hardware and software Able to be integrated into building DCS
System Overall Dimensions	24" D x 40" W x 24" H
Electrical Requirements	100 to 240 V, 50 to 60 Hz