



REGEN-GEEK

# DASEA® Regenbio

## automated 3D cell culture bioreactor

Specifically Designed for Mammalian Cells



*Designed for BioProcess*

## ● INTRODUCTION

DASEA® Regenbio automated 3D cell culture bioreactor is an independently developed bioreactor, with Digitalized, Automated, Scalable, Enclosed, and Activated (DASEA®) features. It is equipped with a human-machine interface (HMI) ecosystem, enabling simplified and efficient operation. The bioreactor utilizes a medium to large scale PLC master control system for precise control and comprehensive functionality, supporting customization. The bioreactor ensures a safe cell culture process with its precise parameter control and powerful data management capabilities, is suitable for large-scale culture of MSC, T, CHO and other cells.

## ● ADVANTAGES



Gentle



Uniform



Steady



Automated



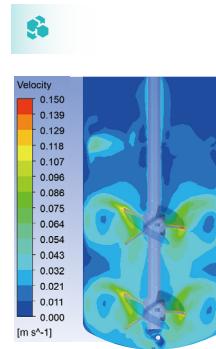
Elephant ear impeller  
Low shear force, low cell injury

$\approx 10 \text{ s}^{-1}$

Mean Shear Rate

$10^2 \text{ s}^{-1} - 10^3 \text{ s}^{-1}$

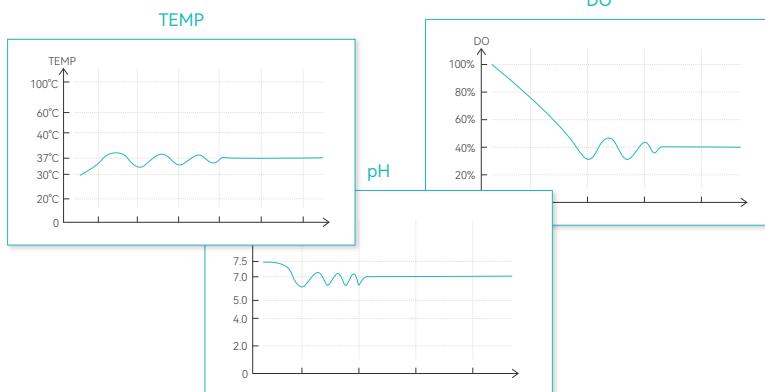
Maximum Shear Rate



Uniform flow field distribution  
No dead zone accumulation  
Efficient mass transfer

$10^{-3} - 10^{-2} \text{ m}^2/\text{s}^3$

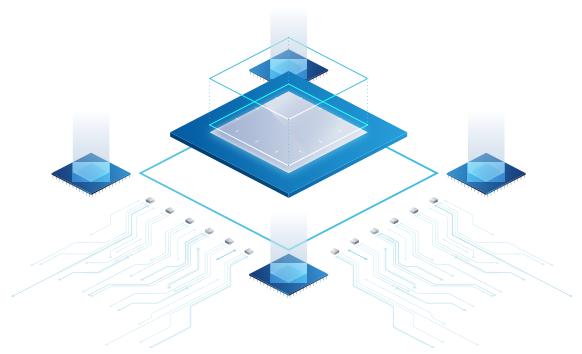
Turbulent Dissipation Rate



Precise PID control strategy ensures gentle fluctuations in temperature, pH, and DO, bringing the culture environment closer to a steady state.



Independently developed core control system ensures efficient linkage, precise control, and comprehensive functions, supporting customized needs for cell culture process.



## ● FEATURES



- **Elephant Ear Impeller:** Designed based on CFD fluid simulation, low shearing, low cell injury.
- **Gas Exchange Strategy:** Both surface and internal aeration, fulfill different process requirements.
- **Dedicated Micro Bubbles:** Micro bubble design to increase gas-liquid contact area for efficient mass transfer.
- **Forward and Reverse Stirring:** Meets the needs of various liquid mixing processes, adjustable forward and reverse switching speed and smoothness.
- **Magnetic Coupling Motor:** No mechanical sealing structure, good airtightness, safe and reliable.
- **Expandable Vessel Lid:** Supports customization to meet diverse customer needs.

• **Easy Calibration:** Supports calibration of temperature, pH, and DO sensors, and automatic recording.

• **Power Outage Protection:** Automatically restores data and resumes operation from pre-outage state.

• **Diverse Modes and Recipes:** Multiple modes and control through recipes to achieve varied process requirements.

• **Multi-Level Access Management:** Available to setup multiple level user access.

• **Audit Trail:** GMP compliance, ensuring data integrity and traceability.

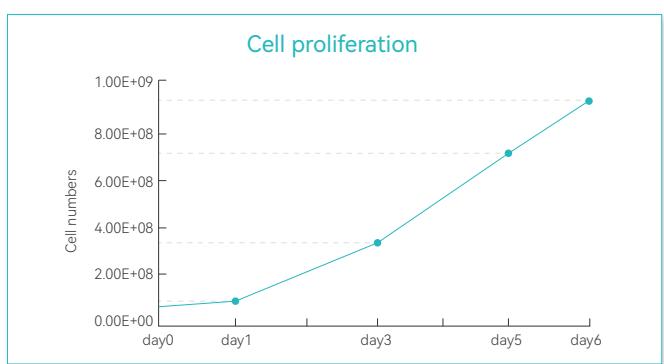
• **HMI:** Independently developed human-machine interface for easy operation.



## ● PERFORMANCE

**hUC-MSC Cell Culture Case Study:** For every 1L of culture medium, add 1-2g of microcarriers. Each gram of microcarriers can carry 200-300 million cells.

Results: After 6 days of culture, the expansion rate is > 10 times.



\*hUC-MSC Cell Culture in Serum-Free 3D Culture System

## ● SPECIFICATIONS



### Controller

| Item                    | Specification  |
|-------------------------|--|
| Dimensions (W × H × D): | 400mm * 862mm * 490mm  |
| Weight                  | ~44kg  |
| Control System          | RSSW-PC001V1.0   |
| HMI                     | 15-inch Color Touchscreen Display, 1024*768 Resolution   |
| Peristaltic Pump        | Speed Range: 0~200RPM; Flow Rate Range: 0.1~100mL/min  |
| Stirring Speed          | 0.4kW; 0~1500RPM; Accuracy: 1RPM   |
| Gas Mass Flow Meter     | 2L: O <sub>2</sub> : 0~40mL/min; CO <sub>2</sub> : 0~40mL/min;<br>N <sub>2</sub> : Optional; Air: 0~60mL/min<br>5/10L: O <sub>2</sub> : 0~60mL/min; CO <sub>2</sub> : 0~60mL/min;<br>N <sub>2</sub> : Optional; Air: 0~100mL/min |
| Heating Blanket         | 200W   |
| Temperature Sensor      | PT100, Range 0~150°C, Measurement Accuracy ±0.05°C,<br>Control Accuracy ±0.1°C   |
| DO                      | Range: 0~212%, Accuracy ±1%; Special Impedance VP<br>Interface, Anti-Interference  |
| pH                      | Range: 0~14, Accuracy ±0.01; Special Impedance VP<br>Interface, Anti-Interference  |



### Vessel

| Item                    | Specification   |
|-------------------------|---|
| Vessel Material         | Glass: Single-walled high borosilicate glass (HBG)<br>Stainless steel: 304 bracket, 316L top cover and fittings |
| Sterilization           | Autoclaved  |
| Overall Volume          | 3L、7L、13L   |
| Working Volume          | 2L、5L、10L   |
| Vessel Dimensions (Ø*H) | 2L-140mmx255mm, 5L-180mmx345mm,<br>10L-230mmx381mm  |
| Vessel Weight           | 2L: 13kg; 5L: 17Kg; 10L: 24kg   |



### Utilities

| Item                    | Specification  |
|-------------------------|--|
| Input Power             | 220V/50HZ  |
| Total Power Consumption | 1500W  |
| Gas                     | AIR, O <sub>2</sub> , CO <sub>2</sub> , N <sub>2</sub> |

## ● ORDER INFORMATION

| Product  | Specifications     | P/N         |
|--|--------------------|-------------|
| DASEA® Regenbio automated 3D cell culture bioreactor |                    |             |
| DASEA® Regenbio automated 3D cell culture bioreactor | Working volume 2L  | aBioR-02-CC |
| DASEA® Regenbio automated 3D cell culture bioreactor | Working volume 5L  | aBioR-05-CC |
| DASEA® Regenbio automated 3D cell culture bioreactor | Working volume 10L | aBioR-10-CC |

| Related Products                             | Specifications           | P/N      |
|--|--------------------------|----------|
| DASEA® Regencarrier® biomimetic microcarrier |                          |          |
| Biomimetic microcarrier                      | 100 mg/vial x 10 vials   | RC001LE  |
| Biomimetic microcarrier                      | 500mg/bottle x 1 bottles | RC002LE  |
| Biomimetic microcarrier                      | 1g/bottle x 4 bottles    | RC003LE  |
| Microcarrier lysis solution                  | 150mg/tube x 2 tubes     | MC001LS  |
| Microcarrier residue detection kit           | 50T/kit                  | MC001RDK |
| Microcarrier residue detection kit           | 100T/kit                 | MC002RDK |
| Lysis residue detection kit                  | 200T/kit                 | LS001RDK |

## Empowering the Cell Manufacturing with DASEA® Technology Make Regeneration Clinically Accessible and Affordable



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