eppendorf

Stimulating Growth. Cultivating Solutions.

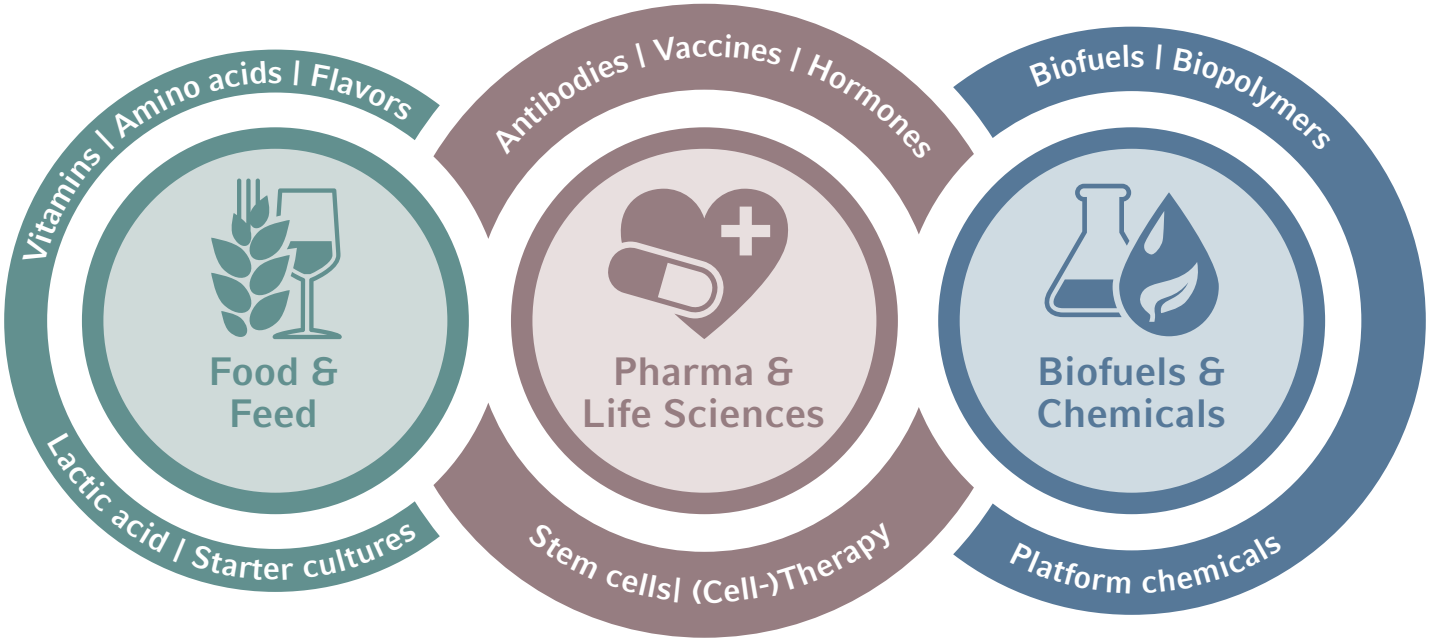
Fermentors and bioreactors for research through production

»Heal, Fuel, and Feed the World.«

Stephen Sherwin

Bioprocess engineers develop and produce a multitude of products and ingredients available today. Their applications are diverse, and the products can be found in pharmaceutical, chemical, and nutrition industries. As Stephen Sherwin, former chairman of BIO association put it aptly: "Heal, fuel, and feed the world".

Our Eppendorf bioprocess solutions are successfully used in these industries and in applied research for decades. By exploiting the strong synergies in bioreactor technology and polymer manufacturing, Eppendorf has emerged as a global player and valuable resource to its customers. With an integrated portfolio comprising software, instruments, consumables, and services, we can satisfy the demands of bioprocess development through production. In that way and in line with our corporate mission, we contribute to the efforts of Eppendorf customers worldwide to improve human living conditions.



Addressing Our Customers' Challenges

Single-use equipment, automation, perfusion culture, and other techniques have the potential to increase efficiency and change the way scientists and engineers work. Along with process intensification comes the need to utilize resources wisely. Users have to cope with rising amounts of data in order to achieve their goals faster. They are being assessed by process performance characteristics such as costs per run and turn-around times.

Eppendorf is the right partner to meet these challenges. Satisfying professionals with full solutions to their tasks is what our bioprocess specialists are focusing on day-to-day. Expert teams take care of our customers worldwide.

Process and Manufacturing
The biopharmaceutical landscape has long been dominated by the production of recombinant proteins and monoclonal antibodies (mABs). Nowadays, the industry is moving towards more diverse pipelines with a broader variety of biological active pharmaceutical ingredients (APIs), including biosimilars. Reacting to these rising demands, companies put flexible systems in place, optimized to balance costs and time-to-market.

Eppendorf offers flexible bioprocess solutions from a single source, supporting batch, fed-batch, continuous, and perfusion cultivation. From parallel small-scale bioreactor systems for early stage bioprocess development, benchtop bioreactors and fermentors for the laboratory scale to sterilize-in-place products for technology transfer and scale-up to production. They enable bioprocess professionals to establish robust and reproducible processes in all scales.

Control and Analytics
Monitoring and control is key in bioprocess development and ensures the process environment for optimum cell growth and high-titer production. Applying Process Analytical Technology (PAT) concepts provides real-time insights improving product quality. Predictive models of cell and process performance enhance process understanding and optimize control through forecasting and estimating optimum parameter settings. Statistical tools like Multivariate Data Analysis (MVA) help scientists to get the most out of their data.

Software solutions from Eppendorf make use of these techniques by providing more than just bioprocess control. Comprehensive data- and information management supports scientists in enhancing their development efforts.

Quality and Regulatory Aspects
The FDA's Quality by Design approach aims to design product quality and process efficiency into the process as early as possible. It includes the identification of critical process parameters (CPPs) and critical quality attributes (CQAs). These have to be monitored, controlled, and documented already early in biopharmaceutical development. Process automation opens up new possibilities in terms of quality control and validation, especially in GMP environments.

Eppendorf's parallel small-scale bioreactor systems support customers in implementing Quality by Design (QbD) principles in their development phase. For our customers working in production/manufacturing facilities, we can also offer software solutions that are 21 CFR part 11 compatible.

Integration and Services
Bioprocess equipment requires first-class service to achieve optimum results. Globalization, digital technologies, rising cost pressures, and the urge to be flexible in their operations make companies in the bioprocessing space face new challenges. They have to adapt their processes, facilities, and supply chains to these needs, establish global networks, and ensure high-quality training of all employees.

At Eppendorf, we offer broad expertise in automation and integration of third-party devices, making sure your systems run efficiently and are seamlessly integrated. Eppendorf customers can rely on high-quality technical and application support as well as comprehensive training and technical documentation.

Vaccines

Driven by epidemic events and by governmental vaccination programs, there is a rising demand for development of new vaccines and the industry is growing at a double-digit rate. Eppendorf bioprocess equipment helps companies in setting up flexible processes that help balancing costs and shortening time-to-market.

Learn more on www.eppendorf.com/vaccines

Antibodies/Hormones

Improved cultivation techniques such as perfusion and new possibilities in data handling and automation enhance development of antibodies, therapeutic proteins, and active ingredients.

See how Eppendorf can support you with these initiatives on www.eppendorf.com/antibodies

Besides standard impellers, Eppendorf offers specially designed impellers which can facilitate continuous and perfusion processes: Spin filters, Cell-Lift impellers, and packed-bed basket impellers.

Fibra-Cel® Disks are a solid support material for growth of adherent mammalian, animal, and insect cells, when secreted proteins are desired.

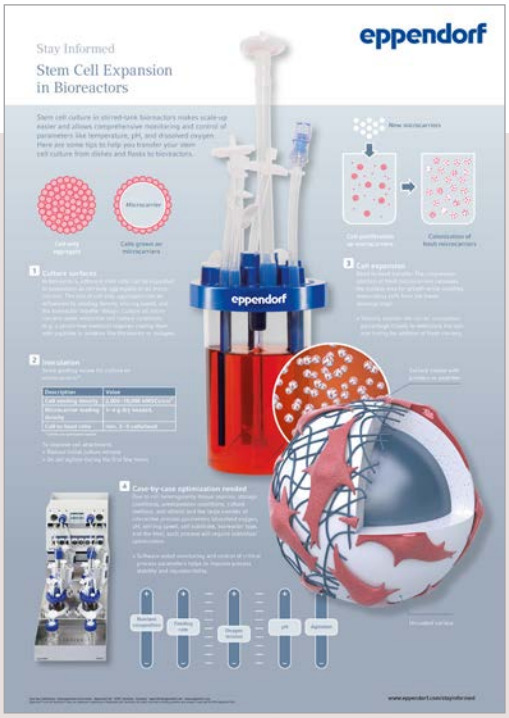
Key advantages:
> Cell densities averaging 10 times higher than traditional microcarriers, due to protection from shear forces
> Higher mass transfer of nutrients and oxygen
> Low pressure drop across the bed for efficient scale-up
> Higher surface-to-volume ratios

Download application note on Vero cell perfusion culture using Fibra-Cel: www.eppendorf.com/appnote359

Packed-bed impeller with Fibra-Cel

Stem Cells

Stem cell-based technologies are promising approaches for therapy and drug discovery. For commercialization, researchers are evaluating standardization of their cultures and efficient scale-up.
Eppendorf customers rely on our bioprocess solutions for controlled cultivation of induced pluripotent stem cells (iPSCs), mesenchymal stem cells (MSCs), and others.



Download PDF on stem cell expansion in bioreactors: www.eppendorf.com/stayinformed

Researchers at Ncardia®, Netherlands, rely on the DASbox® Mini Bioreactor System to develop a process for scaling up their production of iPSC-derived cardiovascular cells.

Find this and more research examples at www.eppendorf.com/stem-cell-bioprocessing

DASbox Mini Bioreactor System, page 12

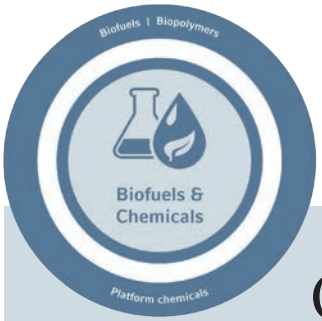
Do you want to know more about stem cell bioprocessing? Become part of the community and join our regular Stem Cell Community Day!

Food & Feed

Microorganisms are routinely used in the food and animal feed industries for processes such as alcohol fermentation, the acidification of dairy products or ensilage. Besides, bacteria and fungi are gaining popularity in the production of food additives such as vitamins, antioxidants or bioactive peptides.
Eppendorf fermentors are available in sizes ranging from 65 mL – 2,400 L and serve process engineers from research and process development through production:

> Strain and process characterization
> Scale-down
> High-cell-density fermentation
> Scale-up

Read how our customers at BIOMIN®, Evonik®, and others benefit from Eppendorf fermentation solutions:
www.eppendorf.com/food-feed



Chemicals

Chemical synthesis, with its use of partially toxic reagents and solvents as well as high energy consumption, is in direct conflict with the sustainable handling of energy and raw material resources. Meanwhile, a large variety of chemicals can be efficiently produced by microbial fermentation. They are used for example as building blocks for polymers, food supplements, and ingredients for cosmetics. Complex biopolymers have the potential to replace fossil-derived plastics in the future.

Academic Customers

No matter which area you are doing research in: We understand that universities and other publicly funded institutes are facing special challenges, such as frequently changing staff and often limited budgets. Also for these requirements, Eppendorf has the right solution.

The BioFlo® 120 Auto Culture modes allow 1-touch process control for microbial and cell culture applications and make the control station the perfect workhorse for beginners.

BioFlo 120, page 13

»The BioFlo range of fermentors enables unrivaled flexibility and performance for advanced process development and scale-up activities.«

Bruno Sommer Ferreira, PhD, CEO Biotrend.

BioFlo 610, page 14

Learn more:
www.eppendorf.com/chemicals

A New Scale of Bioprocessing

	DASbox® Mini Bioreactor System	DASGIP® Parallel Bioreactor Systems	SciVario® twin	BioFlo® 120
				
Working volume range	60 - 250 mL	0.2 - 1.8 L[1]	0.2 - 40 L[1]	0.25 - 40 L[1]
Single-use bioreactors available	•	•	•	•
Glass vessels, autoclavable	•	•	•	•
Stainless-steel vessels, SIP				
Interchangeable vessels	•	•	•	•
Bacteria/yeasts/fungi	•	•	•	•
Plant cells/algae	•	•	o[3]	•
Mammalian/animal cells	•	•	•	•
Stem cells	•	•	o[3]	•
Insect cells	•	•	o[3]	•
Number of parallel units	Up to 24	Up to 16	Up to 2	
Controller[2]	DASware control	DASware control	Touchscreen	Touchscreen
Touchscreen controller			•	•
BioCommand®				•
DASware® control	•	•	•	•
Gas mixing options	4 gas (air, N_2, O_2, CO_2)	4 gas (air, N_2, O_2, CO_2)	4 gas (air, N_2, O_2, CO_2)	4 gas (air, N_2, O_2, CO_2)
Gas flow control[2]	TMFC	R or TMFC	TMFC	R or TMFC
Exhaust analysis	•	•	•	•
Optical density measurement	•	•		•
Validation				

[1] Realized using multiple vessels
[2] Gas Flow Controllers: R=Rotameter, TMFC=Thermal Mass Flow Controller
[3] optional
[4] BioFlo® 510
[5] CelliGen 510

BioFlo® 320	BioFlo® 720	BioFlo® 510/ CelliGen 510	BioFlo® 610	BioFlo® Pro
				
0.25 - 40 L	10 - 250 L	10.75 - 32 L	16 - 100 L[1]	45 - 2,400 L[1]
•	•			
•				
		•	•	•
•	•			
•		• [4]	•	•
•	•	•	•	•
•	•	• [5]		
•	•	• [5]		
	•	•	•	•
Up to 8				
Touchscreen	Touchscreen	Touchscreen	Touchscreen	Touchscreen
•	•	•	•	•
•	•	•	•	•
•				
4 gas (air, N_2, O_2, CO_2)	4 gas (air, N_2, O_2, CO_2)	4 gas (air, N_2, O_2, CO_2)	2 gas (air, O_2)	2 gas (air, O_2)
TMFC	TMFC	TMFC	TMFC	TMFC
•	•	•	•	•
•				
•	•	•	•	•

scale — Pilot/production scale

Parallel Bioprocessing for Unparalleled Results: Small-Scale Systems

DASbox Mini Bioreactor System
60 – 250 mL working volume

DASGIP Parallel Bioreactor Systems
0.2 – 1.8 L working volume

> 4-fold parallel system extendable to up to 24 parallel operated glass or single-use bioreactors.
> Suitable for cell culture and microbial fermentation.
> Compact mini bioreactor system: requires only 7.5 cm (3 inches) bench space per bioreactor.
> Optimal tool for DoE and scale down approaches.
> Agitation control supporting overhead-driven Rushton, marine-type or pitched-blade impellers.
> Innovative liquid-free temperature control system needs no cooling agent supply and supports independent temperature control for each bioreactor.
> Accurate monitoring and control of pH, DO and level.
> Variable speed pumps for accurate liquid addition and operation in batch, fed-batch, continuous and cyclic perfusion mode.
> 4 mass flow controllers per bioreactor allow for individual mixing of air, N_2, O_2 and CO_2 to headspace and/or submerged.
> Novel liquid-free Peltier exhaust condenser with easy to handle slide in - slide out activation and deactivation.
> DASware control Software for advanced process control.
> Compatible with DASware Software Suite for interconnectivity and bioprocess information management.

> Parallel operation of up to 16 glass or single-use bioreactors.
> DASGIP Bioblock for advanced and user-friendly temperature control.
> Suitable for cell culture, microbial fermentation and phototrophic cultivation.
> Modular design of control units allows for flexible system configurations that meet the demands of specific applications.
> Control of agitation, pH, level and DO (including customizable cascade modes) in each bioreactor.
> Variable speed pumps for accurate liquid addition and operation in batch, fed-batch, continuous and cyclic perfusion mode.
> Optical absorbance measurement for online calculation of e.g. OD_{600} or cell dry weight.
> TMFC with individual gas mixing of air, N_2, O_2 and CO_2.
> Online calculation of OTR, CTR and RQ.
> DASware control Software for advanced process control.
> Compatible with DASware Software Suite for interconnectivity and bioprocess information management.

Exceedingly Versatile: Bench-Scale Fermentors and Bioreactors

BioFlo 120
0.4 - 10.5 L working volume (autoclavable)
0.25 - 40 L working volume (single-use)

> Updated flexible software platform for universal control of both microbial and cell culture applications
> New Auto Culture modes offer process control at the touch of a button.
> Compatible with BioBLU® Single-Use Bioreactors for fermentation and cell culture applications
> Precise temperature control provided through interchangeable heat-blanketed or water-jacketed vessels
> High precision thermal mass flow controller (TMFC) for automatic gas flow control
> Automatic gas mix for four independent sparge gas supplies
> Available analog input/output connection for direct integration of accessories (i.e. scales, variable-speed pumps, etc.)
> Integrated Mettler Toledo® Intelligent Sensor Management (ISM®) platform
> Integrated 7 in touchscreen for local process control
> Compatible with DASware Software Suite or BioCommand® for bioprocess information management

BioFlo 320
0.6 - 10.5 L working volume (autoclavable)
0.25 - 40 L working volume (single-use)

> Interchangeable autoclavable and BioBLU Single-Use Bioreactors
> Integrated Mettler Toledo Intelligent Sensor Management (ISM) platform
> Control up to eight systems from a single-user interface
> Universal control for both microbial and cell culture applications
> Field-upgradable TMFC drawers for sparge and overlay gas
> Enhanced software package with new cascade and time profile features
> Built-in optical pH sensing technology for use with the BioBLU Single-Use Bioreactors
> DeltaV® compatibility available through DeltaV Discovery and DeltaV ProPlus PAS
> Up to six integrated pumps capable of operating in variable speed mode
> Eight independently controlled process gas supplies
> Validation packages available for GMP regulated processes
> Compatible with DASware Software Suite or BioCommand for bioprocess information management

Industry Standards Meet Flexibility — Large-Scale Fermentors and Bioreactors

BioFlo 510 & CelliGen 510
Bench- and pilot-scale SIP fermentor and bioreactor
10.75 - 32 L working volume

> SIP bench and pilot scale reactors designed to meet the needs of R&D through production
> Modular design allows for complete system flexibility
> Add or remove components pre- or post-delivery
> Multiple impeller and gas flow options
> Integrated skid design with mobile table option to simplify transport
> Features intuitive RPC control software and touchscreen interface
> Integrated load cell for online vessel volume monitoring
> Fully automated SIP sequence for sterilization
> Flush mounted vessel ports for enhanced vessel design and drainability
> Validation packages available
> 7 additional analog input/output connections for local integration of ancillary equipment
> ASME®-rated pressure vessel

BioFlo 610
Pilot-scale SIP fermentor
16 - 100 L working volume

> Pilot production system without the traditional cost or footprint
> Modular design allows for complete system flexibility
> Add or remove components pre- or post-delivery
> Multiple impeller and gas flow options
> Integrated mobile skid simplifies transport
> Features intuitive RPC control software and touchscreen interface
> Integrated load cell for online vessel volume monitoring
> Fully automated SIP sequence for sterilization
> Flush mounted vessel ports for enhanced vessel design and drainability
> Validation packages available
> 7 additional analog input/output connections for local integration of ancillary equipment
> ASME-rated pressure vessel

BioFlo Pro
Large-scale SIP fermentor
45 - 2,400 L working volume

> Large scale industrial system supporting operation in accordance to cGMP and GAMP® guidelines
> Modular design with over a hundred options allows for high level of customization pre and post delivery
> Multiple impeller and gas flow options
> NEMA-4 (IP65) rated control cabinet with industry-standard Allen Bradley PLC
> Open piping skid allows for easy accessibility
> Fully automated SIP sequence for sterilization
> Clean-in-Place (CIP) options available for vessel and piping
> Flush mounted vessel ports for enhanced vessel design and drainability
> Validation packages available
> ASME-rated pressure vessel

BioFlo 720
Used with large-scale single-use bioreactors
10 - 250 L working volume

> Compatible with Thermo Scientific® HyPerforma® 5:1 bioreactors from 50 L to 2,000 L
> High performance mass flow controllers capable of up to 500:1 turn-down allowing multiple vessel sizes to be run from the same controller
> Suitable for analog and digital sensors (Mettler-Toledo ISM and Hamilton® ARC)
> Available with dual sparge, overlay and CO_2 stripping options
> Field-upgradeable options for future expansion of the system
> Documentation packages available to help qualify the system for use in cGMP environments*
> Intuitive software tools such as Auto Calibrate and Auto Inflate reduce preparation time, maximizing system efficiency
> Integrated Scale Up Assist software simplifies the workflow and calculations necessary to scale up and scale down
> Flexible choices for vessels and shrouds
> Mobile enclosure with a small footprint (0.7 m^2/7.55 sq ft) fitting through a standard lab door
> Watson-Marlow® peristaltic pumps for flow rates in a range of 1.2 mL/min - 3.3 L/min

** BioFlo 720 is not a medical device as defined by the Food and Drug Administration or other regulatory authorities.*

Discover Our Latest Additions to the Bioprocess Products Offering

SciVario twin bioprocess control station
0.2 – 40 L working volume

Bioprocess Autosampler
Compatible with DASbox Mini Bioreactor System and DASGIP Parallel Bioreactor System

> Bioprocess control station for the individual or parallel control of up to two glass or single-use bioreactors and fermentors.
> The base unit can run cell culture or microbial fermentation processes without changes of the hardware.
> The innovative bay-drawer system allows the flexible and individual adaption of standardized functional modules.
> Accurate control and monitoring of all critical process parameters like pH, DO, agitation, and temperature.
> Temperature control with the new improved temperature control block or with heating blanket and cooling fingers.
> Wide-range precise pumps for liquid addition from 0.005 – 600 mL/h and 4.5 – 5200 mL/h.
> Supports batch and fed-batch operations.
> Automated detection and recognition of plugged-in accessories.
> Individual TMFC control of gases (N_2, O_2, CO_2 and air) for submerged gassing.
> Compatible with DASware Software Suite for interconnectivity and bioprocess information management.

> Aseptic operation without the use of a laminar flow cabinet
> Compatible with differently-sized glass and BioBLU Single-Use Bioreactors with working volumes of 60 mL to 1.8 L
> Suitable for 1.5 mL and 10 mL sample vials, up to 648 samples can be stored
> Enables regular sampling 24/7
> Sample storage between 4 and 40 °C.
> Sanitation procedure using ethanol is similar to procedures, which are usually applied when sampling manually
> Low dead volume minimizes the reduction of culture volume
> Modular design that facilitates expansion of the number of bioreactors to be sampled and retrofitting of existing bioprocess systems
> Control of the Bioprocess Autosampler is integrated in DASware control bioprocess software

BioBLU® Single-Use Bioreactors: Dependability through Proven Design

Single-use simplicity
With renowned polymer expertise, Eppendorf is proud to offer the largest portfolio of rigid walled stirred-tank single-use bioreactors – in small and bench scale.

Benefits
> Proven performance and scalability of stirred-tank design
> User-friendly set-up for rapid turnaround, shorter development times and lower operating costs
> Specifically adapted designs available for cell culture and microbial applications

BioBLU c Single-Use Bioreactors for cell culture applications
Single-use solutions for small, bench and pilot-scale cell culture applications. A full portfolio of vessels covers a working volume range of 100 mL – 40 L, offering unmatched scalability. The single-layer polymer design mitigates issues related to leachables and extractables.

BioBLU 5p Single-Use Bioreactor with packed-bed
For the cultivation of adherent cells and for perfusion processes we offer the BioBLU 5p packed-bed bioreactor, pre-loaded with Fibra-Cel disks. It utilizes the proprietary Eppendorf packed-bed impeller design, providing a low-shear environment. It is a premium choice for stem cell culture applications and the production of secreted products.

BioBLU f Single-Use Bioreactors for microbial applications
Single-use solutions for small and bench scale fermentation applications, covering a working volume range of 65 mL – 3.75 L. Proven stirred-tank design, powerful overhead drives featuring Rushton-type impellers, and effective cooling make it possible to achieve the demands of fermentation processes on mass transfer and heat removal.

BioBLU 0.3sc Single-Use Bioreactor for stem cell applications
Single-use solutions for stem cell applications. An 8-blade impeller ensures ensures reduced cell settling and very goog mixing already at low agitation speeds to reduce the stress for your stem cells.

BioBLU Single-Use Bioreactor Adaptor Kits
BioBLU bioreactors are designed for the use with the DASbox and DASGIP systems, BioFlo 120, BioFlo 320, and SciVario twin. A range of adaptor kits is offered, enabling your existing bioreactor system for single-use operation without the expense of replacing the whole system.

Are you worried about leachables and extractables?
The release of chemical compounds into the culture medium is a major concern related to the use of single-use equipment. Standardized tests help investigating the effects of leachables and extractables (L&Es) on cell growth.

Download our application note on leachables studies:
www.eppendorf.com/appnote308

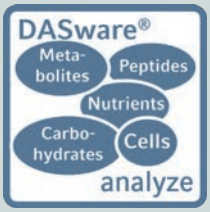
Eppendorf Bioprocess Software — Much More Than Just Bioprocess Control

Eppendorf offers BioCommand® and DASware® control Supervisory Control and Data Acquisition (SCADA) software packages for advanced bioprocess control. The comprehensive DASware software suite provides next-generation bioprocess management.

DASware software suite
Next-generation bioprocess management
A suite of smart and flexible software solutions to accelerate bioprocess development, with DASware control for parallel bioprocess control. The DASware licences enable interconnectivity of bioreactors with external lab-devices, comprehensive data- and information management, Design of Experiments (DoE) and remote control of bioprocesses. DASware can be used with any Eppendorf benchtop bioreactor solution.

DASware control
> Advanced process monitoring, control, and data logging - for parallel cultivation with individual control of each bioreactor

DASware design
> Applies the Design of Experiments (DoE) concept via a full factorial DoE builder or by importing DoE designs from third-party DoE tools



DASware analyze
> Seamless integration of external lab devices to the bioreactor allows for process automation and feedback control loops

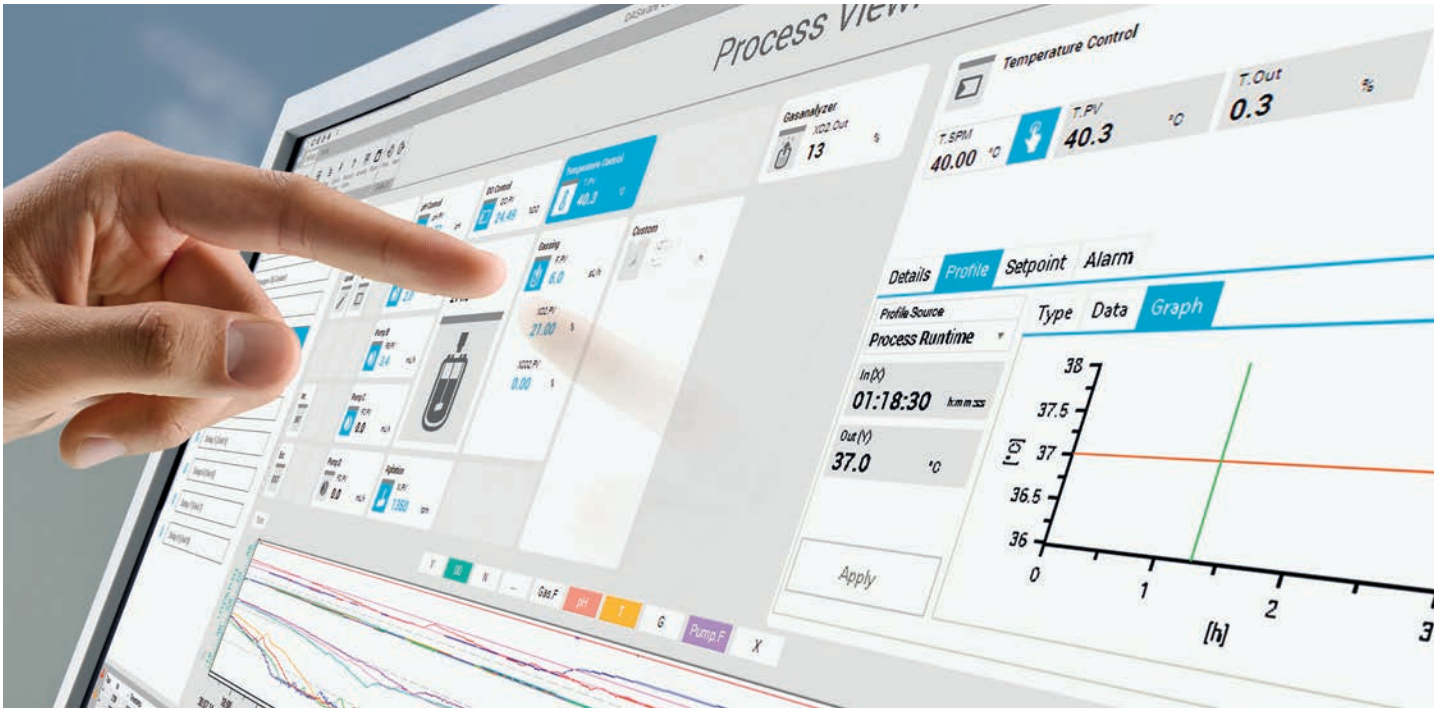
DASware connect
> Integration into process control systems and legacy corporate historians facilitating company-wide access to all relevant bioprocess data

BioCommand software

The BioCommand software enhances your ability to monitor, control and log data from your fermentation and cell culture processes. Three distinct packages provide the tools needed for research, optimization, and if needed, the security and audit trails to support your regulatory requirements.

> **Track and Trend**: Provides the ability to trend and control parameter setpoints, establish alarm settings, and produce batch records; and is ideal for basic process management
> **Batch Control**: Additional enhanced control features including a sophisticated programming module, custom synoptic display window, and equipment lock feature
> **Batch Control Plus**: Includes three levels of security, event logs, and audit-trail capabilities to be compatible with the FDA 21 CFR Part 11

Features	Track & Trend	Batch Control	Batch Control Plus	DASware control
Batch info	•	•	•	•
User-defined event log	•	•	•	•
Summary	•	•	•	•
Loop info	•	•	•	•
Alarms	•	•	•	•
Trend graphs	•	•	•	•
Data log	•	•	•	•
Reports	•	•	•	•
Graphical programming		•	•	
Script programming		•	•	•
Synoptic display		•	•	•
Equipment lock		•	•	•
Audit trail/security			•	•
21 CFR Part 11 compatibility			•	
OPC compliance	•	•	•	•
Parallel calibration				•
DASware compatibility				•



Services and Training — Ensure the Performance of Your Bioprocess System

With our services we complement our bioprocess portfolio with Technical and Application Support, Training, and Maintenance Services.

We are committed to providing sincere, reliable services and tools to help you maintain premium performance, and maximum safety of your Eppendorf instruments and your workflows. This includes a comprehensive range of carefully designed service solutions performed by our dedicated bioprocess service teams worldwide.

Bioprocess Performance Plans
Technologically demanding products require first-class service to ensure that the results they produce are optimized. Customers can rely on Eppendorf Service for superior support for their bioprocess products, beginning with startup of the system. The services range from technical support and troubleshooting to delivery of replacement parts on short notice and customer-specific maintenance programs.

Technical and Application Support
You can expect the highest standards of support for your products and applications from Eppendorf. Our team of specialists is pleased to help you with advice and assistance for all kinds of questions regarding our bioprocess products and their applications.

Preventive Maintenance
As with all complex technical systems, Eppendorf bioprocess equipment should be maintained regularly to keep all parts in good working order. This maintenance avoids cost-intensive down times and contributes to preservation of value. We recommend a complete preventive maintenance once a year. Additionally, we encourage users to execute certain maintenance actions prior to every run or in regular cycles (e.g. every month). We will be happy to advice.

Eppendorf Training Center
In addition to support during installation, we highly recommend training for all new bioprocess customers. In addition to this initial training, Eppendorf also offers individual training adapted to the user's requirements like training of new employees or advanced/refresher training for employees already having experience with the bioprocess systems in place. The structure and methods of the training can be tailored to the customer's requirements from a general overview to a very detailed session on specific products or issues. Training in small groups makes it possible to provide individual guidance.

The Eppendorf App

Searching for the right spare part?
Have a look at the Eppendorf App!

In the Eppendorf App, you find optimized product information tailored to mobile devices, as well as helpful tools for your daily laboratory work. We now extended the catalog functionality of the app, offering you a better overview of the components of your bioproess product. Like this, you will find your spare parts and accessories more easily. Lots of products can be found in that way already - and we will be expanding the app with more!

www.eppendorf.com/app

Eppendorf Handling Solutions

Liquid Handling
Cell Handling
Sample Handling

Liquid Handling

In 1961, Eppendorf launched the first piston-stroke pipette. Today, our broad product offerings in Liquid Handling range from manual pipettes to electronic pipettes, dispensers and burettes to automated pipetting systems.

Eppendorf products are associated with state-of-the-art technology, outstanding ergonomics and award-winning design. This applies to both devices and the requisite consumables such as pipette tips and Combitips®.

Easypet® 3

Pipette controller for use with serological pipettes from 0.1 – 100 mL for aspiration, resuspension and serial dispensing.

> Intuitive and convenient speed adjustment simply done with the tips of your fingers
> Lightweight, well-balanced and ergonomic design that allows for fatigue-free pipetting

Serological Pipets

Quality and convenience designed to work in perfect harmony with Easypet 3.

> Color-coded pipets with clear and precise graduations for easy volume determination
> Sterility assurance level of 10^{-6} and certified absence of detectable pyrogens, DNA, RNase and DNase, non-cytotoxic

Innova® S44i Incubator/Shaker

Stackable incubator shaker with high vessel capacity and for 24/7 operation.

> Ideal for reproducible shake flask-based inoculum preparation
> Reliable operation 24/7 with robust Eppendorf X-Drive

ep*Motion*® 5075m

The most flexible member of our family of automated liquid handling systems.

> Mixing, temperature control and magnetic bead separation abilities
> Optical sensor verifies labware, tips and volumes before the run

Multipette® E3/E3x

A motor driven dispensing system that utilizes the positive displacement principle and is capable of accurately pipetting any liquid.

> Eliminates time consuming volume calculations with auto Combitip recognition
> One-button tip ejector for one handed operation and contact-free advanced ejection

Cell Handling

Discover our comprehensive range of instruments and consumables for the manipulation, cultivation and analysis of cells. For handling cells, in addition to manipulators and

Are you a cell culture expert?

Free
videos, webinars, tips and tricks on
www.eppendorf.com/cellexperts

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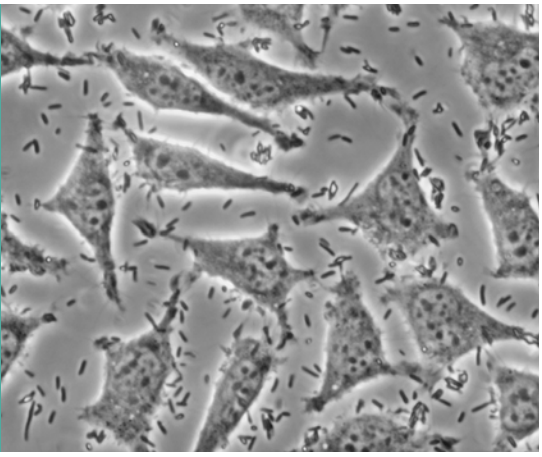

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