



On Target

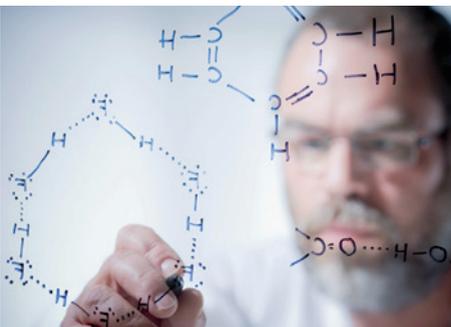
Well thought-out tools for pharmaceutical and biotech laboratories



» Research is what everybody has seen but nobody has thought.«

Albert Szent-Györgyi

Developing the cures and treatments for tomorrow's growing and ageing population requires hard work and new thinking—from target screening all the way to drug development and regulatory clearance. Getting from ideas to grown-up solutions requires determination, passion, and excellent tools. Eppendorf's tools for the laboratory have been among the finest and best for 70 years. Let us sort out the details of your daily lab challenges—so you have the peace of mind to focus on the medicine of tomorrow.



Drug target identification

Whether coming from global protein profiling, protein-protein interaction profiling or other sources, careful target selection is the first step to avoiding side-effects, increasing efficacy, and understanding the mode of action of drug candidates.



Pre-clinical phase

Creating chemical analogs, optimizing the binding affinities of new drug candidates from an often micromolar level to e.g. the nanomolar level, choosing compound clusters—all these measures have to be taken to develop the drug candidate to the next stage.



Clinical phase

Often, only 1 out of 1000 compounds screened reaches the clinical stage. Still, it is years away from approval and the market. Since several companies develop medication for the same disease in parallel, time is crucial.

Enhancing Global Health by Turning Research Into Innovative Treatments

Pharmaceutical R&D has dramatically improved our lives. Medical discoveries have increased life expectancy and resulted in a better quality of life for many. New drugs and medication have improved the treatment of devastating diseases like cancer and HIV/AIDS. Vaccines have enabled the global eradication of smallpox and the regional elimination of polio and measles. Currently, vaccines save the lives of over 2.5 million children each year.

Enabling all this is costly. The research-based pharmaceutical industry is estimated to spend nearly USD 130 billion globally on pharmaceutical R&D each year. Compared with other high-technology industries, this is outstanding (e.g. 5 times greater than in the aerospace and defence industries and 4.5 times more than in the chemicals industry). By investing a substantial amount of money and thousands of scientist-hours, pharmaceutical research pushes the limits of science and enhances global health and prosperity.

The most vital impulses for further innovation nowadays stem more and more from biological science and not from chemistry as it used to. Biosciences claim to *»heal, feed and fuel the world«*, and indeed: Harnessing nature's own toolbox, the biotechnological breakthroughs of the last 40 years enabled us to use bacteria and yeasts as nature's microscopic workhorses, leverage genetic markers and deploy a systematic use of enzyme-based production processes.

Researchers are capitalizing on genetic information to develop new cures for cancer, including therapeutic vaccines, and personalized medicine as a promising role model for the future. For example, genetic tests identify patients predisposed to developing various diseases and give them an opportunity to take preventive steps. Other biotech diagnostic tests look for specific genetic markers that determine whether a patient is likely to benefit from a certain treatment and what is the safest and most effective dosage.

Biopharmaceuticals, i.e. new biological entities with new mechanisms of action, presently are the segment of pharmacy that is growing exponentially. Several diseases, so far incurable, might become medicable as a result of successful research in the field of monoclonal antibodies (mAbs).

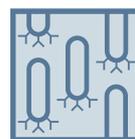
Eppendorf's products fit very well into this biological approach. We offer a variety of comprehensive and scalable hardware and software solutions for R&D, especially in the pre-clinical and clinical phase 1. Our technologically leading bioreactors and fermentors support the biological production of new drugs and biosimilars in pharmaceutical companies all over the world. Thus we, as well as the scientists in pharmaceutical R&D, contribute to improve the conditions of living for all mankind.



Antibody Production

(Mammalian cells)

Antibody library construction



Cell line development



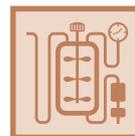
Medium optimization and feeding strategy



Process development and scale-up



Pilot and production





Centrifuges



Pipettes and tips



Thermocyclers



Photometers



Thermocyclers



Automation



Dishes, flasks and plates



CO₂ incubators



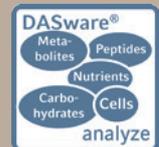
Mini bioreactor system



Photometers



Multi pumps



Analyzer integration



Mini bioreactor system



Bench-scale controller



Single-use bioreactors



Design of Experiments



Single-use bioreactors



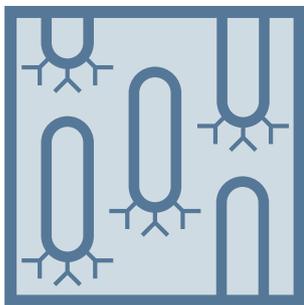
SIP bioreactors



Cuvettes



Photometers



Antibody Library Construction

Preparation of mRNA from mammalian cells can be performed using our centrifuges. Consumables with special purity grades guarantee highest safety for your samples. The Eppendorf Mastercycler® ensure fast PCR runs. For precise and accurate pipetting you can choose between manual pipettes or automated solutions.



Pipetting results are only as good as the pipette and the skills of the operator. Find practical pipetting instructions at: www.eppendorf.com/liquidguide



Centrifuges

- > Max. rotor capacity:
48×1.5/2.0 mL, 6×50 mL,
2×MTP
- > Max. speed: 30,130×g
(17,500 rpm)
- > Remarkable versatility with
12 different rotors
- > Soft-touch one-finger lid closure
for ergonomic operation
- > Menu-driven, multi lingual
operation menu (English,
German, French, Spanish)
with large backlit display



Pipettes and tips

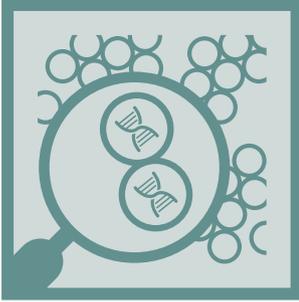
- Electronic pipettes**
- > Intuitive operating concept
for quick and easy work
 - > Fatigue-free pipetting
 - > Powerful rechargeable battery

- Pipette tips**
- > Contamination-free pipetting
with ep Dualfilter T.I.P.S.®
 - > Maximum reproducibility by
ultrahomogeneous surface
of epT.I.P.S.® LoRetention



Thermocyclers

- > Intuitive graphic programming
- > Small footprint
- > Universal block for ultimate
flexibility
- > Connect up to 2 Mastercycler
nexus eco to your existing unit
- > Available with gradient



Cell Line Development

Creating a stable cell line begins with expression vector construction and transfection. Choose from a broad range of thermocyclers to verify the construct and discover the convenience of automated pipetting using the *epMotion*®. To incubate the cells, different formats of cell culture consumables and incubators are available as well.



CO₂ incubators are designed and built with the security of your samples as a top priority. To give you peace of mind, features such as a Building Management System (BMS) relay and a seamless, easy to clean chamber come standard on all models.



Dishes, flasks and plates

- > Easy and fast well identification by contrast rich individual well ID and OptiTrack® alphanumeric labeling
- > Moat surrounding the outer wells to prevent the »edge effect« when filled with liquid
- > Chimney-well design to enable the filling of the inter well spaces of the complete plate to level out well-to-well temperature shifts outside the incubator



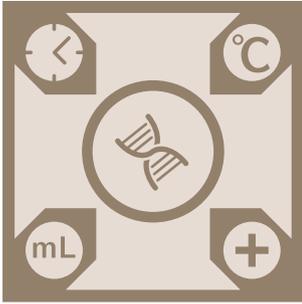
CO₂ incubators

- > Temperature range from 4 °C above ambient to 50 °C
- > Shaking speeds between 25 – 400 rpm, 25 – 300 rpm if stacked, provides versatility for culturing a wide range of cell types.
- > Large 35.6 x 61 cm (14 in x 24 in) platform accommodates flasks up to 4 liters providing flexibility with your cultures



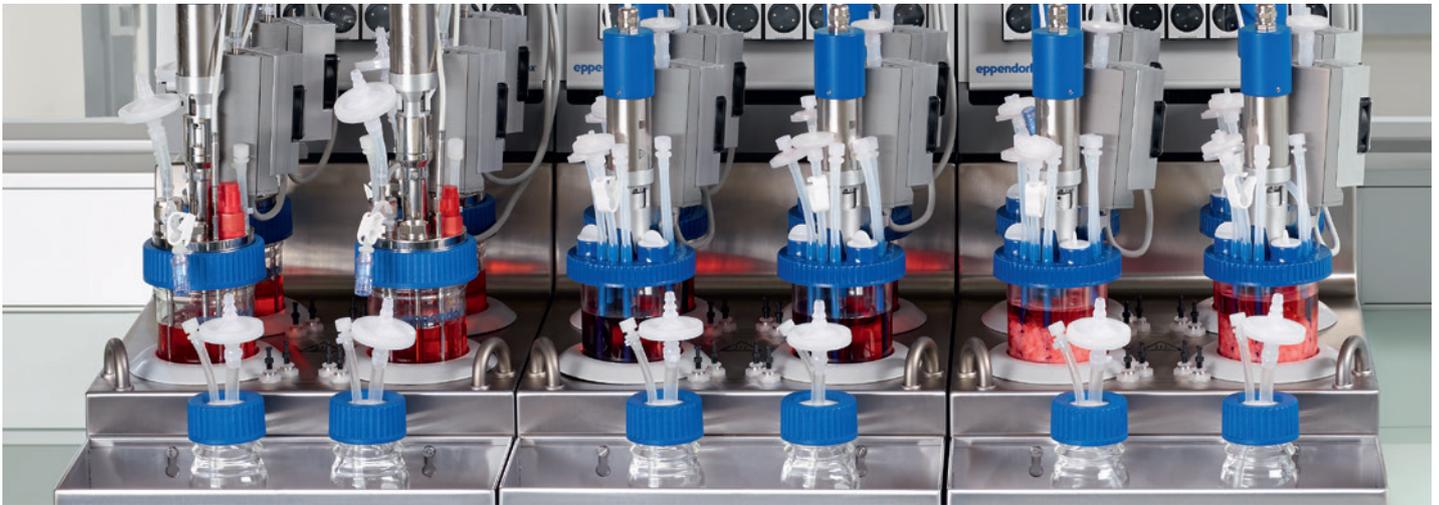
Automation

- > Combination of magnetic finger module and Eppendorf ThermoMixer®
- > Dedicated MagSep reagent kits for nucleic acid purification from 1–24 samples
- > 3 × Prep assistants for user guided automation of nucleic acid purification with MagSep kits
- > 4 × PCR assistants to streamline PCR set-up workflow



Medium Optimization and Feeding

Once the optimum cell line is identified the perfect growth conditions need to be evaluated, including medium composition and feeding. The parallel mini bioreactor system DASbox® is the perfect tool for medium optimization under closely monitored, production-like conditions.

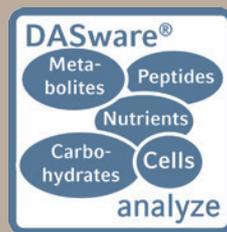


Compact design and advanced control options give you advantages in research and process development.



Mini bioreactor system

- > Parallel set-up of up to 24 bioreactors
- > Excellent scalability and reproducibility in both microbial and cell culture applications
- > Supports industry standard glass bioreactors (DASbox Mini Bioreactor) as well as BioBLU® 0.3 Single-Use Vessels
- > Small working volumes save on the amount of cell material, media and supplements required



Analyzer integration

- > Integration of third party lab devices into bioreactor control units
- > Enables bidirectional OPC interconnectivity, process-triggered feedback control loops, and sampling on demand
- > Allows for online calculations and event- or data-driven decisions



Photometers

- > UV/Vis spectral range 200 nm to 830 nm
- > Freely selectable wavelengths across the entire UV/Vis spectral range (increment: 1 nm)
- > Compatible with microliter measuring cells and standard cuvettes
- > Temperature controlled cuvette shaft in the Eppendorf BioSpectrometer® kinetic (20 °C to 42 °C in 0.1 °C increments)



Process Development and Scale-up

With our benchscale bioprocess solutions, control strategies for pH, DO, and temperature can easily be optimized. DASware® design enables Design of Experiments (DoE). BioBLU vessels combine the advantages of single-use technology with a traditional stirred-tank design and are easy to scale up.



Scalable control functionality enables reproducible results in a cost-effective manner and accelerates bioprocess development from the beginning.



Bench-scale controller

- > Universal control for both microbial and cell culture applications
- > Interchangeable autoclavable and BioBLU® single-use Vessels
- > Left- and right-handed orientations to maximize lab space efficiency



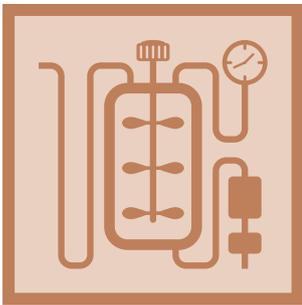
Single-use bioreactors

- > Available with our comprehensive portfolio of BioBLU® Single-use Vessels, including the BioBLU 5p, the first single-use vessel to utilize the exclusive packed-bed impeller
- > All BioBLU c vessel sizes available with pitched blade impellers for cell culture applications
- > BioBLU 5p vessels with packed-bed impeller, pre-loaded with Fibra-Cel® disks



Design of Experiments

- > Built-in full factorial DoE: easy definition of experimental factors and responses; center points and randomized positioning of runs
- > Integration of third party DoE tools like JMP® and others
- > Recipe generator supporting multiple system layouts



Pilot and Production

Once a stable process for antibody production is defined in the laboratory scale, the process is transferred to pilot scale to produce material for preclinical studies, and to larger scale for manufacturing. Eppendorf offers BioBLU Single-Use Vessels with working volumes up to 40 L and BioFlo® and CelliGen® stainless steel production-scale bioreactors.



With a wide range of working volumes from 60 mL to 2400 L we perfectly meet your demands in cell culture, phototrophic cultivation and microbial applications.



Single-use bioreactors

- > Available with our comprehensive portfolio of BioBLU Single-use Vessels, including the BioBLU 5p, the first single-use vessel to utilize the exclusive packed-bed impeller
- > Unique non-invasive pH and DO sensor technology drastically reduces contamination risks (industry standard autoclavable pH sensors available for pH measurement)



SIP bioreactors

- > Large scale industrial system
- > Sterilize-in-place technology
- > 32–520 L working volume
- > Modular design with several field-upgradeable options for easy customization
- > Multiple impeller and gas flow options



Photometers

- > UV/Vis spectral range 200 nm to 830 nm
- > Freely selectable wavelengths across the entire UV/Vis spectral range (increment: 1 nm)
- > Compatible with microliter measuring cells and standard cuvettes
- > Temperature controlled cuvette shaft in the Eppendorf BioSpectrometer kinetic (20 °C to 42 °C in 0.1 °C increments)

»One of our main challenges is to modelize the production processes at small scale to reduce the cost of the development.«

Simon Fradin

Généthon, Évry, France

Research and process development can feel like a long journey of ups and downs. Our DASbox Mini Bioreactor System can help streamlining process development through parallel processing. In a video, our customer Simon Fradin at Généthon explains how he uses the DASbox for small-scale modelling of their production processes. Généthon is a non-profit laboratory which is dedicated to research, development, and production of gene therapy products for rare diseases. Simon and his colleagues in the Bioprocess Development group design and optimize processes to produce viral vectors.



Scale-down model

»With the DASbox, we have the same yield and the same quality of the product as in our upper-scale bioreactors. These scale-down models help us to evaluate the impact of a parameter, to find optima, to benchmark compounds, and so anticipate what happens in the upper scale.«



Are you interested in learning more on the DASbox and its use at Généthon?
Please scan the QR code or visit our Eppendorf YouTube™ channel.

Biochemistry

Cultivation



Preparation and purification



Quantification and analysis



Storage





Shakers



Bioprocess systems



CO₂ Incubators



Dishes, flasks and plates



Conical tubes



Centrifuges



Pipettes and tips



LoRetention tips



Thermo mixing devices



LoBind consumables



Photometers



Cuvettes



Microvolume cuvette



Tubes and plates



Pipettes and tips



Freezers



Deepwell plates



LoBind consumables



Sealing options



Concentrator



Cultivation

The New Brunswick™ Shakers are robust and flexible shakers that provide very broad temperature capabilities for culturing a wide variety of organisms. With our comprehensive range of bioprocess solutions microorganisms can be cultivated under controlled conditions, e.g. using single-use vessels.



Slide-out platform mechanism — provides easy and effortless access to flasks located in the front and back of the shaker/incubator.



New Brunswick Galaxy® 170R

- > Fanless design: More space, less contamination
- > Three O₂ control options (0.1 – 19 %, 1 – 19 %) for hypoxic studies
- > Deep-drawn, easy-to-clean stainless steel chamber



Conical Tubes

- > Cap with flattened and grooved side
- > Safe labelling due to a large writing area
- > Each lot is checked and certified for quality and purity.



New Brunswick Innova® 44/44R

- > Stackable—up to three units for maximum space saving
- > Triple-eccentric counter-balanced drive in cast iron housing provides vibration and troublefree operation for years
- > Quiet operation provides a favorable work environment
- > Shaking speeds between 25 – 400 rpm (+/- 1 rpm)



Preparation and Purification

To prepare and purify your samples you can choose between automated or manual systems. Centrifuge your samples with up to 30,000 g and be more efficient while saving time. These options are completed with a broad range of consumables such as our LoRetention Tips.



Intuitive button positioning allows fast and precise operation of devices and helps even inexperienced users to handle devices safely.



Eppendorf ThermoMixer® C

- > Heating, mixing and cooling in all common vessel and plate formats from 5 µL to 50 mL
- > Reliable prevention of condensate formation with the new ThermoTop® (*condens.protect*®)
- > Simple and intuitive operation due to predefined program keys and clearly arranged menu guides



Eppendorf LoBind® consumables

- > LoBind material guarantees maximum sample recovery
- > Free of surface coating (e.g., silicone) to minimize the risk of sample interference
- > Lot-tested and certified free of DNA, DNase, RNase and PCR inhibitors (PCR clean)



LoRetention tips

- > Ultrahomogenous surface for maximum reproducibility
- > Ultrahydrophobic surface for minimal sample loss
- > Significantly reduced foam formation during pipetting



Quantification and Analysis

With the Eppendorf Detection equipment protein quantification, kinetic studies, ELISA or fluorescence detection can be performed. Choose between cuvette based measurements or preparations in a plate. A variety of accessories and consumables expands the options even further.



Every bit of your sample is valuable. Make sure you know the concentrations of your molecules to get the most out of your sample.



Eppendorf BioSpectrometer®

- > UV/Vis spectral range 200 nm to 830 nm
- > Freely selectable wavelengths across the UV/Vis spectral range
- > Compatible with microliter measuring cells and standard cuvettes
- > Temperature controlled cuvette shaft in the Eppendorf BioSpectrometer kinetic



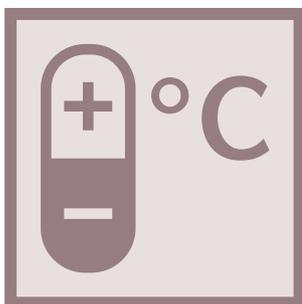
Microvolume cuvette

- > Microvolume measuring cell for measuring 1.5–10 µL sample volumes
- > Low self-absorption ($\leq 0.05 A @ 260 \text{ nm}$)
- > Simple cleaning to minimize the risk of sample carry-over



Cuvettes

- > Suitable for measuring small volumes ($\geq 50 \mu\text{L}$)
- > UV and Vis-transparent between 220 nm and 1,600 nm
- > Two built-in optical path lengths in a single cuvette-just turn the UVette® 90° to change from 10 mm and 2 mm



Storage

The New Brunswick freezers meet the highest standards for quality in regard to performance, sample security, and convenience. To concentrate your samples prior to the storage, the Concentrator plus is available as well as our LoBind Tubes and Plates to safely store your valuable sample.



Preserve outstanding sample quality while minimizing energy consumption.



CryoCube® Upright Freezer

- > Premium seals for optimal uniformity
- > New automatic vent port on front door improves energy consumption and uniformity while providing easier access inside
- > Magnetic closures on inner doors provide easier access
- > New high-efficiency fan, compressor, and condenser



LoBind consumables

- > LoBind material guarantees maximum sample recovery for improved assay results
- > Free of surface coating (e.g., silicone) to minimize the risk of sample interference
- > Lot-tested and certified free of DNA, DNase, RNase and PCR inhibitors (PCR clean)



Concentrator

- > Comes in 3 system configurations
- > Extremely quiet operation <50 dB(A)
- > Chemical-resistant, maintenance-free PTFE diaphragm pump eliminates the need for changing up pump oil



In quickly changing environments like science, training is the key to longterm success. New technologies, new methods, new ways to work—staying on top of the latest developments need trusted partners whos understands your daily routine.

Eppendorf Training Center (since 1997)

Optimally serviced premium products alone do not provide for reliable results. The operator's experience is just as important. With the innovative Eppendorf Training Center, we extend your knowledge and, thus, assure your professional future. In the easy-to-understand and active environment of our practice-oriented seminars, you will learn the operation of our devices,

understand specific workflows and receive important hints to run applications in your lab properly. Our experienced application specialists will support you in small groups. Learn something new or brush up your knowledge. Certificates for successful participation will be provided.

$$E_{\lambda} = \lg \left(\frac{I_0}{I_1} \right) = \epsilon_{\lambda} \cdot c \cdot d$$

>15

Years of Training

99.9

percent of deliveries are correct*

100

service offerings

Logistics

Especially labs with high throughput need on-time delivery. This is even more important for high-running consumables. Our logistics experts are very successful in getting the right products to you on time—no matter where you are. Various logistic hubs and warehouses allow us to manage incoming orders efficiently—so you get your order as fast as possible.

epServices

Eppendorf has more than 100 globally standardized service products. From pipette calibration to preventive maintenance and our Rotor Assurance Program, we can help you to make sure our products work in pristine conditions in your labs.

From a Quick Check to a Premium Performance Plan package—you can choose from different levels of maintenance and service according to your needs. Just let us know how we can help you and enter a world of possibilities.

*Deliveries out of Eppendorf's central warehouse in Hamburg, Germany. »Correct« means that the shipment contains the correct amount of all ordered products and is shipped to the correct address.

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