

POLBIONICA

THE FUTURE BELONGS TO BIOMATERIALS



Bioreactor 3D ResearchLine[®] Flow & Culture

Wondering how to **properly take care** of a tissue or bionic model after 3D printing? We have the **perfect solution** for you!

The perfusion bioreactor is a the perfect device for convenient preparation, continuous culturing, incubation (in flow) of the 3D bioprinted:

- tissue models
- bionic constructs (organs)
- under *in vitro* conditions.

The device significantly facilitates carrying out a broad range of studies assessing the functionality and viability of cells in 3D bioprinted bionic models. Submission of the bionic construct into the well-established bioreactor perfusion system provides circumstances for real-time tracking of desired reaction to both preset physicochemical and biological parameters. Applicability range encompasses the effect assessment of active substances added to the cell medium, for example API or any other potentially bioactive compounds. As a autoregulated measuring system the bioreactor paves the way for standardised and reproducible culture processes.

The unit is equipped with automatically or manually controlled peristaltic pumps. This allows for appropriate dosing of substances, sampling and exchange of the culture medium. Set-up and measurement parameters are displayed on the operator

panel and recorded in the unit's memory.
Experimental data can be transferred by the user to an external USB memory stick.
The Bioreactor 3D Researchline[®]
Flow & Culture controls the following parameters: chamber temperature, perfusion fluid temperature, perfusion speed, perfusion pressure, concentration of supplied CO2 gas in the chamber.
The device allows sterile conditions to be

maintained. The chamber and tubing system is a separately supplied disposable kit.

The Bioreactor 3D Researchline[®] Flow & Culture is designed and manufactured by Polbionica. It is designed for scientific research work.



we implement

ISO 13485 Medical Devices, QMS

KEY FEATURES OF THE BIOREACTOR 3D RESEARCHLINE[®] FLOW & CULTURE:

- temperature control in the range of 10-40°C such a range allows working with cell lines, spheroids, organoids and microorganisms such as pancreatic islets. The ability to control and change temperature conditions allows constructs to be maintained at a high level of viability and metabolic changes to be analysed, thanks to the reduced temperature and slowing down of metabolic pathways,
- 2. control of gas concentration CO2 concentration at a constant and controlled level is key to maintaining proper functionality and cell viability in bioprinted bionic constructs. Thanks to the solution used, the user has constant access to the results of the CO2 concentration measurement and is therefore able to continuously control this culture parameter,
- **3.** the device has an **automatic cell medium exchange system**. This significantly reduces the possibility of contamination of tissue models and organs inside the chamber,
- 4. in addition, a system of specially designed connectors allows samples to be taken in a non-invasive way for the models / constructs inside the chamber. This allows the user to sample and supplement the cell medium without having to pull out the chamber and disturb the constructs,
- 5. pressure control the designed system ensures that the medium flows freely through the bionic constructs / organs. The pressure control option allows the user to continuously monitor the condition of the model and also protects the organ / model from mechanical damage caused, for example, by too rapid flow throughout the system,
- **6. chamber** the bioreactor is equipped with 2 types of chambers:
 - a chamber for testing the cytotoxicity and activity of biologically active molecules, chemicals. The designed chamber allows 3 tissue models to be tested in parallel
 - for the culture and incubation of bionic organs. Special pads inside the chamber ensure the stability of the organ, allowing biological and strength testing.



TECHNICAL PARAMETERS

Supply voltage: 100-240 VAC, 50-60 Hz

Power input: <190 W

Length: 709 mm (27.91 in)

Width: 496 mm (19.53 in)

Height: 338 mm (13.31 in)

Net weight: 22.5 kg

Heating block temperature range: 10-40°C

Number of pumps: 3

Connectivity: USB memory stick for data export, LAN service connector

Gas input (connection): Pneumatic quick coupling Ø4mm, CO2 mixture only, use via regulator with rotameter, maximum pressure 2.0 bar

www.polbionica.com E:/ shop@polbionica.com T:/ +48 780 117 013 al. Prymasa Tysiąclecia 79A PL 01-242 Warszawa