

Pythia Perfusion Hub

Six-Channel Perfusion Platform for Organ-on-a-Chip Culture

The Pythia Perfusion Hub is a compact, six-channel perfusion platform built for translational and preclinical labs that need parallel organ-on-a-chip culture without dedicated infrastructure. A single peristaltic pump drives six physically separated fluid streams in a closed loop, and the whole unit runs inside a standard CO₂ incubator. Standard chip holders fit the Pythia TME-Chip; chip holders and platform size can be customized for other microfluidic devices.

6 independent flow paths / 12 chips per incubator shelf / customizable chip holders



Perfusion Hub with TME-Chip holders and medium reservoirs installed; Controller, reservoirs, and tubing sold separately

Key capabilities

Six independent flow paths. Up to six chips run at the same time, each on a physically separate fluid path with no shared manifold, minimizing cross-contamination between chips.

Single-rotor pumping. One peristaltic rotor drives all six tubes, so every chip is perfused under the same flow conditions.

Easy setup. Reservoirs and tubing sit in fixed positions and chips drop into their holders, with no manifold to assemble, so runs are quick to set up and reproduce.

Customizable format. Standard chip holders fit the Pythia TME-Chip. Chip holders and platform size can be made to fit other organ-on-a-chip and microfluidic devices.

Non-contact fluid handling. Medium stays inside the tubing and never touches the pump, reducing contamination risk and simplifying maintenance.

Designed for the incubator. Runs inside a standard humidified CO₂ incubator. Two Hubs fit side by side on one shelf, giving 12 independently perfused chips per shelf without a dedicated enclosure.

Applications

Long-term perfusion culture • Parallel drug-response studies • Third-party organ-on-a-chip devices

Recommended flow rates

Operating step	Flow rate	Purpose
Priming	5 - 100 μ L/min	Fill tubing and chip channels before culture
Bubble removal	300 μ L/min	Clear trapped air from the fluid path
Perfusion culture	1 - 5 μ L/min	Continuous medium or compound delivery during culture

The Pythia MPS

The Pythia microphysiological system (MPS) has three components: the Perfusion Controller programs perfusion protocols, the Perfusion Hub perfuses up to six chips in parallel, and the TME-Chip hosts the 3D tumor model.



01 Perfusion Controller

Programs flow rate and perfusion protocols



02 Perfusion Hub

Runs up to six chips in parallel



03 TME-Chip

Hosts the 3D tumor microenvironment

Technical specifications

Parameter	Specification
Product configuration	Six-channel perfusion platform with integrated pump and chip holders
Chip capacity	Up to 6 chips, each on an independent fluid path
Chip holders	Standard: Pythia TME-Chip; custom: made to fit other devices (PI200-C)
Platform dimensions	29 × 17.5 × 1.8 cm (L × W × H) standard; custom sizes on request
Weight	770 g without chip holders; 897 g with six chip holders
Pump	Peristaltic; single rotor driving six tubes
Pump flow rate range	0.1 - 380 μ L/min per tube
Recommended culture flow rate	1 - 5 μ L/min
Medium reservoirs and tubing	5 mL COC reservoir and tubing, one per channel; consumable (PA100)
Compatible system	Perfusion Controller (PI100); TME-Chip (PO130, PO131) or custom-fit devices
Operating environment	Standard humidified CO ₂ incubator (37 °C, 5% CO ₂); two Hubs per shelf
Storage	Room temperature, dry environment

Flow performance depends on tubing, fluid properties, and system resistance.

Ordering information

Catalog No.	Product	Description
PI200	Pythia Perfusion Hub	Six-channel platform with pump and six chip holders; 1 unit
PI200-C	Perfusion Hub, custom	Holders and/or platform size made to fit your device; on quotation
PA100	Reservoir and tubing set	5 mL COC medium reservoir and pump tubing; consumable
PI100	Pythia Perfusion Controller	Programmable touchscreen controller; 1 unit
PO130	TME-Chip, 1 mm glass	Standard imaging (10× - 20×); 6 chips per box, sterile
PO131	TME-Chip, 0.17 mm glass	High-resolution imaging (40× - 60×); 6 chips per box, sterile

For custom configurations, send a drawing or sample of your chip for a quotation. Use one holder type per Hub; mixing holder types is not recommended.

Intended use

For Research Use Only (RUO). Not for use in diagnostic or therapeutic procedures. The Pythia Perfusion Hub is intended for parallel perfusion of microfluidic 3D cell-culture and organ-on-a-chip devices.

Contact and support

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