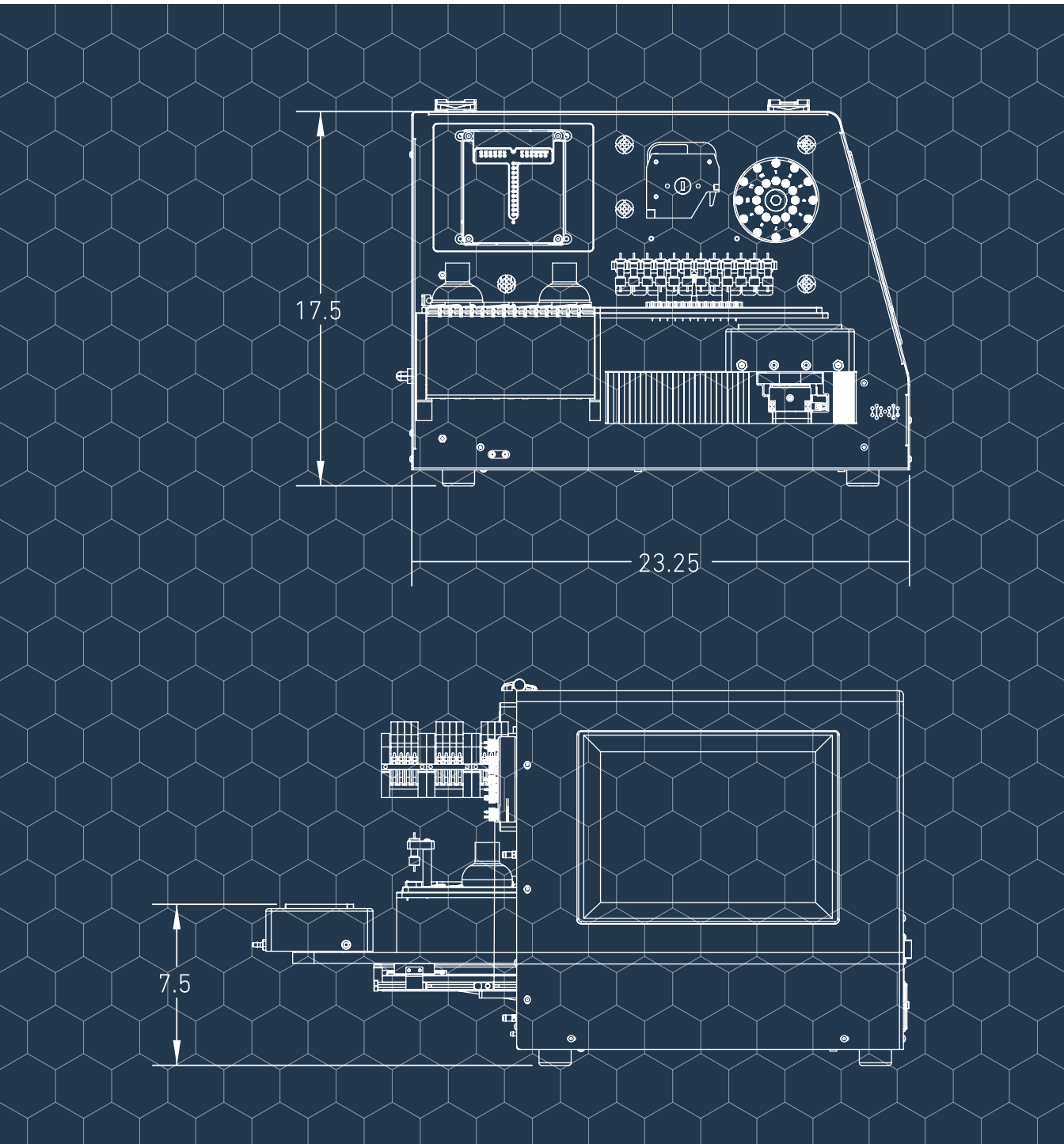
BIOREP®
DIABETES

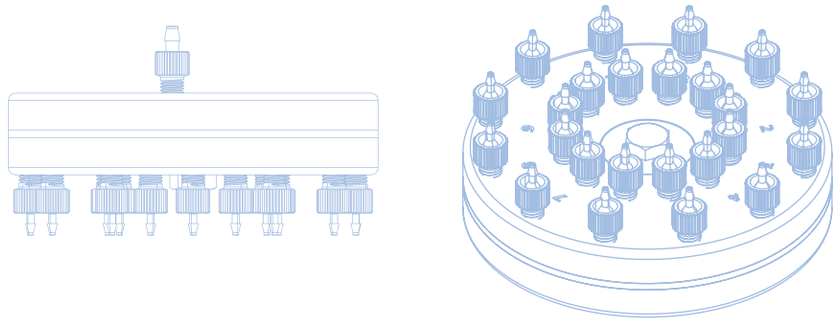
PERIFUSION SYSTEM v5

A NEW MILESTONE TO STUDY CELL SECRETIONS

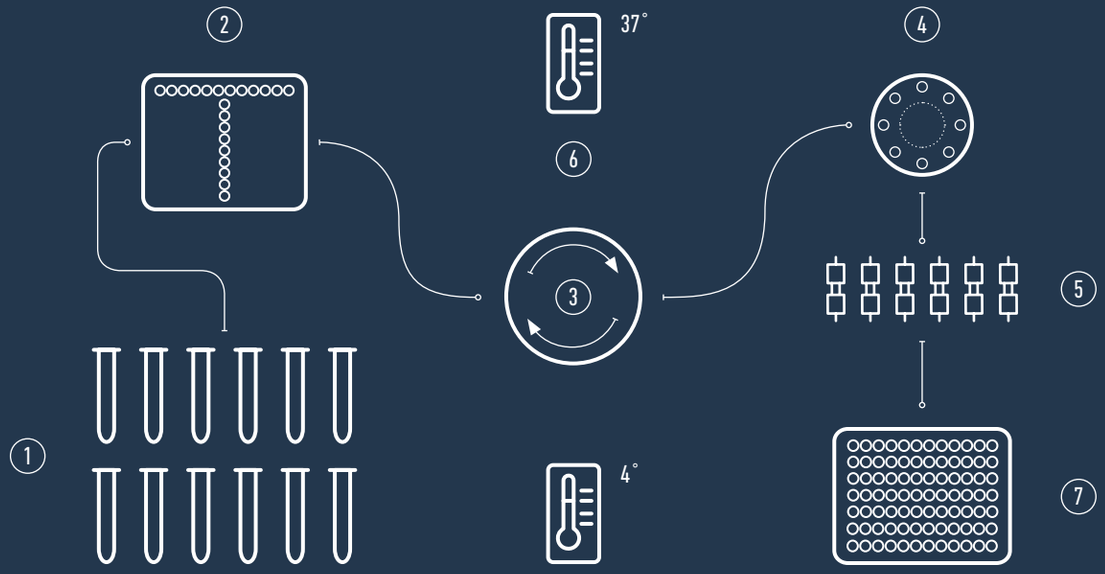


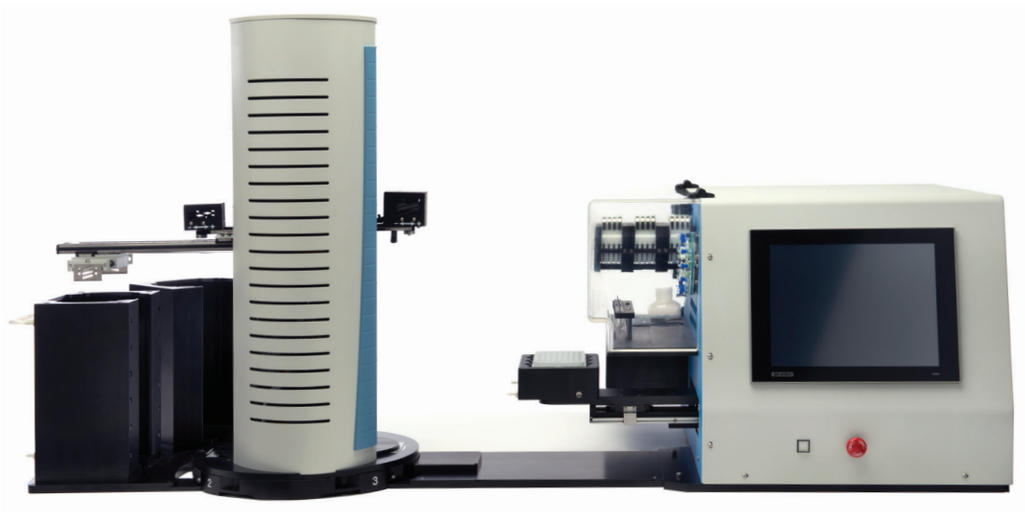
STATE-OF-THE-ART TECHNOLOGY

The **Perifusion System** is used to perform *ex vivo* testing of islets of Langerhans or cells. These micro-organs act as natural glucose sensors in the pancreas. We have developed a Perifusion System which enables a group of islets to be bathed with different solutions containing varying concentrations of glucose and/or test substances in a controlled environment.



12-CHANNEL BUBBLE TRAP





PERIFUSION SYSTEM WITH AUTOMATIC TRAY HANDLING

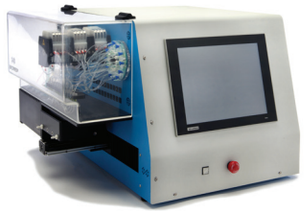
1. Rack holding up to 12 different input solutions
2. Disposable microfluidic manifold
3. Peristaltic pump
4. Bubble trap
5. Perifusion chambers
6. Environmentally controlled incubator
7. 96-well plate

12x12 MICROFLUIDIC DISPOSABLE MANIFOLD:

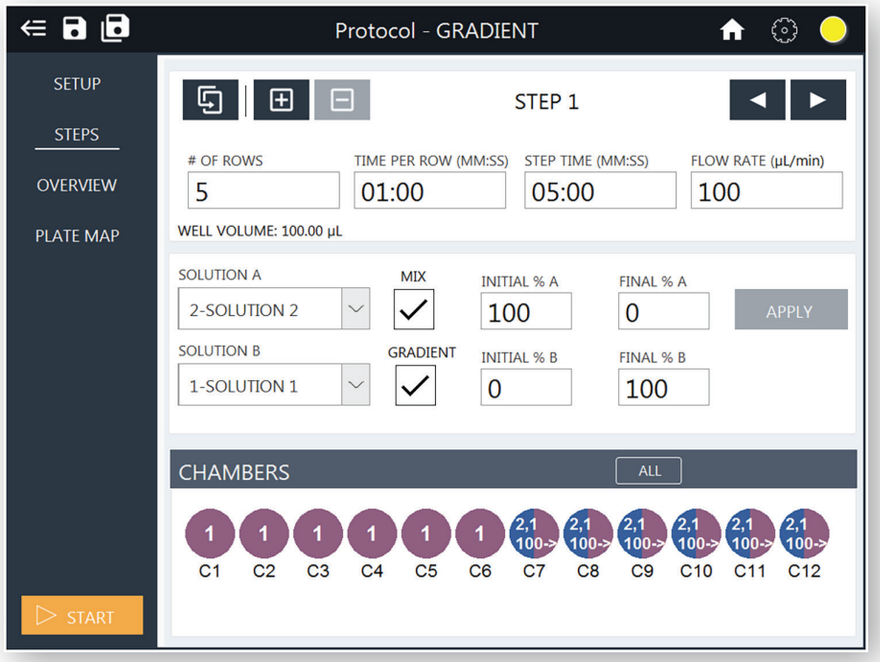
Patent pending microfluidic manifold allows the selection from 12 different inputs and deliver a pre-selected solution to a specific perifusion chamber. The system is capable to generate continuous gradients to stimulate the sample inside the perifusion chamber.

The perfusing fluid is pushed by a peristaltic pump through the perifusion chambers which contain the islets or cells, and the perfusate is collected in a 96-well plate for further analysis. The sample collection is performed automatically accordingly to the number of perifusion chambers in use and the preset sampling rate. The system can accommodate up to twelve perifusion chambers in parallel. The collection plate can be kept at the desired temperature by recirculating chilled water or alcohol by using an integrated pump.

This perifusion system was originally thought to study pancreatic islets *ex vivo*. Since then, its usefulness has grown and it's being utilized to study other cell functions, for example, stem cell derived insulin secreting cells. This machine is so versatile that it has been coupled to a tandem mass spectrometer to identify new molecules secreted from pancreatic islets.



OPERATION SIMPLIFIED



Simple, protocol setup and monitoring

Intuitive access to powerful functions:

- Large, bright, interactive touch interface for all perifusion functions
- Glove friendly
- Simple and quick protocol definition
- Plate-by-plate visual protocol entry confirmation
- Quick recall of pre-saved protocols
- User access control and security with optional password protection, ideal for multiuser environments
- Onboard software logs users, run conditions, and alarms
- Built in odometer to track run-time
- Easy report generation

v5 UPDATED FEATURES:

- New disposable microfluidic manifold
- Ability to use 12 different input source solutions
- Ability to run 12 different chambers in parallel
- Ability to create multiple linear glucose gradients
- 12-channel bubble trap
- All-new intuitive user interface

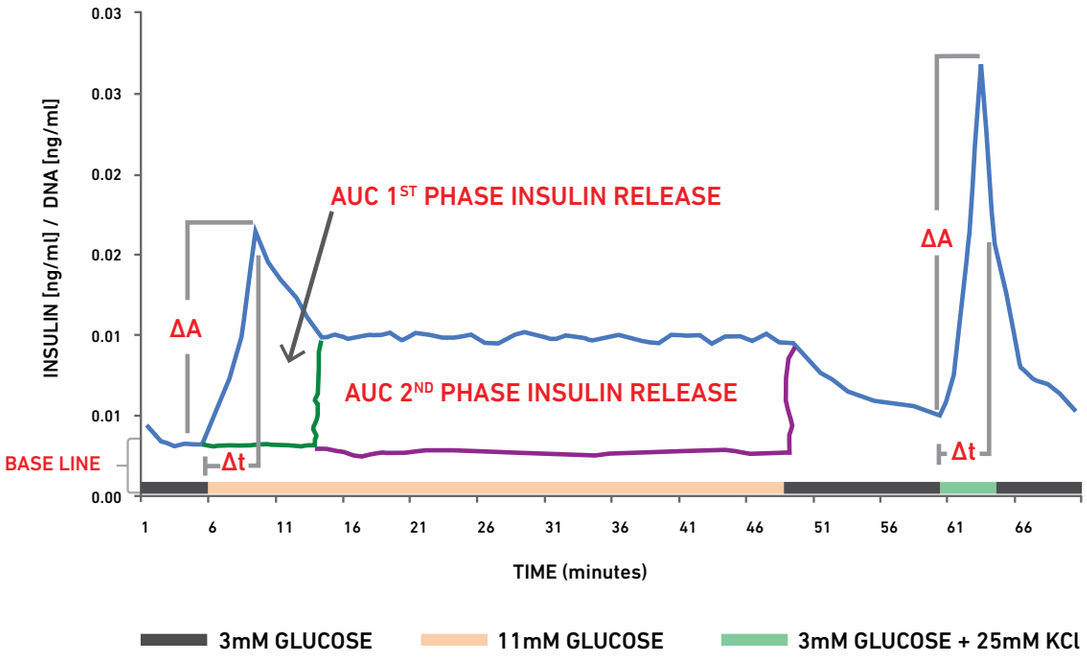
- Designed to perform ex vivo testing of islets of Langerhans
- 12 independent perifusion chambers
- Supports standard or deep 96-well-plates
- Low pulsatility and high fidelity peristaltic pump delivers equal flow rate on all 12 perifusion chambers
- Environmentally controlled enclosure guarantees temperature uniformity across all perifusion chambers
- Refrigerated collection plate allows preservation of the analytes
- High stability and reproducibility across experiments
- Patent pending microfluidic manifold allows the selection from 12 different inputs and deliver a pre-selected solution to a specific perifusion chamber.
- Intuitive touchscreen allows for powerful multi-parameter protocol creation, experiment execution, report generation, and guided system maintenance
- Optional Automatic Tray Handling robotic arm allows for operator free execution of experiments containing up to 20 standard well plates or 6 deep well plates

PUBLICATION REFERENCE:

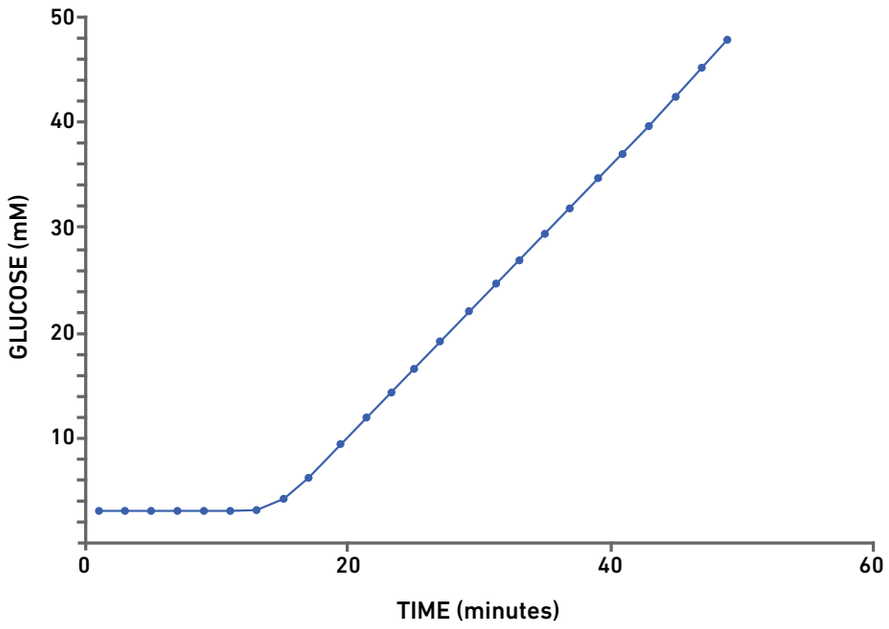
Automated, High-Throughput Assays for Evaluation of Human Pancreatic Islet Function

Cell Transplantation, Vol. 16, pp. 1039–1048, 2008 Cabrera et al.

PARAMETERS THAT CHARACTERIZE THE INSULIN RELEASE PROFILE



RELIABLE GRADIENT GENERATION



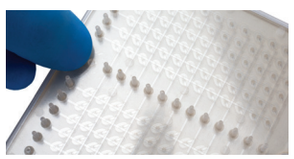
The **Perifusion Chambers** hold the islets to be studied. The chamber has an input and an output. The input solution can be chosen from twelve different alternative solutions. The output is connected to nozzles which deliver the perfusate into a 96 well plate.
*Custom shapes and sizes are available upon request.

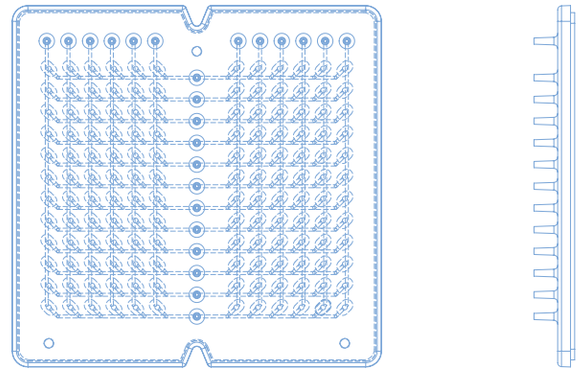
TECHNICAL DATA:

Part Numbers	PERI5-115 – Perifusion System, 115 VAC PERI5-FA-115 – Perifusion System with Automatic Tray Handling, 115 VAC PERI5-230 – Perifusion System, 230 VAC PERI5-FA-230 – Perifusion System with Automatic Tray Handling, 230 VAC
Max. No. of Samples per Assay	12
Collection Tray	Standard or Deep 96-well plate
Flow rate range	0 to 450 µL/min (+/- 10 µL/min)
Temperature range	Room Temperature to 50 °C (122 °F)
Temperature sensor	Type T Thermocouple (+/- 1.0 °C)
Power supply	Voltage and frequency: AC 100 to 120V/220 to 240V +/- 10%, 50/60 Hz Required power capacity: 5A (100 to 120V) / 3A (220 to 240V)
Power consumption	Approx. 575W
Operating temperature	5 to 40 °C (41 to 104 °F)
Operating humidity	35 to 80% (no condensation)
Dimensions	W x D x H: 59.1 cm x 75.7 cm x 44.5 cm (23.25" x 29.8" x 17.5")
Weight	31.4 kg (69 lbs)
Packed dimensions	W x D x H: 121.9" x 101.6 cm x 81.3 cm (48" x 40" x 32")
Packed weight	61.9 kg (136 lbs)
Included items	12 perifusion chambers, 15 dispensing nozzles, cell loading rack, tubing set

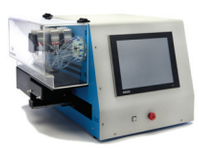
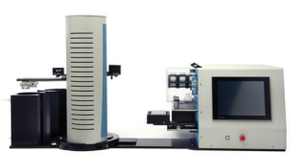
BIOREP TECHNOLOGIES PATENT NOs:
US 8,263,389 / US 8,785,178 / US 8,865,427

ORDERING GUIDE:
PARTS + ACCESSORIES

	PRODUCT NAME	PRODUCT NUMBER
	Perifusion Tubing Set (Tygon) – Pack of 12	PERI5-TUBSET
	Perifusion Tubing Set (PharMed) - Pack of 12	PERI5-TUBSET-PM
	Bubble Trap Extension Tubing (Tygon) - Pack of 12	PERI5-TUBSET-BT
	Bubble Trap Extension Tubing (PharMed) - Pack of 12	PERI5-TUBSET-PM-BT
	Bubble Trap Filter - Pack of 5	PERI5-BT-FILTER
	12x12 Microfluidic Cartridge	PERI-12x12-CARTRIDGE



12x12 MICROFLUIDIC DISPOSABLE MANIFOLD

	PRODUCT NAME	PRODUCT NUMBER
	Perifusion Chamber Beads	PERI-BEADS-100
	Perifusion Chamber	PERI-CHAMBER
	Perifusion Nozzle	PERI-NOZZLE
	Perifusion Chamber O-ring - Pack of 50	PERI-ORING
	Automated Perifusion System	PERI5-115/230
	Fully Automated Perifusion System with Orbitor	PERI5-FA-115/230

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DIABETES

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