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Isolated Tissue Studies

PowerLab® and Multiple Chamber Organ Bath Systems

ADInstruments PowerLab systems are widely used to record and analyze data from experiments using isolated tissues. These tissues typically include isolated muscle, arterial rings or strips, uterine muscle, vas deferens, ileum, colon, isolated atrium, ventricle or diaphragm. Our range of multi-chamber organ baths, bridge amplifiers, stimulating electrodes and isometric and isotonic transducers are designed to complement PowerLab systems in this area of research.

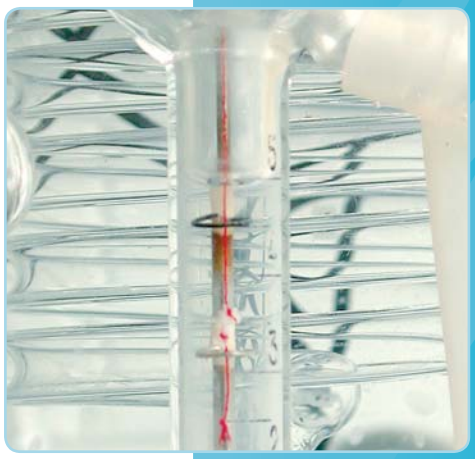
Two, four or eight chamber organ bath configurations are available. Each organ bath can include tissue chambers with 5, 10, 25 or 50 mL volume. Pre-heating reservoir coils are located in a compact temperature–controlled water bath constructed from thick Perspex®. This ensures that the temperature within the glass tissue chambers remains constant. Tissue holders, micropositioners, water pump and temperature controller are included.

The solid design, combined with the volume of water, minimizes any signal artifact due to mechanical vibration. Each tissue chamber has an adjustable gas diffuser. Electrovalves enable simultaneous or individual emptying and refilling of tissue chambers at the press of a button.

To complement the hardware, ADInstruments LabChart® software (included with the PowerLab) and analysis modules such as Dose Response, enable laboratories to conduct studies and analysis efficiently to allow faster throughput of experiments.

Features & Benefits

- Complete systems ready for experiments at affordable prices
- Easy filling and emptying of tissue chambers at the push of a button
- Immersed chambers and reservoir coils ensure temperature stability
- Internal heater and thermostat provide stable temperature control
- Compact, robust design with no external glassware
- Quick to connect and easy to use



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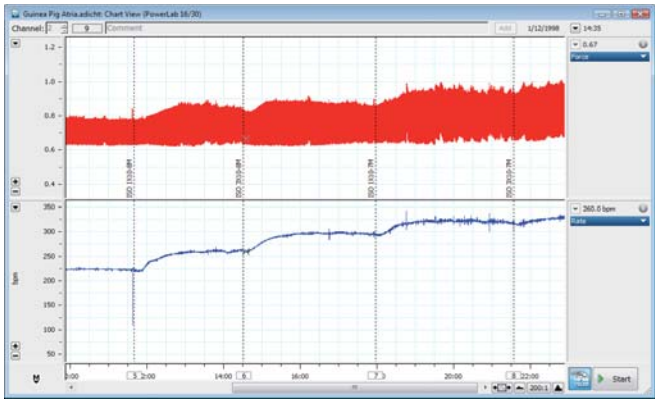
Data Acquisition & Analysis

PowerLab data acquisition systems (comprising a PowerLab recording unit with LabChart and Scope™ software) are ideal for monitoring and recording signals from isolated tissue experiments. PowerLab systems offer seamless integration with bridge amplifiers, transducers, organ baths and most stimulators. Our bridge amplifiers provide software-controlled zeroing, range and filter selection. You can easily calibrate transducers and recording channels into appropriate units such as grams or Newtons.

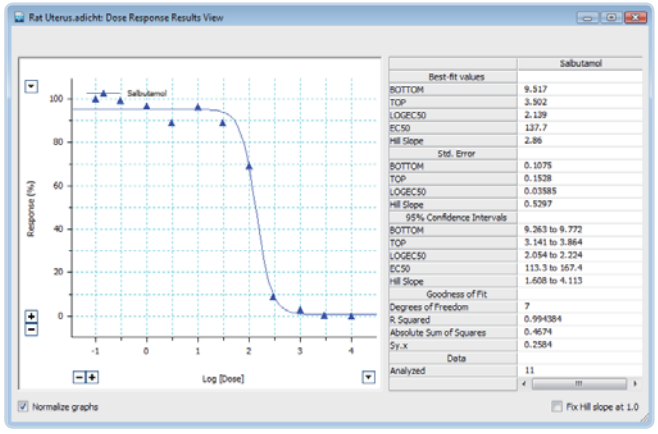
The flexible LabChart display includes a split screen feature to view and analyze previously recorded data while still recording new data. The powerful Data Pad facility allows easy extraction of experimental results for analyses, with OLE capabilities built in.

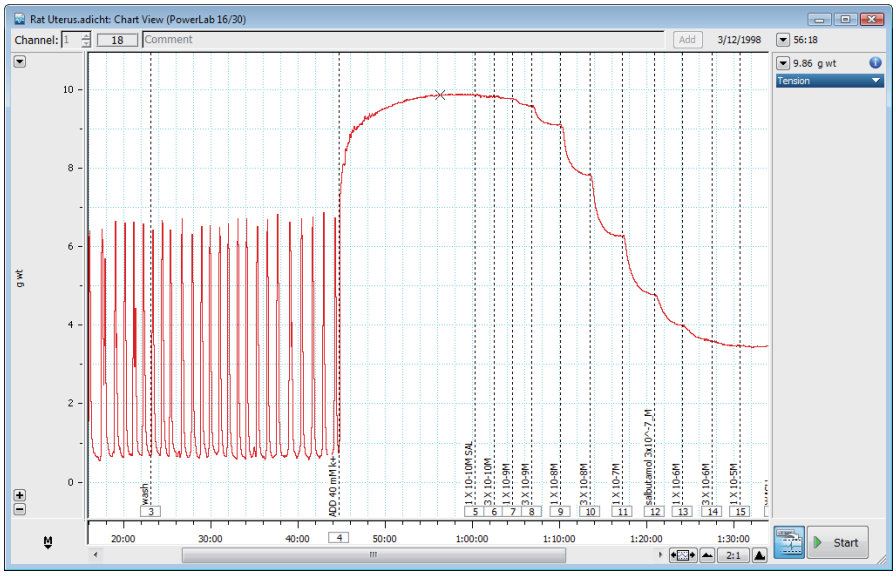


Above: Response of spontaneously beating guinea pig atria to increasing concentrations of isoproterenol recorded in LabChart.

LabChart Software Features

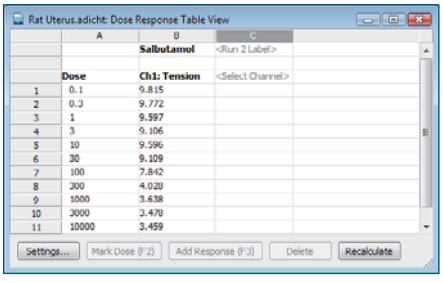
- Control of stimulation frequency and timing of pulse trains
- Online and offline calculations
- Timed Add to Data Pad for fast and easy extraction of experimental results
- Easy calibration (using Units Conversion)
- Comment annotation during or after recording
- Automation of experimental procedures
- Software selectable sampling rates, range and filter settings
- Additional advanced calculations and displays using the LabChart Dose Response Module
- Easy extraction of data into a spreadsheet or other programs, including GraphPad Prism





Above: Relaxation of precontracted rat uterine muscle preparation, with spontaneous contractile activity at left. KCl (40 mM) added at comment #4 precontracts the muscle. Increasing concentrations of salbutamol (10^{-10} M to 10^{-5} M) added at the other comments show a cumulative effect.

The Dose Response Results View displays the measured points and calculated dose response curves. The right hand panel displays the best fit values.



Using the Dose Response Module the Table View displays the dose response data

Product Selection

The following products are recommended for isolated tissue studies. Individual components may be selected or complete organ bath systems can be chosen to reduce cost and provide a ready-to-use solution. See back page for ordering information.

Organ Baths

Compact organ baths come in two, four and eight chamber models. All models feature electrovalves for filling and emptying of tissue chambers individually or simultaneously, at the push of a button. Tissue chambers are available in 5, 10, 25 or 50 mL volumes. Pre-heating reservoir coils, gas diffusers, tissue holders, micropositioners, water pump and thermostat controller are all included.

PowerLab Systems

We recommend PowerLab 8/30 and PowerLab 16/30 models for use with multiple-chamber organ baths. These systems connect via USB to Windows® and Mac® OS computers. The eight and sixteen channel PowerLab models also feature analog outputs that can be used to control an external stimulator. A trigger input provides remote starting capability. Fast data acquisition, 16 bit resolution, real-time data display and powerful analysis features ensure accuracy and efficiency in data collection and analysis.

Bridge Amps

Our Quad and Octal Bridge Amps are optimized for use with PowerLab systems and multi-chamber organ baths. They include fast software or switch initiated zeroing. Each input provides a software-controlled, low-noise bridge amplifier with software-selectable input ranges and filtering. These models are suitable for use with full-bridge strain-gauge transducers.

Transducers

Isometric transducers are available in regular and high sensitivity models. If you want to measure displacement against a constant preload, we also provide isotonic transducers. Micropositioners hold the transducers above the tissue chambers to enable fine adjustment of tissue pretension. ADInstruments supplied transducers plug directly into ADInstruments Bridge Amps for immediate use.

Stimulating Electrodes

We supply single ring, double ring or pole stimulating electrodes in platinum or stainless steel. A choice of internal diameters is available for ring electrodes. You will require a stimulator for use with stimulating electrodes. Your ADInstruments representative can provide information on a suitable stimulator configuration.

Ordering Information

Organ Bath Systems

ML870B5/C* Organ Bath System		ML870B6/C* Organ Bath System		ML880B7/C* Organ Bath System	
1 x ML870	PowerLab 8/30	1 x ML870	PowerLab 8/30	1 x ML880	PowerLab 16/30
1 x ML224	Quad Bridge Amp	1 x ML228	Octal Bridge Amp	2 x ML228	Octal Bridge Amps
4 x MLT0201	Force Transducers	8 x MLT0201	Force Transducers	16 x MLT0201	Force Transducers
1 x ML0146/C	4 Chamber Organ Bath	1 x ML0186/C	8 Chamber Organ Bath	2 x ML0186/C	8 Chamber Organ Bath
1 x MLS260	LabChart Pro	1 x MLS260	LabChart Pro	1 x MLS260	LabChart Pro

* Need to specify Chamber size 5, 10, 25 or 50 mL.

Individual Items

Organ Baths**
ML0126/C Two Chamber Organ Bath and Thermostat Controller
ML0146/C Four Chamber Organ Bath and Thermostat Controller
ML0186/C Eight Chamber Organ Bath and Thermostat Controller

**Organ baths include: tissue chambers, pre-heating reservoir coils, gas diffusers, tissue holders, micropositioners, water pump and thermostat controller. Tissue chamber size C = 5, 10, 25 or 50 mL, must be selected on ordering.

Transducers			
MLT0201	Force Transducer	Operating range: 5 mg to 25 g wt	Sensitivity: 30 mV/V (full range)
MLT0202	Sensitive Isometric Transducer	Operating range: 0 mg to 25 g wt	Sensitivity: 100 mV/V (full range)
MLT0015	Isotonic Transducer	Displacement range: ± 15° (0 to 48 mm)	Sensitivity: 1 mV/V/° (625 µV/V/mm)
MLT7006	Hall Effect Isotonic Transducer	Displacement range: ± 15° (0 to 60 mm)	Sensitivity: 90 µV/V/° (45 µV/V/mm)

Stimulating Electrodes

Specify internal diameter for ring electrodes: ID = 6.5, 8 or 10 mm

Type and Description	Platinum	Stainless Steel
Single Ring (6.5, 8 or 10 mm inner diameter) 20 mm between ring and tissue holder	MLA0301/ID	MLA0305/ID
Double Ring (6.5, 8 or 10 mm inner diameter) 20 mm between rings, 6 mm above tissue holder	MLA0302/ID	MLA0306/ID
3 mm Length Pole, 20 mm from the tissue holder	MLA0303	MLA0307
Double Ring (6 mm inner diameter) 15 mm between rings, 12 mm from tissue holder	MLA0304	MLA0308

Software

MLS060 LabChart	MLS330/6 GLP Client and MLS335/6 GLP Server

MLS260 LabChart Pro (Includes the modules listed below. Modules are also available for individual purchase.)

MLS390/6 Dose Response	(Win)	MLS310/6 Heart Rate Variability	(Win and Mac)	MLS340/6 Cardiac Output	(Win)
MLS065/6 DMT Normalization	(Win and Mac)	MLS240/6 Metabolic	(Win and Mac)	MLS320/6 Video Capture	(Win and Mac)
MLS370/6 Blood Pressure	(Win)	MLS062/6 Spike Histogram	(Win and Mac)	MLS395/6 Circadian Analysis	(Win)
MLS360/6 ECG Analysis	(Win)	MLS380/6 Peak Analysis	(Win)		

Share your data with colleagues. Free LabChart Reader – download to view and analyze LabChart data.

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