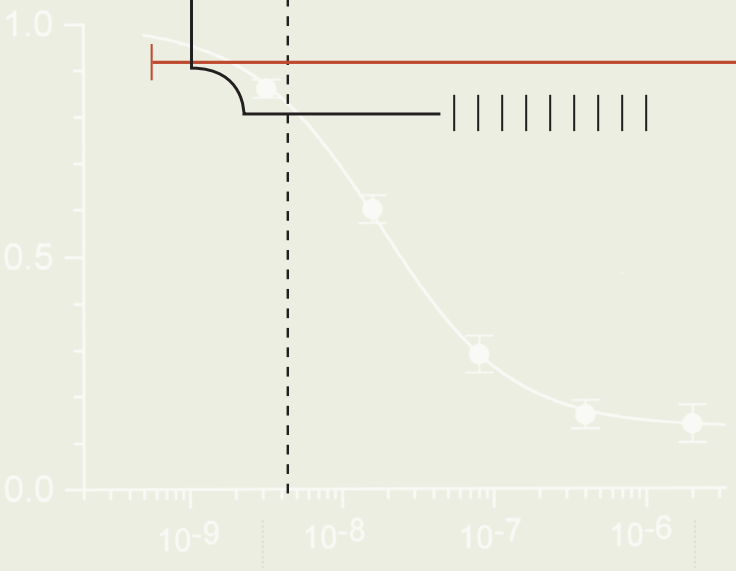
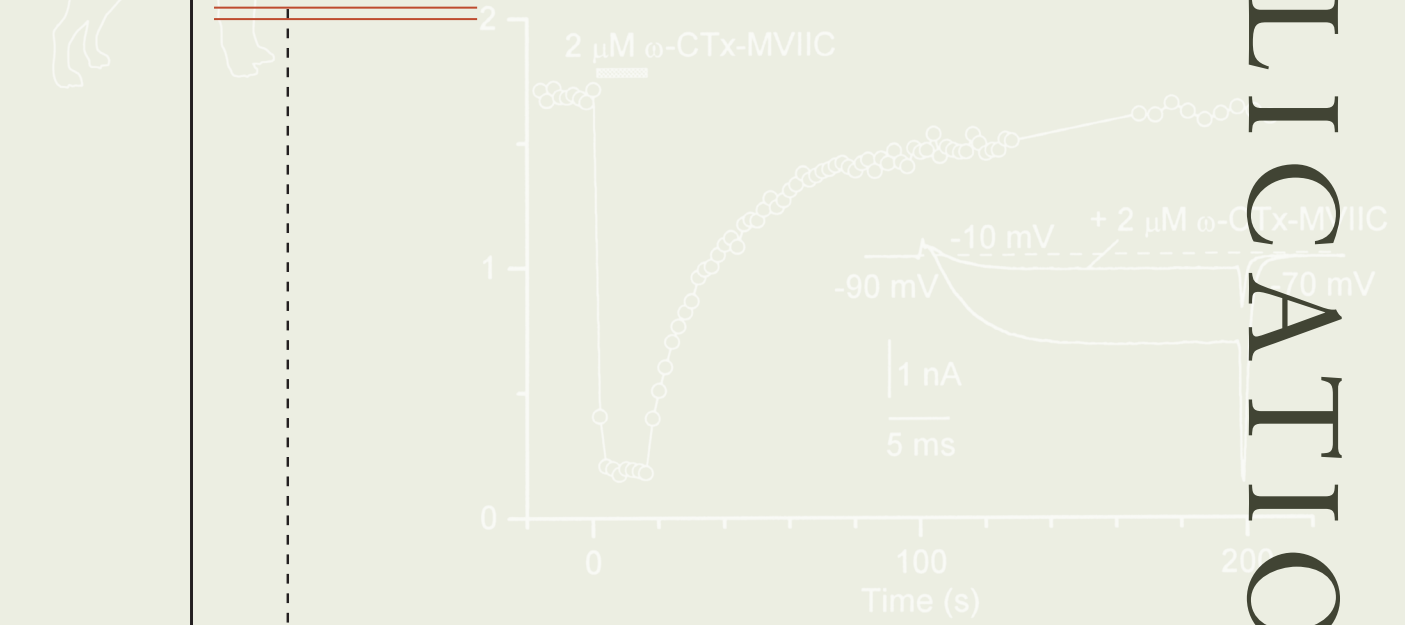
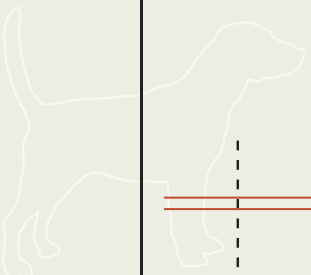
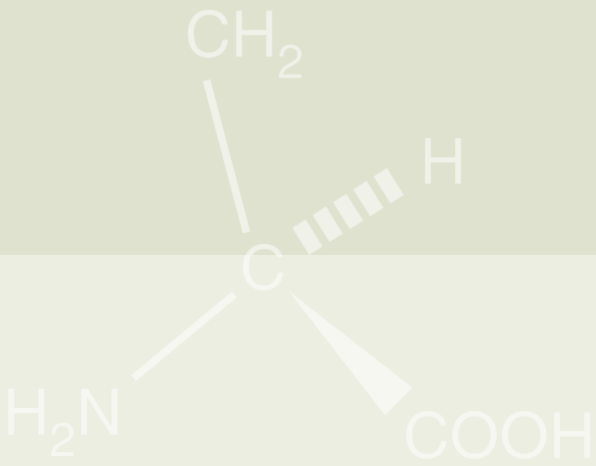


APPLICATIONS



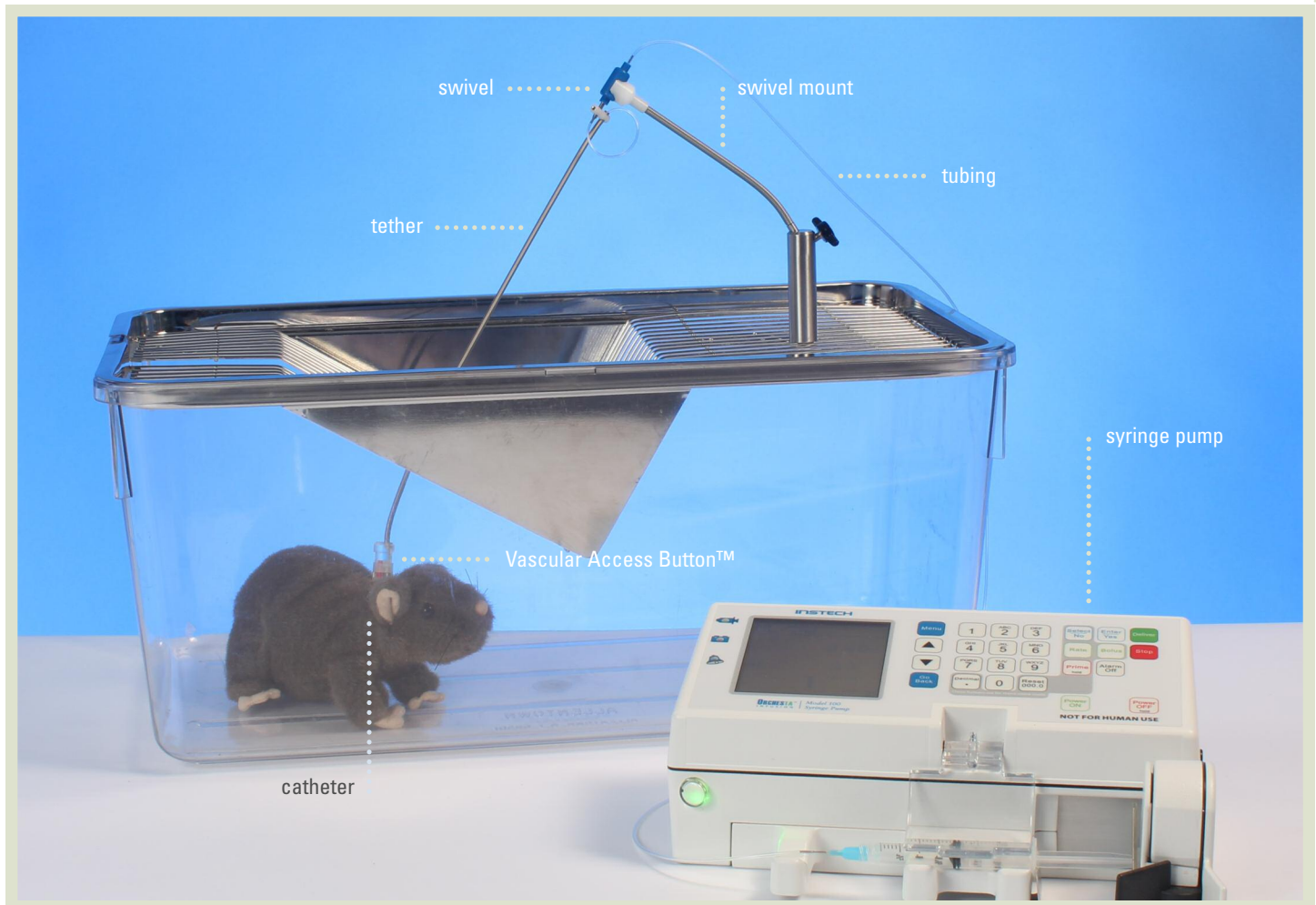
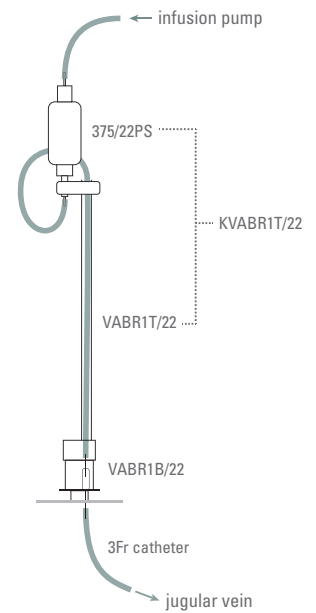
RAT INFUSION

Continuous intravenous infusion of rats is the most common application of Instech's equipment. A basic system includes a catheter, exteriorization device, tether, swivel, swivel-to-cage mount and infusion pump.

You have several options with a rat system: reusable or disposable components, tethers that attach to a harness worn by the rat or to a button that is surgically implanted, and a range of catheters depending on the vessel or organ you need to access.

Use a Harvard Apparatus 11 Elite syringe pump for most basic experiments; for GLP studies use the advanced OrchesTA™ model 100 syringe pump.

www.instechlabs.com/Infusion/systems/single.php

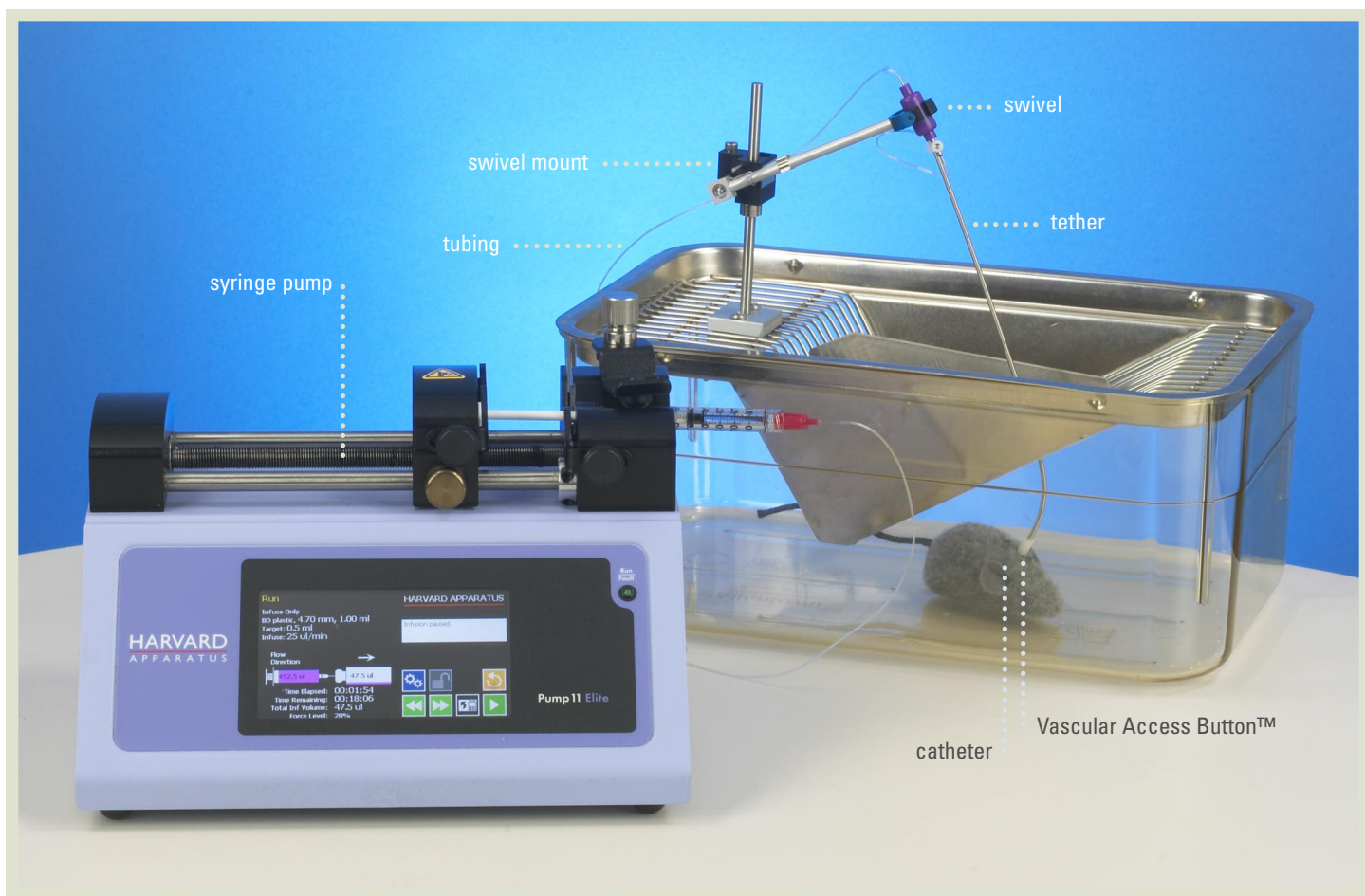


SYSTEM COMPONENTS



	AS SHOWN	ALTERNATIVES
PUMP	 <p>OR-100-0001 (p54) OrchestTA syringe pump</p>	 <p>HA1100 (p56) Harvard Apparatus pump</p>
SWIVEL	 <p>375/22PS (p39) Plastic swivel, 1ch, 22ga</p>	 <p>375/22 (p40) Stainless steel swivel, 1ch, 22ga</p>
SWIVEL MOUNT	 <p>CM375KRP (p45) Spring balanced mount</p>	 <p>CM375BS (p45) Counter-balanced mount</p>
TETHER	 <p>VABR1T/22 (p28) Vascular Access Button tether VABR1B/22 Vascular Access Button, 1ch, 22ga</p>	 <p>VAH95T (p31) Vascular Access Harness tether VAH95AB Vascular Access Harness, 1ch</p>
CATHETER (many other options available)	 <p>C30PU-RJV1303 (p21) Rat JVC, 3Fr</p>	 <p>C30PU-RFV1308 (p21) Rat FVC, 3Fr</p>

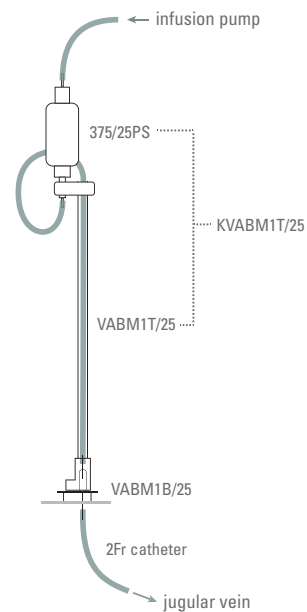
MOUSE INFUSION



Choose your equipment carefully when setting up continuous mouse infusion studies. A typical mouse can turn a swivel with no more than 0.025oz-in of frictional torque. Instech has three models that meet this specification: a 25ga stainless steel model, a 25ga plastic model, and the 375/D/22LT dual channel model. Always use a spring counter-balanced lever arm to remove the weight of the tether from the mouse.

Instech's mouse catheters are designed for mouse anatomy on one end and, on the other, to connect to a Vascular Access Button™ for reliable exteriorization and simple connection to a tether, swivel and syringe pump.

www.instechlabs.com/Infusion/systems/singlemice.php



SYSTEM COMPONENTS



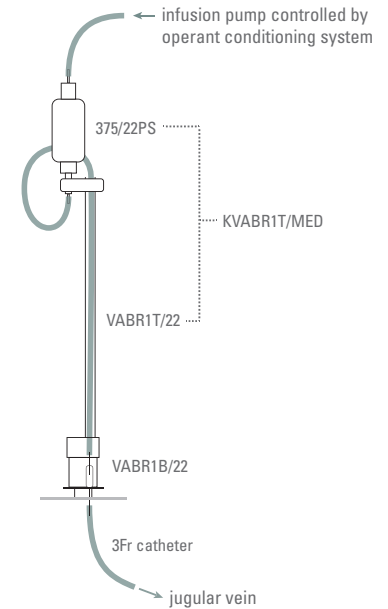
	AS SHOWN	ALTERNATIVES
PUMP	 <p>HA1100 (p56) Harvard Apparatus pump</p>	 <p>OR-100-0001 (p54) OrchesTA syringe pump</p>
SWIVEL	 <p>375/25PS (p39) Plastic swivel, 1ch, 25ga</p>	 <p>375/25 (p40) Stainless steel swivel, 1ch, 25ga</p>
SWIVEL MOUNT	 <p>SMCLA (p46) Counter-balanced lever arm</p>	
TETHER	 <p>VABM1T/25 (p33) Vascular Access Button tether VABM1B/25 Vascular Access Button, 1ch, 25ga</p>	 <p>VABM1T/25 (p33) Vascular Access Button tether VABM1B/22 Vascular Access Button, 1ch, 22ga</p>
CATHETER (many other options available)	 <p>C20PU-MJV1617 (p23) Mouse JVC, 2Fr</p>	 <p>C10PU-MFV1301 (p23) Mouse FVC, 1-3Fr</p>

IV SELF ADMINISTRATION

Rat 



Operant chambers shown are courtesy of Med Associates, Inc.



Instech swivels, tethers and balance arms are used with operant behavior systems for IV self administration studies. A lever press or nose poke will trigger an IV dose from a syringe pump.

Instech's Vascular Access Buttons were originally developed for self-administration studies because of long-term patency and the simplicity of moving animals into and out of the operant chamber.

www.instechlabs.com/Infusion/systems/selfadministration-rat.php
www.instechlabs.com/Infusion/systems/selfadministration-mouse.php

Connection Options for IV Self Administration

RAT

BUTTON



VABR1B/22

- quick connecting
- closed system
- group housing possible

HARNESS



VAH95AB

- quick connecting
- closed system

MOUSE

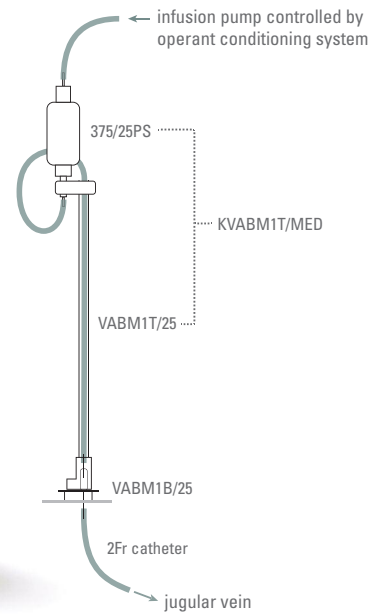
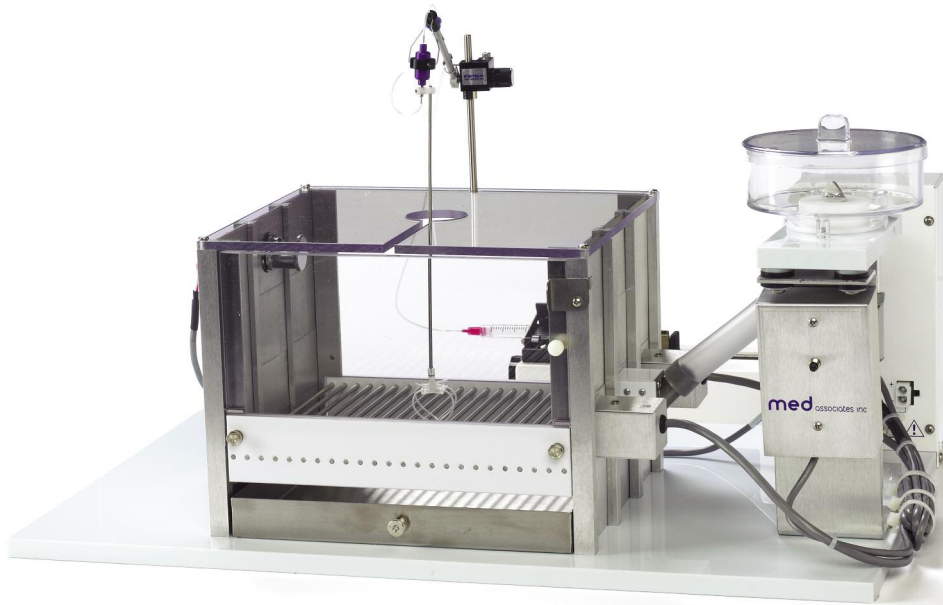


VABM1B/25

- quick connecting
- closed system
- group housing possible

IV SELF ADMINISTRATION

 *Mouse*



IV SELF-ADMINISTRATION SYSTEMS

MANUFACTURER	OPERANT CHAMBER*	COMPATIBLE INSTECH EQUIPMENT	
Med Associates, Inc. St. Albans VT, USA www.med-associates.com	MED-008-CT-B1 Basic rat self administration test package	MOUNT (p46)	SWIVEL & TETHER (p27, 39)
	MED-307A-CT-B1 Basic mouse self administration test package	MCLA/MED	KVABR1T/MED, VABR1B/22
TSE Systems GmbH Bad Homburg, Germany www.tse-systems.com	PhenoMaster Behavior Operant behavior home cage monitoring system - for rats - for mice	SMCLA/MED	KVABM1T/MED, VABM1B/25
		CM375BS SMCLA	375/22, VABR1T/22, VABR1B/22 375/25, VABM1B/25, VABM1T/25
Coulbourn Instruments Whitehall PA, USA www.coulbourn.com	Habitest Modular Test Cages - for rats - for mice	MCLA/COUL	KVABR1T/MED, VABR1B/22
		SMCLA/COUL	KVABM1T/MED, VABM1B/25
Panlab, S.L. Barcelona, Spain www.panlab.com	Modular Self Administration Boxes		

* Operant chamber system information provided for reference only. Order directly from the manufacturer.

BLOOD SAMPLING

Instech offers a range of equipment for laboratory animal blood sampling, from manual sampling from a catheter using the revolutionary PinPort™ to hands-free automated sampling through a tether with the ABS2™.

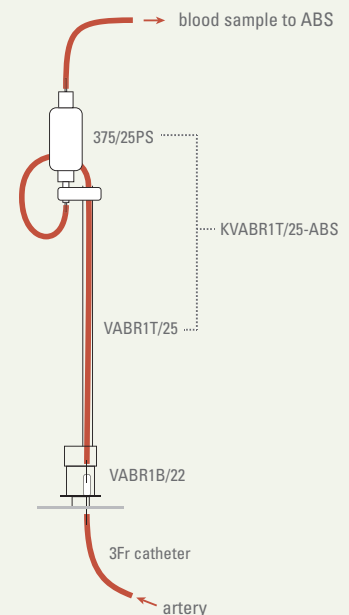
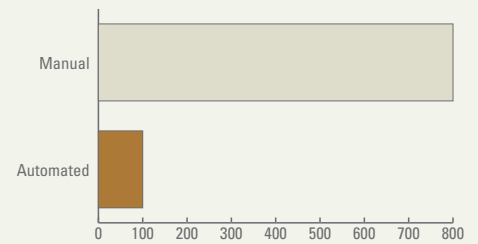
Catheters will lose patency for blood sampling more quickly than they will for infusion. For best results use round-tip polyurethane catheters, be sure the catheter tip is in the correct location in the vessel, use a good lock solution, flush as needed but not too often (typically weekly is ideal), always use positive pressure technique, and use a closed-system such a PinPort or Vascular Access Button to avoid contamination.

Rat, Automated Sampling

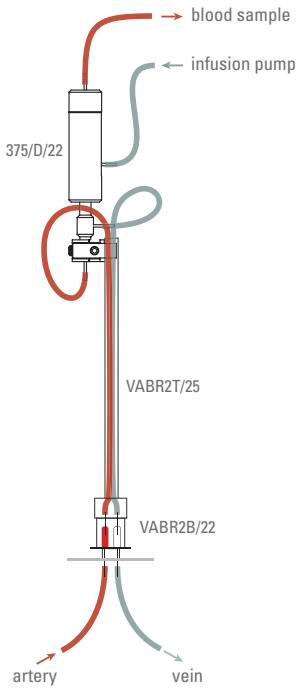


automated blood sampler (p61)

LOWER STRESS
adrenaline (pg/ml), rats



Rat, Sampling + Infusion

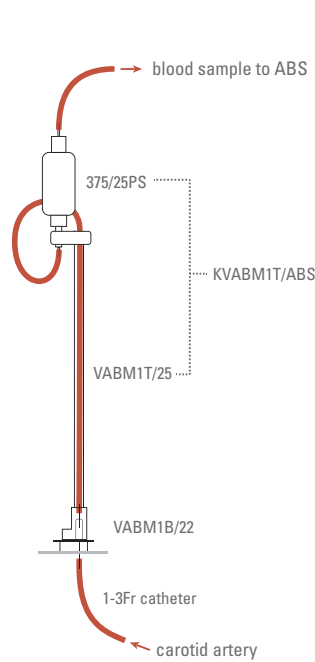


375/D/22 (p41)
2 channel swivel



VABR2B/22 (p29)
Vascular Access Button (2ch)

Mouse, Automated Sampling



ABS2 (p61)
Automated blood sampler

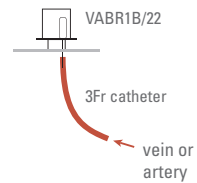


375/25PS (p39)
1 channel swivel, 25ga

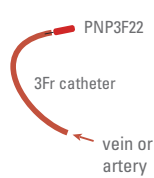


VABM1B/22 (p33)
Vascular Access Button, 22ga

Rat, Manual Sampling



VABR1B/22 (p28)
Vascular Access Button, 1ch

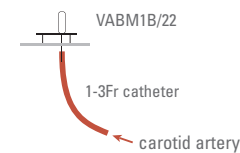


PNP3F22 (p24)
PinPort, 22ga

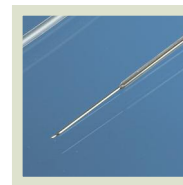


C15SS-RTV1438P (p22)
Rat tail vein cannula, 25ga

Mouse, Manual Sampling



VABM1B/22 (p33)
Vascular Access Button, 22ga



C10SS-MTV1429P (p23)
Mouse tail vein cannula, 29ga

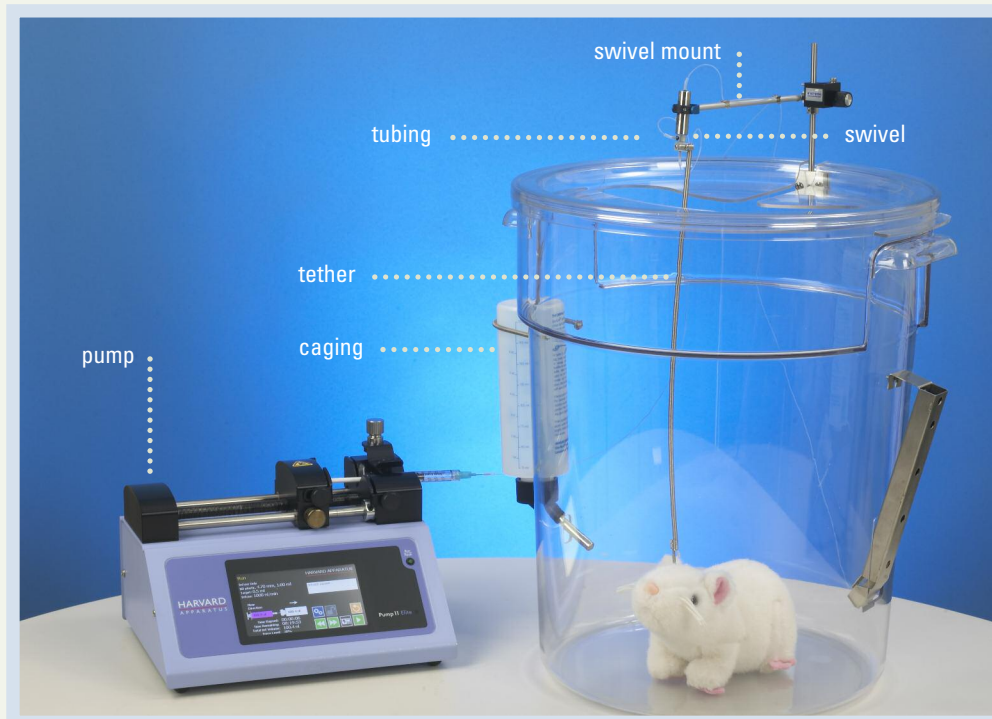
MICRODIALYSIS

Rat

Instech provides the liquid swivels, head block tethers, counter-balanced lever arms and syringe pumps that have made microdialysis on awake rodents possible from the earliest days of the technique.

The Harvard Apparatus Pico Plus Elite syringe pump delivers the smooth low-flow rates required for microdialysis.

These systems are compatible with probes, fraction collectors and other equipment from a range of manufacturers.



PUMP



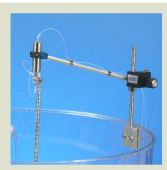
HA1100DU (p56)
Harvard Pico Plus Elite

SWIVEL



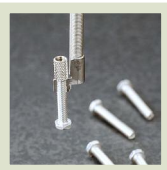
375/D/22QM (p41)
Microdialysis swivel

SWIVEL MOUNT



MCLA (p46)
Lever arm, 6in

TETHER



M115S (p37)
Rat head block tether

TUBING



BFEP-T22Q (p49)
FEP tubing

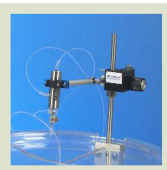
OTHER



MGIG/AKIT (p37)
Glass ionomer cement



375/D/22QE (p41)
Microdialysis swivel



SMCLA (p46)
Lever arm, 3.5in



MINF (p37)
Mouse head block tether



MC015/10 (p49)
Tubing connectors



MTANK (p47)
Enclosure, 15in



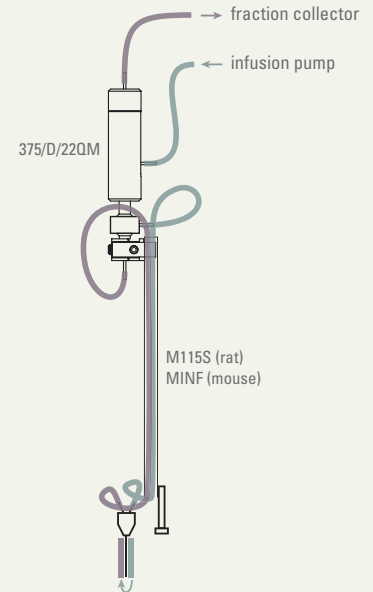
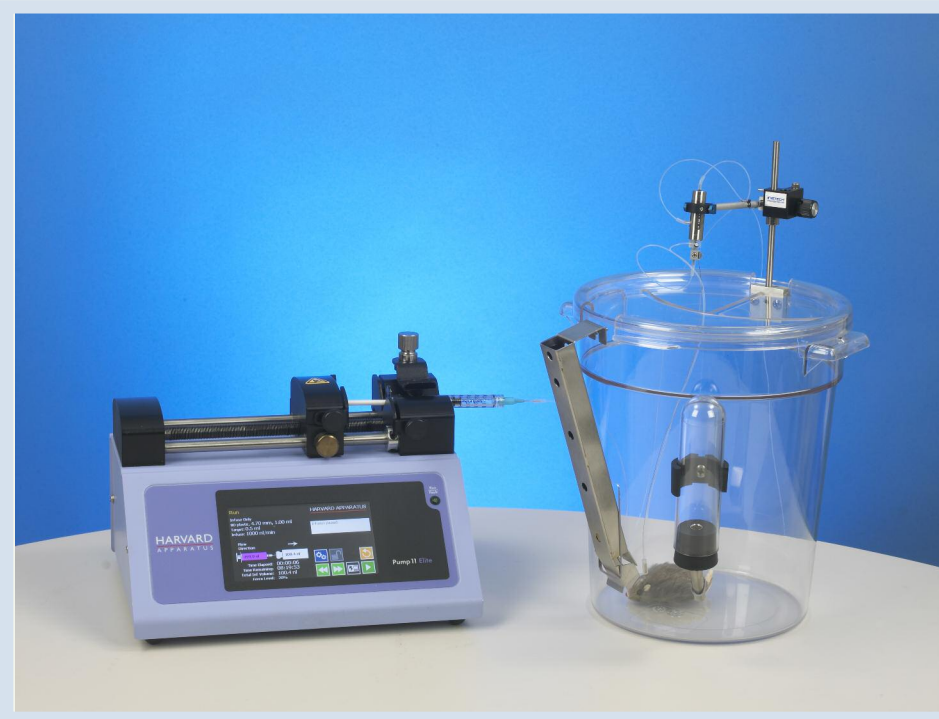
MCS/5A (p43)
5 channel swivel



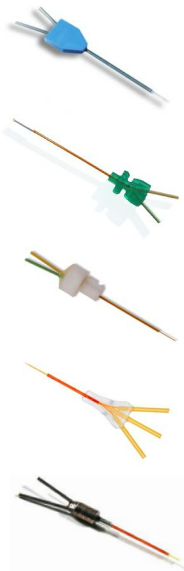
STANK (p347)
Enclosure, 8.5in

-  www.instechlabs.com/Infusion/systems/microdialysisrats.php
-  www.instechlabs.com/Infusion/systems/microdialysismice.php

Mouse



Sources for Microdialysis Probes

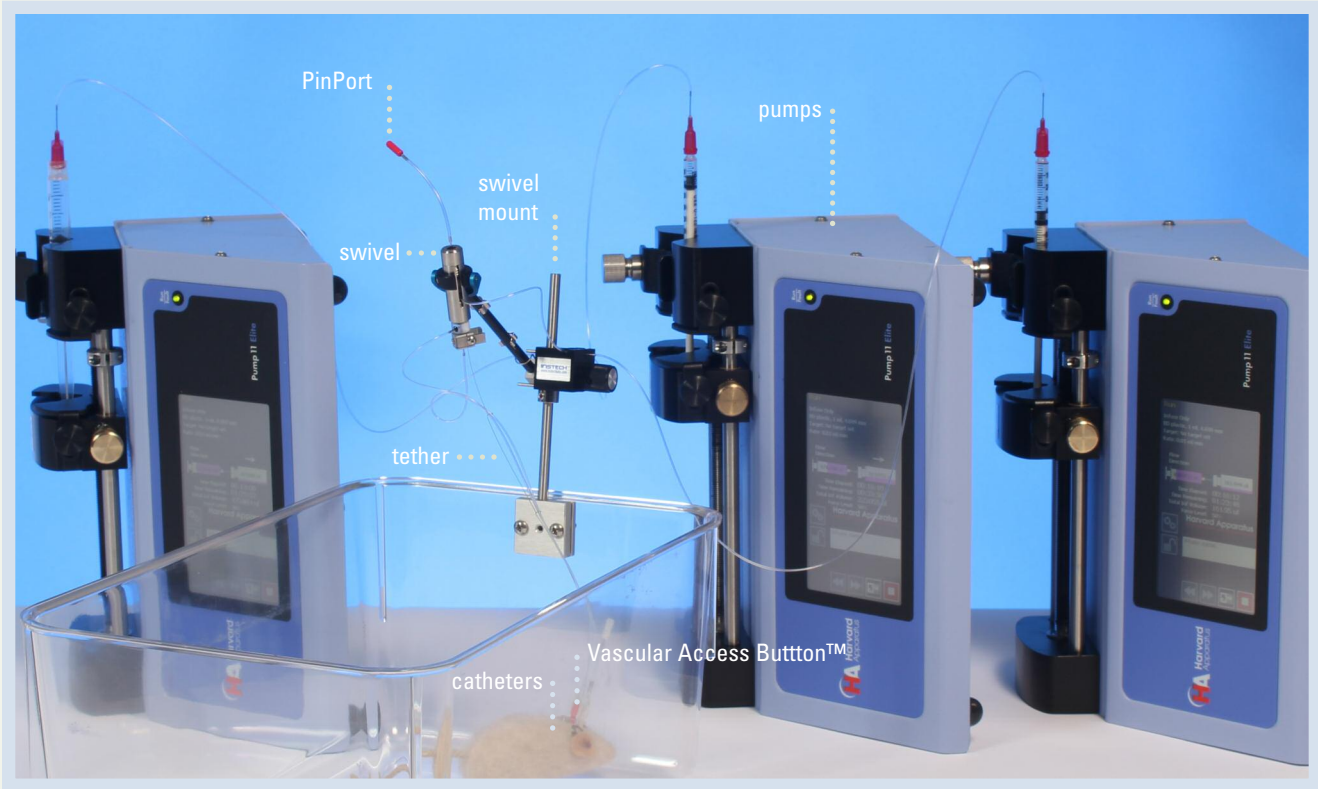


Manufacturer	Model	Application	Membrane	Cutoff (kD)	OD (mm)
CMA Microdialysis AB Solna, Sweden www.microdialysis.se	CMA 12	regular CNS use	PAES or PES	20 or 100	0.5
	CMA 11	small diameter probe	cuprophane	6	0.24
	CMA 7	mice	cuprophane	6	0.24
Microbiotech/se AB Stockholm, Sweden www.microbiotech.se	MAB 2	regular CNS use	PES	35	0.6
	MAB 6	CNS	PES	15	0.6
	MAB 9	CNS	PES	6	0.6
	MAB 4Cu	small diameter probe	cuprophane	6	0.2
	MAB 4PES	small diameter probe	PES	6	0.2
Bioanalytical Systems West Lafayette, IN, USA www.basinc.com	BR-2	regular CNS use	PAN	30	0.32
	MBR-1-5	mice	cellulosic	38	0.22
Brainlink B.V. Groningen, The Netherlands www.brainlink.nl	Normal	regular CNS use	PAN or RC	45 or 18	0.34 or 0.22
	MetaQuant	ultraslow MD, PK/PD	PAN or RC	45 or 18	0.34 or 0.22
Synaptech Marquette, MI USA www.synaptechnology.com	S-8020	regular CNS use	PAN	20	0.36

Note: this information is provided for reference only. Instech does not supply probes. Order directly from the manufacturer. Probe images courtesy of the listed manufacturer.

GLUCOSE CLAMP

Hyperinsulinemic-Euglycemic Clamp, Mouse



The hyperinsulinemic-euglycemic clamp is considered the gold standard method for assessing insulin action in vivo. Conducting these experiments on freely-moving rodents, particularly mice, can be difficult, not least due to the jugular vein and carotid artery catheterization surgery.

Instech now offers complete systems for mice and rats, starting with the catheters that connect to two-channel Vascular Access Buttons, special tethers with 3- and 4-way connectors, up to the infusion pumps that control delivery of insulin, glucose, red blood cells and other infusates.

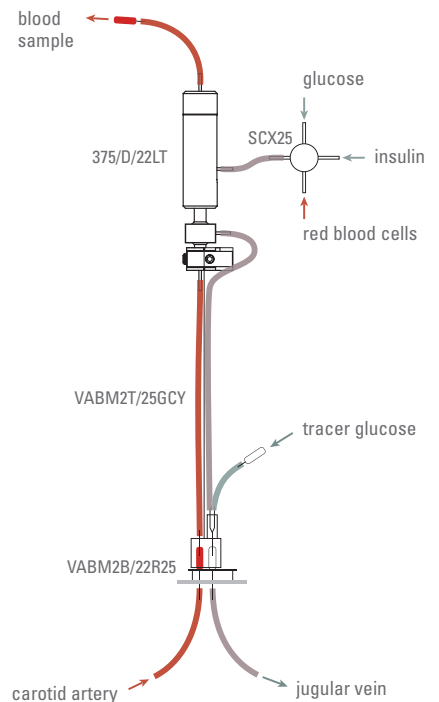
The mouse system is based on the techniques developed and taught by the Vanderbilt MMPC. The two-channel VAB is Instech's version of the researcher-constructed MASA™, simplifying connection and permitting group housing when not on study.

www.instechlabs.com/Infusion/systems/glucoseclampmice.php

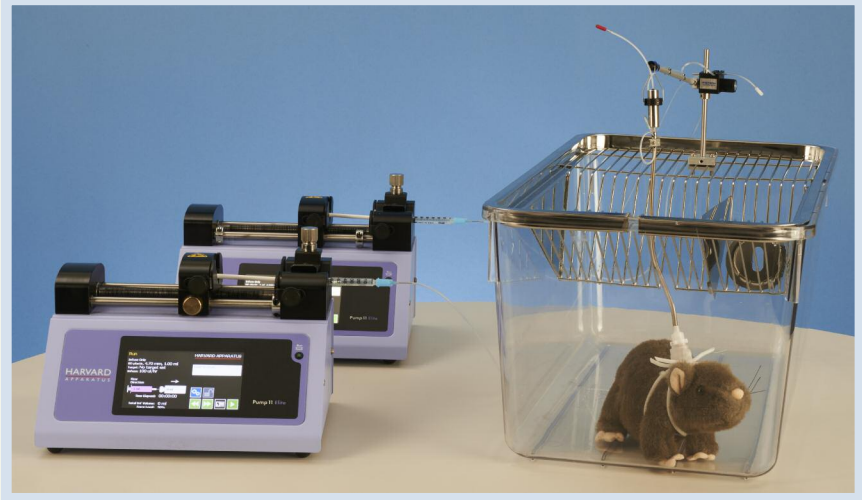
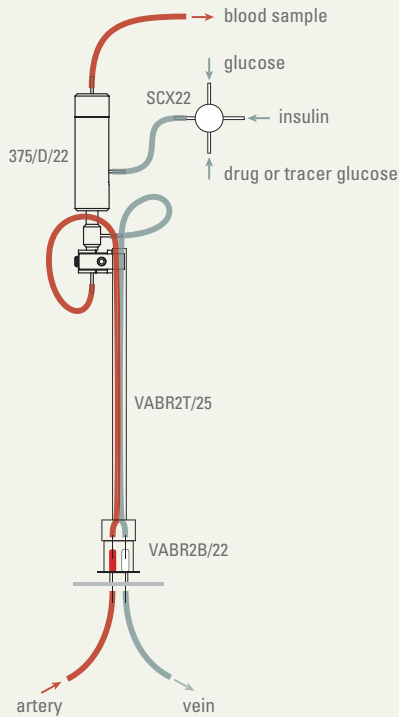
MASA is a trademark of the Vanderbilt MMPC. <https://labnodes.vanderbilt.edu/mmpc>



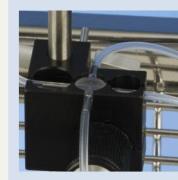
VABM2T/25GCV NEW
VABM2B/22R25 (p34)
 2ch Vascular Access Button
 with Glucose Clamp Tether



Hyperinsulinemic-Euglycemic Clamp, Rat



SCX22 (p51)
4-way connector



MCLA/GC (p46)
Swivel arm with pocket
for 4-way connector



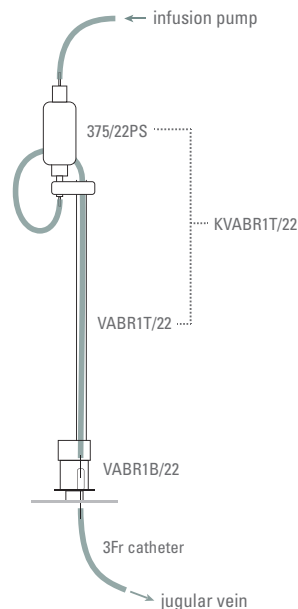
VABR2T/25 (p29)
VABR2B/22
2ch Vascular Access Button


www.instechlabs.com/Infusion/systems/glucoseclampsrats.php

WHOLE BODY PLETHYSMOGRAPHY



Photo of FinePointe WBP chamber
courtesy of Data Sciences International

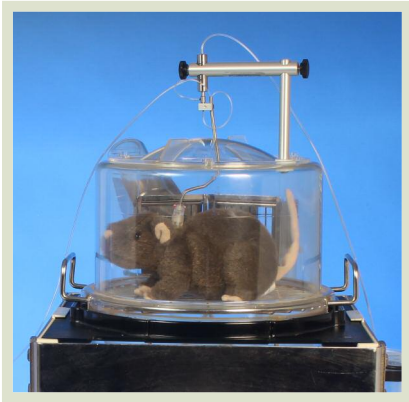


 Instech's swivel and tether systems can be integrated into whole body plethysmography chambers to combine measurement of respiratory function with infusion or blood sampling.

The swivel is held in an o-ring seal at the top of the chamber. Tether lengths should be optimized for the height of the chamber. The Vascular Access Button™ and Harness systems make it easy to move an animal into and out of the chamber.

www.instechlabs.com/Infusion/systems/wbp.php

BILE COLLECTION



Instech's two channel Vascular Access Buttons and Harnesses have simplified and refined rat bile collection. Catheters in the bile duct and duodenum are connected to the ports of the button or harness so that bile can flow in an extra-corporeal loop while the animal is recovering from surgery and in transport. To start sampling, simply remove the loop connector, plug in a mating tether with a swivel, and collect bile outside the cage at animal level.

Additional configurations are available for simultaneous infusion or blood sampling, and a similar system is available for mice. Many animal vendors can perform the catheterizations and install the button or harness with loop as a surgical service.

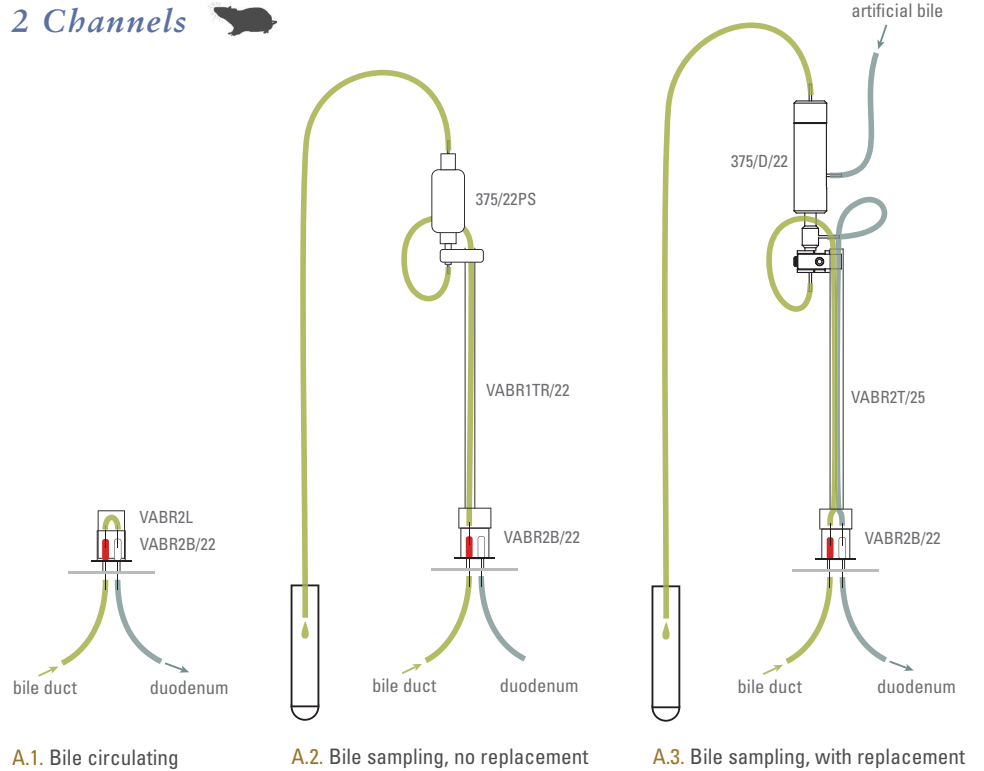


VABR2B/22 (p29)
VABR2L
2-channel button
with loop connector



VAHD115AB (p32)
VAHD115L
2-channel harness
with loop connector

2 Channels



3 Channels

