



Surgical Services

We take pride in supporting your research goals by investing in our core programs and facilities to offer high-quality products and services that are designed to meet your exact needs. We are continually striving to improve our surgical services offerings across Europe in an effort to provide the models and technical support necessary to speed your development time.

When partnering with Charles River, you have access to a flexible, highly skilled, and trained team of surgeons that can offer:

- Standard and complex models exactly when you need them;
- Reduced time to experiment;
- Surgical protocols that have been approved by the Charles River Ethics Committee;
- Consistent model quality; and
- Technical support to assist you on how to handle and use the models.

Our European production facilities, located in the UK and France, offer a vast array of surgical services on multiple species. Our European teams work in close collaboration with our North American teams, which allows us to provide consistent and reproducible models worldwide.

Our portfolio includes:

- Vascular catheters
- Non-vascular catheters
- Excision surgeries
- Cardiovascular and neurological procedures
- Device implants
- On-site surgical support upon request
- Training sessions
- Customised model development

Key Benefits

- Dual expertise: animal model production and surgical services
- Technical expertise: standard protocols or custom protocol development
- Flexible solutions: spot orders or scheduled supply
- Guaranteed health and genetic quality of the animal models used in these services



Surgical Services

Excision Surgery: Endocrinectomy

Hypophysectomy	Rats (from 60 g)
Orchidectomy (castration)	Rat/mouse (from weaning)
Ovariectomy	Rat/mouse (from weaning)
Splenectomy	Rat/mouse (5-6 weeks)
Suprarenalectomy (adrenalectomy)	Rat/mouse (5-6 weeks)
Thymectomy	Rat/mouse (4-6 weeks)
Thyro-parathyroidectomy	Rat (5-6 weeks)
Vasectomy	Rat/mouse (6-8 weeks)
Thyroidectomy with parathyroid implant	Rat (5-6 weeks)
Parathyroidectomy	Rat (5-6 weeks)
Partial hepatectomy (70%)	Rat (8 weeks)

Cardiovascular and Kidney Surgery

Nephrectomy	Rat/mouse (6-8 weeks)
Nephrectomy bilateral 5/6	Rat/mouse (6-8 weeks)
Heart failure (thoracic banding)	Rat/mouse (3 weeks)
Myocardial infarction (coronary artery ligation)	Rat/mouse (from 6 weeks)

Vascular Catherisation Single or Combined

Femoral artery catheter	Rat (from 8 weeks)
Femoral vein catheter	Rat (from 5 weeks)
Jugular vein catheter	Rat/mouse/guinea pig (from 5 weeks)
Double jugular vein catheter	Rat (from 8 weeks)
Carotid artery catheter	Rat/mouse (from 5 weeks)
Portal vein catheter (via mesenteric vein)	Rat (from 8 weeks)
Double femoral artery and femoral vein	Rat (from 8 weeks)
Double jugular vein and femoral vein	Rat (from 8 weeks)
Double portal vein and femoral artery	Rat (from 8 weeks)
Double portal vein and jugular vein	Rat (from 8 weeks)

Non-Vascular Catherisation

Bile duct cannulation	Rat (from 250 g)
Gastric cannulation	Rat/mouse (from 8 weeks)
Duodenal cannulation	Rat (from 250 g)
Bilateral ventricular cannulation	Rat (6-8 weeks)

Neurology

Bilateral subdiaphragmatic vagotomy	Rat/mouse (6-8 weeks)
Lateral (left or right) ventricular cannulation IVC	Rat (6-8 weeks)
Cannulation of third ventricle	Rat (from 8 weeks)
Alzheimer's disease model	Rat (6-8 weeks)
Parkinson's disease model	Rat (from 8 weeks)
Intralateral brain cannulation	Rat/mouse (6-8 weeks)
Double intralateral ventricle cannulation	Rat (from 8 weeks)



Surgical Services

Osmotic pump implantation

ALZET® osmotic pumps are implantable miniature pumps which infuse your agents at a constant flow rate in mice, rats or other species.

Twelve ALZET® pump models are available with a range of flow rates from 0.11 $\mu\text{l}/\text{hour}$ to 10 $\mu\text{l}/\text{hour}$ offering drug infusion durations from 1 day to 6 weeks.

Charles River in conjunction with Durect offers the following services :

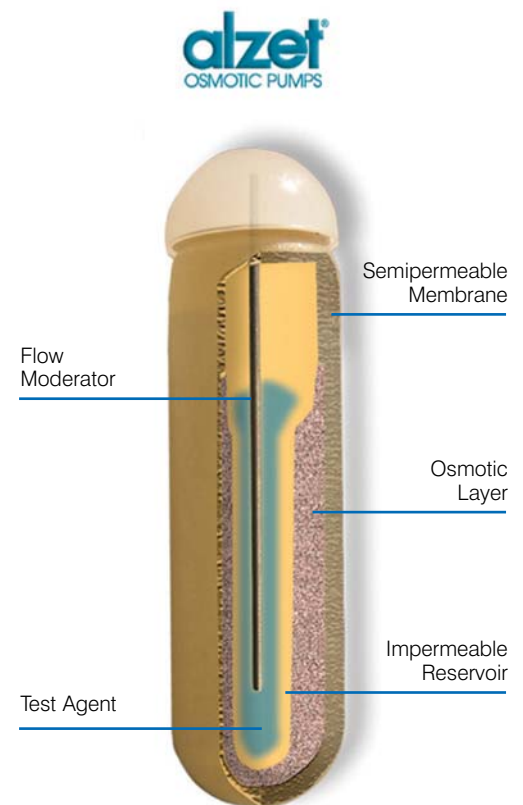
- Exclusive distribution of ALZET® osmotic pumps
- ALZET® osmotic pump pre-implantation

ALZET® pumps make it possible to optimise agent administration by doing away with repeated bolus dosing, which is time-consuming and contributes to animal stress.

Osmotic pump implantation in rats and mice

- Various pump models and infusion durations available
- Test product supplied by sponsor (subject to solvent compatibility)
- Site : subcutaneous or intra-peritoneal cavity
- Targeted delivery using a catheter or cannula for intravenous, intracerebral administration or administration to a designated organ or site.

www.alzet.com



Surgical Services

Telemetry Device Implantation

The surgical suites at Charles River offers various surgical models including the implantation of telemetry devices.

Compared to the standard protocols for the measurement of physiological parameters, telemetry devices enable recordings to be made economically and reliably.

- Stress-related artefacts are significantly reduced.
- The effects of anaesthetics do not interfere with measurements.
- Recordings can be made continuously without restraint.

A variety of implants is available and the following recordings may be made: blood pressure, temperature, electrocardiogram, electromyogram and electroencephalogram.

The use of pre-implanted animals carrying implants fitted by Charles River offers the following advantages :

- Obviates the need for prior training to carry out the implantation technique.
- Reduces the time required for the procedure and post-operative care.
- Guaranteed model reproducibility due to the high level of technical expertise of our surgical team

As required, implanted animals can be ordered on an as needed basis or according to a predefined schedule to ensure a continuous supply. Implants can be customer-supplied if required.




charles river

Contact us
surgery@eu.crl.com
www.criver.com