

## ▶ INTRAVENOUS INFUSION

Compared to conventional infusion methods in which external catheters and swivels restrict animal movement and pose an infection risk, intravenous (IV) infusion with ALZET pumps present a significant advantage in terms of animal welfare and experimental convenience. For IV infusion, the pump is fully implanted SC with the attached catheter leading into the target vessel. After pump implantation and vessel cannulation, mice can move freely around the cage, even in a group-housed environment.



### MOUSE JUGULAR CATHETERS

DURECT developed a line of catheters designed to facilitate use of ALZET pumps for IV infusion in mice via the external jugular vein. These catheters will fit any ALZET pump model.

### BRAIN INFUSION KIT 3

The ALZET Brain Kit 3 is specifically designed for intraventricular and intraparenchymal infusion in the mouse. The fine gauge stainless steel cannula minimizes trauma to brain tissue during placement, and its 3 mm length is appropriate for targeting the lateral ventricles of adult mice. Uniquely designed depth adjustment spacers allow cannula length adjustment for targeting more superficial brain areas.



## ▶ INTRACEREBRAL INFUSION

For compounds which do not cross the blood-brain barrier, local infusion directly into the brain is the only way to generate reliable data. The low flow rates and small size of ALZET pumps, used together with the Brain Infusion Kit 3, make an ideal combination for intracerebral delivery in mice. ALZET pumps have been used in hundreds of neuroscience studies to infuse agents, from neurotrophic factors to siRNA to psychoactive drugs and more.

### ▶ CSF Volume & Production Rate in the Mouse

CSF Volume: 0.035 ml (35  $\mu$ l)

CSF Production rate: 0.018 ml/hr (18  $\mu$ l/hr)

Source: Pardridge, W.M., *Transnasal and intraventricular delivery*. In "Peptide Drug Delivery to the Brain" (Table 4.2) Raven Press, 1991:112.

## Long-Term Administration

ALZET pumps range in duration from 24 hours to 4 weeks. However, animals can be dosed for longer periods by performing serial implantation of pumps. This procedure is generally well tolerated and enables steady state exposure of experimental agents over prolonged periods of time. The longest infusion study reported in mice using ALZET pumps is 5 months, with pumps being replaced every 4 weeks (Bello *et al.* Clinical Cancer Research 2004;10(13):4527-4537). In contrast with other infusion devices, ALZET pumps contain no moving parts or batteries that can potentially fail during the course of a long-term study.

## In Vivo Imaging Applications

Bioluminescence Imaging (BLI) and Magnetic Resonance Imaging (MRI) techniques are powerful research tools that enable *in vivo* monitoring of ongoing biological processes over time in the same animal. ALZET pumps are increasingly being used in studies involving *in vivo* imaging. ALZET pumps can be easily adapted for compatibility with MRI or BLI equipment. Please contact ALZET technical support for specific information.

