Recent References on the Administration of Nucleic Acids Using ALZET® Osmotic Pumps

DNA


Agents: vascular endothelial growth factor, DNA Vehicle: Glucose; Route: CSF/CNS (medula); Species: Rat; Pump: 2001; Duration: 1 week;
ALZET Comments: 5% glucose used; Controls received mp w/ vehicle; animal info (Male, adult spontaneously hypertensive rats, 16 weeks old, 299 +- 4); Blood pressure measured via telemetry transmitters;vascular endothelial growth factor aka VEGF-A; ALZET brain infusion kit 2 used; gene therapy;


Agents: Mitochondrial DNA Vehicle: Not Stated; Route: SC; Species: Mice; Pump: Not Stated; Duration: 28 Days;
ALZET Comments: Dose (30 ug/kg/day); animal info (Male, CD-1, 18-22 g); diabetes;


Agents: DNA aptamer (RAGE) Vehicle: Not Stated; Route: SC; Species: Mice; Pump: 2006; Duration: 21 days;
ALZET Comments: Dose (2 x10^-4 ug/day); Controls received mp w/ vehicle; animal info (8 week old, male, C57BL/6J ); RAGE-apt is a DNA aptamer against the advanced glycation end products receptor; gene therapy;


Agents: DNAzyme DT912 Vehicle: Saline; Route: IP; Species: Mice (nude); Pump: 1002; Duration: 14 days;
ALZET Comments: animal info (female, BLAB/c, 4-6 weeks old); cancer (Prostate PC3); “we here employed an osmotic pump as a delivery vehicle for DNAzymes via the abdominal route and demonstrated a viable means for efficient DNAzyme delivery” pg 548; Dose (12.5 mg/kg/day);

Q4843: B. Koenig, et al. Long term study of deoxyribozyme administration to XT-1 mRNA promotes corticospinal tract regeneration and improves behavioral outcome after spinal cord injury. Experimental Neurology 2016;276(51-58

Agents: DNAXT-1as Vehicle: Not Stated; Route: CSF/CNS (intrathecal); Species: Rat; Pump: 1007D; Duration: 2 weeks;
ALZET Comments: Controls received mp w/ control enzyme or PBS; animal info (female, Wistar, 200-250g); pumps replaced every week; spinal cord injury; post op. care (Baytril; manual bladder emptying; Rimadyl); behavioral testing (horizontal ladder task); used self-made intrathecal catheter from 32-gauge polyurethane; enzyme inhibitor (DNA enzyme of mRNA of xylosyltransferase-1);

Q5375: C. Huang, et al. Thioredoxin interacting protein (TXNIP) regulates tubular autophagy and mitophagy in diabetic nephropathy through the mTOR signaling pathway. Sci Rep 2016;6(29196

Agents: DNAzymes, Scrambled or TXNIP Vehicle: Saline; Route: SC; Species: Rat; Pump: 2006; Duration: 12 weeks;
ALZET Comments: Controls received mp w/ vehicle; animal info (female, heterozygous rats; functionality of mp verified by blood glucose levels (AMES glucometer); pumps replaced every 6 weeks; diabetes; Inhibition of TNXIP using DNA-zyme impoves authophagy and mitophagy in diabetic nephropathy; Resultant plasma level (pg. 10);


Agents: Thioredoxin-interacting protein DNAzyme Vehicle: Not Stated; Route: SC; Species: Rat; Pump: 2006; Duration: 12 weeks;
ALZET Comments: Controls received mp w/ scrambled TXNIP DNAzyme; animal info (female, heterozygous (mRen-2)27, 6 weeks old); pumps replaced every 6 weeks; cardiovascular; diabetes; Thioredoxin-interacting protein aka TXNIP;

**Agents:** CpGB DNA  
**Vehicle:** Not Stated;  
**Route:** SC;  
**Species:** Mice;  
**Pump:** Not Stated;  
**Duration:** 7 days; 28 days;  
**ALZET Comments:** Controls received mp w/ PBS; animal info (male, C57BL6 or TNFa -/- or IFNg -/- or CXCR3 -/- or CCR5 -/- or CCL2 -/- or TLR9 -/-); functionality of mp verified by immunofluorescence at pump outlet; gene therapy; immunology; CpGB DNA is a TLR9 ligand;

Q4752: X. H. Yu, et al. Chemosensitization of Solid Tumors by Inhibition of Bcl-xL Expression Using DNAzyme. ONCOTARGET 2014;5(9039-9048)

**Agents:** DNAzyme oligonucleotide  
**Vehicle:** Saline;  
**Route:** IP;  
**Species:** Mice (nude);  
**Pump:** 1002;  
**Duration:** 14 days;  
**ALZET Comments:** Animal info (female, Balb/C, 4 weeks old); functionality of mp verified by plasma levels and residual volumes; cancer (prostate adenocarcinoma); "Analysis showed that the DNAzyme was stable over the treatment period and the Alzet osmotic pump provided a consistent delivery of the DNAzyme in vivo “ pg 9044;


**Agents:** Plasmid DNA-lipid complex  
**Vehicle:** Not Stated;  
**Route:** Not Stated;  
**Species:** Mice (SCID, CD-1);  
**Pump:** Not Stated;  
**Duration:** Not Stated;  
**ALZET Comments:** Therapeutic indication (Gene therapy); Brain coordinates: 3 mm lateral and 2 mm caudal to bregma;


**Agents:** DNA, RNA, small interfering  
**Vehicle:** Lipopolyplexes, (PEI F25-LMW, DPPC);  
**Route:** SC;  
**Species:** Not Stated;  
**Pump:** Not Stated;  
**Duration:** 6+ weeks;  
**ALZET Comments:** cancer (mamma carcinoma, prostate carcinoma, colon carcinoma); PEI F25-LMW aka Polyethylenimine F-25 Low molecular weight; DPPC aka dipalmitoyl-phosphatidyl-choline


**Agents:** DNA, cytosine-guanine  
**Vehicle:** Not Stated;  
**Route:** CSF/CNS;  
**Species:** Mice;  
**Pump:** 2004;  
**Duration:** 4 weeks;  
**ALZET Comments:** Controls received mp w/ saline; animal info (male, C57BL/6, TLR9-deficient); ALZET brain infusion kit 2 used; stress/adverse reaction: (see pg. 1117) "One C57BL/6 mouse died because of complications during the operation, and 1 TLR9-deficient mouse died for unknown reasons 2 weeks after implantation of the pump”.;


**Agents:** DNAXTas  
**Vehicle:** Not Stated;  
**Route:** CSF/CNS (intrathecal);  
**Species:** Rat;  
**Pump:** 1007D;  
**Duration:** 14 days;  
**ALZET Comments:** Controls received mp w/ control deoxyribozyme or mp w/ saline; pumps replaced after 7 days; post op. care (gentamicin); animal info (female, Sprague Dawley, 200-225 g.); control also known as DNAXTmb; schematic w/ pump on fig. 1; custom cannula used


**Agents:** DNA, plasmid  
**Vehicle:** Gene, HIV-2 gp140;  
**Route:** SC;  
**Species:** Mice;  
**Pump:** 2004;  
**Duration:** 28 days;  
**ALZET Comments:** 28 day stability verified by agarose gel electrophoresis; immunology; different methods of immunization used; genetic immunization; DNA did not adhere to the osmotic minipump after 1 month since DNA concentration remained stable and intact
**P5966:** A. Roguin, et al. Restoration of blood flow by using continuous perimuscular infiltration of plasmid DNA encoding subterranean mole rat Spalax ehrenbergi VEGF. PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA 2003;100(8):4644-4648

**Agents:** DNA, naked; vascular endothelial growth factor, DNA **Vehicle:** Water; **Route:** Intramuscular (left quadriceps muscle); **Species:** Mice; **Pump:** 2001; **Duration:** 7 days;

**ALZET Comments:** Controls received mp w/ saline; tissue perfusion (quadriceps muscle); gene therapy; fenestrated catheter; pump implanted IP; "we have shown that when using plasmid DNA, continuous administration is superior to multiple simultaneous IM injections." (p. 4647)

**Q8741:** J. A. A. Spijkers, et al. Foetal rise in hepatic enzymes follows decline in c-met and hepatocyte growth factor expression. Journal of Hepatology 2001;34

**Agents:** Embryonic DNA **Vehicle:** Not Stated; **Route:** SC; **Species:** Rat; **Pump:** 2001D; **Duration:** Not Stated;

**ALZET Comments:** Dose (80 ug/hr/day); animal info (Wistar, Female, Pregnant); Embryonic DNA aka BrdU; dependence;


**Agents:** Methylisothiourea, S-; adenovirus vector; gene, mouse iNOS cDNA sequence **Vehicle:** Saline; Dye, methlene blue; Dye, India black ink; PBS; **Route:** SC (wound healing site); **Species:** Rat; **Pump:** 2001; 2ML1; **Duration:** 7 days;

**ALZET Comments:** Controls received mp w/ saline; functionality of mp verified by dye infusion; gene therapy; enzyme inhibitor; methylisothiourea,S- is an inducible nitric oxide synthase inhibitor (iNOS inhibitor); wound healing; SC-implanted pumps infused 2 hydroxyproline sponges via catheter; initial studies used 2ML1 pumps to infuse dyes in order to assess the feasibility of direct infusion with pumps; iNOS inhibitor infusion was with 2001 pumps; pumps were designed to infuse directly into SC implanted polyvinyl sponges at the wound site; Adenovirus vector was dissolved in PBS; iNOS inhibitor was delivered in saline; diagram of pump-catheter assembly and location (p. 18); “Dye infusion demonstrated both grossly and microscopically excellent delivery of the infusate to wound sponges” (p. 18);

**RNA (2007-Present)**


**Agents:** Anti-eRNA oligos **Vehicle:** CSF/ artificial; **Route:** CNS/CSF; **Species:** Mice; **Pump:** 1003D; **Duration:** 3 days;

**ALZET Comments:** Dose (8.3 pmole/ul); animal info (3 months old, 20-30 g, C57BL/6N); antisense (eRNA_06347: 5′-GATTTGGAAATTGCTAG-3′; eRNA_093384: 5′-GGAAGCAGGTGAACAG-3′); ALZET brain infusion kit 3 used; ischemia (Cerebral);


**Agents:** RNA, small interfering (PDI) **Vehicle:** Not Stated; **Route:** CSF/CNS (right lateral ventricle); **Species:** Rat; **Pump:** 1007D; **Duration:** 7 days;

**ALZET Comments:** Animal info (Male Sprague Dawley rats, 7 weeks old); ALZET brain infusion kit 1 used; Brain coordinates (1 mm posterior; 1.5 mm lateral; 3.5 mm depth from bregma); neurodegenerative (Epilepsy);

**Q8576:** J. E. Kim, et al. PLPP/CIN-mediated Mdm2 dephosphorylation increases seizure susceptibility via abrogating PSD95 ubiquitination. Exp Neurol 2020;331(113383

**Agents:** siRNA, Mdm2 **Vehicle:** Not stated; **Route:** CNS/CSF (lateral cerebral ventricle); **Species:** Mice; **Pump:** 1007D; **Duration:** 1 day;

**ALZET Comments:** Dose (20 μM); animal info (PLPP/CIN−/− mice); ALZET brain infusion kit 3 used; Brain coordinates (2.0 mm depth from bregma); dependence;


**Agents:** siRNA; TRPV1 **Vehicle:** CSF, artificial; **Route:** CSF/CNS (intrathecal); **Species:** Rat; **Pump:** Not stated; **Duration:** 3 days;

**ALZET Comments:** Dose (0.5 nmol/μL/h); Controls received mp w/ vehicle; animal info (Male Wistar rats weighing 250 to 320 g); behavioral testing (Mechanical or Thermal Stimulation); dependence;
Q8400: C. M. Campolim, et al. Short-term exposure to air pollution (PM2.5) induces hypothalamic inflammation, and long-term leads to leptin resistance and obesity via Tlr4/Ikbke in mice. Scientific Reports 2020;10(1):10160
**Agents:** RNA, small interfering  
**Vehicle:** Not stated; **Route:** CNS/CSF (lateral ventricle); **Species:** Mice; **Pump:** 1007D; **Duration:** 5 days;
**ALZET Comments:** small interfering RNA aka si-RNA; Brain coordinates (AP −0.5 mm; L −1.3 mm; DV −2.2 mm); Cannula placement verified via angiotensin II and measurement of water intake; toxicology;

Q8762: F. Han, et al. Dopamine D2 receptor modulates Wnt expression and control of cell proliferation. Scientific Reports 2019;9(1):16861
**Agents:** RNA, small interfering (Dopamine D2 Receptor)  
**Vehicle:** Not Stated; **Route:** SC; **Species:** Mice; **Pump:** Not Stated; **Duration:** 28 days;
**ALZET Comments:** Dose (3 ug/day); animal info (C57BL/6, Male, 20 g, 8-10 weeks old); Dopamine D2 Receptor siRNA aka D2R Receptor ; ischemia (Renal);

**Agents:** DJ-1-specific siRNA  
**Vehicle:** Not Stated; **Route:** SC; **Species:** Mice; **Pump:** Not Stated; **Duration:** 7 days;
**ALZET Comments:** Dose (3 ug/day); animal info (Male, C57Bl/6J, ); enzyme inhibitor (DJ-1 siRNA inhibits renal ROS production); cyanoacrylate adhesive; cardiovascular;

**Agents:** Bevacizumab; RNA, small interfering (anti-HIF-1α/PEG); Immunotoxin,  DTAT/DTATEGF; Endostatin; 17-ODYA; Miconazole;  
**Vehicle:** Not Stated; **Route:** CSF/CNS (intratumoral), IV; **Species:** Mice; **Pump:** Not Stated; **Duration:** Not Stated;
**ALZET Comments:** enzyme inhibitor (CYP epoxygenase); cancer (glioblastoma); This review describes methods (including convection-enhanced delivery devices, implantable polymer devices, nanocarriers, and cellular vehicles) to deliver antiangiogenic factors to intracranial tumors.

**Agents:** RNA, small interfering (cardiolipin synthase); RNA, small interfering (Phospholipid scramblase-3)  
**Vehicle:** Not Stated; **Route:** CSF/CNS; **Species:** Rat; **Pump:** 1003D; **Duration:** 72 hours;
**ALZET Comments:** Dose (30 nmol); animal info (17-day-old male Sprague–Dawley rats); Brain coordinates (−0.8 mm posterior to bregma, −1.5 mm lateral to midline, and −4.6 mm ventral to the skull surface); Traumatic brain injury;

**Agents:** RNA, small interfering (Flt3, scrambled)  
**Vehicle:** Not Stated; **Route:** CSF/CNS(Intrathecal); **Species:** Mice; **Pump:** 1002; **Duration:** Not Stated;
**ALZET Comments:** Dose (12.53 ng/ml); animal info (C57BL/6 naive mice, Flt3KO mice 25–30 g.);  behavioral testing (reflexive tail flick); spinal cord injury; stress/adverse reaction: (see pg. 10);

Q8810: R. Prince, et al. Targeting anticoagulant protein S to improve hemostasis in hemophilia. Thrombosis and Hemostasis 2018;131 (Agents: siRNA ; control siRNA  
**Vehicle:** Not Stated; **Route:** SC; **Species:** Mice; **Pump:** 2001; **Duration:** Not Stated;
**ALZET Comments:** Dose (1 mg/kg/day); animal info (10 weeks old, C57BL/6Ji); siRNA aka s72206, control siRNA aka 4459405; cardiovascular;

**Agents:** YY1-siRNA  
**Vehicle:** Not stated; **Route:** CSF/CNS; **Species:** Mice; **Pump:** Not stated; **Duration:** 4 days;
**ALZET Comments:** animal info (Male, C57BL/6, 25-35 g); Brain coordinates (mediolateral=1.0 mm, anteroposterior=0.2 mm; dorsoventral=3.1 mm); ischemia (Cerebral);

Agents: SNX5-specific or non silencing snRNA Vehicle: Not stated; Route: SC; Species: Mice; Pump: 1007D; Duration: 7 days;
ALZET Comments: Dose (3 ug/day); animal info (Male, C57BL/6J, 1 year old); SNX5-specific aka sorting nexin 5; gene therapy;

Q7151: D. S. Lee, et al. PDI-mediated S-nitrosylation of DRP1 facilitates DRP1-S616 phosphorylation and mitochondrial fission in CA1 neurons. Cell Death & Disease 2018;9(9):869

Agents: RNA, small interfering (protein disulfide isomerase), L-NAME Vehicle: Saline; Route: CSF/CNS (right lateral ventricle); Species: Rats; Pump: 1007D; Duration: Not Stated;
ALZET Comments: Dose (15 μg/μl L-NAME); animal info (7-week-old male Sprague-Dawley rats); Nω-nitro-L-arginine methyl ester hydrochloride aka L-name; enzyme inhibitor (protein disulfide isomerase); ALZET brain infusion kit 1 used; Brain coordinates (right lateral ventricle, 1mm posterior; 1.5 mm lateral; 3.5 mm depth from bregma);


Agents: BzATP, OxATP, A740003, Compound C, 3-chloroacetyl indole, Mithramycin A, U0126, RNA, small interfering (Heat shock protein B1) Vehicle: Not Stated; Route: CSF/CNS (lateral ventricle); Species: Mice; Pump: 1007D; Duration: 7 days;
ALZET Comments: Dose: BzATP (5 mM), OxATP (5 mM) A740003 (10 μM), Comp C (100 nM), 3CAI (25 μM), MMA (25 μM), U0126 (25 μM); animal info (Male, C57BL/6J, 25-30 g, 60-90 days old); BzATP is a P2RX7 agonist, OxATP and A740003 are P2RX7 antagonists; enzyme inhibitor (mitogen-activated protein kinase 1/2); ALZET brain infusion kit 3 used; Brain coordinates (lateral cerebral ventricle 1.0mm lateral to bregma); dependence; no stress: doses were well tolerated, and no signs of neurotoxicity (hind-limb paralysis, vocalization, food intake, or neuroanatomical damage) were observed;


Agents: RNA, small interfering; L-NAME; PACMA31 Vehicle: Saline; Route: CSF/CNS; Species: Rat; Pump: 1007D; Duration: 1 week;
ALZET Comments: Controls received mp w/ vehicle; animal info (7 week old male Sprague-Dawley rats); enzyme inhibitor (PACMA31 is a selective PDI inhibitor); ALZET brain infusion kit 1 used; Brain coordinates (1 mm posterior; 1.5 mm lateral; 3.5 mm depth from bregma); Therapeutic indication (seizure);


Agents: siHes1, scRNA NPs Vehicle: Not Stated; Route: CSF/CNS; Species: Guinea Pig; Pump: 2001; Duration: 1 day;
ALZET Comments: Dose (1 uL/hr); animal info (200-250 g, Female); siHes1 aka Hes1 siRNA; bilateral cannula used; cyanoacrylate adhesive; dependence;


Agents: RNA, small interfering (ASK1) Vehicle: siPORTNeoFX Transfection agent; Route: CSF/CNS (left lateral ventricle); Species: Mice; Pump: 1003D; Duration: 3 days;
ALZET Comments: Dose (1 IL/h/ day); animal info (Adult,C57BL/6, male); enzyme inhibitor (apoptosis signal-regulating kinase 1); ALZET brain infusion kit used; ALZET brain infusion kit used; ischemia (Cerebral);


Agents: Colominic acid, RNA, small interfering (anti-Orf2p), cell-permeable peptide Penetratin-coupled siRNA Vehicle: Saline; Route: CSF/CNS; Species: Mice; Pump: 1003D; Duration: 3 days;
ALZET Comments: 0.9% sodium chloride used; Dose (1.5 ug/ul- colomic acid, 5 uM- En 1/2); Controls received mp w/ vehicle; animal info (male, En1-het mice, ); Brain coordinates (-3.8 mm dorso/ventral); neurodegenerative (dopaminergic neurons);

**Agents:** RNA, micro 146a  
**Vehicle:** Not Stated;  
**Route:** CSF/CNS (corpus callosum);  
**Species:** Mice;  
**Pump:** 1007D;  
**Duration:** 7 days;

**ALZET Comments:** animal info (8-10 week old male C57BL/6 mice); enzyme inhibitor (interleukin-1 receptor-associated kinase 1); Brain coordinates (0 mm to the bregma, 1 mm bilateral to the midline, 1.8 mm depth from the surface of the cortex);


**Agents:** RNA, small interfering  
**Vehicle:** Not Stated;  
**Route:** CSF/CNS (intratumoral);  
**Species:** mice (nude);  
**Pump:** 1002, 2002;  
**Duration:** 14 days;

**ALZET Comments:** animal info (athymic nude, 6-8 weeks old); ALZET brain infusion kit 3 used; cancer (glioblastoma); "Because repeated surgery introduces stress and pain that may impact the survival of the experimental animals, we opted for the convection-enhanced delivery (CED) strategy using an Alzet osmotic pump to deliver a continuous supply of the nano RNAi combination..." pg E6151;


**Agents:** shRNA, NM_133534.1; antibody, CX3CR1  
**Vehicle:** NaCL; DMSO;  
**Route:** CSF/CNS;  
**Species:** Rat;  
**Pump:** 1003D;  
**Duration:** 3 days;

**ALZET Comments:** Controls received mp w/ vehicle; animal info (male, Sprague Dawley, P7); ALZET brain infusion kit 3 used; ALZET brain infusion kit 3 used; Brain coordinates;


**Agents:** RNA, small interfering (Cdc2-like kinase 2)  
**Vehicle:** Saline; DMSO;  
**Route:** CSF/CNS (lateral ventricle);  
**Species:** Mice;  
**Pump:** 1007D;  
**Duration:** 7 days;

**ALZET Comments:** Dose (2 μg/day); 0.3% DMSO used; Controls received mp w/ vehicle; animal info (Eight-week-old male Swiss, db/db mice (Leprdb/Leprdb) and Leprdb/+ mice); Small interference RNA aka siCLK2;


**Agents:** RNA, small interfering (PDI; DTNB); bactracin; Immunoglobulin, anti-PDI; tunicamycin;  
**Vehicle:** Not Stated;  
**Route:** CSF/CNS;  
**Species:** Rat;  
**Pump:** 1007D;  
**Duration:** 7 days, 14 days;

**ALZET Comments:** Controls received mp w/ vehicle or control siRNA or control IgG; animal info (male, Sprague Dawley, 7 weeks old); pumps replaced every week; ALZET brain infusion kit 1 used; Brain coordinates (behavioral testing (Beam balance, Morris water maze);


**Agents:** RNA, small interfering; TRPC6; U0126  
**Vehicle:** Not Stated;  
**Route:** CSF/CNS (right lateral ventricle);  
**Species:** Rat;  
**Pump:** 1007D;  
**Duration:** Not Stated;

**ALZET Comments:** Controls received mp w/ vehicle; animal info (7 week old male Sprague-Dawley rats); U0126 is a selective ERK1/2 inhibitor; ALZET brain infusion kit 1 used; Brain coordinates (1 mm posterior; 1.5 mm lateral; -3.5 mm depth to the bregma); Therapeutic indication (epilepsy);


**Agents:** RNA, small interfering (PDI; DTNB);  
**Vehicle:** Not Stated;  
**Route:** CSF/CNS;  
**Species:** Rat;  
**Pump:** 1007D;  
**Duration:** 7 days, 14 days;

**ALZET Comments:** Controls received mp w/ vehicle or control siRNA or control IgG; animal info (male, Sprague Dawley, 7 weeks old); pumps replaced every week; ALZET brain infusion kit 1 used; behavioral testing (behavioral seizure severity); Brain coordinates;
Agents: RNA, small interfering (HSP25) Vehicle: Saline; Route: CSF/CNS (right lateral ventricle); Species: Rat; Pump: 1007D; Duration: 7 days, 1 week;
ALZET Comments: Controls received control siRNA; animal info (7 months old); ALZET brain infusion kit 1 used; Electrophysiology; Therapeutic indication (Heat shock proteins, ER stress);

Agents: RNA, small interfering (Gastrin-specific) Vehicle: TransIT in vivo transfection reagent; Route: Kidney (subscapular space); Species: Mice; Pump: 1007D; Duration: 7 days;
ALZET Comments: Controls received mp with mock (nonsilencing) siRNA; ALZET polyethylene tubing used; Therapeutic indication (Nephrology, Hypertension, L-Dopa); Dose (3 ug/day)

Agents: RNA, small interfering (ASK1) Vehicle: siPORTNeoFX Transfection agent; Route: CSF/CNS (Left ventricle); Species: Mice; Pump: 1003D; Duration: 3 days;
ALZET Comments: animal info (C57BL/6, 8-12 weeks); Therapeutic indication (Hypoxia, late inflammation, ischemic stroke);

Agents: RNA, micro Vehicle: CSF, artificial; Route: CSF/CNS (right lateral ventricle); Species: Rat; Pump: 2001; Duration: 7 days;
ALZET Comments: Controls received mp w/ vehicle; ALZET brain infusion kit 2 used; behavioral testing (Rotarod); Dose (12.5 uM);