Recent References (2019-Present) on the Administration of Enzyme Inhibitors Using ALZET® Osmotic Pumps

Agents: ONO-4819 Vehicle: Not Stated; Route: Not Stated; Species: Mice; Pump: 2004; Duration: Not Stated;
ALZET Comments: Dose (75 ug/kg/day); animal info (male, 8-10 weeks old myeloid knockout mice); ONO-4819 is an EP4a antagonist; enzyme inhibitor (cyclooxygenase); ischemia (renal);

Agents: Candesartan Vehicle: Not Stated; Route: SC; Species: Rat; Pump: 2001D; Duration: 24 hours;
ALZET Comments: Dose (0.01 mg/kg/min); 5% dextrose in water used; animal info (4/10-week old female Wistar-Kyoto rats); Blood pressure measured via direct intracarotid method with use of digital BP analyzer; enzyme inhibitor; gene therapy; Therapeutic indication (treating renal Na+ retention and hypertension);

Agents: Ketorolac Vehicle: Saline; Route: SC; Species: Mice; Pump: 2002; Duration: 10 days;
ALZET Comments: Dose (0.64, 1.28, 6.4 mg/kg/hr); dose-response (); Controls received mp w/ vehicle; functionality of mp verified by ketorolac and prostaglandin levels in plasma and brain;

Agents: Bromodeoxyuridine, Fibroblast Growth Factor 2, Gap27 Vehicle: CSF; Route: CSF/CNS; Species: Rat; Pump: 1007D; Duration: 7 days;
ALZET Comments: Dose (0.75 ug/h BrdU, 0.0125 ug/hr FGF2, 0.13 ug/h Gap27); Controls received mp w/ vehicle; animal info (Male, Sprague Dawley, 120-280 g); dental cement used

Q10104: R. M. B. Bell, et al. Carbonyl reductase 1 amplifies glucocorticoid action in adipose tissue and impairs glucose tolerance in lean mice. Molecular Metabolism 2021;48(101225
Agents: Dexamethasone; Aldosterone; 20b-DHB Vehicle: DMSO; Propylene glycol; Route: SC; Species: Mice; Pump: Not Stated; Duration: 7 days;
ALZET Comments: Dose: 20b-DHB(20 ug/day); animal info (C57BL/6J Male, Female (8 weeks of age); Dihydrocorticosterone aka (20b-DHB) is a full agonist of the mineralocorticoid receptor.; Mifepristone is a GR antagonist RU486; Spironolactone is a MR antagonist; Carbonyl reductase 1 (Cbr1),is an enzyme inhibitor; diabetes; obesity

Agents: miR-155 inhibitor Vehicle: CSF, artificial; Route: CSF/CNS; Species: Rat; Pump: Not Stated; Duration: 1 day;
ALZET Comments: Dose (0.25 ul/hr); Controls received mp w/ vehicle; animal info (Sprague Dawley, 200-250 g, Male); enzyme inhibitor (miR-155 inhibitor); ALZET brain infusion kit XX used; Brain coordinates (3.7 mm posterior to the bregma, 4.1 mm lateral to the midline, and 3.5 mm under the dura); bilateral cannula used; dental cement used;neurodegenerative (Brain Injury);

Agents: AMD3100 Vehicle: Saline; Route: SC; Species: Mice; Pump: 1004; Duration: 21 days;
ALZET Comments: Animal info (19-25 g, Male); AMD3100 aka CXCR4 Inhibitor ; enzyme inhibitor (CXCR4 Inhibitor);

**Agents:** VIPER or Candesartan  
**Vehicle:** CSF, artificial  
**Route:** CNS/CSF  
**Species:** Rat  
**Pump:** 2002  
**Duration:** 14 days  
**ALZET Comments:** Dose (VIPER-40 µg/kg/day or Candesartan-4 µg/day); Controls received mp w/ vehicle; animal info (7 weeks old, Male, Sprague Dawley); VIPER aka TLR4 Inhibitor Candesartan aka AT1R antagonist; Brain coordinates (0.5 mm caudal to bregma, 1.5 mm lateral to the midline, and 2.7 mm below the skull surface); bilateral cannula used; cardiovascular;


**Agents:** Nonselective arginase inhibitor S-(2-boronoethyl)-L-cysteine  
**Vehicle:** Saline  
**Route:** SC  
**Species:** Mice  
**Duration:** 7 days  
**ALZET Comments:** Dose (2.3 mg/kg/day); Controls received mp w/ vehicle; animal info (Male, 8 weeks old, C57Bl/6J); Nonselective arginase inhibitor S-(2-boronoethyl)-L-cysteine aka BEC; enzyme inhibitor (Nonselective arginase inhibitor);


**Agents:** Selective Calpain 2 Inhibitor  
**Vehicle:** Not stated  
**Route:** CNS/CSF  
**Species:** Mice  
**Pump:** 2002  
**Duration:** 10 days  
**ALZET Comments:** Dose (0.3 mg/kg/day); Controls received mp w/ vehicle; animal info (C57Bl/6); Selective Calpain 2 Inhibitor aka C21; enzyme inhibitor (Selective Calpain 2 Inhibitor); neurodegenerative (Traumatic Brain Injury);


**Agents:** Dasatinib  
**Vehicle:** Not Stated  
**Route:** CNS/CSF  
**Species:** Mice  
**Pump:** 1003D  
**Duration:** 3 days  
**ALZET Comments:** 30% PEG/PBS used; (Iodine-123 Meitner-Auger PARP1 inhibitor aka 123 I-MAPi;


**Agents:** p75 NTR metalloprotease inhibitor  
**Vehicle:** Saline  
**Route:** CSF/CNS  
**Species:** Mice  
**Duration:** 7 days  
**ALZET Comments:** Dose (0.25 µl/hr); Controls received mp w/ vehicle; animal info (APP/PS1, 4-10 months old); p75 NTR metalloprotease inhibitor aka TAPI-2; enzyme inhibitor (p75 NTR metalloprotease inhibitor); Brain coordinates (0.3 mm posterior, 1.0 mm lateral, and 2.3 mm ventral to Bregma); bilateral cannula used; neurodegenerative (Alzheimer’s Disease);


**Agents:** (Iodine-123 Meitner-Auger PARP1 inhibitor  
**Vehicle:** PEG; PBS  
**Route:** CNS/CSF  
**Species:** MICE  
**Pump:** 1003D  
**Duration:** 3 days  
**ALZET Comments:** 30% PEG/PBS used; (Iodine-123 Meitner-Auger PARP1 inhibitor aka 123 I-MAPi;


**Agents:** PAI-039  
**Vehicle:** Not stated  
**Route:** CNS/CSF  
**Species:** Mice  
**Pump:** 1004  
**Duration:** 4 weeks  
**ALZET Comments:** Dose (42 ng/kg/min); Controls received mp w/ vehicle; animal info (10-11 months old); behavioral testing (Maze Test, Novel Object Recognition Test); Brain coordinates (-0.22 mm lateral, 0.8 mm, dorsal 2 mm); neurodegenerative;


**Agents:** Methionine Sulfoximine  
**Vehicle:** Saline  
**Route:** CSF/CNS  
**Species:** Rat  
**Pump:** 2004  
**Duration:** 28 days  
**ALZET Comments:** Dose (0.625 ug/hr); Controls received mp w/ vehicle; animal info (Male, Sprague Dawley, 280-400 g); Methionine Sulfoximine aka MSO; Brain coordinates (AP 7.8 mm, ML 5.2 mm, DV – 6.5 mm); bilateral cannula used;
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<td><strong>Agents:</strong></td>
<td>CLR01 <strong>Vehicle:</strong> Saline; <strong>Route:</strong> SC; <strong>Species:</strong> Mice; <strong>Pump:</strong> 1004; <strong>Duration:</strong> 28 days; <strong>ALZET Comments:</strong> Dose (40 ug/kg/day); Controls received mp w/ vehicle; animal info (C57BL/6, 17 month old); CLR01 aka amyloid inhibitor; enzyme inhibitor (CLR01); neurodegenerative (Parkinson’s Disease);</td>
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<td><strong>Agents:</strong></td>
<td>S-Methyl-L-thiocitrulline <strong>Vehicle:</strong> Saline; <strong>Route:</strong> SC; <strong>Species:</strong> Rat; <strong>Pump:</strong> 1007D; <strong>Duration:</strong> 7 days; <strong>ALZET Comments:</strong> Dose (0.5 ± 0.1 μL/hr/day); 0.9% saline used; animal info (male Sprague Dawley); post op. care (Ampicillin, meloxicam); enzyme inhibitor (S-Methyl-L-thiocitrulline is a neuronal nitric oxide synthase (nNOS) inhibitor); Brain coordinates (AP–1.0 mm, ML –2.0 mm, DV –3.5mm from bregma); bilateral cannula used; dependence;</td>
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<td><strong>Agents:</strong></td>
<td>PDE1-selective inhibitor <strong>Vehicle:</strong> Saline; <strong>Route:</strong> SC; <strong>Species:</strong> Mice; <strong>Pump:</strong> 2004; <strong>Duration:</strong> 4 weeks; <strong>ALZET Comments:</strong> Dose (3 mg/kg/day); Controls received mp w/ vehicle; animal info (4 months old, ); PDE1-selective inhibitor aka IC86430 ; enzyme inhibitor (PDE1-selective inhibitor); cardiovascular;</td>
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<td><strong>Agents:</strong></td>
<td>PDE1-selective inhibitor <strong>Vehicle:</strong> DMSO/Saline; <strong>Route:</strong> SC; <strong>Species:</strong> Mice; <strong>Pump:</strong> 2004; <strong>Duration:</strong> 4 weeks; <strong>ALZET Comments:</strong> Dose (3 mg/kg/day); Controls received mp w/ vehicle; animal info (4 months old, );</td>
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<td><strong>Agents:</strong></td>
<td>Carbon monoxide-releasing molecule-2; Zinc protoporphyrin IX <strong>Vehicle:</strong> CSF, Artificial; DMSO, Buffered; <strong>Route:</strong> CSF/CNS (paraventricular nucleus); <strong>Species:</strong> Rat; <strong>Pump:</strong> 2006; <strong>Duration:</strong> 6 weeks; <strong>ALZET Comments:</strong> Dose ((CORM-2 2 nmol/h),(ZnPP IX 2 nmol/h)); 0.5% DMSO in aCSF used; Controls received normal-salt diet and mp w/ vehicle; animal info (male, Dahl Salt-Sensitive, 250-275g); post op. care (buprenorphine 0.01 mg/kg SC immediately after and 12 h postoperatively); Carbon monoxide-releasing molecule-2 (aka CORM-2) is an agent that releases CO from tricarbonyldichlororuthenium (II) dimer; Brain coordinates (1.8 mm posterior to the bregma, 0.4 mm lateral to the central line, and 7.9 mm ventral to the zero level); Pump implantation occured at week 4 of study. Cannulae were secured using dental acrylic. Author states “The success rate of bilateral PVN microinjection was 75%.” p.2; Therapeutic indication (exogenous or endogenous CO within the PVN might have potential antihypertensive treatment by downregulating COX2 and PICs in the PVN and by reducing PVN oxidative stress-mediated sympathetic activity in high salt-induced hypertension);</td>
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<th>Q6949:</th>
<th>T. Zera, et al. Microglia and brain angiotensin type 1 receptors are involved in desensitising baroreflex by intracerebroventricular hypertonic saline in male Sprague-Dawley rats. Autonomic Neuroscience: Basic and Clinical 2019;217(49-57</th>
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<td><strong>Agents:</strong></td>
<td>Minocycline, Losartan <strong>Vehicle:</strong> Saline, iso-osmotic, Saline, hyperosmotic; <strong>Route:</strong> CSF/CNS (lateral ventricle); <strong>Species:</strong> Rat; <strong>Pump:</strong> 2ML2; <strong>Duration:</strong> 2 weeks; <strong>ALZET Comments:</strong> Dose (Minocycline-5 μg/h; Losartan- 12.5 μg/h); 0.9% isosmotic saline with minocycline, 5% Hyperosmotic saline with Losartan used; animal info (Normotensive adult male Sprague-Dawley rats); Brain coordinates (1.2mm posterior to bregma, −1.8mm laterolateral from sagittal suture, diameter 0.5 mm) bilateral cannula used; cyanoacrylate adhesive;</td>
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   **Agents:** Lck inhibitor **Vehicle:** DMSO, Kolliphor **Route:** CSF/CNS **Species:** Mice; **Pump:** 1004; **Duration:** 4 weeks;
   **ALZET Comments:** Controls received mp w/ vehicle; animal info (8 weeks old, Nu/J, Male); Lck-I aka Lck Inhibitor; enzyme inhibitor (Lck Inhibitor); ALZET brain infusion kit 3 used; Brain coordinates (+0.5 mm and +1.1 mm ML relative to Bregma);

   **Agents:** IPI-9119 **Vehicle:** 1-methyl-2-pyrrolidinone; sodium phosphate buffer; **Route:** SC; **Species:** Mice; **Pump:** 2002; **Duration:** 4 weeks;
   **ALZET Comments:** Dose (100 mg/mL); 20% 1-methyl-2-pyrrolidinone used; cancer (prostate); no stress: Mice did not show any signs of toxicity, stress, weight loss, or changes in feeding behavior. (see pg. 635);

   **Agents:** handle region peptide **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Pump:** Not Stated; **Duration:** 4 weeks;
   **ALZET Comments:** Dose (0.01, 0.3 mg/kg/d); Controls received sham surgery and mp w/ vehicle; animal info (8 weeks, C57BL/6J); Therapeutic indication (candidate to treat heart failure in CKD due to inhibition of unfavorable signaling pathways via both AT1R and (P)RR);

   **Agents:** Cambinol **Vehicle:** Not stated; **Route:** CSF/CNS; **Species:** Mice; **Pump:** Not Stated; **Duration:** 28 days;
   **ALZET Comments:** Dose (0.31 ug/kg/day); animal info (Male, C57BL/6, 8-10 wk); Brain coordinates (anteroposterior=-0.6 mm, mediolateral=1.5 mm dorsoventral= 2.0 mm); neurodegenerative (Depressive Disorder);

   **Agents:** LY294002 **Vehicle:** CSF, artificial; **Route:** CSF/CNS (left lateral ventricle); **Species:** Mice; **Pump:** 1003D; 2002;
   **ALZET Comments:** Dose (5 ug/ml); Controls received mp w/ vehicle; animal info (Eight-week-old male C57BL6/J mice);

   **Agents:** Glibenclamide **Vehicle:** DMSO, NaOH, Saline; **Route:** SC; **Species:** Rat; **Pump:** 2004; **Duration:** Not Stated;
   **ALZET Comments:** Dose (200ng/hour); animal info (80 male Sprague Dawley rats (275-450 g, ~2-4 months old));

   **Agents:** Inhibitor receptor-associated protein **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Pump:** 2004; **Duration:** 21 days;
   **ALZET Comments:** Dose (0.25 ul/h); Controls received mp w/ vehicle; animal info (8-12 weeks old, C57BL/6/J mice);

   **Agents:** POL5551; POL6326 **Vehicle:** Saline; **Route:** SC; **Species:** Mice; Pigs; **Pump:** 1007D; **Duration:** 7 days;
   **ALZET Comments:** Dose (8mg/kg/dose); Controls received mp w/ vehicle; animal info (female pigs; 8-10 wk male mice);

**Agents:** 2-[(4-biphenylsulfonyl)amino]-3-phenyl-propionic acid  
**Vehicle:** Not Stated;  
**Route:** IV (inferior mesenteric vein); IP;  
**Species:** Rat (transgenic);  
**Pump:** 2ML1; 2001;  
**Duration:** 7 days;  
**ALZET Comments:** Dose (100 μg/h); animal info (Male Lew-Tg(CAG-EGFP)ys rats); (Matrix metalloproteinases 2/9);


**Agents:** Mdivi-1  
**Vehicle:** Not Stated;  
**Route:** Not Stated;  
**Species:** Rat;  
**Pump:** 1003D;  
**Duration:** Not Stated;  
**ALZET Comments:** Dose (1 mg/kg/day); Controls received mp w/ vehicle; animal info (Adult male Sprague-Dawley rats 250–300 g); behavioral testing (Bames Maze Task, Morris Water Maze Test);


**Agents:** Vigabatrin  
**Vehicle:** PBS;  
**Route:** SC;  
**Species:** Mice;  
**Pump:** Not Stated;  
**Duration:** Not Stated;  
**ALZET Comments:** Dose (100 mg/kg/day); 50% DMSO used; animal info (C57BL/6J 5-week-old male mice); enzyme inhibitor (Vigabatrin inhibits GABA transaminase);


**Agents:** Propanoic acid, (3S)-3-(3-bromo-5-(tert-butyl)phenyl)-3-(2-(3-hydroxy-5-((5-Hydroxy-1,4,5,6-tetrahydropyrimidin-2-yl)amino)benzamido)acetic acid)  
**Vehicle:** DMSO, Water;  
**Route:** SC;  
**Species:** Mice;  
**Pump:** Not Stated;  
**Duration:** 4 weeks;  
**ALZET Comments:** Dose (100 mg/kg/day); 50% DMSO used; animal info (C57BL/6J 5-week-old male mice); enzyme inhibitor (integrin inhibitor); Therapeutic indication (nonalcoholic steatohepatitis; liver fibrosis);


**Agents:** oxATP; BBG; YM872  
**Vehicle:** PBS;  
**Route:** Not stated;  
**Species:** Rat;  
**Pump:** Not stated;  
**Duration:** Not Stated;  
**ALZET Comments:** Dose (oxATP (1 mM), BBG (540 μM) and YM872 (240 μM)); Controls received mp w/ vehicle; animal info (Thirty-eight adult, female PVG rats); post op. care (2.8mg/kg carprofen); behavioral testing (optokinetic nystagmus assessment);


**Agents:** Dexmedetomidine  
**Vehicle:** Saline;  
**Route:** SC;  
**Species:** Rat;  
**Pump:** Not Stated;  
**Duration:** 1 week;  
**ALZET Comments:** Dose (25 μg/mL); Controls received mp w/ vehicle; animal info (Sprague Dawley, Male, 400 g); Dexmedetomidine aka DEX; enzyme inhibitor (a2 adrenergic receptor agonist); bilateral cannula used; dependence;


**Agents:** MCC950  
**Vehicle:** Saline;  
**Route:** CSF/CNS (right lateral ventricle);  
**Species:** Mice;  
**Pump:** 2006;  
**Duration:** 6 weeks;  
**ALZET Comments:** Dose (0.15 μl/h); Controls received mp w/ vehicle; enzyme inhibitor (inflammasome inhibitor); ALZET brain infusion kit 3 used; Brain coordinates (A/P, − 0.5; L, − 1.1; relative to bregma); cyanoacrylate adhesive; neurodegenerative (Alzheimer's Disease);


**Agents:** Diphenyleneiodonium  
**Vehicle:** Saline;  
**Route:** SC;  
**Species:** Mice;  
**Pump:** Not Stated;  
**Duration:** 3 months;  
**ALZET Comments:** Dose (10 ng/kg/day); Controls received mp w/ vehicle; animal info (C57/BL, 3 months old, Male); DPI aka Diphenyleneiodonium ; enzyme inhibitor (NOX2 inhibitor); neurodegenerative (Parkinson’s Disease);
**ALZET® Bibliography**

**Q9045:** A. D. Snow, *et al.* The Amazon rain forest plant Uncaria tomentosa (cat's claw) and its specific proanthocyanidin constituents are potent inhibitors and reducers of both brain plaques and tangles. Scientific Reports 2019;9(1):561

**Agents:** B-amyloid inhibitor  
**Vehicle:** Saline;  
**Route:** CSF/CNS;  
**Species:** Mice;  
**Pump:** 2002;  
**Duration:** 2 weeks;

**ALZET Comments:** Dose (8 mg/ml); Controls received mp w/ vehicle; animal info (6-8 months old); B-amyloid inhibitor aka PTI-777; enzyme inhibitor (B-amyloid inhibitor); Brain coordinates (AP -1.7; ML 3.0; DV -3.0); bilateral cannula used; neurodegenerative (Alzheimer's Disease);


**Agents:** Corticotropin-releasing factor receptor type 1 antagonist;  
**Route:** SC;  
**Species:** Rat;  
**Pump:** 2001;  
**Duration:** 7 days;

**ALZET Comments:** Dose (4 mg/kg/day); Controls received mp w/ vehicle; animal info (Sprague Dawley, 2 months old); behavioral testing (Object Recognition Test, Object Location Test); CRFR1 antagonist aka Corticotropin-releasing factor receptor type 1 antagonist; enzyme inhibitor (CRFR1 inhibitor); Brain coordinates (AP-1.3, L 2.0, V 3.5 mm); dependence;

**R0374:** C. Shimbori, *et al.* The Role of Mast Cells in the Pathophysiology of Pulmonary Fibrosis. Not Stated 2019;135-173

**Agents:** TY-51469, H4R antagonist, MK-571 ; PD123319 Vehicle: Not Stated;  
**Route:** SC;  
**Species:** Mice;

**ALZET Comments:** Dose: TY-51469 (0.1 or 1.0 mg/kg/day), H4R antagonist (40 mg/kg); PD123319 (0.5 or 5 mg/kg/d); animal info (ICR, C57BL/6 mice);


**Agents:** Fasudil Vehicle: Not stated;  
**Route:** CNS/CSF;  
**Species:** Mice;  
**Pump:** 2001;  
**Duration:** 7 days;

**ALZET Comments:** Dose (25 gm/kg/day); Controls received mp w/ vehicle; animal info (CD1, Male, 25-30 g);


**Agents:** MIF inhibitor, Nitrofen Vehicle: Not Stated;  
**Route:** SC;  
**Species:** Rat;  
**Pump:** Not Stated;  
**Duration:** 21 days;

**ALZET Comments:** Dose (200 mg- Nitrofen, 1.8 mg/kg/day- MIF inhibitor); animal info (Adult, );


**Agents:** Compound A Vehicle: DMSO;  
**Route:** SC;  
**Species:** Mice;  
**Pump:** Not Stated;  
**Duration:** 2 weeks;

**ALZET Comments:** Controls received mp w/ vehicle; animal info (4 weeks old, C57BL/6, Male);


**Agents:** Amiloride, SC144, Etanercept Vehicle: CSF, artificial;  
**Route:** CSF/CNS;  
**Species:** Rat  
**Duration:** 72 hours;

**ALZET Comments:** Dose (Amiloride- 50 ug, SC144- 10 ug, ETAN-10 uM); Controls received mp w/ vehicle; animal info (Male, Sprague Dawley, 200-250 g); Brain coordinates (3.7 mm posterior to the bregma, 4.1 mm lateral to the midline, and 3.5 mm under the dura); ischemia (Global);

**Q8924:** H. Oshima, *et al.* Empagliflozin, an SGLT2 Inhibitor, Reduced the Mortality Rate after Acute Myocardial Infarction with Modification of Cardiac Metabolomes and Antioxidants in Diabetic Rats. The Journal of Pharmacology and Experimental Therapeutics 2019;368(3):524-534

**Agents:** Empagliflozin Vehicle: DMSO;  
**Route:** SC;  
**Species:** Rat;  
**Pump:** Not Stated;  
**Duration:** 2 weeks;

**ALZET Comments:** Dose (10 mg/kg/day); animal info (Male, 25-30 weeks);

**Q7610:** T. Odaira, *et al.* Mechanisms underpinning AMP-activated protein kinase-related effects on behavior and hippocampal neurogenesis in an animal model of depression. Neuropsychopharmacology 2019;150(121-133

**Agents:** Peptide, zeta-inhibitor Vehicle: Saline;  
**Route:** CSF/CNS;  
**Species:** Mice;  
**Pump:** 2002;  
**Duration:** 14 days;

**ALZET Comments:** Dose (5 ug/12 ul/day); animal info (6- weeks old, 26-28 g); behavioral testing (Forced Swim Test, Tail-Suspension Test); ZIP aka zeta-inhibitory peptide; enzyme inhibitor (zeta-inhibitor); ALZET brain infusion kit 3 used; Brain coordinates (1.00 L, 0.22 P, 3.00 to bregma); bilateral cannula used; cyanoacrylate adhesive; dependence;
Agents: Clozapine N-oxide Vehicle: Vehicle; Route: SC; Species: Mice; Pump: Not Stated; Duration: 6 weeks
ALZET Comments: Controls received mp w/ vehicle; animal info (10 weeks old, Male); behavioral testing (Pressure Application Measurement, Up-Down staircase Test);

Q7614: J. Nie, et al. Ranolazine prevents pressure overload-induced cardiac hypertrophy and heart failure by restoring aberrant Na(+) and Ca(2+) handling. J Cell Physiol 2019;234(7):11587-11601
Agents: Ranolazine Vehicle: Saline; Route: SC; Species: Mice; Pump: 1004; Duration: 4 weeks
ALZET Comments: Dose (40 mg/kg/d); Controls received mp w/ vehicle; animal info (C57BL/6/J, 8 week old, Male);

Agents: Ro-31-8220; imatinib Vehicle: PBS; Route: SC; Species: Mice (transgenic); Pump: 2002; Duration: 14 days
ALZET Comments: Dose (Ro-31-8220 (1 mM); imatinib (0.5 mM)); Controls received mp w/ vehicle; animal info (6-12 week old transgenic mice); enzyme inhibitor (Protein Kinase C);

Agents: Rotenone Vehicle: DMSO, PEG; Route: SC; Species: Mice; Pump: 2004; Duration: 4 weeks
ALZET Comments: Dose (2.5 mg/kg/day); 50 DMSO: 50 PEG used; Controls received mp w/ vehicle; animal info (male C57BL/6J mice nine weeks old; approximately 25 g);

Agents: arginine methyltransferase 3 inhibitor Vehicle: DMSO; Route: SC; Species: Mice; Pump: 2002; Duration: 2, 4, 6 wks
ALZET Comments: Dose (20 mg/kg/day); animal info (8 weeks old, C57BL/6); Multiple pumps per animal (1, 2, or 3);

Agents: Okadaic acid Vehicle: CSF, artificial; Route: SC; Species: Rat; Pump: 2002; Duration: 14 days
ALZET Comments: Dose (2.4 nm); animal info (Male, Wistar rat, 2 months old); okadaic acid aka OA; enzyme inhibitor (non-specific phosphatase inhibitor); ALZET brain infusion kit 1 used; bilateral cannula used; (Alzheimer’s Disease);

Q7557: S. Martinez-Martinez, et al. Cardiomyocyte calcineurin is required for the onset and progression of cardiac hypertrophy and fibrosis in adult mice. FEBS J 2019;286(1):46-65
Agents: Angiotensin II, Cyclosporin A Vehicle: Not Stated; Route: SC; Species: Mice; Pump: 2001, 2004; Duration: 21 days
ALZET Comments: Dose (60 ug/kg/h-Ang II, 0.208 mg/kg/h- CsA); animal info (C57BL/6/J, 8-12 weeks old);

Agents: CLR01 Vehicle: Saline; Route: SC; Species: Mice; Pump: 1004; Duration: 6 weeks
ALZET Comments: Dose (0.0, 0.5, or 5.0 mg/kg); 0.9% saline used; Controls received mp w/ vehicle; animal info (Transgenic B6SJL-Tg mice); behavioral testing (grip-strength test, rotarod test); half-life: 1-2 hours (p.5);
Agents: Cydn-4-36, Temozolomide, or both Vehicle: DMSO; Route: SC; Species: Mice; Pump: Not stated; Duration: 14 days;
ALZET Comments: Dose (Cydn- 150 mg/kg/day or TMZ-20 mg/kg/day); animal info (8-10 weeks old, BALB/c nu/nu);

Agents: Casein kinase I inhibitors Vehicle: Not stated; Route: CNS/CSF; Species: Mice; Pump: 1004 or 1002;
ALZET Comments: animal info (8 weeks old, Male, C57BL/6J); Casein kinase I inhibitors aka NCC007 and londaysin; Brain coordinates (0.2 mm anterior, 1.4 mm lateral, and 2.2 mm from the surface of the skull); dental cement used; dependence;

Agents: Chloroquine, Pan-MTOR inhibitor-21 mg/ml, or leupeptin Vehicle: DMSO; Route: CSF/CNS; Species: Mice; Pump: 1007D; Duration: 5 days (Pan-MTOR inhibitor) or 7 days (leupeptin);
ALZET Comments: Dose (Chloroquine-5 mg/kg/day, Pan-MTOR inhibitor-50 mg/kg/day, or leupeptin-4 mg/kg/day); 4% DMSO used; animal info (TRGL6, 4 months old); Brain coordinates (lateral ventricle: AP – 0.3mm to bregma, ML 1.0mm to bregma, and DV 2.5 mm to cranium); neurodegenerative (Autophagy-Lysosome Pathway);

Agents: MGCD0103 Vehicle: Not Stated; Route: SC; Species: Rat; Pump: Not Stated; Duration: 4 weeks;
ALZET Comments: Dose (10 μg/day); animal info (Male Sprague-Dawley rats (6-week old and about 200 g));

Agents: Pyridostigmine Bromide; Donepezil Vehicle: Not Stated; Route: SC; Species: Rat; Pump: 2004; Duration: 16 weeks;
ALZET Comments: Dose (Pyridostigmine bromide at 1.5 mg/kg/day; Donepezil at 1.4 mg/kg/day); animal info (5 week old male SHR and Wistar Kyoto rats); pumps replaced every 4 weeks; long-term study; BP measured via Tail-cuff method;

Agents: Cathepsin B inhibitor Vehicle: Dimethyl sulfoxide; Route: SC; Species: Mice; Pump: 1002; Duration: 14 days;
ALZET Comments: Dose (2.5 mL/hr); 1.5% DMSO used; animal info (6 weeks old);

Agents: NLRP3 inhibitor Vehicle: Saline; Route: SC; Species: Mice; Pump: Not Stated; Duration: 25 days;
ALZET Comments: Dose (10 kg/mg/day); 0.9% Saline used; animal info (Male, C57BL/6J, 10-12 weeks old, 25-30 g);

Agents: liraglutide; dorsomorphin Vehicle: Saline; Route: SC; Species: Mice (hyperglycemic); Pump: 1002; Duration: 4 weeks;
ALZET Comments: Dose ((liraglutide 17, 107 nmol/kg/day), (dorsomorphin 52.9 μmol/kg/day)); Controls were normoglycemic and received mp w/ vehicle; animal info (20 week, male, ApoE-/-); pumps replaced every 2 weeks;

Agents: DNMT inhibitor Vehicle: Saline; Route: SC; Species: Mice; Pump: 2002; Duration: 2 weeks;
ALZET Comments: Dose (0.5 or 2 mg/dl); Controls received mp w/ vehicle; animal info (6 weeks old, Male, C57BL/6J);
**Agents:** Bisindolylmaleimide; KN-93; H-89; U0126; SP600125; okadaic acid; cyclosporin  
**A Route:** CSF/CNS (right lateral ventricle);  
**Species:** Rat;  
**Pump:** 1003D;  
**Duration:** 3 days;  
**ALZET Comments:** Dose (BIM 25uM, KN-93 25uM, H-89 10uM, U0126 25uM, okadaic acid 10uM, cyclosporine A 250uM); animal info (male SD rats 7 wk old); behavioral testing (Morris Water maze test); Brain coordinates (1 mm posterior; 1.5 mm lateral; 3.5 mm depth to the bregma);

**Agents:** candesartan  
**Vehicle:** Not Stated;  
**Route:** SC;  
**Species:** Rat;  
**Pump:** 2001D;  
**Duration:** 24 hours;  
**ALZET Comments:** Dose (0.01 mg/kg/min); Controls received mp w/ agent; animal info (4 weeks, male and female, Wistar-Kyoto (WKY) and spontaneously hypertensive (SHR); all animals received pump with candesartan 24h prior to experiments to block systemic AT1Rs.;

**Agents:** Angiotensin II; B-aminopropionitrile  
**Vehicle:** Saline;  
**Route:** SC;  
**Species:** Mice;  
**Pump:** Not stated;  
**Duration:** 1,6 weeks;  
**ALZET Comments:** Dose (Angiotensin II (1000 ng/kg per day); B-aminopropionitrile (150 mg/kg/day)); Controls received mp w/ vehicle; animal info (Male C57BL/6J mice (10–12 weeks; 25–30 g)); Multiple pumps per animal (2); B-aminopropionitrile is an enzyme inhibitor (lysyl oxidase inhibitor); cardiovascular;

**Agents:** C-type natriuretic peptide  
**Vehicle:** Ultra-pure water;  
**Route:** SC;  
**Species:** Mice;  
**Pump:** Not stated;  
**Duration:** 4 weeks;  
**ALZET Comments:** Dose (0.33 or 1 mg/kg/day); Controls received mp w/ vehicle; animal info (5 weeks old, Braf Q341R/+); C-type natriuretic peptide aka inhibitor of the FGFR3-RAF1-MEK/ERK signaling ; enzyme inhibitor (inhibitor of the FGFR3-RAF1-MEK/ERK signaling); antihypertensive;

**Agents:** MS-275; trichostatin A  
**Vehicle:** Acetic Acid, Buffered;  
**Route:** IP;  
**Species:** Mice;  
**Pump:** Not stated;  
**Duration:** 3 days;  
**ALZET Comments:** Dose ((MS275 20 mg/kg/day), (TSA; 1 mg/kg/day)); Acetic acid (pH 5.0) used; Controls received sham surgery and mp w/ vehicle; animal info (10-week, male, C57BL/6L); enzyme inhibitor (MS275 for class I HDAC, TSA for pan-HDAC); “Often in rodent model studies, HDACi are delivered by single or daily i.p. injections (30, 32, 47, 62). Our study used i.p. osmotic minipumps to deliver a constant concentration of HDACi, to mimic pharmacokinetics of humans better, and this may partially explain the difference in findings among these studies. For example, in the cisplatin model of nephrotoxicity, when TSA was given via i.p. daily, there was a significant enhancement of tubular autophagy and renoprotection (32). In our study of bilateral IRI, we found increased autophagy marker expression in the cortex, but continuous HDACi did not further enhance autophagy, and in some cases the autophagy markers (e.g., beclin) were reduced compared with the vehicle-treated mice.” pg.F885;

**Agents:** EX-527; 10068-F4  
**Vehicle:** Not Stated;  
**Route:** SC;  
**Species:** Mice;  
**Pump:** Not stated;  
**Duration:** 4 weeks;  
**ALZET Comments:** Dose ( EX-527 5 mg/kg/day, 10068-F4 30mg/kg/day ); Controls received mp w/ vehicle; animal info (BKS.Cg-Dock7mC=CLeprdb=J mice, 8 weeks old); enzyme inhibitor (EX-527 is an SIRT1 inhibitor, 10058-F$ is a c-Myc inhibitor); diabetes;
4-(5-phenyl-3-{3-[3-(4-trifluoromethyl-phenyl)-ureido]-propyl}-pyrazol-1-yl) benzenesulfonamide is a dual COX-2/sEH inhibitor; enzyme inhibitor (cyclooxygenase-2 and soluble epoxide hydrolase); cancer (ovarian);

ALZET Comments:

Agents:
Q7082:
coordinates (0.5 mm anterior to bregma, 0.7 mm laterally from the longitudinal midline);
inhibitor aka LDN-193189 ; enzyme inhibitor (Bone morphogenetic protein 4 inhibitor); ALZET brain infusion kit 3 used; Brain

ALZET Comments:

Agents:

Potentiating Oligodendrocyte Differentiation. eNeuro 2019;6(2):
Q8012:
TGF0BRI ; enzyme inhibitor (Transforming growth factor-BI Inhibitor); neurodegenerative (Myelination);

ALZET Comments:

Agents:
Q8736:
M. Hamaguchi, et al. Circulating transforming growth factor-beta1 facilitates remyelination in the adult central nervous system. 2019;8(Agents: Transforming Growth Factor-BI Inhibitor Vehicle: Saline; Route: CSF/CNS; Species: Mice; Pump: 1002; Duration: Not Stated; ALZET Comments: Dose (7.25 ug/kg/day); animal info (Female, 8-10 weeks old); Transforming growth factor-BRI Inhibitor aka TGF0BRI ; enzyme inhibitor (Transforming growth factor-BI Inhibitor); neurodegenerative (Myelination);

Q8012: A. E. Govier-Cole, et al. Inhibiting Bone Morphogenetic Protein 4 Type I Receptor Signaling Promotes Remyelination by Potentiating Oligodendrocyte Differentiation. eNeuro 2019;6(2);

Agents: LDN-193189 Vehicle: CSF, artificial; Route: CSF/CNS (ventricle); Species: Mice; Pump: 1007D; Duration: 7 days;
ALZET Comments: Dose (400 ng/day); Controls received mp w/ vehicle; animal info (7-8 weeks old, C57BL/6); Pharmacological inhibitor aka LDN-193189 ; enzyme inhibitor (Bone morphogenetic protein 4 inhibitor); ALZET brain infusion kit 3 used; Brain coordinates (0.5 mm anterior to bregma, 0.7 mm laterally from the longitudinal midline);

Agents: PTUPB Vehicle: Not Stated; Route: IP; Species: Mice (SCID); Pump: Not Stated; Duration: 4 weeks;
ALZET Comments: Dose (30 mg/kg/d); animal info (6-wk-old female C57BL/6 or SCID mice); PTUPB aka 4-(5-phenyl-3-[3-{3-(4-trifluoromethyl-phenyl)-ureido}-propyl]-pyrazol-1-yl) benzenesulfonamide is a dual COX-2/seEH inhibitor; enzyme inhibitor (cyclooxygenase-2 and soluble epoxide hydrolase); cancer (ovarian);

Q8001: E. Gabande-Rodriguez, et al. Lipid-induced lysosomal damage after demyelination corrupts microglia protective function in lysosomal storage disorders. EMBO J 2019;38(2);

Agents: Ca074Me Vehicle: Saline; Route: CSF/CNS; Species: Mice; Pump: 1004; Duration: 1 month;
ALZET Comments: Dose (1 mg/ml); 0.9% Saline used; Controls received mp w/ vehicle; animal info (ASMko, 2 months old); behavioral testing (Rotarod Test); Cathb inhibitor aka Ca074Me; enzyme inhibitor (Cath B inhibitor); ALZET brain infusion kit 3 used; Brain coordinates (AP, -0.5 mm; ML, 1 mm; and DV, -2.2 mm); dependence;