
**Agents:** Sildenafil  
**Vehicle:** Saline  
**Route:** SC  
**Species:** Lamb  
**Pump:** Not Stated  
**Duration:** 6 days

**ALZET Comments:** Dose: (6 mg/day); Controls received mp w/ vehicle; animal info: Fetal lamb model of PPHN; Cardiovascular


**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; hypoxia and normoxia

Q8506: B. Gomes de Almeida Schirmer, et al. The NO-donor MPC-1011 stimulates angiogenesis and arteriogenesis and improves hindlimb ischemia via a cGMP-dependent pathway involving VEGF and SDF-1alpha. Atherosclerosis 2020;304(30-38

**Agents:** MPC-1011; Cilostazol  
**Vehicle:** Not stated  
**Route:** SC  
**Species:** Rat  
**Pump:** 2004  
**Duration:** Not stated

**ALZET Comments:** Dose (3.6 mg/day MPC-1011; 100 mg/kg/bi-daily Cilostazol); animal info (Four-week-old male Sprague-Dawley rats); MPC-1011 aka novel NO-donor; cardiovascular


**Agents:** Apelin-13  
**Vehicle:** CSF, Artificial  
**Route:** CSF/CSN  
**Species:** Mice  
**Pump:** 1002  
**Duration:** 14 days

**ALZET Comments:** Dose (30 μg); Controls received mp w/ vehicle; animal info (APLNKO mice); Apelin-13 aka APLN; ALZET brain infusion kit 3 used; Brain coordinates (1 mm anterior and 1.5 mm right to the bregma); cancer (Glioblastoma);


**Agents:** GDGRGDACK  
**Vehicle:** Dextran, sulfate  
**Route:** SC  
**Species:** Mice  
**Pump:** 1003D  
**Duration:** 3 days

**ALZET Comments:** Dose (2.4 mg/mouse/day); 1% Dextran Sulfate used; animal info (C57BL/6 wild-type mice, 8-20 weeks old); peptides; gene therapy;


**Agents:** NEP1-40  
**Vehicle:** DMSO/Saline  
**Route:** CSF/CNS  
**Species:** Rat  
**Pump:** 2ML4  
**Duration:** 1, 3 weeks

**ALZET Comments:** Dose (1 mg); Controls received mp w/ vehicle; animal info (Male, Sprague Dawley, 8-10 weeks old, 280-320 g); behavioral testing (Beam Walking Test, Morris Water Maze Test); NEP1-40 aka Specific antagonist of the Nogo-66 receptor; ALZET brain infusion kit 2 used; Brain coordinates (anteroposterior −0.9 mm and mediolateral +2.0 mm); ischemia (Cerebral)


**Agents:** Ephrin B2-Fc, human recombinant; Fc-IgG, human recombinant  
**Vehicle:** PBS, Human Serum Albumin buffered  
**Route:** CSF/CNS (lateral ventricle)  
**Species:** Rat  
**Pump:** Not Stated  
**Duration:** 3 days

**ALZET Comments:** Dose ((EphB2-Fc 100 μl), (IgG-Fc 100 μl)); 0.01M phosphate-buffered saline (pH7.4) containing 0.1% human serum albumin used; Controls received sham surgery; animal info (male, Sprague-Dawley, 8-10 weeks old, 280-320 g); post op. care (Body temperature of animals kept at 37+/-0.5C with a heating pad during recovery); behavioral testing (Adhesive removal test); Brain coordinates (1.0 mm anteroposterior, 1.4 mm lateral, 4.0 mm dorsoventral relative to bregma); Cannula placement verified via stereotaxic frame; ischemia (cerebral infarction); pump model not stated although flow rate listed as 100ul; Therapeutic indication (EphB2-Fc treatment significantly accelerated the sensory recovery compared with those in the IgG–Fc group, Activation of ephrinB2 can promote angiogenesis, decrease Abeta deposits and rescue the secondary neurodegeneration of thalamus after cerebral infarction);

**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:** Cordycepin **Vehicle:** DMSO; **Route:** SC; **Species:** Mice; **Pump:** Not stated; **Duration:** 7 days;

**ALZET Comments:** Dose (2.4 mg/kg/day); Controls received mp w/ vehicle; animal info (BALB/c, ); dependence;


**Agents:** EX-527; 10068-F4 **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice; **Pump:** 1002; **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); diabetes;


**Agents:** Relaxin, human recomb. **Vehicle:** Not Stated; **Route:** SC; **Species:** Rat (pregnant); **Pump:** Not Stated; **Duration:** 28 days;

**ALZET Comments:** Dose (2000 ng/h); Resultant plasma level (RLX level close to 0.5 ng/mL); gene therapy;


**Agents:** oxamate; L-lactate, Sodium **Vehicle:** CSF, Artifical; Saline, Sterile; **Route:** CSF/CNS (lateral ventricle); CSF/CNS (globus pallidus); **Species:** Rat; **Pump:** Not Stated; **Duration:** 2, 7, 14 days;

**ALZET Comments:** oxamate 7 or 14 days; L-lactate 2 or 7 days; Dose ((OXA 10, 25, 50 mM), (L-lactate 5, 10, 25 mM)); Controls received sham surgery and mp w/ vehicle; animal info (male, Sprague-Dawley, 220-250g); behavioral testing (modified neurological severity score); oxamate aka OXA is an LDH inhibitor; enzyme inhibitor (lactate dehydrogenase); ischemia (intracerebral hemorrhage); pump model not stated but flow rate was listed at 0.5 μL/h;Therapeutic indication (lactate may assist to facilitate angiogenesis and neurogenesis following ICH);


**Agents:** Peptide, human alpha calcitonin gene-related **Vehicle:** Saline, Sterile Physiological; **Route:** SC; **Species:** Mice; **Pump:** Not Stated; **Duration:** 28 days;

**ALZET Comments:** Dose (1 μmol/l at 0.5μl/h); Controls received mp w/ vehicle; animal info (8 weeks, male, C57BL/6); CGRP is a 37-amino acid peptide produced as a consequence of alternative RNA processing of the calcitonin gene; ischemia (cerebral ischemia); only WT mice were used for mp experiments; Therapeutic indication (Calcitonin gene-related peptide administration promotes cerebral blood flow recovery, suppresses astrocyte activation and increases angiogenesis after cerebral ischemia);

Q7165: Yanru Zhao1, Mengwen Yan1,2,* , Chen Chen1,* , Wei Gong1,3, Zhongwei Yin1, Huaping. et al. MiR-124 aggravates failing hearts by suppressing CD151-facilitated angiogenesis in heart. Oncotarget 2018;9(18):14382-14396

**Agents:** Angiotensin II **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice; **Pump:** 1004; **Duration:** 28 days;

**ALZET Comments:** Dose (1.5 mg/kg/day); animal info (Male C57BL/6 mice (22–25 g));


**Agents:** CD31 antibody, LHDA **Vehicle:** Saline; **Route:** CSF/CNS; **Species:** Mice; **Pump:** 1007D; **Duration:** 1 week;

**ALZET Comments:** Dose (0, 10, 100 ug/kg/day-LHDA, ); Controls received mp w/ vehicle; animal info (C57BL/6J); Brain coordinates (0.2 mm posterior, 2.5 mm left, and 3 mm depth from the skull surface); bilateral cannula used;

**Agents:** Ganciclovir  
**Vehicle:** Saline, physiological  
**Route:** CSF/CNS (lateral ventricle)  
**Species:** Mice  
**Pump:** 1002; 1007D  
**Duration:** 7, 11, 14 days  

**ALZET Comments:**


**Agents:** miR-29b antagonir  
**Vehicle:** Not Stated  
**Route:** Not Stated  
**Species:** Mice  
**Pump:** Not Stated  
**Duration:** 4 weeks  

**ALZET Comments:** Controls received mp w/ vehicle; animal info (8–12 week-old male C57BL6 mice); cardiovascular;


**Agents:** Angiotensin II  
**Vehicle:** Not Stated  
**Route:** Not Stated  
**Species:** Rat  
**Pump:** Not Stated  
**Duration:** 5 weeks  

**ALZET Comments:** Controls received mp w/ saline; animal info (male, SD, 180-220g); cardiovascular; Dose (25 ug/kg/hr);


**Agents:** Angiotensin II  
**Vehicle:** Not Stated  
**Route:** SC  
**Species:** Mice  
**Pump:** Not Stated  
**Duration:** 2 weeks  

**ALZET Comments:** Dose (200 ng/kg/min); animal info (8-week-old male C57BL/6 mice); cardiovascular;


**Agents:** unclustered ephrin A5 Fc, clustered (C) ephrin A5 Fc, antibody, IgG  
**Vehicle:** CSF, artificial  
**Route:** CSF/CNS  
**Species:** Mice  
**Pump:** 1007D  
**Duration:** Not Stated  

**ALZET Comments:** Controls received mp w/ vehicle; animal info (C57BL/6, 5-6 weeks old) ALZET brain infusion kit 3 used; no stress “All mice survived, and no apparent behavioral discomfort was observed. “ (see pg. 41 ); Therapeutic indication (angiogenesis, Temporal lobe epilepsy); Dose (50 ug/mL);

Q6017: N. Clere, et al. Pro-Angiogenic Effects of Low Dose Ethoxidine in a Murine Model of Ischemic Hindlimb: Correlation between Ethoxidine Levels and Increased Activation of the Nitric Oxide Pathway. Molecules 2017;22(4):  

**Agents:** Ethoxide, glucose  
**Vehicle:** Not Stated  
**Route:** SC; IP  
**Species:** Mice  
**Pump:** 1003D, 1007D, 1002  
**Duration:** 3 days, 7 days, 10 days, 14 days  

**ALZET Comments:** animal info (8 weeks); 5% glucose; average plasma concentration between 18.34 and 46.97 nM ethoxidine; Therapeutic indication (ischemia; angiogenesis; neovascularization); Dose (0.14 ng/kg)


**Agents:** Sonic hedgehog protein, Cyclopamine, antibody, anti-VEGF  
**Vehicle:** PBS  
**Route:** CSF/CNS  
**Species:** Rat  
**Pump:** 1007D  
**Duration:** 7 days  

**ALZET Comments:** Dose (1 mg/mL Shh, 20 μM Shh plus Cyc, 25 μg/ml Shh plus VEGF antibody); animal info (Male Sprague–Dawley rats); Cyclopamine is a sonic hedgehog protein inhibitor; Brain coordinates (bregma -0.8 mm anteroposterior, ±1.5 mm mediolateral, and -4.5 mm dorsoventral);


**Agents:** Nerve Growth Factor  
**Vehicle:** Saline  
**Route:** SC; IP  
**Species:** Mice  
**Pump:** 1003D, 1007D, 1002  
**Duration:** 3 days, 7 days, 10 days, 14 days  

**ALZET Comments:** Controls received mp w/ vehicle; Therapeutic indication (Angiogenesis);
Q6037: Q. Duan. Deregulation of XBP1 expression contributes to myocardial vascular endothelial growth factor-A expression and angiogenesis during cardiac hypertrophy in vivo. Aging Cell 2016; Agents: Isoproterenol hydrochloride Vehicle: Not Stated; Route: Not Stated; Species: Mice; Pump: 1007D, 1002; Duration: 2 weeks; ALZET Comments: Controls received sham surgery; animal info (C57BL/6, 8 weeks old); Therapeutic indication (ER stress, Heart failure); Dose (15 mg/kg/day);

Q5311: L. Chen, et al. 20-HETE contributes to ischemia-induced angiogenesis. Vascular Pharmacology 2016;83(57-65) Agents: DDMS; 6,15-20-HEDGE Vehicle: Not Stated; Route: Intramuscular (hindlimb gracilis); Species: Mice; Pump: 2002, 2004; Duration: 32 days; ALZET Comments: Controls received mp w/ vehicle; animal info (Balb/c mice, 12 wk old); functionality of mp verified by blood pressure and blood perfusion scans; dose-response (pg. 61); good methods (pg. 58); ischemia (peripheral); tissue perfusion (intramuscular); Polyethylene catheter tubing used (inner ID 0.8 mm); Dose (5 mg/kg/day);

Q4886: Y. S. B. X. Q. W. T. L. Y. D. & et al. The Ephrin-A5/EphA4 Interaction Modulates Neurogenesis and Angiogenesis by the p-Akt and p-ERK Pathways in a Mouse Model of TLE. MOLECULAR NEUROBIOLOGY 2016;53(561-576) Agents: Ephrin-A5-Fc; immunoglobulin G2A Vehicle: CSF, artificial; Route: CSF/CNS (hippocampus); Species: Mice; Pump: 1007D; Duration: 7 days; ALZET Comments: Controls received mp w/ vehicle; animal info (male, C57BL6, 18-21g, 5-6 weeks old); ALZET brain infusion kit used; no stress (see pg. 563) All mice survived the operation, remained active, ate well, and appeared to be well groomed.”; behavioral testing (seizure frequency); Cannula placement verified via histological analysis; pumps primed in 37C PBS overnight; used dentyl acrylic;

Q4538: S. Morita, et al. Vascular endothelial growth factor-dependent angiogenesis and dynamic vascular plasticity in the sensory circumventricular organs of adult mouse brain. Cell and Tissue Research 2015;359(865-884) Agents: Ara-C Vehicle: Saline; Route: CSF/CNS; Species: Mice; Pump: 2002; Duration: 10 days; ALZET Comments: Controls received mp w/ vehicle; animal info (male, C57BL6L, 18-21g, 5-6 weeks old); comparison of IP injection vs mp; cardiovascular; “This infusion method is effective for suppressing cell proliferation in the subventricular zone and minimizes surgery damage to brain tissues” pg 867;

Q4241: J. Liu, et al. The effect of chronic stress on anti-angiogenesis of sunitinib in colorectal cancer models. PSYCHONEUROENDOCRINOLOGY 2015;52(130-142) Agents: Norepinephrine bitartrate hydrate; propranolol Vehicle: Ascorbic acid; PBS; Route: SC; Species: Mice; Pump: 1004; Duration: 20 days; ALZET Comments: Animal info (female, BALB/c, 5-7 weeks old); cancer (colorectal carcinoma, human);

Q5225: Y. Liu, et al. Angiotensin-(1-7) Suppresses Hepatocellular Carcinoma Growth and Angiogenesis via Complex Interactions of Angiotensin II Type 1 Receptor, Angiotensin II Type 2 Receptor and Mas Receptor. Mol Med 2015;21(626-36) Agents: Angiotensin (1-7), A-779, PD123319 Vehicle: Saline; Route: SC; Species: Mice; Pump: Not Stated; Duration: 21 days; ALZET Comments: Controls received mp w/ vehicle; animal info: Male BALB/c mice (6-8 wks old); functionality of mp verified by measurement of tumor volumes; cancer (Hepatocellular Carcinoma); peptides; Dose: (200 ng/kg/min) Ang-(1–7), (800 ng/kg/min) Ang-(1–7), (800 ng/kg/min) A779, (10 mg/kg/day) PD123319

Q4501: J. Liu, et al. The effect of chronic stress on anti-angiogenesis of sunitinib in colorectal cancer models. PSYCHONEUROENDOCRINOLOGY 2015;52(130-142) Agents: Norepinephrine bitartrate hydrate; propranolol Vehicle: Ascorbic acid; PBS; Route: SC; Species: Mice; Pump: 1004; Duration: 20 days; ALZET Comments: Animal info (female, BALB/c, 5-7 weeks old); cancer (colorectal carcinoma, human);

Q3977: Y. C. Lim, et al. Proinsulin C-Peptide Prevents Impaired Wound Healing by Activating Angiogenesis in Diabetes. Journal of Investigative Dermatology 2015;135(269-278) Agents: C-peptide Vehicle: PBS; Route: SC; Species: Mice; Pump: 2004; Duration: 2 weeks; ALZET Comments: Controls received sham surgery; animal info (male, C57BL6J, 6 weeks old, streptozotocin induced diabetes); cardiovascular; peptides; diabetes;
**Agents:** miR-126 **Vehicle:** Saline; **Route:** CSF/CNS (intrathecal); **Species:** Rat; **Pump:** 1003D; **Duration:** Not Stated;
**ALZET Comments:** Controls received mp w/ control agomir; animal info (male, Sprague Dawley, 180-220g); spinal cord injury; post op. care (Ringer's solution administered IP 5 ml, penicillin G 40000 U IM QD for 3 days, bladders manually expressed BID); behavioral testing (locomotor testing, open field); immunology; pumps primed overnight at 37C

**Agents:** SecinH3 **Vehicle:** DMSO; glycerol; **Route:** SC; **Species:** Mice; **Pump:** 2001; **Duration:** 16 days;
**ALZET Comments:** Controls received mp w/ vehicle; animal info (male, Arf6 flox/flox, 8 weeks old); pumps replaced every 4 days; 50% DMSO used; 50% glycerol; cancer (B16 melanoma or LLC); xenograft model;

**Agents:** ABG-898 **Vehicle:** Glucose, sterile; **Route:** SC; **Species:** Mice; **Pump:** Not Stated; **Duration:** 7 days;
**ALZET Comments:** Controls received mp w/ vehicle; animal info (WT or TSP-1 -/-); 5% glucose used; cardiovascular; immunology; peptides;

**Agents:** Rosuvastatin, Angiotensin II **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Pump:** 2004; **Duration:** 5 days;
**ALZET Comments:** Controls received mp w/ vehicle; animal info (apoE -/-, 8 weeks old); cardiovascular; peptides; "Because the s.c. administration of the statin using an osmotic minipump allows 100% drug bioavailability and its p.o. administration results in 34.5% bioavailability in mice (Peng et al., 2009), we chose the former route to ensure a full dosage effect.” pg 2948; comparison of mp vs. oral gavage

**Agents:** Isoproterenol hydrochloride **Vehicle:** Not Stated; **Route:** Not Stated; **Species:** Mice; **Pump:** 1002; 1004; **Duration:** 14 days; 28 days;
**ALZET Comments:** Controls received mp w/ saline; animal info (C57BL6); cardiovascular;

**Agents:** Nerve growth factor, b- **Vehicle:** PBS; Evans blue dye; **Route:** Bone (parietal); **Species:** Rat; **Pump:** 2001; **Duration:** 7 days;
**ALZET Comments:** Controls received mp w/ vehicle; animal info (male, Sprague Dalwey, 250-300g); 1% Evans blue used; good methods (picture of dual cannula implantation pg 1161); Multiple pumps per animal (2); pump with agent inserted into right pocket, pump with PBS inserted into left pocket; bilateral infusion;