



**Recent References (2018-Present) on the Intravenous Administration of Agents
Using ALZET® Osmotic Pumps**

Q10295: D. Olivari, *et al.* Searching for Preclinical Models of Acute Decompensated Heart Failure: a Concise Narrative Overview and a Novel Swine Model. *Cardiovascular Drugs and Therapy* 2022;36(4):727-738

Agents: Serelaxin **Vehicle:** Saline; **Route:** IV; **Species:** Pig; **Pump:** Not Stated; **Duration:** 48 hours;

ALZET Comments: Dose: (30 µg/kg/day); Controls received mp w/ vehicle; animal info: 17 male *Sus scrofa domestica* pig weighing

34 ± 4 kg; post op. care: Analgesia was performed with butorphanol; Cardiovascular "

Q9836: Z. Zhao, *et al.* Attenuation of atrial remodeling by aliskiren via affecting oxidative stress, inflammation and PI3K/Akt signaling pathway. *Cardiovascular Drugs and Therapy* 2021;35(3):587-598

Agents: Wortmannin **Vehicle:** Not Stated; **Route:** IV; **Species:** Dog; **Pump:** Not Stated; **Duration:** 2 weeks;

ALZET Comments: Dose (70 µg/kg/day); animal info (mongrel dogs of either sex, weighing from 11 to 17 kg); 131.71 mmHg - 117.29 mmHg; Wortmannin aka WM, PI3K antagonist; cardiovascular;

Q8639: J. Li, *et al.* Silencing of Central (Pro)renin Receptor Ameliorates Salt-Induced Renal Injury in Chronic Kidney Disease. *Antioxidants and Redox Signaling* 2021;

Agents: U0126; Wortmannin; Losartan **Vehicle:** CSF, artificial; **Route:** CSF/CNS (intracerebral); IV; **Species:** Rat; **Pump:** Not stated; **Duration:** 4 weeks;

ALZET Comments: Dose (2.5 µg/day U0126; 2.5 µg/day Wortmannin; 1 mg/kg/day Losartan); Controls received mp w/ vehicle; animal info (male Sprague-Dawley rats, 5 weeks old, 150-180 g); Blood pressure measured via tail cuff method; cardiovascular;

Q9242: F. N. Gava, *et al.* Restoration of Cardiac Function After Myocardial Infarction by Long-Term Activation of the CNS Leptin-Melanocortin System. *JACC Basic to Translational Science* 2021;6(1):55-70

Agents: Leptin; Melanotan II **Vehicle:** Saline; **Route:** CSF/CNS (intracerebral); IV; **Species:** Rat; **Pump:** 2002; **Duration:** 28 days;

ALZET Comments: Dose (0.62 µg/h Leptin; 10 ng/h Melanotan II); Controls received mp w/ vehicle; animal info (12 to 14 week-old male Sprague-Dawley rats); Melanotan II aka MTII; cardiovascular;

Q9204: L. S. Dalboge, *et al.* Evaluation of VGF peptides as potential anti-obesity candidates in pre-clinical animal models. *Peptides* 2021;136(170444)

Agents: NERP-1; HHPD-41; TLQP-21; PGH-NH2; NERP-2; TLQP-62; Glucagon-like peptide-1 (7-37); Ghrelin **Vehicle:** Not Stated; **Route:** CSF/CNS (intracerebral); IV; **Species:** Mice; **Pump:** 1007D; **Duration:** 7 days;

ALZET Comments: Dose (2 nmol/mouse/day Glucagon-like peptide-1 (7-37); 3 nmol/mouse/day Ghrelin); Controls received mp w/ vehicle; animal info (male and female C57BL/6J mice, 13 weeks old); Glucagon-like peptide-1 aka GLP-1 (7-37); peptides; Brain coordinates (-0.7 mm posterior, -1.2 mm lateral [left], and -2.0 mm ventral); dependence;

Q9201: A. A. da Silva, *et al.* Chronic CNS-mediated cardiometabolic actions of leptin: potential role of sex differences. *American Journal of Physiology Regulatory, Integrative Comparative Physiology* 2021;320(2):R173-R181

Agents: Leptin **Vehicle:** Not Stated; **Route:** CSF/CNS (intracerebral); IV; **Species:** Rat; **Pump:** 2001; **Duration:** 7 days;

ALZET Comments: Dose (0.62 µg/h); animal info (male and female Sprague-Dawley rats, 12 weeks old); Blood pressure measured via BP telemeter device; 95 mmHg - 110 mmHg; peptides; diabetes;

Q9818: Y. Zhou, *et al.* Improvement of lung ischemia-reperfusion injury by inhibition of microRNA-155 via reductions in neuroinflammation and oxidative stress of vagal afferent nerve. *Pulmonary Circulation* 2020;10(2):2045894020922125

Agents: miR-155 inhibitor **Vehicle:** CSF, Artificial; **Route:** CSF/CNS (intracerebral); IV; **Species:** Rat; **Pump:** Not Stated; **Duration:** 24 hours;

ALZET Comments: Dose (5 µg); animal info (Male Sprague-Dawley (200–250 g)); ALZET brain infusion kit used; Brain coordinates (3.7 mm posterior to the bregma, 4.1 mm lateral to the midline, and 3.5 mm under the dura); dental cement used; ischemia (lung ischemia);



Q9829: L. Zheng, *et al.* Rhythmic light flicker rescues hippocampal low gamma and protects ischemic neurons by enhancing presynaptic plasticity. *Nature Communications* 2020;11(1):3012

Agents: GK23; GK13; Conotoxin, w-; **Vehicle:** CSF, Artificial; **Route:** CSF/CNS (intracerebral); IV; **Species:** Mice; **Pump:** 1003D; **Duration:** 3 days;

ALZET Comments: Dose (2 mg/kg/day GK23, GK13; 2.28 ng/kg/day w-Conotoxin); animal info (Adult male C57Bl/6 mice (3-months-old)); behavioral testing (Open field test; Morris water maze; Y-maze test); peptides; ALZET brain infusion kit 3 used; Brain coordinates (coordinates from bregma: anterior-posterior = -0.5 mm; lateral = 1.0 mm); dental cement used; ischemia (cerebral ischemia);

Q9910: T. Yan, *et al.* FAM222A encodes a protein which accumulates in plaques in Alzheimer's disease. *Nature Communications* 2020;11(1):411

Agents: Amyloid protein, beta **Vehicle:** CSF, Artificial; **Route:** CSF/CNS (intracerebral); IV; **Species:** Mice; **Pump:** 1004; **Duration:** 28 days;

ALZET Comments: Animal info (5xFAD transgenic mice); behavioral testing (Barnes maze test; Y maze test); Amyloid protein, beta aka AB; ALZET brain infusion kit 3 used; Brain coordinates (relative to bregma: ante- roposterior -0.5 mm, medial lateral 0.75 mm); cyanoacrylate adhesive; neurodegenerative (Alzheimer's disease);

Q9928: X. Xu, *et al.* Identification of a pro-elongation effect of diallyl disulfide, a major organosulfur compound in garlic oil, on microglial process. *Journal of Nutritional Biochemistry* 2020;78(108323

Agents: LY294002 **Vehicle:** DMSO; CSF, Artificial; **Route:** CSF/CNS (intracerebral); IV; **Species:** Mice; **Pump:** 2002; 1003D; **Duration:** 3 days;

ALZET Comments: Dose (5 µg/mL); 3% DMSO used; Controls received mp w/ vehicle; animal info (Male C57BL6/J mice (6-8 weeks)); behavioral testing (tail suspension test; forced swim test); Brain coordinates (-0.2 mm anterior and 1.0 mm lateral relative to bregma and 2.3 mm below the surface of the skull); dependence;

Q9064: K. C. Wu, *et al.* Deletion of equilibrative nucleoside transporter-2 protects against lipopolysaccharide-induced neuroinflammation and blood-brain barrier dysfunction in mice. *Brain, Behavior, and Immunity* 2020;84(59-71

Agents: Dipyridamole **Vehicle:** Not Stated; **Route:** CSF/CNS (intracerebral) IV; **Species:** Mice; **Pump:** 2002; **Duration:** 14 days;

ALZET Comments: Dose (90.6 µg/kg); Controls received mp w/ vehicle; animal info (male Ent1 and Ent2 knockout mice, 8-10 weeks of age); ALZET brain infusion kit 3 used; Brain coordinates (A-P -0.6 mm and M-L -1.2 mm from the bregma and D-V -2 mm below the dura); neurodegenerative (Lipopolysaccharide-induced neuroinflammation; Blood-Brain Barrier dysfunction);

Q9102: A. Wsol, *et al.* Impaired hypotensive effects of centrally acting oxytocin in SHR and WKY rats exposed to chronic mild stress. *American Journal Physiology-Regulatory Integrative and Comparative Physiology* 2020;318(1):R160-R172

Agents: Oxytocin; Oxytocin receptor antagonist **Vehicle:** NaCl, Sterile; **Route:** CSF/CNS (intracerebral); IV; **Species:** Rat; **Pump:** 2004; **Duration:** 1 day;

ALZET Comments: Dose (2.4 µg/6 µL/day); 0.9% NaCl used; Controls received mp w/ vehicle; animal info (spontaneously hypertensive rats (SHR); normotensive Wistar-Kyoto, males, 250-300 g); behavioral testing (Chronic Mild Stress; Acute Alarming Stress); Blood pressure measured via tail cuff procedure; 117 mmHg - 179 mmHg (SHR rat); 83 mmHg - 113 mmHg (WKY rat); Oxytocin aka OT, Oxytocin receptor antagonist aka OTANT; ALZET brain infusion kit 2 used; Brain coordinates (1.3 mm lateral and 2.0 mm posterior to the midsagittal suture); dependence;

Q9553: S. K. Woo, *et al.* SUR1-TRPM4 channels, not KATP, mediate brain swelling following cerebral ischemia. *Neuroscience Letters* 2020;718(134729

Agents: Oligodeoxynucleotide **Vehicle:** Saline, sterile normal; **Route:** IV (external jugular); **Species:** Rat; **Pump:** 2001D; **Duration:** 24 hours;

ALZET Comments: Dose (1.2 mg / 24 h); animal info (Male Wistar rats, aged 11-12 weeks (300-350 gm)); Oligodeoxynucleotide aka ODN; ischemia (cerebral);



Q9551: G. Weselek, *et al.* Norepinephrine is a negative regulator of the adult periventricular neural stem cell niche. *Stem Cells* 2020;38(9):1188-1201

Agents: Prazosin; Propranolol **Vehicle:** CSF, artificial; **Route:** CSF/CNS (intracerebral); IV; **Species:** Mice; **Pump:** Not Stated; **Duration:** 7 days;

ALZET Comments: 0.5% ACSF used; Controls received mp w/ vehicle; animal info (C57BL/6N male mice, 8 to 12 weeks old); Prazosin aka β -AR antagonist, Propranolol aka β -AR antagonist; dependence;

Q9541: X. Wang, *et al.* Susceptibility of Rat Steatotic Liver to Ischemia-Reperfusion Is Treatable With Liver-Selective Matrix Metalloproteinase Inhibition. *Hepatology* 2020;72(5):1771-1785

Agents: Propionic acid, 2-[(4-biphenylsulfonyl)amino]-3-phenyl- **Vehicle:** Not Stated; **Route:** IV (inferior mesenteric); **Species:** Rat; **Pump:** 2ML1; **Duration:** 2 days;

ALZET Comments: Dose (100 μ g/kg/h); animal info (Male Lewis rats); 2-[(4-biphenylsulfonyl)amino]-3-phenyl-propionic acid aka MMP-2,9 inhibitor; ischemia (reperfusion injury);

Q9530: F. Wang, *et al.* Soluble (pro)renin receptor treats metabolic syndrome in mice with diet-induced obesity via interaction with PPAR γ . *JCI Insight* 2020;5(7):

Agents: Renin receptor, human recombinant soluble; PF429242 **Vehicle:** Not Stated; **Route:** IV (external jugular); **Species:** Mice; **Pump:** 1002; **Duration:** 2 weeks;

ALZET Comments: Dose (30 μ g/kg/d); Controls received mp w/ vehicle; animal info (Male 36-week-old DIO C57/BL6 mice); Multiple pumps per animal (2 pumps); human recombinant soluble renin receptor aka sPRR, PF429242 aka PF; dependence;

Q9455: M. Shaqura, *et al.* Neuronal aldosterone elicits a distinct genomic response in pain signaling molecules contributing to inflammatory pain. *Journal of Neuroinflammation* 2020;17(1):183

Agents: FAD286 **Vehicle:** Saline; **Route:** IV (lumbar); **Species:** Rat; **Pump:** Not Stated; **Duration:** Not Stated;

ALZET Comments: Dose (0.3 μ g/1 μ l); 0.9% NaCl used; Controls received mp w/ vehicle; animal info (male Wistar rats (180–250g)); dependence;

Q8673: B. Miziak, *et al.* Anti-Epileptogenic Effects of Antiepileptic Drugs. *International Journal of Molecular Sciences* 2020;21(7):

Agents: Tiagabine; Valproate; Levetiracetam **Vehicle:** Not Stated; **Route:** SC; CSF/CNS (intracerebral); IV; **Species:** Rat; **Pump:** Not stated; **Duration:** 3 days; 21 days; 8 weeks;

ALZET Comments: Dose (50 mg/kg/day Tiagabine; 600 mg/kg/day Valproate); behavioral testing (Morris Water Maze; Open Field Test); neurodegenerative (Epilepsy);

Q8898: A. Ma, *et al.* Overexpression of Central ACE2 (Angiotensin-Converting Enzyme 2) Attenuates the Pressor Response to Chronic Central Infusion of Ang II (Angiotensin II): A Potential Role for Nrf2 (Nuclear Factor [Erythroid-Derived 2]-Like 2). *Hypertension* 2020;76(5):1514-1525

Agents: Angiotensin II; Angiotensin (1-7); A779; Sulforaphane **Vehicle:** CSF, artificial; **Route:** CSF/CNS (intracerebral); IV; **Species:** Mice; **Pump:** 1002; **Duration:** 14 days; 7 days;

ALZET Comments: Dose (100 ng/kg/min Angiotensin II; 200 ng/kg/min Angiotensin (1-7); 400 ng/kg/min A779;); Controls received mp w/ vehicle; animal info (male mice, 3 months old); Blood pressure measured via radio telemetry; 92.3 mmHg - 125.1 mmHg; Angiotensin II aka Ang II; cardiovascular;

Q8624: N. Lax, *et al.* Systemic microbial TLR2 agonists induce neurodegeneration in Alzheimer's disease mice. *Journal of Neuroinflammation* 2020;17(1):55

Agents: Zymosan; CU-CPT22 **Vehicle:** Not Stated; **Route:** CSF/CNS (intracerebral); IV; **Species:** Mice; **Pump:** 1007D; 1004; 1002; **Duration:** 28 days; 1 week; 2 weeks;

ALZET Comments: Dose (25 μ g zymosan; 10 μ g/day CU-CPT22); animal info (male and female 5xFAD mice); CU-CPT22 aka Toll-like receptor 2 antagonist; Brain coordinates (A = 0, L = 1, H = 2.5); neurodegenerative (Alzheimer's disease);



Q8586: J. Kjell, *et al.* Defining the Adult Neural Stem Cell Niche Proteome Identifies Key Regulators of Adult Neurogenesis. *Cell Stem Cell* 2020;26(2):277-293 e8

Agents: Z-DON **Vehicle:** CSF, artificial; DMSO; **Route:** CNS/CSF (intracerebral); IV; **Species:** Mice; **Pump:** 2001; **Duration:** 7 days;

ALZET Comments: Dose (100 uM); 0.4% DMSO used; Controls received mp w/ vehicle; animal info (male C57BL/6J mice, 8-10 weeks old); Z-DON aka Transglutaminase 2 inhibitor; ALZET brain infusion kit 2 used; Brain coordinates (1.2 mm laterally to and 0.5 mm posterior to the bregma (right side)); gene therapy;

Q8557: S. E. Joppe, *et al.* Genetic targeting of neurogenic precursors in the adult forebrain ventricular epithelium. *Life Science Alliance* 2020;3(7):

Agents: Ara-C; **Vehicle:** Not stated; **Route:** CSF/CNS (intracerebral); IV; **Species:** Mice; **Pump:** 1007D; **Duration:** 7 days;

ALZET Comments: Controls received mp w/ vehicle; animal info (male mice); ALZET brain infusion kit 3 used; Brain coordinates (0 mm AP and -0.9 mm ML to the bregma); gene therapy;

Q8861: L. B. James-Allan, *et al.* Regulation of glucose homeostasis by small extracellular vesicles in normal pregnancy and in gestational diabetes. *FASEB Journal* 2020;34(4):5724-5739

Agents: Small extracellular vesicles, human **Vehicle:** PBS; **Route:** IV (right jugular vein); **Species:** Mice; **Pump:** 1003D; **Duration:** 4 days;

ALZET Comments: Controls received mp w/ vehicle; animal info (Nonpregnant female C57BL/6 mice); human small extracellular vesicles aka human sEVs; diabetes;

Q8851: M. M. H. Ibrahim, *et al.* Effects of Intracerebroventricular Glycogen Phosphorylase Inhibitor CP-316,819 Infusion on Hypothalamic Glycogen Content and Metabolic Neuron AMPK Activity and Neurotransmitter Expression in Male Rat. *Journal of Molecular Neuroscience* 2020;70(5):647-658

Agents: CP-316819 **Vehicle:** DMSO; **Route:** CSF/CNS (intracerebral); IV; **Species:** Rat; **Pump:** 2001D; **Duration:** 24 hours;

ALZET Comments: Dose (2.5 mg/24 hr, 10.0 mg/24 hr); dose-response (); Controls received mp w/ vehicle; animal info (Adult male Sprague-Dawley rats (2-3 months of age)); CP-316819 aka carboximide GP inhibitor [R-R*,S*]-5-chloro-N-[2-hydroxy-3-(methoxymethylamino)-3-oxo-1-(phenylmethyl)propyl]-1H-indole-2-carboxamide; ALZET brain infusion kit 1 used; Brain coordinates (1.4 mm lateral to midline; 0.8 mm posterior to bregma; 3.5 mm ventral to the brain surface); dependence;

Q8857: C. T. Huang, *et al.* Glycemic control with insulin attenuates sepsis-associated encephalopathy by inhibiting glial activation via the suppression of the nuclear factor kappa B and mitogen-activated protein kinase signaling pathways in septic rats. *Brain Research* 2020;1738(146822)

Agents: Dextrose; Fluorocitrate; Minocycline; SB203580; PD98059 **Vehicle:** DMSO; **Route:** CSF/CNS (intracerebral); IV (jugular); **Species:** Rat; **Pump:** 2001; **Duration:** 7 days;

ALZET Comments: 1% DMSO used; Controls received mp w/ vehicle; animal info (male, Sprague-Dawley rats (weight, 200-250 g)); behavioral testing (Von Frey filament test, Plantar test); functionality of mp verified by residual volume; SB203580 aka p38 MAPK inhibitor, PD98059 aka extracellular signal-regulated kinase inhibitor; Brain coordinates (0.8 mm posterior and 1.3 mm lateral to the bregma, and 4.0 mm ventral to the skull surface); dependence;

Q8544: K. Hu, *et al.* Boron agents for neutron capture therapy. *Coordination Chemistry Reviews* 2020;405(Agents: N5-2OH; BPA **Vehicle:** Not stated; **Route:** CSF/CNS (intracerebral); IV; **Species:** Rat; **Pump:** Not stated; **Duration:** Not stated;

ALZET Comments: animal info (F98 glioma-bearing rats); dependence;

Q9270: C. Y. Ho, *et al.* CX3CR1-microglia mediates neuroinflammation and blood pressure regulation in the nucleus tractus solitarius of fructose-induced hypertensive rats. *Journal of Neuroinflammation* 2020;17(1):185

Agents: AZD8797 **Vehicle:** 2-hydroxypropyl- β -cyclodextrin; **Route:** CSF/CNS (intracerebral); IV; **Species:** Rat; **Pump:** Not Stated; **Duration:** 14 days;

ALZET Comments: Controls received mp w/ vehicle; animal info (Wistar-Kyoto rats); Blood pressure measured via tail-cuff method; 109.8 \pm 1.8 mmHg - 125.1 \pm 2.2 mmHg; AZD8797 aka CX3CR1 inhibitor; cardiovascular;



Q8537: M. Hecker, *et al.* Immunomodulation by an Omega-6 Fatty Acid Reduced Mixed Lipid Emulsion in Murine Acute Respiratory Distress Syndrome. *Journal of Clinical Medicine* 2020;9(7):

Agents: Triglycerides, long-chain; Triglycerides, medium chain **Vehicle:** Saline; **Route:** IV (external jugular); **Species:** Mice; **Pump:** Not stated; **Duration:** 3 days;

ALZET Comments: Dose (1.5 mg/kg/day); Controls received mp w/ vehicle; animal info (13-15 week old mice, 22-24 g); long-chain Triglycerides aka LCT; medium chain Triglycerides aka SMOF; dependence;

Q8536: D. He, *et al.* Asthmatic Airway Vagal Hypertonia Involves Chloride Dyshomeostasis of Preganglionic Neurons in Rats. *Frontiers in Neuroscience* 2020;14(31)

Agents: Minocycline **Vehicle:** CSF, Artificial; **Route:** CSF/CNS (intracerebral); IV; **Species:** Rat; **Pump:** 2002; **Duration:** 15 days;

ALZET Comments: Dose (172 ng/mL); animal info (Male Sprague–Dawley rats, seven-week-old, 170–190 g); Minocycline aka MC; ALZET brain infusion kit 2 used; Brain coordinates (0.8 mm caudal to the bregma; 1.5 mm lateral to the midline; 4 mm below the surface of the skull); dependence;

Q8517: F. Gulcu Bulmus, *et al.* Kisspeptin and RF9 prevent paroxetine-induced changes in some parameters of seminal vesicle fluid in the male rats. *Andrologia* 2020;52(4):e13538

Agents: Kisspeptin; RFamid Peptide **Vehicle:** Saline; **Route:** CSF/CNS (intracerebral); IV; **Species:** Rat; **Pump:** Not stated; **Duration:** 10 days;

ALZET Comments: Dose (1 nmol Kisspeptin and 20 nmol RF9); Controls received mp w/ vehicle; animal info (male Sprague Dawley rats (21-day-old) weighing 40 ± 2 g); RFamide Peptide aka RF9; peptides; Brain coordinates (according to the bregma, in the anterior– posterior plane: 0.90 mm; in the lateral plane: 1.4 mm; and 4 mm on the vertical plane); dependence;

Q8507: K. P. Gomes, *et al.* Antiepileptic effects of long-term intracerebroventricular infusion of angiotensin-(1-7) in an animal model of temporal lobe epilepsy. *Clinical Science (Lond)* 2020;134(17):2263-2277

Agents: Angiotensin (1-7) **Vehicle:** Saline, Sterile; **Route:** CSF/CNS (intracerebral); IV; **Species:** Rat; **Pump:** Not stated; **Duration:** 28 days;

ALZET Comments: Dose (200 ng/kg/h); 0.9% NaCl used; Controls received mp w/ vehicle; animal info (Wistar adult male rats, 240-280 g); Angiotensin (1-7) aka Ang-(1-7); Brain coordinates (0.8 mm posterior and 1.4 mm lateral to the bregma); neurodegenerative (Epilepsy);

Q9232: Y. Fukuo, *et al.* The Therapeutic Effects of Dodecaborate Containing Boronophenylalanine for Boron Neutron Capture Therapy in a Rat Brain Tumor Model. *Biology (Basel)* 2020;9(12):

Agents: Boronophenylalanine–amide alkyl dodecaborate **Vehicle:** Not Stated; **Route:** CSF/CNS (intracerebral); IV; **Species:** Rat; **Pump:** 2001D; **Duration:** 1 day;

ALZET Comments: Dose (1.2 mg/kg); animal info (eight-week-old male Fischer rats, 200-250 g); boronophenylalanine–amide alkyl dodecaborate aka BADB; cancer (Brain Tumor);

Q9230: T. Fujimura, *et al.* The pain-relieving effects of lactoferrin on oxaliplatin-induced neuropathic pain. *Journal of Veterinary Medical Science* 2020;

Agents: Lactoferrin, human recombinant **Vehicle:** PBS; **Route:** IV (external jugular); **Species:** Mice; **Pump:** Not Stated; **Duration:** 2 weeks;

ALZET Comments: Dose (10 mg/kg/day); Controls received mp w/ vehicle; animal info (five-week-old male ICR mice); human recombinant lactoferrin aka rhLf; dependence;

Q8457: H. Elleaume, *et al.* Radiation therapy combined with intracerebral convection-enhanced delivery of cisplatin or carboplatin for treatment of the F98 rat glioma. *J Neurooncol* 2020;149(2):193-208

Agents: Carboplatin **Vehicle:** Not stated; **Route:** CSF/CNS (intracerebral); IV; **Species:** Rat; **Pump:** Not stated; **Duration:** 7 days;

ALZET Comments: Dose (84 ug/g); animal info (Fischer rats); cancer (Glioma);



Q8456: F. El Gaamouch, *et al.* VGF-derived peptide TLQP-21 modulates microglial function through C3aR1 signaling pathways and reduces neuropathology in 5xFAD mice. *Molecular Neurodegeneration* 2020;15(1):4

Agents: TLQP-21 **Vehicle:** CSF, Artificial; **Route:** CSF/CNS (intracerebral); IV; **Species:** Mice; **Pump:** Not stated; **Duration:** 28 days;

ALZET Comments: Dose (15 µg/day); Controls received mp w/ vehicle; animal info (wild-type C57BL/6 J mice, 3 months); Brain coordinates (P = - 0.1, ML = ±1.0 and DV = - 3.0 from bregma (mm)); neurodegenerative (Alzheimer's disease);

Q8453: K. A. Duggan, *et al.* Vasoactive intestinal peptide infusion reverses existing renal interstitial fibrosis via a blood pressure independent mechanism in the rat. *European Journal of Pharmacology* 2020;873(172979)

Agents: Vasoactive intestinal peptide **Vehicle:** Hartmann's Solution; **Route:** IV (iliac); **Species:** Rat; **Pump:** Not stated;

Duration: 14 weeks;

ALZET Comments: Dose (5 pmol/kg/min); Controls received mp w/ vehicle; animal info (Fourteen week old spontaneous hypertensive rat); long-term study; Blood pressure measured via tail cuff plethysmography; 193 mmHg - 200 mmHg; Vasoactive intestinal peptide aka VIP; peptides; dependence;

Q8438: R. A. Desai, *et al.* Nimodipine Reduces Dysfunction and Demyelination in Models of Multiple Sclerosis. *Annals of Neurology* 2020;88(1):123-136

Agents: Nimodipine **Vehicle:** PEG-400; **Route:** IV; SC; **Species:** Rat; **Pump:** Not stated; **Duration:** 12 days;

ALZET Comments: Dose (30 mg/kg); Controls received mp w/ vehicle; animal info (adult male Sprague Dawley rats); neurodegenerative (multiple sclerosis);

Q8472: The pain-relieving effects of lactoferrin on oxaliplatin-induced neuropathic pain. *Journal of Veterinary Medical Science* 2020;

Agents: Lactoferrin, human recombinant **Vehicle:** PBS; **Route:** IV (external jugular); **Species:** Mice; **Pump:** Not stated;

Duration: 2 weeks;

ALZET Comments: Dose (10 mg/kg/day); Controls received mp w/ vehicle; animal info (five-week-old male ICR mice); human recombinant lactoferrin aka rhLf; dependence;

Q7516: W. Yin, *et al.* Protein kinase C and protein kinase A are involved in the protection of recombinant human glucagon-like peptide-1 on glomeruli and tubules in diabetic rats. *Journal of Diabetes Investigation* 2019;10(3):613-625

Agents: Peptide-1, recombinant human glucagon-like **Vehicle:** Saline; **Route:** IV; **Species:** Rat; **Pump:** 2004; **Duration:** 12 weeks;

ALZET Comments: "Dose (1.5 pmol/kg/min); Controls received mp w/ vehicle; animal info (Eight-week-old male/female Wistar rats weighing 300 – 10 g); diabetes; "

Q6890: X. Wang, *et al.* Liver-Selective MMP-9 Inhibition in the Rat Eliminates Ischemia-Reperfusion Injury and Accelerates Liver Regeneration. *Hepatology* 2019;69(1):314-328

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); enzyme inhibitor (Matrix metalloproteinases 2/9);

Q7500: F. Wang, *et al.* Site-1 protease-derived soluble (pro)renin receptor targets vasopressin receptor 2 to enhance urine concentrating capability. *JCI Insight* 2019;4(7):

Agents: Histidine-tagged sPRR **Vehicle:** Not stated; **Route:** IV (jugular); **Species:** Mice; **Pump:** 1007D; **Duration:** 7 days;

ALZET Comments: Dose (30 µg/kg/day); Controls received mp w/ vehicle; animal info (experiments. Male 10- to 12-week-old C57/BL6 mice);

Q7573: R. Lin, *et al.* Systemic Factors Trigger Vasculature Cells to Drive Notch Signaling and Neurogenesis in Neural Stem Cells in the Adult Brain. *Stem Cells* 2019;37(3):395-406

Agents: Biotin, recombinant vascular endothelial growth factor 165 **Vehicle:** Saline; **Route:** IV (Femoral); **Species:** Mice; **Pump:** Not Stated; **Duration:** 3 days;

ALZET Comments: Dose (1 mg/kg); Controls received mp w/ vehicle; animal info (9-week old CD-1 mice);



Q7535: E. D. Levin, *et al.* Prolonging the Reduction of Nicotine Self-Administration in Rats by Coadministering Chronic Nicotine With Amitafadine, a Triple Monoamine Reuptake Inhibitor With CYP2B6 Inhibitory Actions. *Nicotine Tob Res* 2019;

Agents: Nicotine Ditartrate **Vehicle:** Saline; **Route:** SC, IV (jugular); **Species:** Rat; **Pump:** 2ML4; **Duration:** 4 weeks;

ALZET Comments: Dose (2.5 mg/kg/day); animal info (Young adult female Sprague-Dawley rats); post op. care (ketoprofen, bupivacaine); behavioral testing (dual-lever experiment);

Q6881: W. Deng, *et al.* Insulin ameliorates pulmonary edema through the upregulation of epithelial sodium channel via the PI3K/SGK1 pathway in mice with lipopolysaccharide-induced lung injury. *Mol Med Rep* 2019;

Agents: Insulin, human **Vehicle:** PBS; **Route:** IV (jugular); **Species:** Mice; **Pump:** Not Stated; **Duration:** 24 hours;

ALZET Comments: Dose (Human Insulin (.01 U/kg/day)); Controls received mp w/ vehicle; animal info (C3H/HeN mice, aged 7-9 weeks); ALZET internal jugular vein catheter used; cardiovascular;

R0380: A. Clavreul, *et al.* Nanocarriers and nonviral methods for delivering antiangiogenic factors for glioblastoma therapy: the story so far. *Int J Nanomedicine* 2019;14(2497-2513)

Agents: Bevacizumab; RNA, small interfering (anti-HIF-1 α /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.

Q8341: N. Aydogdu, *et al.* The Effects of Irisin on Nomega-Nitro-L-arginine Methyl Ester Hydrochloride-Induced Hypertension in Rats. *Balkan Med J* 2019;36(6):337-346

Agents: Irisin **Vehicle:** Saline; **Route:** IV; **Species:** Rat; **Pump:** 2ML2; **Duration:** 2 weeks;

ALZET Comments: Dose (50 nmol/day); Controls received mp w/ vehicle; animal info (adult male, 330-390 g, Sprague Dawley rats); Blood pressure measured via tail cuff method; replacement therapy (Irisin);

Q7367: R. A. Augustine, *et al.* Impaired hypothalamic leptin sensitivity in pseudopregnant rats treated with chronic prolactin to mimic pregnancy. *J Neuroendocrinol* 2019;e12702

Agents: Ovine prolactin **Vehicle:** CSF, artificial; **Route:** IV; **Species:** Rat; **Pump:** 2001; **Duration:** 7 days;

ALZET Comments: Dose (2.5 ug/uL/hr); Controls received mp w/ vehicle; animal info (10 week old, female, Sprague-Dawley); bilateral cannula used; dependence;

R0377: X. S. Zeng, *et al.* Neurotoxin-Induced Animal Models of Parkinson Disease: Pathogenic Mechanism and Assessment. *ASN Neuro* 2018;10(1759091418777438)

Agents: Rotenone, MPTP **Vehicle:** Not Stated; **Route:** IV, IP; **Species:** Rat; **Pump:** Not Stated; **Duration:** 14 days, 33 days;

ALZET Comments: Dose (Rotenone (3 mg/kg/day); MPTP (46 mg/kg/day)); neurodegenerative (Parkinson's);

Q7161: X. Yu, *et al.* Zinc Metallochaperones Reactivate Mutant p53 Using an ON/OFF Switch Mechanism: A New Paradigm in Cancer Therapeutics. *Clin Cancer Res* 2018;24(18):4505-4517

Agents: Zinc metallochaperone 1 **Vehicle:** DMSO; **Route:** IV (jugular); **Species:** Mice (nude); **Pump:** 2001; **Duration:** 7, 17 days;

ALZET Comments: Dose (1 mg/kg/d); Controls received mp w/ vehicle; animal info (8-12 week old mice); pumps replaced after 1 week; comparison of IV bolus injection vs continuous pump infusion; half-life: <30 min (p. 4505); cancer (therapeutics);

Q6901: T. Vajen, *et al.* Blocking CCL5-CXCL4 heteromerization preserves heart function after myocardial infarction by attenuating leukocyte recruitment and NETosis. *Sci Rep* 2018;8(1):10647

Agents: MKEY; MKEY, scrambled **Vehicle:** Formic acid; **Route:** IV (jugular); **Species:** Mice; **Pump:** 1007D; **Duration:** 7 days;

ALZET Comments: Dose (1.3 mg/kg/day); animal info (C57BL/6 mice); cardiovascular;



Q7915: A. K. E. Hornsby, *et al.* Circulating unacylated-ghrelin impairs hippocampal neurogenesis and memory in mice and is altered in human Parkinson's disease dementia. *BioRxiv* 2018;

Agents: ghrelin, unacylated- **Vehicle:** saline, sterile, heparinized, BSA buffered; **Route:** IV (jugular); **Species:** Mice; **Pump:** 1007D; **Duration:** 7 days;

ALZET Comments: Dose (48µg/day); sterile isotonic saline containing BSA (1mg/ml) and heparin (5U/ml) used; Controls received mp w/ vehicle; animal info (6 months, C57BL/6 and GOAT-null); UAG is considered an inactive precursor to acyl-ghrelin; neurodegenerative (Parkinson's); replacement therapy (ghrelin);

Q7818: L. Gonzalez, *et al.* Angiotensin-(1-9) reduces cardiovascular and renal inflammation in experimental renin-independent hypertension. *Biochemical Pharmacology* 2018;156(357-370

Agents: angiotensin (1-9) **Vehicle:** Not stated; **Route:** IV (jugular); **Species:** Rat; **Pump:** 2002; **Duration:** 14 days;

ALZET Comments: Dose ((Ang(1-9) 600 ng/kg/min), (PD123319 28 ng/kg/min), (A779 100 ng/kg/min)); Controls received sham surgery and mp w/ vehicle; animal info (male, Sprague-Dawley, 150+/-10g); PD123319 is an AT2R blocker. A779 is a Mas receptor blocker; replacement therapy (Uninephrectomized); cardiovascular; vehicle used but identity not stated.; Therapeutic indication (Ang-(1-9) protects against hypertensive cardiovascular and kidney damage induced by volume overload by decreasing inflammation in the heart, aortic wall, and kidney; these effects are not mediated by the Mas or AT2 receptor.);