



Recent References on Aging Research
Using ALZET® Osmotic Pumps

Aging Research (2022-Present)

Q11354: H. Liu, *et al.* Restoring carboxypeptidase E rescues BDNF maturation and neurogenesis in aged brains. *Life Medicine* 2023;2(2):

Agents: Carboxypeptidase E **Vehicle:** Not Stated; **Route:** CSF/CNS (left lateral ventricle); **Species:** Mice; **Strain:** Not Stated; **Pump:** 1007D; **Duration:** 24 hours;

ALZET Comments: animal info (18 months old); brain coordinates: (antero-posterior, 0.5 mm; lateral, 1.3 mm; depth, 2.9 mm relative to bregma and the surface of the brain); neurodegenerative (neurogenesis); aging

Q11349: H. Li, *et al.* Pleiotrophin ameliorates age-induced adult hippocampal neurogenesis decline and cognitive dysfunction. *Cell Rep* 2023;42(9):113022

Agents: Pleiotrophin **Vehicle:** PBS; **Route:** CSF/CNS (hippocampus); **Species:** Mice; **Strain:** C57BL/6; SAMP8; **Pump:** 1002; **Duration:** 14 days;

ALZET Comments: Dose (1 mg/100ml); controls received mp w/ vehicle; animal info (Male; 8 weeks old or 12 months old); brain coordinates (-2 mm posterior to bregma; +/- 1.7 mm lateral to the midline; -1.9 mm below the dura); behavioral testing (Open field; Maze; Memory); aging; "As expected, we found that the infusion of PTN significantly increased the dendritic length and dendritic complexity of DCX+ newborn neurons in the hippocampus of old SAMP8 mice (Figures S5L–S5O). Taken together, our data indicate an age-dependent role of PTN in regulating neurodegeneration in the aging brain." p. 12

Q11264: K. Chittimalli, *et al.* Restoration of the gut barrier integrity and restructuring of the gut microbiome in aging by angiotensin-(1-7). *Clinical Science* 2023;137(11):913-930

Agents: Angiotensin 1-7; A779 **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Strain:** C57BL/6; **Pump:** Not Stated; **Duration:** 4 w
ALZET Comments: Dose (Ang (1-7) 1 ug/kg/min; A779 0.5 ug/kg/min); animal info (Male; 5-6 weeks or 15 months old); receptor antagonist (MasR); peptides; aging;

R0451: I. Chaves-Coira, *et al.* Cognitive Deficits in Aging Related to Changes in Basal Forebrain Neuronal Activity. *Cells* 2023;12(11):

Agents: Insulin-like growth factor 1 **Vehicle:** Not Stated; **Route:** CNS/CSF; **Species:** Not Stated; **Strain:** Not Stated; **Pump:** Not Stated; **Duration:** 28 days;

ALZET Comments: neurodegenerative; aging

Q11089: M. S. Arrazola, *et al.* Necroptosis inhibition counteracts neurodegeneration, memory decline, and key hallmarks of aging, promoting brain rejuvenation. *Aging Cell* 2023;22(5):e13814

Agents: GSK'872 **Vehicle:** Not Stated; **Route:** IP; **Species:** Mice; **Strain:** Wild-type; **Pump:** 1004; **Duration:** 28 days;

ALZET Comments: Dose (2 mg/kg); animal info (23 months old); enzyme inhibitor (RIPK3); behavioral testing (Morris water maze); aging;

Q10717: G. Vasam, *et al.* Early Onset of Aging Phenotype in Vascular Repair by Mas Receptor Deficiency. *Geroscience* 2022;44(1):311-327

Agents: A779 **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice; **Strain:** WT, MasR+/-, MasR-/- C57BL/6; **Pump:** Not Stated; **Duration:** 4 weeks;

ALZET Comments: Dose: (1 µg/kg/min); animal info: background, mice 12-14 weeks, 11-12 months; A-779 is a Mas receptor blocker; aging (vasoreparative dysfunction)

Q10713: A. P. Valencia, *et al.* Aging Increases Susceptibility to Develop Cardiac Hypertrophy following High Sugar Consumption. *Nutrients* 2022;14(21):

Agents: Elamipretide **Vehicle:** Saline; **Route:** Not Stated; **Species:** Mice; **Strain:** BALB/cBy, C57BL/6; **Pump:** Not Stated; **Duration:** 2 weeks;

ALZET Comments: Dose (3 mg/kg/day); Controls received mp w/ vehicle; animal info (Male CB6F1 hybrid mice ()), 5–7 months; 24–25 months; Elamipretide aka (ELAM)aging; Therapeutic indication (Aging); cardiovascular (heart disease)



Q11176: T. Li, *et al.* BMP4 Exerts Anti-Neurogenic Effect via Inducing Id3 during Aging. *Biomedicines* 2022;10(5):

Agents: BMP4; noggin **Vehicle:** Saline; **Route:** CSF/CNS (left lateral ventricle); **Species:** Mice; **Strain:** WT; C57BL/6N; **Pump:** 1007D; **Duration:** 7 days;

ALZET Comments: Dose: BMP4 300, 500; 800 ng/d; Noggin 150, 300; 500 ng/d; dose dependent; 0.9% NaCl vehicle used; Controls received mp w/ vehicle; animal info: mice at the age of 8–9 mo; ALZET brain infusion kit 3 used; Brain coordinates (antero-posterior, 0.5 mm; lateral, -1.3 mm; depth, 2.9 mm relative to bregma and the surface of the brain; noggin is a potent BMP inhibitor; aging, neurogenesis

Q10591: O. Leiter, *et al.* Selenium Mediates Exercise-Induced Adult Neurogenesis and Reverses Learning Deficits Induced By Hippocampal Injury and Aging. *Cell Metabolism* 2022;34(3):408-423 e8

Agents: Sodium selenite **Vehicle:** Saline; **Route:** CSF/CNS (hippocampus); **Species:** Mice; **Strain:** C57BL/6J; **Pump:** 1004; 1007D; **Duration:** 7 days; 3 days;

ALZET Comments: Dose (1 μ M); Controls received mp w/ vehicle; animal info (Female; 8 weeks old); behavioral testing (Open-field test; Y-maze test; Novel object location task); Brain coordinates (Hippocampus region -1.3 mm anterior/posterior; 1.0 mm dorsal/lateral; -2.2 mm dorsal/ventral relative to Bregma); aging

Q10445: G. E. Barbone, *et al.* X-ray multiscale 3D neuroimaging to quantify cellular aging and neurodegeneration postmortem in a model of Alzheimer's disease. *European Journal of Nuclear Medicine and Molecular Imaging* 2022;49(13):4338-4357

Agents: LY37926 **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Strain:** B6/129 wild-type; 3xTgAD; **Duration:** 28 days;

ALZET Comments: Dose: (1 mg/kg/day). Controls received mp w/ vehicle; animal info: 11-month-old male; LY379268 is selective agonist of group II metabotropic glutamate receptors; neurodegenerative (Alzheimer's disease);

Alzheimer's Research (2022-Present)

Q11025: J. L. Wickline, *et al.* L-type calcium channel antagonist isradipine age-dependently decreases plaque associated dystrophic neurites in 5XFAD mouse model. *Neuropharmacology* 2023;227(109454)

Agents: Isradipine **Vehicle:** DMSO; PEG300; **Route:** SC; **Species:** Mice; **Strain:** 5XFAD; **Pump:** 2004; **Duration:** 30 days;

ALZET Comments: Dose (3 mg/kg/day); (50% DMSO; 50% PEG 300) used; verified solubility of isradipine in vehicle; comparison of oral, sc extended-release pellets vs mp; Controls received mp w/ vehicle; animal info: 6 or 9 months; post op. care: analgesia 0.1 mL of 0.005 mg/mL buprenorphine sc, antibiotic ointment applied to suture site; behavioral testing (Open field; Novel object recognition; Morris water maze); neurodegenerative (Alzheimer's); aging;

Q11003: H. L. Song, *et al.* Monoclonal antibody Y01 prevents tauopathy progression induced by lysine 280-acetylated tau in cell and mouse models. *Journal of Clinical Investigation* 2023;133(8):

Agents: Monoclonal antibody Y01 **Vehicle:** PBS; **Route:** CSF/CNS (right lateral ventricle); **Species:** Mice; **Strain:** tau-P301L; **Pump:** Not Stated; **Duration:** 28 days;

ALZET Comments: Dose (1.9 mg/ml); Controls received mp w/ vehicle; animal info: 8 months; comparison of ip injection vs mp; ALZET brain infusion kit used; Brain coordinates: 0.58 mm posterior to bregma, 1 mm lateral to the midline, and 2 mm from the skull surface; behavioral testing (Nest building test; Y maze; Morris water maze); neurodegenerative

Q11213: M. A. Pedrosa, *et al.* AT1 receptor autoantibodies mediate effects of metabolic syndrome on dopaminergic vulnerability. *Brain Behavior and Immunity* 2023;108(255-268)

Agents: AT1-AA **Vehicle:** Saline; **Route:** IP; **Species:** Rat; **Strain:** Not Stated; **Pump:** Not Stated; **Duration:** 14 days;

ALZET Comments: Dose (0.15 μ g/ μ l, 0.25 μ g/ μ l); Controls received mp w/ vehicle; animal info: Male young adult rats 2–3-month-old; Blood pressure measured via non-invasive pressure system meter; Blood pressure measurement (p.261) Fig,4; AAT1-AA are agonistic autoantibodies to the ang II type 1 receptor; neurodegenerative (Parkinson's, Alzheimer's); "Our data using osmotic minipump infusions suggest that circulating AT1-AA can disrupt BBB, enter CSF and affect brain." p.11



Q10961: S. Meng, *et al.* Catalpol Mitigates Alzheimer's Disease Progression by Promoting the Expression of Neural Stem Cell Exosomes Released miR-138-5p. *Neurotoxicity Research* 2023;41(1):41-56

Agents: miR-138-5p inhibitor; scramble RNA, negative control **Vehicle:** Not Stated; **Route:** CSF/CNS (left lateral ventricle); **Species:** Mice; **Strain:** C57BL/6; **Pump:** 1004; **Duration:** Not Stated;

ALZET Comments: Dose (0.2 ml/minute); animal info: WT C57BL/6 mice; Brain coordinates (bregma: – 0.22 mm; dorsoventral: 3 mm; lateral: 1 mm); neurodegenerative (Alzheimer's disease);

Q11055: Y. Madokoro, *et al.* Direct Enhancement Effect of Hippocampal Cholinergic Neurostimulating Peptide on Cholinergic Activity in the Hippocampus. *International Journal of Molecular Sciences* 2023;24(10):

Agents: Hippocampal cholinergic neurostimulating peptide **Vehicle:** Bicarbonate buffer; **Route:** CSF/CNS (cerebral ventricle); **Species:** Mice; **Strain:** HCNP-pp cKO; **Pump:** 1002; **Duration:** 2 weeks;

ALZET Comments: animal info: 87-91 weeks; brain coordinates (0.6 mm posterior and 1.2 mm lateral from the bregma); dental cement used; neurodegenerative (Alzheimer's disease and Lewy body dementia.);

Q11086: C.-W. Lin, *et al.* Monascus-fermented metabolites repressed amyloid β -peptide-induced neurotoxicity and inflammatory response in in vitro and in vivo studies. *Journal of Functional Foods* 2023;104(

Agents: Amyloid beta-peptide-40 **Vehicle:** Acetonitrile; trifluoroacetic acid; **Route:** CSF/CNS (left ventricle); **Species:** Rat; **Strain:** Sprague-Dawley; **Pump:** Not Stated; **Duration:** 28 days;

ALZET Comments: 35% acetonitrile solution; Controls received mp w/ vehicle; animal info (Male; 6-8 weeks old); peptides; ALZET brain infusion kit 2 used; dental cement used; Alzheimer's

Q11342: C. Kondak, *et al.* Mitochondrial Effects of Hydromethylthionine, Rivastigmine and Memantine in Tau-Transgenic Mice. *International Journal of Molecular Sciences* 2023;24(13):

Agents: Rivastigmine; memantine **Vehicle:** Aqua ad injectabilia; **Route:** SC; **Species:** Mice; **Strain:** NMRI; L1 transgenic; L66; **Pump:** 1004; **Duration:** 28 days;

ALZET Comments: Dose: rivastigmine 5 mg/kg/d; memantine 1 mg/kg/d; controls received mp w/ vehicle; wound clips used; neurodegenerative (Alzheimer's)

R0438: G. Canet, *et al.* The pathomimetic oA β (25)-(-)(35) model of Alzheimer's disease: Potential for screening of new therapeutic agents. *Pharmacology & Therapeutics* 2023;245(108398)

Agents: Galantamine memantine hybrid **Vehicle:** Not Stated; **Route:** CSF/CNS (lateral ventricle); **Species:** Mice; **Strain:** Not Stated; **Pump:** Not Stated; **Duration:** 7 days;

ALZET Comments: Dose (2.5. or 7.5 μ g/day); peptides; Alzheimer's disease; review of different approaches for AD prevention and therapy

Q11243: K. A. Alkadhi. A rat model of pre-clinical Alzheimer's disease. *Handbook of Animal Models in Neurological Disorders* 2023;43-55

Agents: Amyloid beta (1-42) **Vehicle:** Acetonitrile; trifluoroacetic acid; **Route:** CSF/CNS (lateral ventricle); **Species:** Rat; **Strain:** Wistar; **Pump:** Not Stated; **Duration:** 2 weeks;

ALZET Comments: Dose (160pmol/day); 35% acetonitrile/0.1% trifluoroacetic acid used; post op. care: wound clips used; triple antibiotic ointment; peptides; catheter; Brain coordinates (AP: -0.3, L: 1.2, V: 4.5); dental cement used; behavioral testing: Radial arm water maze task; Short term memory; Long term memory; neurodegenerative (Alzheimer's); good methods p. 44-45

Q11233: T. Ali, *et al.* Peptide aptamer targeting A β -PrP-Fyn axis reduces Alzheimer's disease pathologies in 5XFAD transgenic mouse model. *Cellular and Molecular Life Sciences* 2023;80(6):139

Agents: PA8; Thioredoxin A **Vehicle:** Not Stated; **Route:** CSF (intraventricular); **Species:** Mice; **Strain:** 5XFAD transgenic; **Pump:** 2006; **Duration:** 12 weeks;

ALZET Comments: Dose (14.4 μ g/day); animal info (Female; 6 weeks old); pumps replaced every 6 weeks; behavioral testing (Open field test; Contextual fear conditioning test); neurodegenerative (Alzheimer's Disease); stress: "Three animals of the PA8 treatment group had to be euthanized due to complications following the second surgery and before the experimental end point and behavioral experiments. Issues included difficult wound healing and displacement of the osmotic pump tubing." p. 3



Q10887: Y. Zhao, *et al.* ATAD3A Oligomerization Promotes Neuropathology and Cognitive Deficits in Alzheimer's Disease Models. *Nature Communications* 2022;13(1):1121

Agents: TAT control peptide; DA1 peptide **Vehicle:** Not Stated; **Route:** Not Stated; **Species:** Mice; **Strain:** 5XFAD; **Pump:** 2004; **Duration:** 8.5 months;

ALZET Comments: Dose (1 mg/kg/day); Animal info: (mice); behavioral testing: (Y-maze test; Barnes maze test; Nest building performance test; Open field test); pumps replaced every 4 weeks; peptides; neurodegenerative (Alzheimer's Disease);

Q11036: C. A. Wood, *et al.* Activity disruption causes degeneration of entorhinal neurons in a mouse model of Alzheimer's circuit dysfunction. *eLife* 2022;11(**Agents:** Tetrodotoxin **Vehicle:** Saline; trypan blue; **Route:** CSF/CNS (right dorsal); **Species:** Mice; **Strain:** Nop-GlyCl; TeTX; **Pump:** 1003D; **Duration:** 3 days; 9 days;

ALZET Comments: Dose: 23 ul/day; 0.9% saline containing 0.04% Trypan blue used; Controls received mp w/ vehicle; pumps primed overnight; animal info: 3 to 6 months old; pumps replaced 4 and 7 days later to continue TTX administration; ALZET brain infusion kit 3 used; Brain coordinates (AP -4.5, ML +3.0, and DV -2.5 mm that targeted immediately above the right EC or at AP -3.1, ML +3.0, and DV -2.65 to target the dorsal DG); neurodegenerative (Alzheimer's); "

Q10715: C. Vandendriessche, *et al.* Biomarker and Therapeutic Potential of Peripheral Extracellular Vesicles in Alzheimer's Disease. *Advanced Drug Delivery Reviews* 2022;190(114486

Agents: Vesicle; extracellular **Vehicle:** Not Stated; **Route:** CSF/CNS (hippocampus); **Species:** Mice; **Strain:** APPswe, PS1dE9; **Pump:** Not Stated; **Duration:** 14 days;

ALZET Comments: Dose (2 mg/ml); animal info (mice); neurodegenerative (Alzheimer's disease);

Q10637: N. Orti-Casan, *et al.* A TNF Receptor 2 Agonist Ameliorates Neuropathology and Improves Cognition in an Alzheimer's Disease Mouse Model. *Proceedings of the National Academy of Sciences* 2022;119(37):e2201137119

Agents: NewStar2 **Vehicle:** PBS; **Route:** CSF/CNS (lateral ventricle); **Species:** Mice; **Strain:** C57BL/6 (background); **Pump:** 2006; **Duration:** 6 weeks;

ALZET Comments: Controls received mp w/ vehicle; animal info;; Male mice 6 mo of age behavioral testing: EPM; Y-Maze spontaneous alternation; MWM; stability of compound verified by cytotoxicity assay; Brain coordinates (anteroposterior, 0.05 mm; lateral, 0.1 mm; dorsoventral, 0.25 mm.); dental cement used; neurodegenerative (Alzheimer's disease); "

R0398: M. Klonarakis, *et al.* The Three Sisters of Fate: Genetics, Pathophysiology and Outcomes of Animal Models of Neurodegenerative Diseases. *Neuroscience and Biobehavioral Reviews* 2022;135(104541

Agents: Sodium azide **Vehicle:** Not Stated; **Route:** SC; **Species:** Rat; **Strain:** Sprague-Dawley; **Duration:** 4 weeks;

ALZET Comments: animal info (Male); neurodegenerative (Alzheimer's; Parkinson's; Huntington's disease);

Q10537: J. O. Hendrickx, *et al.* Short-Term Pharmacological Induction of Arterial Stiffness and Hypertension with Angiotensin II Does Not Affect Learning and Memory and Cerebral Amyloid Load in Two Murine Models of Alzheimer's Disease. *International Journal of Molecular Sciences* 2022;23(5):

Agents: Angiotensin II **Vehicle:** PBS; **Route:** SC; **Species:** Mice; **Strain:** hAPP23+/-, APPswe/PSEN1dE9 C57BL6; **Pump:** 1004; **Duration:** 28 days;

ALZET Comments: Dose (1 µg/kg/min); Controls received mp w/ vehicle; animal info (5 months old mice); wound clips used; behavioral testing (Morris water maze); Blood pressure measured via non-invasive CODA tail-cuff blood pressure system; peptides; neurodegenerative (Alzheimer's disease); cardiovascular (hypertension)

Q10934: L. K. Hamilton, *et al.* Stearoyl-CoA Desaturase inhibition reverses immune, synaptic and cognitive impairments in an Alzheimer's disease mouse model. *Nature Communications* 2022;13(1):2061

Agents: ab142089 **Vehicle:** DMSO; aCSF; **Route:** CSF/CNS (lateral ventricles); **Species:** Mice; **Strain:** 3xTg/ WT; **Pump:** 1004; **Duration:** 1 month;

ALZET Comments: Dose: (80 uM); 0.8% DMSO vehicle used; Controls received mp w/ vehicle; animal info: 9-month-old female mice; behavioral testing; Open field test; Elevated plus maze; Light dark box; Morris water maze; SCD inhibitor; Brain coordinates (0.0 mm antero-posterior and 0.9 mm lateral to Bregma); pumps primed 48h; neurodegenerative (Alzheimer's disease, learning, memory);



Q10445: G. E. Barbone, *et al.* X-ray multiscale 3D neuroimaging to quantify cellular aging and neurodegeneration postmortem in a model of Alzheimer's disease. *European Journal of Nuclear Medicine and Molecular Imaging* 2022;49(13):4338-4357

Agents: LY37926 **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Strain:** B6/129 wild-type; 3xTgAD; **Duration:** 28 days;

ALZET Comments: Dose: (1 mg/kg/day). Controls received mp w/ vehicle; animal info: 11-month-old male; LY379268 is selective agonist of group II metabotropic glutamate receptors; neurodegenerative (Alzheimer's disease);

Q10489: B. Anand, *et al.* Significance of native PLGA nanoparticles in the treatment of Alzheimer's disease pathology. *Bioactive Materials* 2022;17(506-525)

Agents: PLGA **Vehicle:** CSF; **Route:** CSF/CNS (right lateral ventricle); **Species:** Mice; **Strain:** 5xFAD, wild-type; **Pump:** 2004; **Duration:** 28 days;

ALZET Comments: Dose: (25 µM); animal info: Three-month old mice along with age-matched control mice; behavioral testing: Novel-object recognition test; PLGA aka Acidic poly(D,L-lactide-co-glycolide) nanoparticles; ALZET Brain Infusion Kit used; Brain coordinates (right ventricle (-0.8 mm mid/lateral, -0.1 mm antero/posterior and -3.0 mm dorso/ventral from Bregma); neurodegenerative (Alzheimer's);

Arthritis Research (2017-Present)

Q11273: Y. Fu, *et al.* Effects of Leptin and Body Weight on Inflammation and Knee Osteoarthritis Phenotypes in Female Rats. *JBMR Plus* 2023;7(7):e10754

Agents: Leptin, recombinant **Vehicle:** Tris hydrochloride; **Route:** SC; **Species:** Rat; **Strain:** Zucker (F344 BN F1); **Pump:** 2006; **Duration:** 23 weeks;

ALZET Comments: Dose (3.6 µg/day); Controls received mp w/ vehicle; animal info (Female; Obese; 12 months old, hybrid); pumps replaced every 5 weeks; long-term study; functionality of mp verified by plasma levels p. 7

Q9406: S. Park, *et al.* Intermittent fasting with a high-protein diet mitigated osteoarthritis symptoms by increasing lean body mass and reducing inflammation in osteoarthritic rats with Alzheimer's disease-like dementia. *British Journal of Nutrition* 2021;1-13

Agents: Amyloid protein, beta (25-35) **Vehicle:** Saline, sterile; **Route:** CSF/CNS (hippocampus); **Species:** Rat; **Duration:** 14 d

ALZET Comments: Dose (3 to 6 nmol/d); animal info (Sprague-Dawley female rats, 10 weeks, 235 g); Brain coordinates (lateral, -3-3 mm from the bregma; posterior, 2-0 mm from the midline; ventral, -2-5 mm from the dura);

Q9384: G. Nalesso, *et al.* Calcium calmodulin kinase II activity is required for cartilage homeostasis in osteoarthritis. *Scientific Reports* 2021;11(1):5682

Agents: KN-93 **Vehicle:** PBS; **Route:** SC; **Species:** Mice; **Pump:** Not Stated; **Duration:** 28 days;

ALZET Comments: Dose (5 µmol/kg/day); Controls received mp w/ vehicle; animal info (Ten week old, male C57BL/6 mice);

Q9507: P. B. Tran, *et al.* Prolonged chemogenetic inhibition of nociceptors in a murine surgical model of osteoarthritis: effects on immune responses in dorsal root ganglia. *Osteoarthritis and Cartilage* 2020;28

Agents: Clozapine-N-oxide **Vehicle:** Saline; **Route:** Abdomen; **Species:** Mice; **Pump:** Not Stated; **Duration:** 6 weeks;

ALZET Comments: Controls received mp w/ vehicle; animal info (10-week old male NaV1.8-PdI C57BL/6 mice); Clozapine-N-oxide aka CNO; immunology;

Q8551: A. Jarneborn, *et al.* Tofacitinib treatment aggravates Staphylococcus aureus septic arthritis, but attenuates sepsis and enterotoxin induced shock in mice. *Scientific Reports* 2020;10(1):10891

Agents: Tofacitinib **Vehicle:** DMSO; PEG 300; Water; **Route:** SC; **Species:** Mice; **Pump:** 2002; **Duration:** 3 days;

ALZET Comments: Dose (15 mg/kg/day); 10% Peg 300, 40% water used; Controls received mp w/ vehicle; animal info (Female NMRI mice and female BALB/c mice, 6-12 weeks old); dependence;

Q7656: H. J. Qin, *et al.* SDF-1/CXCR4 axis coordinates crosstalk between subchondral bone and articular cartilage in osteoarthritis pathogenesis. *Bone and Mineral* 2019;125(140-150)

Agents: AMD3100 **Vehicle:** Saline **Route:** Bone (tibia); **Species:** Mice; Rat; **Strain:** C57BL6J; SD **Pump:** 1004; **Duration:** 28 days

ALZET Comments: Dose (180 µg/day); Controls received mp w/ vehicle; animal info (mice rats 3 mo, male)



Q7272: F. Bai, *et al.* Spinal Cord Glycine Transporter 2 Mediates Bilateral ST35 Acupoints Sensitization in Rats with Knee Osteoarthritis. Evidence-Based Complementary and Alternative Medicine 2019;2019(7493286)

Agents: Glycine **Vehicle:** Saline; **Route:** CSF/CNS (Intrathecal); **Species:** Rat; **Pump:** 2002; **Duration:** 14 Days;
ALZET Comments: Dose (0.1 umol/h); Controls received mp w/ vehicle; animal info (Male Sprague-Dawley rats, 200-250 g); behavioral testing (PWMT test);

Q8129: M. Miyoshi, *et al.* Efficacy of constant long-term delivery of YM-58483 for the treatment of rheumatoid arthritis. Eur J Pharmacol 2018;824(89-98)

Agents: Antagonist of Ca²⁺ release-activated Ca²⁺ (CRAC) channels **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Duration:** 28d
ALZET Comments: Dose (0.5 ug/kg/day); Controls received mp w/ vehicle; animal info (Male, 6-10 weeks old, 30 g); Antagonist of Ca⁺ release-activated Ca²⁺ channels aka YM-58483; dependence;

Q6532: K. Wang, *et al.* T140 blocks the SDF-1/CXCR4 signaling pathway and prevents cartilage degeneration in an osteoarthritis disease model. PLoS One 2017;12(4):e0176048

Agents: T140 **Vehicle:** PBS; **Route:** SC; **Species:** Guinea pig; **Pump:** 2006; **Duration:** Not Stated;
ALZET Comments: Dose (180 ug/d); Controls received mp w/ vehicle; animal info (9 month old male ~600g); pumps replaced every 6 weeks; Therapeutic indication (osteoarthritis);

Atherosclerosis Research (2021-Present)

Q11032: Q. Yu, *et al.* Urotensin II Enhances Advanced Aortic Atherosclerosis Formation and Delays Plaque Regression in Hyperlipidemic Rabbits. International Journal of Molecular Sciences 2023;24(4):

Agents: Urotensin II **Vehicle:** Saline; **Route:** SC; **Species:** Rabbit; **Strain:** Not Stated; **Pump:** 2006; **Duration:** 6 weeks; 12 weeks; 24 weeks;

ALZET Comments: Dose: 5.4 ug/kg/h; Controls received mp w/ vehicle; animal info: Male/female rabbits, six weeks old; pumps replaced every 6 weeks; Blood pressure/heart rate measured via medial auricular artery; cardiovascular; atherosclerosis

Q11030: D. Ye, *et al.* Antisense oligonucleotides targeting hepatic angiotensinogen reduce atherosclerosis and liver steatosis in hypercholesterolemic mice. Global Translational Medicine 2023;2(1):

Agents: Losartan **Vehicle:** Water; **Route:** SC; **Species:** Mice; **Strain:** LDL receptor -/-; **Pump:** 2006; **Duration:** 12 weeks;
ALZET Comments: Dose: Losartan 15 mg/kg/day; Controls received mp w/ vehicle; animal info: Male ~8 weeks old; pumps replaced after 6 weeks; Blood pressure measured via: Tail cuff; Blood pressure measurement results (see pg. 3) fig. 1; cardiovascular (liver steatosis, atherosclerosis)

Q11018: Y. Wang, *et al.* Moxonidine Increases Uptake of Oxidised Low-Density Lipoprotein in Cultured Vascular Smooth Muscle Cells and Inhibits Atherosclerosis in Apolipoprotein E-Deficient Mice. International Journal of Molecular Sciences 2023;24(4):

Agents: Angiotensin II **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice; **Strain:** ApoE-/-; **Pump:** 2004; **Duration:** 28 days;
ALZET Comments: Dose: (1 ug/kg body weight/min); animal info: Male 3 months old; cardiovascular; atherosclerosis

Q11136: W. Lian, *et al.* CXCL12 Inhibition Prevents Telomere Shortening and Repression of Telomerase Activity in Both Early and Late Post-menopausal Atherosclerosis via ABCA1 Upregulation. Proceedings of the Bulgarian Academy of Sciences 2023;76(3):429-439

Agents: POL5551 **Vehicle:** PBS; **Route:** SC; **Species:** Mice; **Strain:** C57BL/6; **Pump:** 1007D; **Duration:** 2 weeks;
ALZET Comments: Dose (30 mg/kg/day); Controls received mp w/ vehicle; animal info (Female; 8-9 weeks old); receptor antagonist (CXCR4); cardiovascular;



Q11236: J. An, *et al.* Nicotine exacerbates atherosclerosis and plaque instability via NLRP3 inflammasome activation in vascular smooth muscle cells. *Theranostics* 2023;13(9):2825-2842

Agents: Nicotine **Vehicle:** Saline; **Route:** Not Stated; **Species:** Mice; **Strain:** Apoe^{-/-}; **Pump:** 2006; **Duration:** 6 weeks;
ALZET Comments: Dose (5 mg/kg/day); 0.9% NaCl used; Controls received mp w/ vehicle; animal info (Male; 8 weeks old; Fed Western diet of 21% milk fat and 0.15% cholesterol); toxicology; "...nicotine infusion for 6 weeks significantly increased the plaque size and plaque area percentage of internal elastic lamina area in BA compared with that of vehicle-treated mice. These data suggest that nicotine, the core component in cigarette smoking and electronic cigarette smoking, markedly aggravates atherogenesis in Apoe^{-/-} mice." p. 4

R0404: H. Williams, *et al.* Use of Mouse Carotid Artery Ligation Model of Intimal Thickening to Probe Vascular Smooth Muscle Cell Remodeling and Function in Atherosclerosis. *Methods in Molecular Biology* 2022;2419(537-560

Agents: Uridine, bromodeoxy- **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice; **Strain:** Not Stated; **Pump:** Not Stated;
Duration: 1 day; 6 weeks;
ALZET Comments: Dose: (0.11)animal info: male and female adult 2 mos old; post op. care: 1.5 µg of buprenorphine hydrochloride (Vetergesic); Bromodeoxyuridine aka (BrdU)

Q10707: P. F. Tsui, *et al.* An Octimibate Derivative, Oxa17, Enhances Cholesterol Efflux and Exerts Anti-Inflammatory and Atheroprotective Effects in Experimental Atherosclerosis. *Biochemical Pharmacology* 2021;188(114581

Agents: Oxa17 **Vehicle:** DMSO; **Route:** SC; **Species:** Mice; **Strain:** C57BL/6; Oxa17; **Pump:** 2006; **Duration:** 8 weeks;
ALZET Comments: Controls received mp w/ vehicle; animal info: Eight-week-old male mice, is an octimibate derivative; Therapeutic indication (atherosclerosis)

Q10333: S. K. Sinha, *et al.* Local M-CSF (Macrophage Colony-Stimulating Factor) Expression Regulates Macrophage Proliferation and Apoptosis in Atherosclerosis. *Arteriosclerosis Thrombosis and Vascular Biology* 2021;41(1):220-233

Agents: Uridine, bromodeoxy- **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice; **Strain:** Wild-type; **Pump:** 1002; **Duration:** 2 w
ALZET Comments: Dose: (50 µg per day); animal info: 8- to 10-week-old female and male; cardiovascular

Q10051: N. Otaka, *et al.* Vasohibin-2 Aggravates Development of Ascending Aortic Aneurysms but not Abdominal Aortic Aneurysms nor Atherosclerosis in ApoE-Deficient Mice. *American Journal of Hypertension* 2021;34(5):467-475

Agents: Angiotensin II **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Strain:** ApoE^{-/-}; **Pump:** 2004; **Duration:** 3 weeks;
ALZET Comments: Dose (1000 ng/kg/min); Controls received mp w/ vehicle; animal info (male mice, 9 to 14 weeks old); Blood pressure measured via tail cuff system;98 mmHg - 139 mmHg; cardiovascular;

Q10221: M. Kukida, *et al.* Effects of Endogenous Angiotensin II on Abdominal Aortic Aneurysms and Atherosclerosis in Angiotensin II-Infused Mice. *Journal of American Heart Association* 2021;10(9):e020467

Agents: Angiotensin II **Vehicle:** Not Stated; **Route:** Not Stated; **Species:** Mice; **Strain:** C57BL/6J; **Pump:** 2001; **Duration:** 7 d
ALZET Comments: Dose: (1000 ng/kg per minute); Animal info: male mice (8-to10-weeks-old); cardiovascular;

Q9833: H. Zhao, *et al.* Chronic Staphylococcus aureus Superantigen Toxic Shock Syndrome Toxin-1 Exposure Accelerates the Progression of Atherosclerosis in Rabbits. *Acta Cardiologica Sinica* 2020;

Agents: TSST-1 **Vehicle:** PBS; **Route:** SC; **Species:** Rabbit; **Strain:** New Zealand White rabbits **Pump:** Not Stated **Duration:** 42d
ALZET Comments: Dose (1.3 mg/mL); Controls received mp w/ vehicle; animal info (male 8 months old); cardiovascular;

Q10854: W. Yu, *et al.* Smooth MPscle NADPH Oxidase 4 promotes Angiotensin II-Induced Aortic Aneurysm and Atherosclerosis by Regulating Osteopontin. *BBA- Molecular Basis of Disease* 2020;1866(12):165912

Agents: Ang II **Vehicle:** Saline **Route:** SC **Species:** Mice; **Strain:** C57BL/6 LDLR^{-/-}; FVB/N ApoE^{-/-}; **Pump:** 2004; **Duration:** 4 w
ALZET Comments: Dose: (1.44 mg/kg/day); Controls received mp w/ vehicle; animal info: Male mice at 10 weeks of age; Blood pressure measured via: tail-cuff plethysmography (NTg 110.30 ± 1.80 mmHg vs. SDN 110.30 ± 1.80 mmHg, n = 6-7) or after Ang II infusion (NTg 167.60 ± 3.60 mmHg vs. SDN 166.70 ± 4.40 mmHg, n = 9-11); cardiovascular; (Aortic aneurysm)



Q10052: K. Ozawa, *et al.* Proteolysis of Von Willebrand Factor Influences Inflammatory Endothelial Activation and Vascular Compliance in Atherosclerosis. *Basic to Translational Science* 2020;5(10):1017-1028

Agents: ADAMTS13 **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice; **Strain:** LDL-R^{-/-}; **Pump:** 1004; **Duration:** 14 days;

ALZET Comments: Dose (2 ug/day); animal info (mice, 20 to 30 weeks old); Blood pressure measured via tail-cuff plethysmograph; 45 mmHg - 55 mmHg; cardiovascular;

Q8611: M. Krishnan, *et al.* beta-hydroxybutyrate Impedes the Progression of Alzheimer's Disease and Atherosclerosis in ApoE-Deficient Mice. *Nutrients* 2020;12(2):

Agents: Beta-hydroxybutyrate **Vehicle:** PBS; **Route:** SC; **Species:** Mice; **Strain:** ApoE^{-/-}; C57BL/6J; **Pump:** 1004; **Duration:** 8 w

ALZET Comments: Dose (1.5 mmol/kg/day); Controls received mp w/ vehicle; animal info (Six-week-old male mice); pumps replaced every 4 weeks; half-life (p.10); Beta-hydroxybutyrate aka (B-OHB); neurodegenerative (Alzheimer's disease)

Q9784: A. M. Flores, *et al.* Pro-efferocytic nanoparticles are specifically taken up by lesional macrophages and prevent atherosclerosis. *Nature Nanotechnology* 2020;15(2):154-161

Agents: Angiotensin II **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice; **Strain:** ApoE^{-/-}; **Pump:** 2004; **Duration:** 4 weeks;

ALZET Comments: Dose (1000 ng/kg/min); animal info (8-10 weeks old,); cardiovascular;

Q9779: D. D. Chin, *et al.* Collagenase-Cleavable Peptide Amphiphile Micelles as a Novel Theranostic Strategy in Atherosclerosis. *Advanced Therapeutics* 2020;3(3):

Agents: Angiotensin II **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Strain:** ApoE^{-/-}; **Pump:** 2004; **Duration:** 28 days;

ALZET Comments: Dose (1.9 mg/kg/day); Controls received mp w/ vehicle; animal info (27 weeks old); cardiovascular;

Dementia Research

Q9406: S. Park, *et al.* Intermittent fasting with a high-protein diet mitigated osteoarthritis symptoms by increasing lean body mass and reducing inflammation in osteoarthritic rats with Alzheimer's disease-like dementia. *British Journal of Nutrition* 2021;1-13

Agents: Amyloid protein, beta (25-35) **Vehicle:** Saline, sterile; **Route:** CSF/CNS (hippocampus); **Species:** Rat; **Duration:** 14d

ALZET Comments: Dose (3 to 6 nmol/d); animal info (Sprague-Dawley female rats, 10 weeks, 235 g); Brain coordinates (lateral, -3.3 mm from the bregma; posterior, 2.0 mm from the midline; ventral, -2.5 mm from the dura);

Q9277: A. K. E. Hornsby, *et al.* Unacylated-Ghrelin Impairs Hippocampal Neurogenesis and Memory in Mice and Is Altered in Parkinson's Dementia in Humans. *Cell Report Medicine* 2020;1(7):100120

Agents: Ghrelin, unacylated **Vehicle:** Saline, sterile; **Route:** SC; **Species:** Mice; **Pump:** 1007D; **Duration:** 7 days;

ALZET Comments: Dose (48 ug/day); Controls received mp w/ vehicle; animal info (six-month old homozygous GOAT null mice); unacylated Ghrelin aka UAG; neurodegenerative (Parkinson's Dementia);

Q8384: S. K. S. Bengtsson, *et al.* GABA-A receptor modulating steroids in acute and chronic stress; relevance for cognition and dementia? *Neurobiology of Stress* 2020;12

Agents: Allopregnanolone; **Route:** SC; **Species:** Mice; **Duration:** 4 weeks;

ALZET Comments: Controls received mp w/ vehicle; animal info (wild-type mice, 10 weeks old); Allopregnanolone aka AP α ; neurodegenerative (Cognitive dysfunction, dementia and Alzheimer's disease);

Q9052: M. Wang, *et al.* Astrocytic connexin 43 potentiates myelin injury in ischemic white matter disease. *Theranostics* 2019;9(15):4474-4493

Agents: Cabenexolone; Meclofenamic Acid; Gap 26; Gap 19 **Vehicle:** Saline; **Route:** CSF/CNS; **Species:** Mice; **Pump:** 1004; **Duration:** 4 weeks;

ALZET Comments: Dose (CBX- 0.1, 0.5 or 2.5 ug/ul, MFA- 0.1, 1, or 10 mM, Gap 26- 2.0 ug/ul, Gap 19 2.0 ug/ul); Controls received mp w/ vehicle; animal info (Male, C57BL/6, 10-12 weeks old, 22-27 g); Cabenexolone aka CBX, Meclofenamic Acid aka MFA, Gap 26, or Gap 19 aka XX; ALZET brain infusion kit 3 used; Brain coordinates (anterior-posterior = -0.4 mm, medial-lateral = 1.0 mm, and dorsal-ventral = 3.0 mm); dental cement used; neurodegenerative (Dementia);



Q8135: A. Montagne, *et al.* Pericyte degeneration causes white matter dysfunction in the mouse central nervous system. *Nat Med* 2018;24(3):326-337

Agents: Ancrod **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Pump:** 2002; **Duration:** 14 days;

ALZET Comments: Dose (0.52 ul/hr); Controls received mp w/ vehicle; animal info (12 weeks old,); neurodegenerative

Q5727: Y. Zhu, *et al.* Protective Effect of 17beta-Estradiol Upon Hippocampal Spine Density and Cognitive Function in an Animal Model of Vascular Dementia. *Sci Rep* 2017;7(42660)

Agents: Estradiol, 17b- **Vehicle:** Not Stated; **Route:** SC; **Species:** Rat; **Pump:** 2006; **Duration:** Not Stated;

ALZET Comments: Controls received mp w/ 20% cyclodextrin; animal info (male, Sprague Dawley, 250-300g, adult); functionality of mp verified by serum levels; behavioral testing (Morris water maze); replacement therapy (estradiol infusion); long-term study; cardiovascular; Dose (0.05 ug/h); "exogenous E2 replacement produced E2 levels of 25-33pg/ml" (pg 2);

Q4865: Osamu Nakagawasaia, *et al.* BE360, a new selective estrogen receptor modulator, produces antidepressant and antidementia effects through the enhancement of hippocampal cell proliferation in olfactory bulbectomized mice. *Behavioural Brain Research* 2016;297(315-322)

Agents: BE360; estradiol, 17b-; tamoxifen; raloxifen hydrochloride **Vehicle:** PEG 300; **Route:** SC; **Species:** Mice; **Pump:** 2002; **Duration:** 2 weeks;

ALZET Comments: Controls received mp w/ vehicle; animal info (female, ddY, 10 weeks old, bulbectomized); dose-response (pg 317-318); neurodegenerative (dementia); behavioral testing (sucrose preference; y-maze); BE360 is a novel selective estrogen receptor modulator; Dose (100 ug/day);

Q4199: H. J. Yang, *et al.* Fermenting soybeans with *Bacillus licheniformis* potentiates their capacity to improve cognitive function and glucose homeostasis in diabetic rats with experimental Alzheimer's type dementia. *European Journal of Nutrition* 2015;54(77-88)

Agents: Amyloid protein, beta (35-25); amyloid protein, beta (25-35) **Vehicle:** Saline; **Route:** CSF/CNS (hippocampus); **Species:** Rat; **Pump:** Not Stated; **Duration:** 14 days;

ALZET Comments: Controls received mp w/ control B-amyloid protein (25-35); animal info (male, Sprague Dawley, 223g); bilateral cannula used; behavioral testing (locomotor activity, passive avoidance test, morris water maze);

Q3622: M. H. Savolainen, *et al.* The beneficial effect of a prolyl oligopeptidase inhibitor, KYP-2047, on alpha-synuclein clearance and autophagy in A30P transgenic mouse. *NEUROBIOLOGY OF DISEASE* 2014;68(1-15)

Agents: KYP-2047 **Vehicle:** DMSO; saline; **Route:** IP; **Species:** Mice (transgenic); **Pump:** Not Stated; **Duration:** 28 days;

ALZET Comments: Controls received mp w/ vehicle; animal info (Snca tm(A30P) or WT, 12-13 months old); functionality of mp verified by decrease in PREP activity; 50% DMSO used; neurodegenerative (Parkinson's disease; Lewy body dementia); post op. care (buprenorphine); stability verified by (stability experiment one month); pumps primed overnight in 37C saline;

Q4943: E. L. Scott, *et al.* Long-term estrogen deprivation leads to elevation of Dickkopf-1 and dysregulation of Wnt/beta-Catenin signaling in hippocampal CA1 neurons. *Steroids* 2013;78(6):624-32

Agents: Estradiol, 17 B- **Vehicle:** Cyclodextrin, B-; **Route:** SC; **Species:** Rat; **Pump:** Not Stated; **Duration:** 14 days;

ALZET Comments: 24- month old, female mice, ovariectomized; neurodegenerative (dementia); 20% cyclodextrin used; mp were used to infuse estradiol to mimic physiological levels during diestrus I (10-15 pg/mL); dose: 0.0167 mg

Q2903: L. V. Colom, *et al.* Memantine protects cholinergic and glutamatergic septal neurons from Abeta(1-40)-induced toxicity. *Neuroscience Letters* 2013;541(:):54-57

Agents: Memantine **Vehicle:** Not Stated; **Route:** SC; **Species:** Rat; **Pump:** 2ML2; **Duration:** 8 days;

ALZET Comments: Animal info (Sprague Dawley, 300-400g); neurodegenerative (Alzheimer's disease, dementia)

Q5575: P. A. Lawlor, *et al.* A β Infusion and Related Models of Alzheimer Dementia. *Animal Reproduction* 2011;48(347-370)

Agents: Amyloid protein, beta; adenovirus **Vehicle:** DMSO, Hcl; **Route:** CSF/CNS (ventricle); **Species:** mice (transgenic);

ALZET Comments: ALZET brain infusion kit used; behavioral testing (Morris water maze, passive avoidance, novel object recognition); gene therapy (viral vector); "Use of an osmotic mini-pump to deliver Ab has the advantage of providing the continuous release and presence of Ab in the brain throughout the experiment." Pg. 353; Therapeutic indication (Alzheimer's disease); Dose (Amyloid beta: 100 μ M, DMSO:);



Q0084: L. Crews, *et al.* Selective Molecular Alterations in the Autophagy Pathway in Patients with Lewy Body Disease and in Models of alpha-Synucleinopathy. PLoS One 2010;5(2):U163-U178

Agents: Rapamycin **Vehicle:** Not Stated; **Route:** CSF/CNS; **Species:** Mice (transgenic); **Pump:** 1007D; **Duration:** 2 weeks;
ALZET Comments: Controls received mp w/ vehicle; cyanoacrylate adhesive; animal info (alpha-syn, Tg);

R0352: A. A. Boulton. Animal Models of Dementia. Springer Protocols 2010;48(1-721

Agents: Amphetamine sulfate; Dopamine **Vehicle:** Propylene Glycol; **Route:** SC; CSF/CNS (nucleus accumbens); **Species:** Rat;
Pump: 2ML2; **Duration:** 14 days;

ALZET Comments: comparison of injections and sylastic pellet vs mp; pulsed delivery; PE tubing contained drug and a dye in short sections interspersed with a substance immiscible with drug, to allow 12 hour infusions of drug and 12-hour infusions of the inert substance (perfluorodecalin) throughout a 14 day infusion period.; pumps primed in a physiological saline solution at 37°C for 4 hours.

Glaucoma Research

Q11049: S. Kumar, *et al.* Neuroprotection of Retinal Ganglion Cells Suppresses Microglia Activation in a Mouse Model of Glaucoma. ARVO Journals 2023;64(7):24

Agents: Meclofenamic acid **Route:** CSF/CNS; **Species:** Mice; **Strain:** C57BL/6; **Pump:** 2004; **Duration:** 4 weeks;
ALZET Comments: Dose (20 mg/kg/d); animal info: adult, 3-4 months old, both sexes; pumps replaced after 4 weeks;

Q10222: S. Kumar, *et al.* Neuroprotection of the Inner Retina Also Prevents Secondary Outer Retinal Pathology in a Mouse Model of Glaucoma. Investigative Ophthalmology & Visual Science, 2021;62(9):35

Agents: Meclofenamic Acid **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice; **Strain:** C57BL/6; WT; **Pump:** 2004;
ALZET Comments: Dose: (20 mg/kg/day); Controls received mp w/ no vehicle; animal info: mice and on connexin 36 knock-out mice; pumps replaced at 4 weeks; Meclofenamic acid aka (MFA); neurodegenerative (Glaucoma);

Q6465: J. M. Harder, *et al.* Early immune responses are independent of RGC dysfunction in glaucoma with complement component C3 being protective. Proc Natl Acad Sci U S A 2017;114(19):E3839-E3848

Agents: AG1478 **Vehicle:** DMSO; **Route:** SC; **Species:** Mice **Strain:** D2.C3-/-; B6;129S4-C3tm1Crr/J **Pump:** 2004;
Duration: 3.5 months;
ALZET Comments: Dose (12 mg/kg/d); Controls received mp w/ vehicle; pumps replaced every 39 days; enzyme inhibitor (EGFR); Lynch coil;

Q5942: A. Akopian, *et al.* Targeting neuronal gap junctions in mouse retina offers neuroprotection in glaucoma. J Clin Invest 2017;127(7):2647-2661

Agents: Meclofenamic acid **Route:** SC; **Species:** Mice; **Strain:** C57BL/6; CxWT; **Pump:** 2004; **Duration:** 8 weeks;
ALZET Comments: animal info (3-4 months); pumps replaced every 4 weeks; comparison of injection vs mp; stress/adverse reaction: We found that animals in which sc minipumps were inserted for MFA delivery had significant problems swimming the water maze, which compromised the ability to assess the visual behavioral tests (page 2659); Dose (5, 10, 20 mg/kg/d);

Q5012: J. K. a. M.-S. Kim. The Evaluation of Osmotic Pump as Glaucoma Drug Delivery System in Normal Dogs. Pakistan Veterinary Journal 2015;35(2):239-241

Agents: Dorzolamide; timolol; **Route:** SC (Eye); **Species:** Dog; **Strain:** Beagle; **Pump:** 2004; **Duration:** 24 days;
ALZET Comments: Controls received no mp; Controls received no mp; "Osmotic pump, as one of the constant drug delivery systems, can be placed in the subcutaneous pocket with minimal surgical skills, and continuously administer the wanted drugs into the target regions" pg 241; picture of implantation pg 240; Interesting (use of pump in veterinary application);

Q2860: E. Nitta, *et al.* Aldosterone: a mediator of retinal ganglion cell death and the potential role in the pathogenesis in normal-tension glaucoma. Cell Death & Disease 2013;4(1):U109-U114

Agents: Aldosterone **Vehicle:** DMSO; **Route:** SC; **Species:** Rat; **Strain:** Sprague Dawley; **Pump:** 2006; **Duration:** 6 weeks;
ALZET Comments: Control animals received mp w/ vehicle; animal info (male, 200-250 g); up to 5% DMSO used; long-term



Q2976: G. Foureaux, *et al.* Antiglaucomatous Effects of the Activation of Intrinsic Angiotensin-Converting Enzyme 2. INVESTIGATIVE OPHTHALMOLOGY & VISUAL SCIENCE 2013;54(6):4296-4306

Agents: A-779 **Vehicle:** Not Stated; **Route:** SC; **Species:** Rat; **Strain:** Wistar; **Pump:** Not Stated; **Duration:** Not Stated; **ALZET Comments:** Animal info (male, 180-220g)

P9208: C. J. Dong, *et al.* alpha-2 adrenergic modulation of NMDA receptor function as a major mechanism of RGC protection in experimental glaucoma and retinal excitotoxicity. Investigative Ophthalmology & Visual Science 2008;49(10):4515-4522

Agents: Brimonidine; Memantine; Atipamezole **Vehicle:** Not Stated; **Route:** SC; **Species:** Rat; **Strain:** Sprague Dawley; **Pump:** Not Stated; **Duration:** 2 weeks;

ALZET Comments: Enzyme inhibitor (PDE-4); animal info (male, 350-400 g.); Brimonidine also known as UK14304

Q7597: L. A. Wheeler, *et al.* Alpha-2 adrenergic receptor agonists are neuroprotective in experimental models of glaucoma. European Journal of Ophthalmology 2001;11 Suppl 2(S30-5

Agents: Brimonidine; timolol **Vehicle:** Not Stated; **Route:** SC; **Species:** Rat; **Strain:** Sprague Dawley; **Pump:** Not Stated; **Duration:** 3 weeks;

ALZET Comments: Dose ((brimonidine 1 mg/kg/day),(timolol 2 mg/kg/day)); Controls received mp w/ vehicle; Therapeutic indication (neuroprotection of retinal ganglion cells); brimonidine: a-2 adrenergic receptor agonist; timolol b-adrenergic receptor antagonist;

Parkinson's Disease Research (2020-Present)

Q11004: S. Song, *et al.* Dysfunction of the noradrenergic system drives inflammation, alpha-synucleinopathy, and neuronal loss in mouse colon. Frontiers in Immunology 2023;14(1083513

Agents: Salmeterol; dipheyleiendonim **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Strain:** SNCA; **Duration:** 28 days;

ALZET Comments: Dose: (salmeterol: 10 ug/kg/day, dipheyleiendonim: 10 mg/kg/day); animal info: 8 wk male; received mp w/ vehicle; salmeterol: B2-adrenoreceptor agonist, DPI: NADPH oxidase inhibitor; behavioral testing (Accelerated Rotarod)

Q11213: M. A. Pedrosa, *et al.* AT1 receptor autoantibodies mediate effects of metabolic syndrome on dopaminergic vulnerability. Brain Behavior and Immunity 2023;108(255-268

Agents: AT1-AA **Vehicle:** Saline; **Route:** IP; **Species:** Rat; **Strain:** Not Stated; **Pump:** Not Stated; **Duration:** 14 days;

ALZET Comments: Dose (0.15 ug/ul, 0.25 ug/ul); Controls received mp w/ vehicle; animal info: Male young adult rats 2-3-month-old; Blood pressure measured via non-invasive pressure system meter; Blood pressure measurement (p.261) Fig,4; AAT1-AA are agonistic autoantibodies to the ang II type 1 receptor; neurodegenerative (Parkinson's, Alzheimer's); "Our data using osmotic minipump infusions suggest that circulating AT1-AA can disrupt BBB, enter CSF and affect brain." p.11

Q11045: T. P. Kilpelainen, *et al.* Nonpeptidic Oxazole-Based Prolyl Oligopeptidase Ligands with Disease-Modifying Effects on alpha-Synuclein Mouse Models of Parkinson's Disease. Journal of Medicinal Chemistry 2023;66(11):7475-7496

Agents: KYP-2047; HUP-55 **Vehicle:** DMSO; Tween 20; **Route:** IP; CSF/CNS (lateral ventricle); **Species:** Mice; **Strain:** C57BL/6JRccHsd; **Pump:** 1004; **Duration:** 28 days;

ALZET Comments: Dose: 10 mg/kg/day; 0.2% dimethyl sulfoxide; 5% Tween in saline used; animal info (10 to 11 weeks old male C57BL/6JRccHsd mice); post op. care: Topical lidocaine (10 mg/mL), buprenorphine, (0.1 mg/kg) and carprofen (5 mg/kg) s.c.injections; KYP-2047 is a peptide-like PREP inhibitor; ALZET brain infusion kit 3 used; brain coordinates: 0.7 mm anterior and 1.4 mm lateral to bregma; behavioral testing (Cylinder Test.); neurodegenerative (Parkinson's);

Q10612: M. Morissette, *et al.* Prevention of L-Dopa-Induced Dyskinesias by MPEP Blockade of Metabotropic Glutamate Receptor 5 Is Associated with Reduced Inflammation in the Brain of Parkinsonian Monkeys. Cells 2022;11(4):

Agents: MPTP **Vehicle:** Not Stated; **Route:** SC; **Species:** Monkey (cynomologus); **Strain:** Cynomologus; **Duration:** 24 hrs;

ALZET Comments: animal info (Drug-naïve; Ovariectomized; Female); behavioral testing (Motor Behavior Measures); MPTP aka 1-methyl-4-phenyl1,2,3,6-tetrahydropyridine; neurodegenerative (Parkinson's Disease);



Q10608: E. Montalban, *et al.* Translational Profiling of Mouse Dopaminergic Neurons Reveals Region-Specific Gene Expression, Exon Usage, and Striatal Prostaglandin E2 Modulatory Effects. *Molecular Psychiatry* 2022;27(4):2068-2079

Agents: Misoprostol; Haloperidol **Vehicle:** PBS; Saline; **Route:** IP; CSF/CNS (intracerebral); **Species:** Mice; **Strain:** Wild-type; **Pump:** 1004; 2004; **Duration:** Not Stated

ALZET Comments: animal info (D2-TRAP; C57BL/6 mice Male; Female; Transgenic); behavioral testing (rotarod/food-cued Y maze); bilateral cannula used; neurodegenerative (Parkinson's; Addiction; Schizophrenia); Therapeutic indication (Neuromodulators);

Q10588: R. Landau, *et al.* The Rat Rotenone Model Reproduces the Abnormal Pattern of Central Catecholamine Metabolism Found in Parkinson's Disease. *Disease Models & Mechanisms* 2022;15(1):

Agents: Rotenone **Vehicle:** DMSO; PEG; **Route:** SC; **Species:** Rat; **Strain:** Sprague Dawley; **Duration:** 10 days;

ALZET Comments: Dose (2 mg/kg/day); 1:1 DMSO:PEG used; animal info (Male ; 10 weeks old; Acclimated for at least 3 days before mp implantation); enzyme inhibitor (Rotenone); neurodegenerative (Parkinson's disease);

R0398: M. Klonarakis, *et al.* The Three Sisters of Fate: Genetics, Pathophysiology and Outcomes of Animal Models of Neurodegenerative Diseases. *Neuroscience and Biobehavioral Reviews* 2022;135(104541

Agents: Sodium azide **Vehicle:** Not Stated; **Route:** SC; **Species:** Rat; **Strain:** Sprague-Dawley; **Duration:** 4 weeks;

ALZET Comments: animal info (Male); neurodegenerative (Alzheimer's; Parkinson's; Huntington's disease);

Q10552: F. Imafuku, *et al.* Central and Enteric Neuroprotective Effects by Eucommia ulmoides Extracts on Neurodegeneration in Rotenone-induced Parkinsonian Mouse. *Acta Medica Okayama* 2022;

Agents: Rotenone **Vehicle:** DMSO; PEG; **Route:** SC; **Species:** Mice; **Strain:** C57BL/6J; **Pump:** 2004; **Duration:** 4 weeks;

ALZET Comments: Dose: (2.5 mg/kg/day) Controls received mp w/ vehicle; animal info: 8 week, behavioral testing: open field

Q10166: Q. Gao, *et al.* Angiotensin-(1-7) reduces alpha-synuclein aggregation by enhancing autophagic activity in Parkinson's disease. *Neural Regeneration Research* 2022;17(5):1138-1145

Agents: Angiotensin (1-7) **Route:** SC; **Species:** Rat; **Strain:** Sprague-Dawley; **Pump:** 2004; **Duration:** 4 weeks;

ALZET Comments: Dose: (1.1 nmol/0.25 uL/hr); Controls received mp w/ vehicle; animal info: male (SD) rats, aged 7 weeks and weighing 250–280 g; behavioral testing: The grid test and bar test; Blood pressure measured via Tail cuff; 1 mmHg = 0.133 kPa.; Angiotensin (1-7) aka (Ang 1-7); Brain coordinates ((anteroposterior, –5.2 mm; mediolateral, –2.1 mm; dorsoventral, –7.8 mm from bregma); neurodegenerative (Parkinson's disease); "Our current study shows that the Ang-(1-7)/MasR axis reduces α -syn pathology in a rotenone-induced cell model by reducing dysfunctional autophagic activity. More importantly, our results imply potential of Ang-(1-7) for (PD) therapy in vivo. These findings deepen our insight into the protective mechanisms of the Ang-(1-7)/MasR axis during (PD) progression and support the development of related therapeutic strategies for the treatment of (PD) and other α -synucleinopathies."

Q10745: T. S. Eteläinen, *et al.* Removal of Proteinase K Resistant α Syn Species Does Not Correlate With Cell Survival in a Virus Vector-Based Parkinson's Disease Mouse Model. *Neuropharmacology* 2022;218(Agents: KYP-2047 **Vehicle:** Not Stated; **Route:** IP; **Species:** Mice; **Strain:** C57BL/6; **Pump:** 1002; **Duration:** 2 weeks; 4 weeks;

ALZET Comments: Dose: (10 mg/kg/day.); Controls received mp w/ vehicle; animal info: Male 10–11 weeks old post op. care: Topical lidocaine (10 mg/ml), s.c. buprenorphine (0.1 mg/kg) and s.c. carprofen (5 mg/kg); pumps replaced after 2 weeks; KYP-2047 is a enzyme inhibitor (PREP); neurodegenerative (Parkinson's disease); good methods (pg. 3)

Q10502: M. Bourque, *et al.* AV-101, a Pro-Drug Antagonist at the NMDA Receptor Glycine Site, Reduces L-Dopa Induced Dyskinesias in MPTP Monkeys. *Cells* 2022;11(22):

Agents: 1-methyl-4-phenyl-1,2,3,6-tetrahydropyridine; **Route:** SC; **Species:** Monkey; **Strain:** Cynomolgus; **Duration:** 24 hours;

ALZET Comments: Dose (0.5 mg/24 h); animal info (Female; Ovariectomized; Monkey; 9.2-12.7 years old; Weighed 3.6-5.2 kg); behavioral testing (Motor responses); 1-methyl-4-phenyl-1,2,3,6-tetrahydropyridine aka MPTP;



Q10310: J.-M. Renko, *et al.* Neuroprotective Potential of a Small Molecule RET Agonist in Cultured Dopamine Neurons and Hemiparkinsonian Rats. *Journal of Parkinson's Disease* 2021;11(3):1023-1046

Agents: BT44; Neurotrophic factor, glial cell-line derived **Vehicle:** PBS; Propylene glycol; **Route:** CSF/CNS; **Species:** Rat; **Strain:** C57BL/6J; BALB/c; **Pump:** 2002; **Duration:** 14 days;

ALZET Comments: Dose: BT44 (1 ug/24 h); (0.3 ug/24 h); Controls received mp w/ vehicle; animal info; and BALB/c mice 6–8 week old female; post op. care: buprenorphine; 0.05 mg/kg; Temgesic®, 0.3 mg/ml; Carprofen 5 mg/kg. Additional doses of buprenorphine and carprofen were given 1 day after the surgeries; behavioral testing: Rotational assay; Cylinder test; BT44 is a RET agonist, GDNF aka glial line-derived neurotrophic factor; (Alzet Brain infusion kit no. 2, Durect, USA) used; Brain coordinates (bregma A/P + 0.2; L/M –3.0;D/V –5.0mm); dental cement used; polycarboxylate cement;

Q10297: Z. Ou, *et al.* NLRP3 Inflammasome Inhibition Prevents alpha-Synuclein Pathology by Relieving Autophagy Dysfunction in Chronic MPTP-Treated NLRP3 Knockout Mice. *Molecular Neurobiology* 2021;58(4):1303-1311

Agents: MPTP **Vehicle:** Saline; **Route:** IP; **Species:** Mice; **Strain:** (NLRP3–/–) KO; (NLRP3+/+); **Pump:** 2002; **Duration:** 28 days;

ALZET Comments: Dose: (40 mg/kg/day); Controls received mp w/ vehicle; animal info: Male and their counterparts (both 6–8 weeks old) in a C57BL/6; MPTP aka (1-methyl-4-phenyl-1,2,3,6-tetrahydropyridin); neurodegenerative (Parkinson's disease);

Q10170: S. M. Graves, *et al.* Mitochondrial oxidant stress mediates methamphetamine neurotoxicity in substantia nigra dopaminergic neurons. *Neurobiology of Disease* 2021;156(105409

Agents: Isradipine **Vehicle:** DMSO; PEG300; saline; **Route:** SC; **Species:** Mice; **Strain:** Wild-type, (C57/Bl6); **Pump:** 2002;

Duration: 28 days; 14 days;

ALZET Comments: Dose: Isradipine (3 mg/kg/day); 50% DMSO; 15% PEG300; 0.9% Saline vehicle used; Controls received mp w/ vehicle; animal info: Male mice; Brain coordinates (coordinates: AP: -3.05, ML: 1.20, and DV -4.30.);

R0403: A. des Rieux. Stem Cells and Their Extracellular Vesicles as Natural and Bioinspired Carriers for the Treatment of Neurological Disorders. *Current Opinion in Colloid & Interface Science* 2021;54

Agents: Not Stated **Vehicle:** Not Stated;

Route: CSF/CNS (lateral ventricle); **Species:** Rat; **Strain:** Not Stated; **Pump:** Not Stated; **Duration:** 2 weeks;

ALZET Comments: Different EV and cell administration routes to the nervous system (p.17) fig. 6;

Q10148: K. Cho, *et al.* Selective striatal cell loss is ameliorated by regulated autophagy of the cortex. *Life Sciences* 2021;282(119822

Agents: 3-nitropropionic Acid; NQDI-1 **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Duration:** 7 days;

ALZET Comments: Dose:3-NP (0.5 µl/h); NQDI-1 (2.5 mg/kg/day); 3-nitropropionic acid aka (3-NP); NQDI-1 aka ASK1 inhibitor; "Neurodegenerative (Alzheimer's disease; Parkinson's disease (PD); Huntington's disease (HD))"

Q9040: J. Zhu, *et al.* Apelin-36 mediates neuroprotective effects by regulating oxidative stress, autophagy and apoptosis in MPTP-induced Parkinson's disease model mice. *Brain Research* 2020;1726(146493

Agents: Apelin-36 **Vehicle:** Saline; **Route:** CSF/CNS (substantia nigra); **Species:** Mice; **Strain:** C57BL/6; **Pump:** 1007D;

Duration: 7 days;

ALZET Comments: Dose (0.1, 0.3 and 0.5 µg/ mice/day); Controls received mp w/ vehicle; animal info (Nine- to eleven-week old male, 23–27 g); Apelin-36 is a neuroendocrine peptide in 1-methyl-4-phenyl-1,2,3,6-tetrahydropyridin; peptides; ALZET brain infusion kit 2 used; Brain coordinates (AP: –3.1 mm; ML: 1.3 mm; DV: –4.25 mm); neurodegenerative (Parkinson's)

Q9868: W. Zhang, *et al.* Inhibition of NADPH oxidase within midbrain periaqueductal gray decreases pain sensitivity in Parkinson's disease via GABAergic signaling pathway. *Physiological Research* 2020;

Agents: 6-hydroxydopamine **Vehicle:** CSF, Artificial; **Route:** CSF/CNS; **Species:** Rat; **Strain:** Sprague Dawley; **Pump:** 1003D;

Duration: 3 days;

ALZET Comments: Dose (6 ul/min); Controls received mp w/ vehicle; animal info (Male, 200–250 g); behavioral testing (Rotation Behavior Test); 6-hydroxydopamine aka 6-OHDA ; Brain coordinates (3.3 mm rostral to the interaural line, 1.4 mm left of the midline, and 6.5 and 6.8 mm ventral to the dural surface); neurodegenerative (Parkinson's Disease);



Q9525: Q. Wang, *et al.* Locus coeruleus neurons are most sensitive to chronic neuroinflammation-induced neurodegeneration. *Brain, Behavior, and Immunity* 2020;87(359-368

Agents: Diphenylethylidone; **LPS Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Strain:** C57BL/6J; B6.129S-Cybbtm1Din/J (gp91phox^{-/-} deficient); **Pump:** Not Stated; **Duration:** 2 weeks;

ALZET Comments: Dose (10 ng/kg/day); Controls received mp w/ vehicle; animal info (Eight-week-old male mice); Diphenylethylidone aka DPI; neurodegenerative (Parkinson's disease);

Q9428: M. J. Renko, *et al.* GDNF Receptor Agonist Alleviates Motor Imbalance in Unilateral 6Hydroxydopamine Model of Parkinson's Disease. *Frontiers in Neurology and Neuroscience Research* 2020;

Agents: BT13; Glial cell line-derived neurotrophic factor **Vehicle:** Propylene Glycol; PBS; **Route:** CSF/CNS (dorsal striatum); **Species:** Rat; **Strain:** Wistar; **Pump:** 2002; **Duration:** 7 days;

ALZET Comments: Dose (0.25 ug/ul BT13; 0.25 ug/ul Glial cell line-derived neurotrophic factor); Controls received mp w/ vehicle; animal info (Adult male Wistar rats, 240-435 g); post op. care (buprenorphine); behavioral testing (rotational symmetry); Glial cell line-derived neurotrophic factor aka GDNF; Brain coordinates (AP=+1.0; ML=+2.7; DV=-4.0 mm); dental cement used;

Q8931: H. W. Park, *et al.* Intrastriatal administration of coenzyme Q10 enhances neuroprotection in a Parkinson's disease rat model. *Scientific Reports* 2020;10(1):9572

Agents: Coenzyme Q10 **Vehicle:** PBS; Tween 80; **Route:** CSF/CNS (striatum); **Species:** Rat; **Strain:** Sprague Dawley; **Pump:** 2ML4; **Duration:** 4 weeks;

ALZET Comments: Dose (1.5 and 2.4 ug); 2% Tween 80 used; Controls received mp w/ vehicle; animal info (male weighing 280-350 g); behavioral testing (rotation tests); Resultant plasma level (); coenzyme Q10 aka CoQ10; neurodegenerative

Q8672: I. Miyazaki, *et al.* Chronic Systemic Exposure to Low-Dose Rotenone Induced Central and Peripheral Neuropathology and Motor Deficits in Mice: Reproducible Animal Model of Parkinson's Disease. *International Journal of Molecular Sciences* 2020;21(9):

Agents: Rotenone **Vehicle:** DMSO; PEG; **Route:** SC; **Species:** Mice; **Strain:** C57BL/6J; **Pump:** 2004; **Duration:** 4 weeks;

ALZET Comments: Dose (2.5 mg/kg/day); Controls received mp w/ vehicle; animal info (Male 8 weeks old; approximately 25 g); behavioral testing (open field, rotarod and cylinder test); neurodegenerative (Parkinson's disease);

Q8626: C. Lecours, *et al.* Levodopa partially rescues microglial numerical, morphological, and phagolysosomal alterations in a monkey model of Parkinson's disease. *Brain, Behavior, and Immunity* 2020;90(81-96

Agents: 1-Methyl-4-phenyl-1,2,3,6-tetrahydropyridine **Vehicle:** Saline; **Route:** SC; **Species:** Monkey; **Strain:** Macaca fascicularis; **Pump:** Not stated; **Duration:** 2 weeks;

ALZET Comments: Dose (0.5 mg/day); animal info (adult female monkeys, 4 to 11 years old, 2.4 to 4.6 kg); 1-methyl-4-phenyl-1,2,3,6-tetrahydropyridine aka MPTP; neurodegenerative (Parkinson's Disease);

Q9277: A. K. E. Hornsby, *et al.* Unacylated-Ghrelin Impairs Hippocampal Neurogenesis and Memory in Mice and Is Altered in Parkinson's Dementia in Humans. *Cell Report Medicine* 2020;1(7):100120

Agents: Ghrelin, unacylated **Vehicle:** Saline, sterile; **Route:** SC; **Species:** Mice; **Strain:** GOAT ^{-/-}; C57BL/6 (WT); Ghrelin ^{-/-}; **Pump:** 1007D; **Duration:** 7 days;

ALZET Comments: Dose (48 ug/day); Controls received mp w/ vehicle; animal info (six-month old); unacylated Ghrelin aka UAG; neurodegenerative (Parkinson's Dementia);

Q9255: A. C. Guyot, *et al.* A Small Compound Targeting Prohibitin with Potential Interest for Cognitive Deficit Rescue in Aging mice and Tau Pathology Treatment. *Scientific Reports* 2020;10(1):1143

Agents: PDD005 **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice; **Strain:** C57BL/6J; **Pump:** 2004; **Duration:** 28 days;

ALZET Comments: Dose (8 mg/kg/day); Controls received mp w/ vehicle; animal info (Male 2- to 3-month-old and 12-month-old); behavioral testing (Y-maze test); PDD005 aka purine derivative drug; neurodegenerative (Alzheimer's and Parkinson's disease);



Q9154: N. Bengoa-Vergniory, *et al.* CLR01 protects dopaminergic neurons in vitro and in mouse models of Parkinson's disease. *Nature Communications* 2020;11(1):4885

Agents: CLR01 **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Strain:** C57BL/6; **Pump:** 1004; **Duration:** 28 days;
ALZET Comments: Dose (40 ug/kg/day); Controls received mp w/ vehicle; animal info (17 month old); CLR01 aka amyloid inhibitor; enzyme inhibitor (CLR01); neurodegenerative (Parkinson's Disease);

Q8332: D. Alarcon-Aris, *et al.* Anti-alpha-synuclein ASO delivered to monoamine neurons prevents alpha-synuclein accumulation in a Parkinson's disease-like mouse model and in monkeys. *EBioMedicine* 2020;59(102944

Agents: Oligonucleotide, antisense **Vehicle:** CSF, artificial; **Route:** CSF/CNS (lateral ventricle); **Species:** Mice; Monkey; **Strain:** C57BL/6J; Rhesus macaque; **Pump:** 1004; 2ML4; **Duration:** 28 days;

ALZET Comments: Dose (30 ug/day; 100 ug/day; 1 mg/day); Controls received mp w/ vehicle; animal info (Eight-week-old wild-type male mice, male and female monkeys 20 years or older); antisense oligonucleotides aka IND-ASO; ALZET brain infusion kit 3 used; Brain coordinates (antero-posterior -0.34, medial-lateral -1.0 and dorsal-ventral -2.2 in mm); neurodegenerative (Parkinson's disease);

Sirtuin Research (2020-Present)

Q11017: M. Wang, *et al.* SIRT3 improved peroxisomes-mitochondria interplay and prevented cardiac hypertrophy via preserving PEX5 expression. *Redox Biology* 2023;62(102652

Agents: Angiotensin II **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Strain:** Sirt3 KO; **Pump:** 1002; **Duration:** 2 weeks;
ALZET Comments: Dose (2 mg kg/d); 0.9% NaCl, used; Controls received mp w/ vehicle; animal info: adult male (10–12 weeks old)cardiovascular; cardiac hypertrophy

Q10987: D. Rogacka, *et al.* Inhibition of phosphodiesterase 5A by tadalafil improves SIRT1 expression and activity in insulin-resistant podocytes. *Cellular Signalling* 2023;105(110622

Agents: Tadalafil **Vehicle:** DMSO; **Route:** SC; **Species:** Rat; **Strain:** Wistar; **Pump:** 2001; **Duration:** 7 days;
ALZET Comments: Dose Tadalafil (2.5 mg/kg/day); Controls received mp w/ vehicle; animal info: Male Wistar rats; post op. care (Butomidol (10 mg/ml) and gentamicin (50 mg/ml) were subcutaneously administered; tadalafil is a highly selective inhibitor of PDE5A on SIRT1 expression and activity; diabetes;

Q11208: L. G. Niu, *et al.* Genistein Alleviates Oxidative Stress and Inflammation in the Hypothalamic Paraventricular Nucleus by Activating the Sirt1/Nrf2 Pathway in High Salt-Induced Hypertension. *Cardiovascular Toxicology* 2022;22(10-11):898-909

Agents: Genistein; nicotinamide **Vehicle:** Saline; **Route:** CSF/CNS (hypothalamic paraventricular nucleus); **Species:** Rat; **Strain:** Wistar; **Pump:** 1004; **Duration:** 4 weeks;

ALZET Comments: Dose (20 µg/h); (0.3% NaCl); (8% NaCl) used; Controls received mp w/ vehicle; animal info: Four-week-old male 100–120 g; blood pressure measured via: Tail cuff; Blood pressure measurement results (see pg.900) fig.1 b; Brain coordinates (1.8 mm caudal to the bregma, 0.4 mm lateral to the central line, and 7.9 mm ventral to the dorsal surface); bilateral cannula used; cardiovascular;

Q10593: B. Lv, *et al.* Exenatide improves the luteinizing hormone pulse in obese polycystic ovary syndrome rats by upregulating sirtuin-1 in the hypothalamus. *The American Journal of Drug and Alcohol Abuse* 2022;

Agents: EX527 **Vehicle:** DMSO; **Route:** CSF/CNS (third ventricle); **Species:** Rat; **Strain:** PCOS; **Pump:** Not Stated; **Duration:** 3 w
ALZET Comments: Dose: EX527 (5 µg/24 h)Controls received mp w/ vehicle; animal info: Obese rats(EX-527) is an SIRT1 inhibitor; enzyme inhibitor (EX527);

Q11191: S. M. Liu, *et al.* Intermedin Alleviates Vascular Calcification in CKD through Sirtuin 3-Mediated Inhibition of Mitochondrial Oxidative Stress. *Pharmaceuticals (Basel)* 2022;15(10):

Agents: Intermedin 1-53 **Vehicle:** PBS; **Route:** IP; **Species:** Rat; **Strain:** Sprague-Dawley; **Pump:** 2004; **Duration:** 4 weeks;
ALZET Comments: Dose: 100 ng/kg/h; Controls received mp w/ vehicle; animal info: Eight-week-old male



Q11179: X. T. Li, *et al.* Sirtuin 7 mitigates renal ferroptosis, fibrosis and injury in hypertensive mice by facilitating the KLF15/Nrf2 signaling. *Free Radical Biology and Medicine* 2022;193(Pt 1):459-473

Agents: Angiotensin II **Vehicle:** Saline, sterile; **Route:** SC; **Species:** Mice; **Strain:** C57BL/6; **Pump:** 1002; **Duration:** 2 weeks;
ALZET Comments: Dose (1.5 mg/kg/d); Controls received mp w/ vehicle; animal info (male) Blood pressure measured via Tail cuff; Blood pressure measurement (p.462) see Fig.1A; cardiovascular;

Q10861: X. Zhang, *et al.* Angiotensin II Upregulates Endothelin Receptors Through the Adenosine Monophosphate-activated Protein Kinase/Sirtuin 1 Pathway in Vascular Smooth Muscle Cells. *Journal of Pharmacy and Pharmacology* 2021;73(12):1652-1662

Agents: Angiotensin II **Vehicle:** Saline; **Route:** SC; **Species:** Rat; **Strain:** Sprague–Dawley; **Pump:** 2004; **Duration:** 4 weeks;
ALZET Comments: Dose: Ang II (500 ng/kg/min); 0.9% saline vehicle used; Controls received mp w/ vehicle; animal info: Adult male, body weight: 250–300 g; Blood pressure measured via: Tail cuff; measurements (p.1660) see Fig.8 A & B;

Q10876: C. Zhang, *et al.* Sirtuin 3 Deficiency Aggravates Angiotensin II-Induced Hypertensive Cardiac Injury by the Impairment of Lymphangiogenesis. *Journal of cellular and Molecular Medicine* 2021;25(16):7760-7771

Agents: Angiotensin II **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Strain:** Not Stated; **Pump:** Not Stated; **Duration:** 28 days;
ALZET Comments: Dose: (1000 ng/kg per minute); Controls received mp w/ vehicle; animal info: Eight-week-old male mice; Blood pressure measured via: non-invasive tail-cuff; Angiotensin II aka (Ang II)cardiovascular;

Q10792: T. Wei, *et al.* SIRT3 (Sirtuin-3) Prevents Ang II (Angiotensin II)-Induced Macrophage Metabolic Switch Improving Perivascular Adipose Tissue Function. *Arteriosclerosis, Thrombosis and Vascular Biology* 2021;41(2):714-730

Agents: Angiotensin II **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Strain:** SIRT3fl/fl/Cre; SIRT3fl/fl/WT; **Pump:** Not Stated; **Duration:** 7 days;

ALZET Comments: Dose: (1000 ng/kg per minute); Controls received mp w/ vehicle; animal info: 10-week-old male mice; Blood pressure measured via: tail-cuff plethysmography; Angiotensin II aka (Ang II); cardiovascular;

Q10340: M. K. Song, *et al.* Environmental enrichment modulates silent information regulator 1 (SIRT1) activity to attenuate central presbycusis in a rat model of normal aging. *Experimental Gerontology* 2021;155(11):1552

Agents: Dexamethasone **Vehicle:** Not Stated; **Route:** Not Stated; **Species:** Rat; **Strain:** Sprague-Dawley; **Duration:** 4 weeks;
ALZET Comments: Dose: (1 mg/kg/day); animal info: male eight weeks (weighing 250 g) and 62 weeks (weighing 550–650 g); behavioral testing: Hearing test; Dexamethasone aka (DX); dependence;

Q10306: L. Qiu, *et al.* Sirt3 Protects Against Thoracic Aortic Dissection Formation by Reducing Reactive Oxygen Species, Vascular Inflammation, and Apoptosis of Smooth Muscle Cells. *Frontiers in Cardiovascular Medicine* 2021;8(6):75647

Agents: Aminopropionitrile; Angiotensin II **Route:** SC; **Species:** Mice; **Strain:** C57BL/6J; **Pump:** 1004; **Duration:** 4 weeks;
ALZET Comments: Dose: BAPN (1 g/kg per day); Ang II (1,000 ng/kg/min); animal info: Four-week-old male mice; β -aminopropionitrile aka (BAPN); Angiotensin II aka (Ang II); Cardiovascular

Q9296: M. Jiang, *et al.* SIRT1 Alleviates Aldosterone-Induced Podocyte Injury by Suppressing Mitochondrial Dysfunction and NLRP3 Inflammasome Activation. *Kidney Diseases (Basel)* 2021;7(4):293-305

Agents: Aldosterone **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice; **Strain:** WT/cKO; **Pump:** Not Stated; **Duration:** 14 days;
ALZET Comments: Dose (300 ug/kg/day); animal info (8-12-week-old male mice, 25-30 g); dependence;

Q9287: Y. Huang, *et al.* Protective role of SIRT1-mediated Sonic Hedgehog signaling pathway in the preeclampsia rat models. *Journal of Assisted Reproduction and Genetics* 2021;38(7):1843-1851

Agents: SIRT1 **Vehicle:** Not Stated; **Route:** Abdomen; **Species:** Rat; **Strain:** Sprague-Dawley;
ALZET Comments: Animal info: female, timed-pregnancy, 4-5 mo; ischemia - ischemic reduced uterine perfusion pressure

Q9252: W. Gu, *et al.* PHD Finger Protein 19 Promotes Cardiac Hypertrophy via Epigenetically Regulating SIRT2. *Cardiovascular Toxicology* 2021;21(6):451-461

Agents: Angiotensin II; **Species:** Mice; **Strain:** C57BL/6; **Pump:** 2004; **Duration:** 4 weeks;
ALZET Comments: Dose (1.5 mg/kg/day); animal info (8-12 week old male mice); Angiotensin II aka Ang II; cardiovascular;



Q10153: Y. Fan, *et al.* Sirt6-mediated Nrf2/HO-1 activation alleviates angiotensin II-induced DNA DSBs and apoptosis in podocytes. *Food & Function* 2021;12(17):7867-7882

Agents: Angiotensin II **Vehicle:** Saline; **Route:** Not Stated; **Species:** Rat; **Strain:** Wistar; **Duration:** 14 days; 28 days;

ALZET Comments: Dose: (400 ng/kg/min); Controls received mp w/ vehicle; "animal info: male specific-pathogen-free rats"; Angiotensin II aka (Ang II); Chronic kidney disease

Q9757: Y. Q. Ding, *et al.* MicroRNA-214 contributes to Ang II-induced cardiac hypertrophy by targeting SIRT3 to provoke mitochondrial malfunction. *Acta Pharmacologica Sinica* 2021;42(9):1422-1436

Agents: Angiotensin II **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Strain:** C57B/L6; **Pump:** 2002; **Duration:** 2 weeks;

ALZET Comments: Dose (2 mg/kg/day); Controls received mp w/ vehicle; animal info (10-12 weeks old, Male); cardiovascular;

Q9821: B. Zhou, *et al.* FNDC5 Attenuates Oxidative Stress and NLRP3 Inflammasome Activation in Vascular Smooth Muscle Cells via Activating the AMPK-SIRT1 Signal Pathway. *Oxidative Medicine and Cellular Longevity* 2020;2020(6384803

Agents: Angiotensin II **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Strain:** WT; FNDC5^{-/-} (C57BL/6); **Pump:** 1002; **Duration:** 2 w

ALZET Comments: Dose (400 ng/kg/min); Controls received mp w/ vehicle; Blood pressure measured via tail-cuff system; 90 mmHg - 140 mmHg; Angiotensin II aka Ang II; cardiovascular;

Q8968: J. Zheng, *et al.* Sirtuin 3 deficiency accelerates Angiotensin II-induced skeletal muscle atrophy. *Connective Tissue Research* 2020;61(6):586-593

Agents: Angiotensin II **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Strain:** SIRT3 KO; C57BL/6; **Duration:** 4 weeks old;

ALZET Comments: Dose (1000 ng/kg/min); Controls received mp w/ vehicle; animal info (8 weeks old, Male); Blood pressure measured via Tail Cuff Plethysmography; cardiovascular;

Q9846: Y. Zhang, *et al.* WWP2 regulates SIRT1-STAT3 acetylation and phosphorylation involved in hypertensive angiopathy. *Journal of Cellular and Molecular Medicine* 2020;24(16):9041-9054

Agents: miR-155 inhibitor **Vehicle:** CSF, Artificial; **Route:** CSF/CNS; **Species:** Rat; **Strain:** Sprague Dawley;

ALZET Comments: Controls received mp w/ vehicle; animal info (200-250 g); antisense (5'AAU UAC GAU UAG CAC UAU CCC CA-3'); ALZET brain infusion kit XX used; Brain coordinates (3.7mm posterior to the bregma, 4.1mm lateral to the midline, and 3.5mm under the dura); bilateral cannula used; dental cement used; neurodegenerative (Intracerebral Hemorrhage);

Q9902: Q. Yang, *et al.* Sirt6 deficiency aggravates angiotensin II-induced cholesterol accumulation and injury in podocytes. *Theranostics* 2020;10(16):7465-7479

Agents: Angiotensin II **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Strain:** Sirt6^{flox/flox}/Nphs2.Cre; Sirt6^{flox/flox}/Nphs2.Cre^{-/-};

Pump: 2004; **Duration:** 8 weeks;

ALZET Comments: Dose (700 ng/kg/min); Controls received mp w/ vehicle; animal info (8 weeks old, Male); pumps replaced every 4 weeks; cardiovascular;

Q9496: Q. Tang, *et al.* Sirt6 in pro-opiomelanocortin neurons controls energy metabolism by modulating leptin signaling. *Molecular Metabolism* 2020;37(100994

Agents: Leptin **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Strain:** C57BL/6J; Sirt6^{loxP/loxP}; Pomc-Cre; **Pump:** 1007D;

Duration: 2 days;

ALZET Comments: Dose (500 ng/h); Controls received mp w/ vehicle; animal info (Male mice, 6 weeks old); replacement therapy (Leptin);

Q9488: H. Su, *et al.* Sirtuin 3 is essential for hypertension-induced cardiac fibrosis via mediating pericyte transition. *Journal of Cellular and Molecular Medicine* 2020;24(14):8057-8068

Agents: Angiotensin II **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice; **Strain:** WT; SIRT3KO; **Pump:** Not Stated; **Duration:** 28 d

ALZET Comments: Dose (1000 ng/kg/min); Blood pressure measured via tail-cuff occlusion method; 110 mmHg - 160 mmHg;



Q8661: Z. L. Mei, *et al.* CSN6 aggravates Ang II-induced cardiomyocyte hypertrophy via inhibiting SIRT2. *Experimental Cell Research* 2020;396(1):112245

Agents: Angiotensin II **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Strain:** C57BL/6; **Pump:** 1002; **Duration:** 4 weeks;

ALZET Comments: Dose (1.3 mg/kg/day); Controls received mp w/ vehicle; animal info (Male 6-8-weeks-old); cardiovascular;

Q8641: G. Li, *et al.* alpha-Linolenic acid but not linolenic acid protects against hypertension: critical role of SIRT3 and autophagic flux. *Cell Death Dis* 2020;11(2):83

Agents: Angiotensin II **Vehicle:** PBS; **Route:** SC; **Species:** Mice; **Strain:** WT C57BL/6N; **Pump:** Not stated; **Duration:** 21 days;

ALZET Comments: Dose (1000 ng/kg/min); Controls received mp w/ vehicle; animal info (Male, 10 weeks old); Blood pressure measured via tail-cuff plethysmography; cardiovascular;

Q10014: P. B. Katare, *et al.* Activation of toll like receptor 4 (TLR4) promotes cardiomyocyte apoptosis through SIRT2 dependent p53 deacetylation. *Scientific Reports* 2020;10(1):19232

Agents: LPS **Vehicle:** Saline, Pyrogen-Free; **Route:** Not Stated; **Species:** Rat; **Strain:** Sprague-Dawley; **Duration:** 14 days;

ALZET Comments: Dose (12.5 ug/kg/day); Controls received mp w/ vehicle; animal info (Male, 200-250 g); LPS aka Lipopolysaccharide; cardiovascular;

Q8864: W. Jiang, *et al.* CTRP1 prevents sepsis-induced cardiomyopathy via Sirt1-dependent pathways. *Free Radical Biology and Medicine* 2020;152(810-820)

Agents: Tumor necrosis factor related protein 1, C1q, recomb. human globular domain **Vehicle:** Not Stated; **Route:** SC;

Species: Mice; **Strain:** C57BL/6; **Pump:** Not Stated; **Duration:** 3 days;

ALZET Comments: Dose (0.2 µg/g per day); animal info (8-12 weeks old, body weight: 24.5 ± 2 g); recombinant human globular domain C1q/tumor necrosis factor-related protein 1 aka rhCTRP1; cardiovascular;

Q10025: S. Ilari, *et al.* Natural Antioxidant Control of Neuropathic Pain-Exploring the Role of Mitochondrial SIRT3 Pathway. *Antioxidants (Basel)* 2020;9(11):

Agents: Bergamot Polyphenolic fraction; Pregabalin **Vehicle:** Saline; **Route:** SC; **Species:** Rat; **Strain:** Sprague Dawley; **Pump:** Not Stated; **Duration:** 21 days;

ALZET Comments: Dose (25, 50, 75 mg/kg Bergamot Polyphenolic fraction; 10 mg/kg Pregabalin); 0.9% NaCl used; Controls received mp w/ vehicle; animal info (8 week old male 225-250 g); behavioral testing (Mechanical allodynia, Mechanical hyperalgesia, Thermal hyperalgesia); Bergamot Polyphenolic fraction aka BPF; spinal cord injury;

Q8519: J. Guo, *et al.* Resveratrol Inhibits Neointimal Growth after Arterial Injury in High-Fat-Fed Rodents: The Roles of SIRT1 and AMPK. *Journal of Vascular Research* 2020;57(6):325-340

Agents: Resveratrol **Vehicle:** PEG 300; DMSO; **Route:** SC; **Species:** Rat; **Strain:** Sprague-Dawley; **Duration:** 3 days;

ALZET Comments: Dose (4 mg/kg/day); Controls received mp w/ vehicle; animal info (400-450 g); Blood pressure measured via tail-cuff method; Resveratrol aka RSV; cardiovascular;

Q10165: J. Gao, *et al.* Sirtuin 3 governs autophagy-dependent glycolysis during Angiotensin II-induced endothelial-to-mesenchymal transition. *FASEB Journal* 2020;34(12):16645-16661

Agents: Angiotensin II **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Strain:** WT; SIRT3 KO; SIRT3-TgEC; **Duration:** 2 weeks;

ALZET Comments: Dose: (1400 ng/kg/min); Controls received mp w/ vehicle; animal info: Eight-week old male; Blood pressure measured via Tail cuff;

Q10157: X. Feng, *et al.* SIRT3 Deficiency Sensitizes Angiotensin-II-Induced Renal Fibrosis. *Cells* 2020;9(11):

Agents: Angiotensin II **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Strain:** Homozygous SIRT3KO; **Duration:** 4 weeks;

ALZET Comments: Dose: (1000 ng/kg/min); Controls received mp w/ vehicle; animal info: male 4-7 months of age; cardiovascular; Hypertension



Q8412: Y. Chen, *et al.* Intermedin1-53 attenuates aging-associated vascular calcification in rats by upregulating sirtuin 1. Aging 2020;

Agents: Intermedin (1-53) **Vehicle:** PBS; **Route:** SC; **Species:** Rat; **Strain:** Sprague-Dawley; **Pump:** 2004; **Duration:** 4 weeks; **ALZET Comments:** Dose (100 ng/kg/h); Controls received mp w/ vehicle; animal info (2-month old and 16-month old male); 103.5 mmHg - 129.71 mmHg; Intermedin (1-53) aka IMD1-53; peptides; cardiovascular;

Q8409: Y. M. Chao, *et al.* Anomalous AMPK-regulated angiotensin AT1R expression and SIRT1-mediated mitochondrial biogenesis at RVLM in hypertension programming of offspring to maternal high fructose exposure. Journal of Biomedical Science 2020;27(1):68

Agents: Losartan **Vehicle:** CSF, Artificial; **Route:** CSF/CNS (cistern magna); **Species:** Rat; **Strain:** Sprague-Dawley; **Pump:** 1007D; **Duration:** 4 weeks;

ALZET Comments: Dose (3 µg-µL- 1-h- 1); Controls received mp w/ vehicle; animal info (10 weeks); functionality of mp verified by drainage of cerebrospinal fluid; Blood pressure measured via tail-cuff method; 130 mmHg - 160 mmHg;

Stroke (Cerebral ischemia) Research (2019-Present)

Q10629: T. Numaga-Tomita, *et al.* Inhibition of Transient Receptor Potential Cation Channel 6 Promotes Capillary Arterialization During Post-Ischaemic Blood Flow Recovery. British Pharmaceutical Society 2023;180(1):94-110

Agents: Pyrazol-2; CAY-10441 **Vehicle:** DMSO; PEG300; **Route:** Not Stated; **Species:** Mice (transgenic); **Strain:** 129Sv, C57BL/6; ApoE-KO; **Pump:** 2004; **Duration:** 7 days;

ALZET Comments: Dose: (0.1 mg/kg/day) Controls received mp w/ vehicle; animal info: Eight- to 10-week-old male mice (20- to 22-g body weight), post op. care: (0.1 mg/kg) of buprenorphine hydrochloride; ischemia (hindlimb ischaemia);

Q11324: A. Kheyar, *et al.* The novel cyclophilin inhibitor C105SR reduces hepatic ischaemia-reperfusion injury via mitoprotection. JHEP Rep 2023;5(11):100876

Agents: C105SR **Vehicle:** DMSO; **Route:** SC; **Species:** Mice; **Strain:** C57BL/6; **Pump:** Not Stated; **Duration:** Not Stated;

ALZET Comments: Dose (50 mg/kg); controls received mp w/ vehicle; animal info (Male; 10-12 weeks old); ischemia (Hepatic ischaemia-reperfusion injury)

Q10886: Y. Zhao, *et al.* Vascular Endothelium Deploys Caveolin-1 to Regulate Oligodendrogenesis After Chronic Cerebral Ischemia in Mice. Nature Communications 2022;13(1):6813

Agents: Antagomir, PEI; Antagomir, PEI, Cy5 labelled **Vehicle:** Not Stated; **Route:** CSF/CNS (corpus callosum); **Species:** Mice; **Strain:** C57BL/6J; **Pump:** 1002; **Duration:** 14 days;

ALZET Comments: Dose (2 µg /day); Controls received mp w/ vehicle; animal info (Adult male (24–29 g; for BCAS surgery) and mice (6–8 weeks old); Brain coordinates: (0.5mm anterior-posterior, 1.0mm medial-lateral, –2.1mm dorsalventral relative to bregma); ischemia (cerebral); behavioral testing (cognitive test);

R0405: S. E. Yang, *et al.* Therapeutic Potential and Mechanisms of Novel Simple O-Substituted Isoflavones against Cerebral Ischemia Reperfusion. International Journal of Molecular Sciences 2022;23(18):

Agents: Genistein **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice; **Strain:** balb/c; **Pump:** Not Stated; **Duration:** 2 weeks;

ALZET Comments: Dose (0.1 mg/kg); ischemia (Cerebral); Therapeutic indication (Cerebral Ischemia); animal info. mice

Q10592: E. R. Louet, *et al.* tPA-NMDAR Signaling Blockade Reduces the Incidence of Intracerebral Aneurysms. Translational Stroke Research 2022;13(6):1005-1016

Agents: Angiotensin II **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Strain:** C57BL6/129; **Pump:** 1002; **Duration:** 14 days;

ALZET Comments: Dose (800 ug); 0.9% saline used; animal info (tPA null, Male; 8 weeks old); peptides; ischemia (cerebral); Therapeutic indication (Intracranial aneurysms);



Q10418: A. B. Caglayan, *et al.* The Unconventional Growth Factors Cerebral Dopamine Neurotrophic Factor and Mesencephalic Astrocyte-Derived Neurotrophic Factor Promote Post-ischemic Neurological Recovery, Perilesional Brain Remodeling, and Lesion-Remote Axonal Plasticity. *Translational Stroke Research* 2022;

Agents: Cerebral dopamine neurotrophic factor, recombinant human; Mesencephalic astrocyte-derived neurotrophic factor, recombinant human **Vehicle:** NaCl **Route:** CSF/CNS (left ventricle) **Species:** Mice **Strain:** C57Bl6/j; **Pump:** 2004; **Duration:** 28 d **ALZET Comments:** "Dose: (1 ug/day); (0.9% NaCl), vehicle used; Controls received mp w/ vehicle; animal info: male mice (8–10 weeks) behavioral testing: RotaRod test, Grip strength; Open field test; Elevated o maze test; Cerebral Dopamine Neurotrophic Factor aka (CDNF); ALZET brain infusion kit 3 used; Brain coordinates (contralateral motor cortex (0.5 mm rostral and 2.5 mm lateral to the bregma); neurodegenerative (stroke); ischemia (cerebral); "

Q10239: F. Liu, *et al.* Electroacupuncture Improves Cerebral Ischemic Injury by Enhancing the EPO-JAK2-STAT5 Pathway in Rats. *Neuropsychiatric Disease and Treatment* 2021;17(2489-2498

Agents: AG490 **Vehicle:** Not Stated; **Route:** CSF/CNS (lateral ventricle); **Species:** Rat; **Strain:** Sprague-Dawley; **ALZET Comments:** "Controls received mp w/ vehicle; animal info: Adult rats (male: female=1:1, 200–250 g); post op. care: After suturing the skin, analgesics and antibiotics were injected intraperitoneally to prevent postoperative pain and infection; AG-490 (a Janus-tyrosine kinase-2 (JAK-2) phosphorylation inhibitor); ALZET brain infusion kit used; Brain coordinates (bregma, 0.8 mm posterior, –4.8 mm dorsoventral, –1.5 mm lateral); ischemia (cerebral ischemia); "

Q8701: S. Bhattarai, *et al.* Modulation of Brain Pathology by Enhancer RNAs in Cerebral Ischemia. *Mol Neurobiol* 2021;58(4):1482-1490

Agents: Anti-eRNA oligos **Vehicle:** aCSF; **Route:** CSF/CNS; **Species:** Mice; **Strain:** C57BL/6N; **Pump:** 1003D; **Duration:** 3 days; **ALZET Comments:** Dose (8.3 pmole/ul); animal info (3 months old, 20-30 g,); antisense (eRNA_06347: 5'-GATTGGGAATTGCTAG-3' ; eRNA_093384: 5'-GGAAGCAGGTGAACAG-3'); ALZET brain infusion kit 3 used; ischemia (Cerebral);

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 (left ventricle); **Species:** Mice; **Strain:** C57Bl/6; Thy1-YFP-H; **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;

Q9564: W. Xu, *et al.* Blockade of Nogo-A/Nogo-66 receptor 1 (NgR1) Inhibits Autophagic Activation and Prevents Secondary Neuronal Damage in the Thalamus after Focal Cerebral Infarction in Hypertensive Rats. *Neuroscience* 2020;431(103-114

Agents: NEP1-40 **Vehicle:** PBS; **Route:** CSF/CNS (right lateral ventricle); **Species:** Rat; **Strain:** SD; **Duration:** 3 days; **ALZET Comments:** Dose (270 ug/kg); Controls received mp w/ vehicle; animal info (male Sprague–Dawley rats, weighing 60–90 g); behavioral testing (adhesive removal test); NEP1-40 aka Nogo-66 receptor antagonist peptide; peptides; Brain coordinates (relative to bregma: -1.0 mm anteroposterior, 1.4 mm lateral, and -4.0 mm dorsoventral); ischemia (cerebral);

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; **Strain:** pMCAo; **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);

Q9450: D. R. Seeger, *et al.* Blood-Brain Barrier Is the Major Site for a Rapid and Dramatic Prostanoid Increase upon Brain Global Ischemia. *Lipids* 2020;55(1):79-85

Agents: Ketorolac **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Strain:** C57BL/6; **Pump:** Not Stated; **Duration:** 12 hours; **ALZET Comments:** Dose (0.625 mg/kg/h); Controls received mp w/ vehicle; animal info (Mice (C57BL/6 background), 4–6 months of age); Resultant plasma level (2.03% Ketorolac concentration); ischemia (cerebral);



Q8670: N. Miyamoto, *et al.* The effects of A1/A2 astrocytes on oligodendrocyte lineage cells against white matter injury under prolonged cerebral hypoperfusion. *Glia* 2020;68(9):1910-1924

Agents: Flavone, 7,8-dihydroxy **Vehicle:** DMSO; PBS; **Route:** IP; **Species:** Mice; **Strain:** C57BL/6; **Pump:** 1004; **Duration:** 28 d
ALZET Comments: Dose (5 mg/kg); 17% DMSO/PBS used; Controls received mp w/ vehicle; animal info (male C57BL/6 mice (10 weeks old); behavioral testing (Y-maze test); 7,8-dihydroxyflavone aka 7.8-DHF; ischemia (cerebral);

Q8640: L. Li, *et al.* ABCA1/ApoE/HDL Signaling Pathway Facilitates Myelination and Oligodendrogenesis after Stroke. *International Journal of Molecular Sciences* 2020;21(12):

Agents: Apolipoprotein E; High density lipoprotein; **Vehicle:** CSF, artificial; **Route:** CSF/CNS (right lateral ventricle); **Species:** Mice; **Strain:** ApoE2; **Pump:** 1002; **Duration:** 14 days;

ALZET Comments: Dose (25µg); Controls received mp w/ vehicle; animal info (ABCA1-B/-B mice); behavioral testing (adhesive removal test); Apolipoprotein E aka ApoE2; High density lipoprotein aka HDL3; ischemia (cerebral);

Q9124: Z. Y. Zhai, *et al.* Constraint-induced movement therapy enhances angiogenesis and neurogenesis after cerebral ischemia/reperfusion. *Neural Regeneration Research* 2019;14(10):1743-1754

Agents: NEP1-40 **Vehicle:** DMSO/Saline; **Route:** CSF/CNS; **Species:** Rat; **Strain:** SD; **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);

Q9117: M. Yli-Karjanmaa, *et al.* Topical Administration of a Soluble TNF Inhibitor Reduces Infarct Volume After Focal Cerebral Ischemia in Mice. *Frontiers in Neuroscience* 2019;13(781)

Agents: XPro1595; Etancercept **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Strain:** C57BL/6; **Pump:** 1003D; **Duration:** 3 days;

ALZET Comments: Dose (XPro1595- 2.5 mg/ml/ul/hr or Etancercept- 2.5 mg/ml/ul/hr); 0.9% Saline used; Controls received mp w/ vehicle; animal info (Male, C57BL/6, 7-8 weeks old); behavioral testing (Grip Strength Test); ischemia (Cerebral);

Q8836: S. Xing, *et al.* EphrinB2 activation enhances angiogenesis, reduces amyloid-b deposits and secondary damage in thalamus at the early stage after cortical infarction in hypertensive rats. *Journal of Cerebral Blood Flow & Metabolism* 2019;39(1776-1789)

Agents: Ephrin B2-Fc, human recombinant; Fc-IgG, human recombinant **Vehicle:** PBS, Human Serum Albumin buffered; **Route:** CSF/CNS (lateral ventricle); **Species:** Rat; **Strain:** Sprague-Dawley; **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, 80-100g); 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;

Q4964: S. Bake, *et al.* Insulin-like Growth Factor (IGF)-1 treatment stabilizes the microvascular cytoskeleton under ischemic conditions. *Experimental Neurology* 2019;311(162-172)

Agents: Insulin-like growth factor-I, recomb. Human; JB-1 **Vehicle:** CSF, artificial; **Route:** CSF/CNS (right lateral ventricle);

Species: Rat; **Strain:** Sprague Dawley; **Pump:** 1003D; 1007D; **Duration:** 1 day; 5 days;

ALZET Comments: Dose (100 µg/ml rhIGF-1; 20 µg/ml JB-1); Controls received mp w/ vehicle; animal info (Female Sprague Dawley rats; 10-12 months; weight range 325-350 g); JB-1 is an IGFR inhibitor; Brain coordinates (- 1.0mm posterior to bregma, -1.4mm medial lateral, -3.5mm from dural surface); cyanoacrylate adhesive; ischemia (cerebral);