



References on Aging Research Using ALZET® Osmotic Pumps

1. Aging Research

Q8566: W. Kawarazaki, *et al.* Salt causes aging-associated hypertension via vascular Wnt5a under Klotho deficiency. *J Clin Invest* 2020;130(8):4152-4166

Agents: Box5 **Vehicle:** DMSO; **Route:** SC; **Species:** Mice; **Pump:** Not stated; **Duration:** 2 weeks;

ALZET Comments: Dose (13 mg/kg/d); Controls received mp w/ vehicle; animal info (Sixteen-week-old WT, KL+/- mice and 66- to 78-week-old aged mice); Blood pressure measured via radiotelemetry; Box5 aka Wnt5a antagonist; cardiovascular;

Q8516: E. Guivarc'h, *et al.* Nuclear Activation Function 2 Estrogen Receptor alpha Attenuates Arterial and Renal Alterations Due to Aging and Hypertension in Female Mice. *J Am Heart Assoc* 2020;9(5):e013895

Agents: Angiotensin II **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Pump:** 2004; **Duration:** 28 days;

ALZET Comments: Dose (0.5 mg/kg per day); 0.9% NaCl used; Controls received mp w/ vehicle; animal info (5, 18-month-old female mice); post op. care (buprenorphine); Blood pressure measured via tail-cuff method; 100 mmHg - 160 mmHg; cardiovascular;

Q8467: E. Fielder, *et al.* Anti-inflammatory treatment rescues memory deficits during aging in nfkb1(-/-) mice. *Aging Cell* 2020;19(10):e13188

Agents: Ibuprofen **Vehicle:** PEG; DMSO; **Route:** SC; **Species:** Mice; **Pump:** 2004; **Duration:** 2 months;

ALZET Comments: Dose (50 mg/kg/day); Controls received mp w/ vehicle; animal info (male C57BL/6 mice, 6 months old); pumps replaced every 28 days; dependence;

Q8386: M. R. Bersi, *et al.* Multimodality Imaging-Based Characterization of Regional Material Properties in a Murine Model of Aortic Dissection. *Sci Rep* 2020;10(1):9244

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

ALZET Comments: Dose (1000 ng/kg/min); animal info (adult male ApoE-/- mice); Angiotensin II aka AngII; cardiovascular;

Q8328: L. C. Adams, *et al.* Noninvasive imaging of vascular permeability to predict the risk of rupture in abdominal aortic aneurysms using an albumin-binding probe. *Sci Rep* 2020;10(1):3231

Agents: Angiotensin II **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Pump:** 2004; **Duration:** 4 weeks;

ALZET Comments: Dose (1000 ng/kg/min); Controls received mp w/ vehicle; animal info (jMale ApoE-/- knockouts, 8 to 12 weeks old); Angiotensin II aka AngII; cardiovascular;

2. Alzheimer's Research

Q8510: M. Gonzalez-Prieto, *et al.* Microglial CX3CR1 production increases in Alzheimer's disease and is regulated by noradrenaline. *Glia* 2021;69(1):73-90

Agents: Reboxetine **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Pump:** 2004; **Duration:** 28 days;

ALZET Comments: Dose (10 mg/kg/day); Controls received mp w/ vehicle; animal info (7 month old male WT and heterozygous 5xFAD mice); half-life (p. 2; 12.5 hr); neurodegenerative (Alzheimer's);

Q8361: E. E. Parks, *et al.* Interleukin 6 reduces allopregnanolone synthesis in the brain and contributes to age-related cognitive decline in mice. *J Lipid Res* 2020;61(10):1308-1319

Agents: Interleukin-6 **Vehicle:** Saline; **Route:** CNS/CSF; **Species:** Mice; **Pump:** 1002; **Duration:** 14 days;

ALZET Comments: Dose (100 ng/day); Controls received mp w/ vehicle; animal info (Male, C57BL/6N); neurodegenerative (Alzheimer's Disease);

Q8494: L. Park, *et al.* tPA Deficiency Underlies Neurovascular Coupling Dysfunction by Amyloid-beta. *J Neurosci* 2020;40(42):8160-8173

Agents: PAI-039 **Vehicle:** Not stated; **Route:** CNS/CSF; **Species:** Mice; **Pump:** 1004; **Duration:** 4 weeks;



ALZET Comments: Dose (42 ng/kg/min); Controls received mp w/ vehicle; animal info (10-11 months old); behavioral testing (Maze Test, Novel Object Recognition Test); enzyme inhibitor (PAI-1 inhibitor); Brain coordinates (-0.22 mm lateral, 0.8 mm, dorsal 2 mm); neurodegenerative (Alzheimer's Disease);

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

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

ALZET Comments: Dose (25 ug zymosan; 10 ug/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);

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; **Pump:** 1004; **Duration:** 8 weeks;

ALZET Comments: Dose (1.5 mmol/kg/day); Controls received mp w/ vehicle; animal info (Six-week-old male ApoE^{-/-} and C57BL/6J mice); pumps replaced every 4 weeks; Beta-hydroxybutyrate aka B-OHB; neurodegenerative (Alzheimer's Disease);

3. Arthritis Research

Q8551: A. Jarneborn, *et al.* Tofacitinib treatment aggravates Staphylococcus aureus septic arthritis, but attenuates sepsis and enterotoxin induced shock in mice. *Sci Rep* 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; **Pump:** 1004; **Duration:** 28 days;

ALZET Comments: Dose (180 µg/day); Controls received mp w/ vehicle; animal info ((Mice 3 months, male, C57BL/6J), (Rat 3 months, male, Sprague-Dawley)); pumps were implanted directly in subchondral bone;

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; **Pump:** Not stated; **Duration:** 28 days;

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 Hartley guinea pigs weighing about 600g); pumps replaced every 6 weeks; Therapeutic indication (osteoarthritis);



4. Atherosclerosis Research

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; **Pump:** 1004; **Duration:** 8 weeks;

ALZET Comments: Dose (1.5 mmol/kg/day); Controls received mp w/ vehicle; animal info (Six-week-old male ApoE^{-/-} and C57BL/6J mice); pumps replaced every 4 weeks; Beta-hydroxybutyrate aka B-OHB; neurodegenerative (Alzheimer's Disease);

Q8282: C. S. McAlpine, *et al.* Sleep modulates haematopoiesis and protects against atherosclerosis. *Nature* 2019;566(7744):383-387

Agents: Hypocretin-1 **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Pump:** Not stated; **Duration:** 8 weeks;

ALZET Comments: Dose (50 nmol/h/kg); Controls received mp w/ vehicle; pumps replaced every 4 weeks; Hypocretin-1 aka HCRT-1; cardiovascular;

Q7616: A. Kurdi, *et al.* Everolimus depletes plaque macrophages, abolishes intraplaque neovascularization and improves survival in mice with advanced atherosclerosis. *Vascul Pharmacol* 2019;113(70-76

Agents: everolimus **Vehicle:** DMSO; propylene glycol; ethanol, buffered; **Route:** SC; **Species:** Mice; **Pump:** 1004; **Duration:** 12 weeks;

ALZET Comments: "Dose (1.5 mg/kg/day); 50% DMSO, 40% propylene glycol, 10% absolute ethanol supplemented with 0.4 µl/ml Tween 20 used; animal info (6 weeks, female, ApoE(-/-)Fbnl(C1039G+/-)); pumps replaced every 4 weeks; long-term study; cardiovascular; ""Four out of 12 control animals died abruptly during the experiment, which is a phenomenon that started at 21 weeks of WD (corresponding with 9 weeks of treatment with vehicle solution)."" p.72; Therapeutic indication (stabilizes atherosclerotic plaques and reduce atherosclerosis-driven complications such as cardiac hypertrophy and fibrosis, brain hypoxia and sudden death); "

Q8220: D. V. Keulen, *et al.* Oncostatin M reduces atherosclerosis development in APOE*3Leiden.CETP mice and is associated with increased survival probability in humans. *PLoS One* 2019;14(8):e0221477

Agents: Murine Oncostatin M **Vehicle:** PBS; **Route:** SC; **Species:** Mice; **Pump:** 1004; **Duration:** 16 weeks;

ALZET Comments: Dose (10 or 30 µg/kg/day); Controls received mp w/ vehicle; animal info (female APOE3Leiden.CETP transgenic mice (10–15 weeks of age)); pumps replaced every 5.5 weeks; long-term study; Murine Oncostatin M aka Murine OSM; cardiovascular;

Q8037: P. L. Hsu, *et al.* Shear-Induced CCN1 Promotes Atheroprone Endothelial Phenotypes and Atherosclerosis. *Circulation* 2019;139(25):2877-2891

Agents: T1 peptide **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Pump:** 2002; **Duration:** 14 days;

ALZET Comments: Dose (1 mg/kg/day); Controls received mp w/ vehicle; animal info (ApoE^{-/-}, Male, 2-4 months old); T1 aka peptide antagonist selectively targeting CCN1-α6β ; peptides; cardiovascular;

5. Dementia Research

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 (Dementia);

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);

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; neurodegenerative (alzheimer's); behavioral testing (locomotor activity, passive avoidance test, morris water maze); diabetes;

6. Glaucoma Research

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 (knockout); **Pump:** 2004; **Duration:** 3.5 months;

ALZET Comments: Dose (12 mg/kg/d); Controls received mp w/ vehicle; animal info (D2.C3-/- mice); 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 **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice; **Pump:** 2004; **Duration:** 8 weeks;

ALZET Comments: animal info (3-4 months); pumps replaced every 4 weeks; comparison of injection vs mp; neurodegenerative (glaucoma); stress/adverse reaction: We found that animals in which subcutaneous 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); Therapeutic indication (Glaucoma); Dose ((5, 10, and 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 **Vehicle:** Not Stated; **Route:** SC (Eye); **Species:** Dog; **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; **Pump:** 2006; **Duration:** 6 weeks;;

ALZET Comments: Control animals received mp w/ vehicle; animal info (Sprague Dawley, male, 200-250 g); up to 5% DMSO used; long-term study;

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; **Pump:** Not Stated; **Duration:** Not Stated;

ALZET Comments: Animal info (male, Wistar, 180-220g)

7. Parkinson's Disease Research

Q7684: K. C. Wu, *et al.* Down-regulation of natural resistance-associated macrophage protein-1 (Nramp1) is associated with 1-methyl-4-phenyl-1,2,3,6-tetrahydropyridine (MPTP)/1-methyl-4-phenylpyridinium (MPP(+))-induced alpha-synuclein accumulation and neurotoxicity. *Neuropathol Appl Neurobiol* 2019;45(2):157-173

Agents: pyridine, 1-methyl-4-phenyl-1,2,3,6-tetrahydro **Vehicle:** Saline; **Route:** IP; **Species:** Mice; **Pump:** 2002; **Duration:** 14 days;

ALZET Comments: Dose (30 mg/kg/day); Controls received mp w/ vehicle; animal info (Male C57BL/6 mice 6-8 weeks old); MPTP aka 1-methyl-4-phenyl-1,2,3,6-tetrahydropyridine; neurodegenerative (Parkinson's);

Q7668: S. Song, *et al.* Loss of Brain Norepinephrine Elicits Neuroinflammation-Mediated Oxidative Injury and Selective Caudo-Rostral Neurodegeneration. *Mol Neurobiol* 2019;56(4):2653-2669

Agents: Diphenylethylideneiodonium **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Pump:** Not Stated; **Duration:** 3 months;

ALZET Comments: Dose (10 ng/kg/day); Controls received mp w/ vehicle; animal info (C57/BL, 3 months old, Male); DPI aka Diphenylethylideneiodonium ; enzyme inhibitor (NOX2 inhibitor); neurodegenerative (Parkinson's Disease);

Q7376: I. Miyazaki, *et al.* Effects of Enteric Environmental Modification by Coffee Components on Neurodegeneration in Rotenone-Treated Mice. *Cells* 2019;8(3):

Agents: Rotenone **Vehicle:** DMSO, PEG; **Route:** SC; **Species:** Mice; **Pump:** 2004; **Duration:** 4 weeks;

ALZET Comments: Dose (2.5 mg/kg/day); 50 DMSO: 50 PEG used; Controls received mp w/ vehicle; animal info (male C57BL/6J mice nine weeks old; approximately 25 g); enzyme inhibitor (Rotenone is a mitochondrial complex I inhibitor); neurodegenerative (Parkinson's disease);

Q8275: A. K. Mahato, *et al.* 2019;

Agents: Glial cell line-derived neurotrophic factor or BT13 **Vehicle:** Propylene Glycol; **Route:** CSF/CNS; **Species:** Mice; **Pump:** 2002; **Duration:** 7 days;

ALZET Comments: Dose (BT13- 3-6 ug/day, GDNF-3 ug/day); 100% Propylene Glycol used; Controls received mp w/ vehicle; animal info (Male, C57Bl/6, 8-15 weeks old, 19-32 g); Glial cell line-derived neurotrophic factor aka GDNF, BT13 aka selective activator of GFL receptor-dependent signaling, or P; ALZET brain infusion kit XX used; Brain coordinates (AP = +1.0; ML = +2.7; DV = -4.0); bilateral cannula used; dental cement used; neurodegenerative (Parkinson's Disease);

Q8270: M. Luisetto*, *et al.* Role of plants, environmental toxins and physical neurotoxicological factors in Amyotrophic lateral sclerosis, Alzheimer Disease and other Neurodegenerative Diseases. *Journal of Neuroscience and Neurological Disorders* 2019;3(1):001-086

Agents: Rotenone **Vehicle:** Not stated; **Route:** CNS/CSF; **Species:** Rat; **Pump:** Not stated; **Duration:** 6 days;

ALZET Comments: Dose (3 mg/kg/day); Controls received mp w/ vehicle; Rotenone aka Rot; neurodegenerative (Alzheimer's Disease, Parkinson's Disease, Lou Gehrig's Disease);



8. Sitruin Research

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

Agents: Resveratrol **Vehicle:** PEG 300; DMSO; **Route:** SC; **Species:** Rat; **Pump:** Not stated; **Duration:** 3 days;
ALZET Comments: Dose (4 mg/kg/day); Controls received mp w/ vehicle; animal info (Sprague-Dawley rats, 400-450 g); Blood pressure measured via tail-cuff method; Resveratrol aka RSV; 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. *J Biomed Sci* 2020;27(1):68

Agents: Losartan **Vehicle:** CSF, Artificial; **Route:** CSF/CNS (cistern magna); **Species:** Rat; **Pump:** 1007D; **Duration:** 4 weeks;
ALZET Comments: Dose (3 µg·µL⁻¹·h⁻¹); Controls received mp w/ vehicle; animal info (Sprague-Dawley rats at age of 10 weeks); functionality of mp verified by drainage of cerebrospinal fluid; Blood pressure measured via tail-cuff method; 130 mmHg - 160 mmHg; cardiovascular;

Q7574: G. Z. Liu, *et al.* Aldosterone stimulation mediates cardiac metabolism remodeling via Sirt1/AMPK signaling in canine model. *Naunyn Schmiedebergs Arch Pharmacol* 2019;392(7):851-863

Agents: Aldosterone **Vehicle:** Saline; **Route:** SC; **Species:** Dog (Beagle); **Pump:** 2ML4; **Duration:** 4 weeks;
ALZET Comments: Dose (12 µg/kg/day); Controls received mp w/ vehicle; animal info (male adult purebred beagle dogs (8.0–8.5 kg)); cardiovascular;

Q7569: S. Li, *et al.* Fibroblast growth factor 21 protects the heart from angiotensin II-induced cardiac hypertrophy and dysfunction via SIRT1. *Biochimica et Biophysica Acta (BBA) - Molecular Basis of Disease* 2019;1865(6):1241-1252

Agents: Angiotensin II **Vehicle:** PBS; **Route:** SC; **Species:** Mice; **Pump:** 2004; **Duration:** 28 days;
ALZET Comments: Dose (1.1 mg/kg/day); Controls received mp w/ vehicle; animal info (SIRT1-iKO mice (8–12-week-old)); cardiovascular;

Q7343: X. Huang, *et al.* Resveratrol Promotes Diabetic Wound Healing via SIRT1-FOXO1-c-Myc Signaling Pathway-Mediated Angiogenesis. *Front Pharmacol* 2019;10(421)

Agents: EX-527; 10068-F4 **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice; **Pump:** 1002; **Duration:** 4 weeks;
ALZET Comments: Dose (EX-527 5 mg/kg/day, 10068-F4 30mg/kg/day); Controls received mp w/ vehicle; animal info (BKS.Cg-Dock7mC=Cleprdb=J mice, 8 weeks old); enzyme inhibitor (EX-527 is an SIRT1 inhibitor, 10058-F5 is a c-Myc inhibitor); diabetes;

9. Stroke (Cerebral ischemia) Research

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; **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);

Q7313: F. Turcato, *et al.* Sequential combined Treatment of Pifithrin-alpha and Posiphen Enhances Neurogenesis and Functional Recovery After Stroke. *Cell Transplantation* 2018;27(4):607-621

Agents: Phenserine, (+)-; Pifithrin-a **Vehicle:** Saline, physiological; DMSO; **Route:** SC; **Species:** Mice; **Pump:** 2002; **Duration:** 14 days;



ALZET Comments: Dose (25 mg/kg/day (+)-Phenserine); (2 mg/kg/day PFT-a); 10% DMSO in saline for PFT-a; Controls received mp w/ vehicle; animal info (male, 10–12-week-old, C57/BL6); behavioral testing (Accuscan activity monitor, novel object recognition); (+)-phenserine aka Posiphen; ischemia (cerebral); Therapeutic indication (stroke);

Q7876: K. Y. Tseng, *et al.* MANF Promotes Differentiation and Migration of Neural Progenitor Cells with Potential Neural Regenerative Effects in Stroke. *Mol Ther* 2018;26(1):238-255

Agents: neurotrophic factor, recombinant human glial cell line-derived; neurotrophic factor, mesencephalic astrocyte-derived **Vehicle:** PBS; **Route:** CSF/CNS (Lateral ventricle); **Species:** Rat; **Pump:** 2002; **Duration:** 13 days;
ALZET Comments: Dose ((GDNF 0.25 µg/µL at 12 µL/day), (MANF 0.25 µg/µL at 12 µL/day)); Controls received mp w/ vehicle; animal info (male, Sprague-Dawley, 220-260g); GDNF promotes differentiation and tangential migration of cortical GABAergic neurons during brain development. MANF is a non-classical neurotrophic factor that resides in the endoplasmic reticulum; Brain coordinates (A/P 0.5; L/M +1.9; D/V 2.5); Cannula placement verified via stereotaxic frame; ischemia (Cerebral ischemia); pumps were implanted from day 3 to day 16 of experiment before being removed.; Therapeutic indication (the neuroregenerative potential of MANF via promoting neuroblast recruitment to the lesioned cortex in stroke rats);

Q7244: R. Thakkar, *et al.* 17beta-Estradiol Regulates Microglia Activation and Polarization in the Hippocampus Following Global Cerebral Ischemia. *Oxid Med Cell Longev* 2018;2018(4248526

Agents: Estradiol, 17b **Vehicle:** Cyclodextrin, B-; **Route:** SC; **Species:** Rat; **Pump:** Not Stated; **Duration:** 14 days;
ALZET Comments: Dose (0.0167 mg); 20% β-cyclodextrin used; animal info (3 month old, female, Sprague Dawley); ischemia (Cerebral);

Q7249: L. Nusrat, *et al.* Cyclosporin A-Mediated Activation of Endogenous Neural Precursor Cells Promotes Cognitive Recovery in a Mouse Model of Stroke. *Front Aging Neurosci* 2018;10(93

Agents: Cyclosporin A **Vehicle:** Ethanol, Cremaphor; **Route:** SC; **Species:** Mice; **Pump:** Not Stated; **Duration:** 4-49 days;
ALZET Comments: Dose (15 mg/kg/day); ; animal info (adult male C57BL/6 mice 6–8 weeks of age; 20–25 g); pumps replaced; ischemia (cerebral); 65% ethanol and 35% cremaphor used