



Recent References (2018-Present) on Transplantation Research
Using ALZET® Osmotic Pumps

Q11015: D. E. Vatner, *et al.* Exercise enhancement by RGS14 disruption is mediated by brown adipose tissue. *Aging Cell* 2023;22(4):e13791

Agents: U0126 **Vehicle:** Not Stated; **Route:** Not Stated; **Species:** Mice; **Strain:** RGS14 KO; **Pump:** 2001; **Duration:** 7 days; **ALZET Comments:** Dose (10 mg/kg day); animal info: RGS14 KO mice and WT littermates; U0126 is a selective MAPK inhibitor; aging, cardiovascular (exercise capacity)

Q11217: M. Tomaz da Silva, *et al.* The fibrotic niche impairs satellite cell function and muscle regeneration in mouse models of Marfan syndrome. *Acta Physiologica* 2023;237(1):e13889

Agents: Angiotensin 1-7 **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice; **Strain:** WT; MFS-CG; **Pump:** 1004; **Duration:** 10 days; **ALZET Comments:** Dose: (100 ng/kg/min);

Q11183: J. Qian, *et al.* Toll-like receptor-2 in cardiomyocytes and macrophages mediates isoproterenol-induced cardiac inflammation and remodeling. *FASEB Journal* 2023;37(2):e22740

Agents: Isoproterenol **Vehicle:** Ascorbic acid; **Route:** SC; **Species:** Mice; **Strain:** C57BL/6; TLR2KO; **Pump:** 1002; **Duration:** 2 w **ALZET Comments:** Dose (30 mg/kg/day); animal info (8 weeks old); cardiovascular; Therapeutic indication (Heart failure);

Q10957: Y. Li, *et al.* Simultaneous late-gadolinium enhancement and T1 mapping of fibrosis and a novel cell-based combination therapy in hypertensive mice. *Biomedicine & Pharmacotherapy* 2023;158(114069)

Agents: Serelaxin **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice; **Strain:** C57BL/6; **Pump:** 1007D; **Duration:** 7 days; **ALZET Comments:** Dose (0.5/mg/kg/day); animal info (12 week-old male K/DOCA/salt injured mice, weighing approximately 25–30 g); Blood pressure measured via Tail cuff; Blood pressure measurement (p.9) see Fig. 3; cardiovascular; Therapeutic indication (hypertension);

Q11285: J. Huang, *et al.* Macrophage scavenger receptor A1 antagonizes abdominal aortic aneurysm via upregulating IRG1. *Biochemical Pharmacology* 2023;213(115631)

Agents: Angiotensin II **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice; **Strain:** ApoE^{-/-}SR-A1^{+/+}; ApoE^{-/-}SR-A1^{-/-}; **Pump:** 2004; **Duration:** Not Stated;

ALZET Comments: Dose (1.44 mg/kg/d); animal info (Male; 15 weeks old); Blood pressure measured via tail cuff method; peptides; cardiovascular;

Q11098: X. Dai, *et al.* Thymus transplantation regulates blood pressure and alleviates hypertension-associated heart and kidney damage via transcription factors FoxN1 pathway. *International Immunopharmacology* 2023;116(109798)

Agents: Angiotensin II **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice; **Strain:** C57BL/6J; **Pump:** 2006; **Duration:** Not Stated; **ALZET Comments:** Dose (1000 ng/kg/d); Controls received mp w/ vehicle; animal info (Male; 8 weeks old; Avg weight 20 g); Blood pressure measured via tail-cuff method, see Fig. 1; peptides; cardiovascular (hypertension)

Q10668: P. J. Ruchaya, *et al.* Transplantation of Skeletal Muscle-Derived Sca-1(+)/PW1(+)/Pax7(-) Interstitial Cells (PICs) Improves Cardiac Function and Attenuates Remodeling in Mice Subjected to Myocardial Infarction. *Cells* 2022;11(24):

Agents: Uridine, bromodeoxy- **Vehicle:** PBS; **Route:** SC; **Species:** Mice; **Strain:** C57BL/6; **Pump:** Not Stated; **Duration:** 14 days; **ALZET Comments:** Dose (0.2 M); Controls received mp w/ vehicle; animal info (8-week old male); cardiovascular;

Q10602: O. Mashinchian, *et al.* An Engineered Multicellular Stem Cell Niche For The 3D Derivation of Human Myogenic Progenitors From iPSCs. *Embo Journal* 2022;41(14):e110655

Agents: Tacrolimus **Vehicle:** EtOH; **Route:** SC; **Species:** Mice; **Strain:** C57BL/10ScSn-Dmdmdx/J; **Pump:** 1002; **Duration:** Not Stated;

ALZET Comments: Dose: (2.5 mg/kg/day)70% EtOH; 0.9% NaCl vehicle used Controls received mp w/ vehicle; animal info: Male 4 and 8 weeks, tacrolimus aka FK-506



- Q10948:** H. Ishigooka, *et al.* Novel Complement C5 Small-interfering RNA Lipid Nanoparticle Prolongs Graft Survival in a Hypersensitized Rat Kidney Transplant Model. *Transplantation* 2022;106(12):2338-2347
Agents: Cyclosporin **Vehicle:** Not Stated; **Route:** Not Stated; **Species:** Rat; **Strain:** Lewis; **Pump:** 2ML4; **Duration:** 7 days;
ALZET Comments: Dose (CsA 0.3 mg/body/day); animal info (Male); immunology (CsA is an immunosuppressant); nephrology
- Q10755:** J. Hu, *et al.* Exosomal miR-17-5p From Adipose-Derived Mesenchymal Stem Cells Inhibits Abdominal Aortic Aneurysm By Suppressing TXNIP-NLRP3 Inflammasome. *Stem Cell Research and Therapy* 2022;13(1):349
Agents: Angiotensin II **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Strain:** ApoE^{-/-}-C57BL/6; **Pump:** 2004; **Duration:** 28 days;
ALZET Comments: Dose: (1550 ng/kg per minute) Controls received mp w/ vehicle; animal info: 12-week-old male mice; cardiovascular; Abdominal aortic aneurysm
- Q10547:** S. M. Hosseini, *et al.* Suppressing CSPG/LAR/PTPsigma Axis Facilitates Neuronal Replacement and Synaptogenesis by Human Neural Precursor Grafts and Improves Recovery after Spinal Cord Injury. *Journal of Neuroscience* 2022;42(15):3096-3121
Agents: ILP; ISP **Vehicle:** Saline; **Route:** SC; **Species:** Rat; **Strain:** Not Stated; **Pump:** 2006; **Duration:** 6 weeks;
ALZET Comments: Dose (20 ug/d); Controls received mp w/ vehicle; animal info (Female; 250-300 g; 50 total); behavioral testing (BBB Open Field Locomotor Score; Grid-walking analysis; Assessment of pain response after SCI); peptides; spinal cord injury; Therapeutic indication (Neuronal replacement; Synaptic re-connectivity; Neurologic recovery;
- Q10479:** A. Freuchet, *et al.* IL-34 deficiency impairs FOXP3(+) Treg function in a model of autoimmune colitis and decreases immune tolerance homeostasis. *Clinical and Translational Medicine* 2022;12(8):e988
Agents: Interleukin-34, recombinant human **Vehicle:** Not Stated; **Route:** IP; **Species:** Mice; **Strain:** NOD/SCID/Il2rg^{-/-} ;NSG;
Pump: 1004; **Duration:** 14 days;
ALZET Comments: Dose: (.42 µg/h); animal info:) 8–12-week-old; peptide; immunology;
- Q10890:** H. Zhao, *et al.* Role of IgE-FcεpsilonR1 in Pathological Cardiac Remodeling and Dysfunction. *Circulation* 2021;143(10):1014-1030
Agents: Angiotensin II **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Strain:** Wild-type; **Pump:** 2002; **Duration:** 14 days;
ALZET Comments: Dose: (1000 ng/kg per min); Controls received mp w/ vehicle; animal info: 9-week old male; cardiovascular;
- Q10860:** A. E. Yuko, *et al.* LIN28a Induced Metabolic and Redox Regulation Promotes Cardiac Cell Survival in the Heart After Ischemic Injury. *Redox Biology* 2021;47(102162
Agents: Deoxyuridine, 5-ethynyl-2' **Vehicle:** DMSO; Water, double distilled; **Route:** SC; **Species:** Mice; **Strain:** C57BL/6; **Pump:** Not Stated; **Duration:** 1 week;
ALZET Comments: Dose: (39.0625 mg/mL); 50/50% DMSO/ddH₂O vehicle used; Controls received mp w/ vehicle; animal info: (8–12 weeks old male mice)ischemia (Myocardial);
- Q10834:** Z. Xu, *et al.* A Combination of Lycopene and Human Amniotic Epithelial Cells Can Ameliorate Cognitive Deficits and Suppress Neuroinflammatory Signaling by Choroid Plexus in Alzheimer's Disease Rat. *Journal of Nutritional Biochemistry* 2021;88(108558
Agents: Amyloid beta 1-42 **Vehicle:** CSF, artificial; **Route:** CSF/CNS; **Species:** Rat; **Strain:** Wistar; **Pump:** Not Stated;
Duration: 14 days;
ALZET Comments: Dose: 3 nmol/3ml; Controls received mp w/ vehicle; animal info: adult male rats (SPF class, weighing 250–300 g); post op. care: daily application of Neosporin; behavioral testing: Morris water maze; Amyloid beta 1-42 aka (A β1–42); Brain coordinates (anteroposterior 0.8 mm from bregma, mediolateral 1.5 mm, dorsoventral 3.6 mm); dental cement used; neurodegenerative (Alzheimer's disease);
- 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



Q10647: S. P. Persaud, *et al.* Antibody-Drug Conjugates Plus Janus Kinase Inhibitors Enable MHC-Mismatched Allogeneic Hematopoietic Stem Cell Transplantation. *Journal of Clinical Investigation* 2021;131(24):

Agents: Baricitinib **Vehicle:** DMSO; PEG 400; **Route:** SC; **Species:** Mice; **Strain:** BALB/c, DBA/2; **Pump:** 2004; **Duration:** 28 days; **ALZET Comments:** Dose: 400 ug/day; 50% DMSO; 50% Polyethylene glycol vehicle used Controls received mp w/ vehicle; animal info: mice, 6 to 12 weeks of age; post op. care: skin closure was done using 9 mm wound clips and buprenorphine (0.1mg/kg) provided for postoperative analgesia; Baricitinib is a JAK1/2 inhibitor;

Q10825: C. Li, *et al.* Prognostic Value of Elevated Levels of Plasma N-Acetylneuraminic Acid in Patients With Heart Failure. *Circulation Heart Failure* 2021;14(11):e008459

Agents: Angiotensin II **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Strain:** C57BL/6; **Pump:** 1004; **Duration:** 28 days; **ALZET Comments:** Dose (2.16 mg/kg per day); animal info (8 to 10 weeks; weigh about 24 g; male); peptides; cardiovascular; Therapeutic indication (Heart failure);

Q10200: A. Jacob, *et al.* Human adrenomedullin and its binding protein attenuate tissue injury and inflammation following hepatic ischemia reperfusion in rabbits. *Heliyon* 2021;7(8):e07845

Agents: Adrenomedullin **Vehicle:** Not Stated; **Route:** Not Stated; **Species:** Rabbit; **Strain:** New Zealand White; **Pump:** Not Stated; **Duration:** 20 hours;

ALZET Comments: Dose: (12 µg/kg) Controls received mp w/ vehicle; animal info: 4-month old males weighing approximately 3.0 kg. post op. care: buprenorphine; Adrenomedullin aka (AM) is a 52 amino-acid peptide; (Hepathic ischemia reperfusion);

Q10191: J. Hu, *et al.* Angiotensin II receptor blockade alleviates calcineurin inhibitor nephrotoxicity by restoring cyclooxygenase 2 expression in kidney cortex. *Acta Physiologica* 2021;232(1):e13612

Agents: Cyclosporine A; Candesartan; Celecoxib **Vehicle:** Not Stated; **Route:** SC; **Species:** Rat; **Strain:** Wistar; **Pump:** 2ML4; **Duration:** 3 weeks;

ALZET Comments: Dose: Cyclosporine (25 mg/kg); Candesartan (5 mg/kg); Celecoxib ((50mg/kg) Controls received mp w/ vehicle; animal info: Adult rats (10 to12 weeks) male ; Cyclosporine A aka (CsA); Candesartan aka (RAS); Celecoxib aka (COX-2)

Q10272: L. Fluhr, *et al.* Gut microbiota modulates weight gain in mice after discontinued smoke exposure. *Nature* 2021;600(7890):713-719

Agents: DMG; Varenicline; Trigonelline **Vehicle:** PBS; **Route:** SC; **Species:** Mice; **Strain:** Not Stated; **Pump:** 2004; **Duration:** 28d **ALZET Comments:** Dose (DMG 100 mg/kg/day; Varenicline 0.5 mg/kg/day; Trigonelline 70 mg/kg/day); dose-response (weight change during smoke exposure and cessation graph d pg 15); (weight change in HFD-fed mice administered with PBS or nicotine graph j page 18); Controls received mp w/ vehicle; control mice received mp w/ PBS; animal info (8-week old male mice, fed a high-fat or normal chow diet, exposed to cigarette smoke and given 4 antibiotics through their drinking water); Resultant plasma level (plasma DMG levels in HFD-fed mice exposed to smoke reduced after antibiotic treatment); (higher plasma DMG levels in HFD-fed mice that received FMT from donors that underwent cessation of smoke exposure; dependence;

Q10113: P. Bonilla, *et al.* Human-Induced Neural and Mesenchymal Stem Cell Therapy Combined with a Curcumin Nanoconjugate as a Spinal Cord Injury Treatment. *International Journal of Molecular Sciences* 2021;22(11):

Agents: Polyacetal-curcumin nanoconjugate **Vehicle:** Saline; **Route:** CSF/CNS (intrathecal); **Species:** Rat; **Strain:** Sprague–Dawley; **Pump:** 1007D; **Duration:** 7 days;

ALZET Comments: Saline 0.9% vehicle used; Controls received mp w/ vehicle; animal info: Female weighing 300g; post op. care: buprenorphine; behavioral testing: open-field BBB locomotor scale and video-based system for automated gait analysis; PA-C aka polyacetal-curcumin nonconjugate; spinal cord injury

Q9194: W. Bazzar, *et al.* Pharmacological inactivation of CDK2 inhibits MYC/BCL-XL-driven leukemia in vivo through induction of cellular senescence. *Cell Cycle* 2021;20(1):23-38

Agents: CVT2584 **Vehicle:** DMSO; **Route:** IP; **Species:** Mice; **Strain:** BALB/c ; C57BL/6; **Pump:** Not Stated; **Duration:** 16 days; **ALZET Comments:** Dose (2.5 mg/kg/hour); Controls received mp w/ vehicle; animal info (Transplanted mice); CVT2584 aka CDK2 inhibitor; cancer (cancer therapy; MYC-driven tumors);



Q9884: A. Younsi, *et al.* Three Growth Factors Induce Proliferation and Differentiation of Neural Precursor Cells In Vitro and Support Cell-Transplantation after Spinal Cord Injury In Vivo. *Stem Cells International* 2020;2020(5674921

Agents: Platelet-derived growth factor, human recombinant; Epidermal Growth Factor; Basic fibroblast growth factor, recombinant human; **Vehicle:** Not Stated; **Route:** CSF/CNS (spinal cord); **Species:** Rat; **Strain:** Wistar; **Pump:** Not Stated;

Duration: 7 days;

ALZET Comments: Dose (1 ug/ml Platelet-derived growth factor, human recombinant; 30 ug/ml Epidermal Growth Factor; 30 ug/ml Basic fibroblast growth factor, recombinant human); Controls received mp w/ vehicle; animal info (female (250 g); Platelet-derived growth factor, human recombinant aka PDGF-AA; Epidermal Growth Factor aka EGF; Basic fibroblast growth factor, recombinant human aka bFGF; spinal cord injury;

Q9889: S. Yoshida, *et al.* Syngeneic Mesenchymal Stem Cells Reduce Immune Rejection After Induced Pluripotent Stem Cell-Derived Allogeneic Cardiomyocyte Transplantation. *Scientific Reports* 2020;10(1):4593

Agents: Tacrolimus **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice; **Strain:** BALB/c; **Pump:** 1002; **Duration:** 15 days;

ALZET Comments: Dose (1.5 mg/kg body weight); animal info (Adult male mice (6–7 weeks old, 17–22 g)); pumps replaced every 13 days; immunology;

Q9566: H. Xu, *et al.* Limited efficacy of rapamycin monotherapy in vascularized composite allotransplantation. *Transplant Immunology* 2020;61(101308

Agents: Rapamycin; Tacrolimus **Vehicle:** Not Stated **Route:** SC **Species:** Mice **Strain:** Inbred; **Pump:** Not Stated; **Duration:** 28d

ALZET Comments: Dose (0.5-2 mg/kg/day Rapamycin; 2 mg/kg/day Tacrolimus); animal info (male mice); Rapamycin aka RPM, Tacrolimus aka FK506; cardiovascular;

Q9560: J. Xiao, *et al.* Experimental abdominal aortic aneurysm growth is inhibited by blocking the JAK2/STAT3 pathway. *International Journal of Cardiology* 2020;312(100-106

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

ALZET Comments: Dose (1000 ng/kg/min); 0.5% DMSO used; Controls received mp w/ vehicle; animal info (Sixteen-week-old male mice weighing 25 to 30 g); Angiotensin II aka Ang II; cardiovascular;

Q9537: L. Wang, *et al.* Donor bone-marrow CXCR4⁺ Foxp3⁺ T-regulatory cells are essential for costimulation blockade-induced long-term survival of murine limb transplants. *Scientific Reports* 2020;10(1):9292

Agents: Rapamycin **Vehicle:** Not Stated; **Route:** Not Stated; **Species:** Mice; **Strain:** WT BALB/c; WT C57BL/6; **Pump:** Not Stated; **Duration:** 4 weeks;

ALZET Comments: Dose (2 mg/kg/d); animal info (mice, 8-12 weeks old); dependence;

Q9500: W. M. Tierney, *et al.* Transplanted Human Neural Progenitor Cells Attenuate Motor Dysfunction and Lengthen Longevity in a Rat Model of Ataxia. *Cell Transplantation* 2020;29(963689720920275

Agents: Cyclosporine **Vehicle:** Not Stated; **Route:** SC; **Species:** Rat; **Strain:** spastic Han Wistar; **Pump:** 2ML4; **Duration:** 28 d

ALZET Comments: Dose (15 mg/ kg/d); animal info (rat); behavioral testing (Motor Activity Testing); pumps replaced every 23 days; neurodegenerative (ataxia)

Q10054: L. Pandolfi, *et al.* Loading Imatinib inside targeted nanoparticles to prevent Bronchiolitis Obliterans Syndrome. *Scientific Reports* 2020;10(1):20726

Agents: Imatinib **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Strain:** C57BL/6; Balb/c; **Pump:** 2004; **Duration:** 28 days;

ALZET Comments: Controls received mp w/ vehicle; animal info (Pathogen-free, male mice, 20-24 g); Imatinib aka GNP-HClm; toxicology;

Q8908: X. Ni, *et al.* C-peptide and islet transplantation improve glomerular filtration barrier in diabetic nephropathy rats. *Transplant Immunology* 2020;62(101322

Agents: C-peptide **Vehicle:** Saline; **Route:** IP; **Species:** Rat; **Strain:** Sprague-Dawley; **Pump:** 2ML4; **Duration:** 4 weeks;

ALZET Comments: Dose (50 pmol/kg/min); Controls received mp w/ vehicle; animal info (male rats, 180-200 g); diabetes;



Q8642: H. Li, *et al.* Alterations of gut microbiota contribute to the progression of unruptured intracranial aneurysms. *Nat Commun* 2020;11(1):3218

Agents: Angiotensin II **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice; **Strain:** Not Stated; **Pump:** 2004; **Duration:** 4 weeks; **ALZET Comments:** Dose (1 ug/kg/min); animal info (Male, 8-week-old mice); Angiotensin II aka Ang II; cardiovascular;

Q9275: M. Honda, *et al.* Inhibition of receptor activity-modifying protein 1 suppresses the development of endometriosis and the formation of blood and lymphatic vessels. *Journal of Cellular and Molecular Medicine* 2020;24(20):11984-11997

Agents: CGRP8-37 **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Strain:** C57BL/6 WT; **Pump:** Not Stated; **Duration:** 14 days; **ALZET Comments:** Dose (80 ug/d); Controls received mp w/ vehicle; animal info (Female mice (8-week-old)); CGRP8-37 aka Calcitonin gene-related peptide antagonist; peptides; dependence;

Q8455: T. R. Eijgenraam, *et al.* The phospholamban p.(Arg14del) pathogenic variant leads to cardiomyopathy with heart failure and is unresponsive to standard heart failure therapy. *Scientific Reports* 2020;10(1):9819

Agents: Isoproterenol **Vehicle:** Not stated; **Route:** SC; **Species:** Mice; **Strain:** Not Stated; **Pump:** 2004; **Duration:** 4 weeks; **ALZET Comments:** Dose (30 mg/kg/day); animal info (adult (10-week-old) PLN-R14Δ/+ mice); cardiovascular;

Q8432: C. Dai, *et al.* Tacrolimus- and sirolimus-induced human beta cell dysfunction is reversible and preventable. *JCI Insight* 2020;5(1):

Agents: Tacrolimus **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Strain:** NSG; **Pump:** 1004; **Duration:** 4 weeks; **ALZET Comments:** Dose (0.25 mg/kg/day); Controls received mp w/ vehicle; animal info (Male, age 12–18 weeks); Tacrolimus aka TAC; dependence;

Q7672: D. Verma, *et al.* Vitamin K antagonism impairs the bone marrow microenvironment and hematopoiesis. *Blood Pressure* 2019;134(3):227-238

Agents: Warfarin **Vehicle:** PBS; **Route:** SC; **Species:** Mice; **Strain:** Not Stated; **Pump:** Not Stated; **Duration:** Not Stated; **ALZET Comments:** Dose (0.5 mg/kg/d or 0.05 mg/kg/d);

Q9091: B. Ulmasov, *et al.* An Inhibitor of Arginine-Glycine-Aspartate-Binding Integrins Reverses Fibrosis in a Mouse Model of Nonalcoholic Steatohepatitis. *Hepatology Communications* 2019;3(2):246-261

Agents: Integrin antagonist **Vehicle:** DMSO; **Route:** SC; **Species:** Mice; **Strain:** C57BL/6J; **Pump:** Not Stated; **Duration:** 4 weeks **ALZET Comments:** Dose (100 mg/kg/day); 50% DMSO used; Controls received mp w/ vehicle; animal info (, 5 weeks old, Male); Integrin antagonist aka CWHM-12; dependence;

Q7494: B. Ulmasov, *et al.* An Inhibitor of aArginine-Glycine-Aspartate-Binding Integrins Reverses Fibrosis in a Mouse Model of Nonalcoholic Steatohepatitis. *Hepatol Commun* 2019;3(2):246-261

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

Q7663: G. Shetty, *et al.* Effect of hormone modulations on donor-derived spermatogenesis or colonization after syngeneic and xenotransplantation in mice. *Anesthesia & Analgesia* 2019;7(2):257-265

Agents: Follicle stimulating hormone, recomb. human **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice; **Strain:** C57BL/6Lau; nude; **Pump:** 2002; **Duration:** 2 weeks; **ALZET Comments:** Dose (5 IU/day); Controls received sham surgery; animal info (7-9 weeks, male); replacement therapy (FSH);

Q8814: L. E. Ragle, *et al.* Long-label-retaining mammary epithelial cells are created early in ductal development and distributed throughout the branching ducts. *Mechanisms of Development* 2019;159(103565)

Agents: Uridine, 5-bromodeoxy- **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice; **Strain:** Not Stated; **Pump:** Not Stated; **Duration:** 14 days; **ALZET Comments:** Dose (0.1 mg); animal info (3 weeks old); 5-bromodeoxyuridine aka 5BrdU; dependence;



Q6954: S. L. Payne, *et al.* Initial cell maturity changes following transplantation in a hyaluronan-based hydrogel and impacts therapeutic success in the stroke-injured rodent brain. *Biomaterials* 2019;192(309-322

Agents: Cyclosporine A **Vehicle:** Ethanol, Cremophor; **Route:** SC; **Species:** Rat; **Strain:** SD; **Pump:** 2ML4; **Duration:** 56 days; **ALZET Comments:** Dose (15 mg/kg/day); animal info (male rats, 350 g); post op. care (3 mg/kg- ketoprofen); behavioral testing (Montoya staircase and tapered beam test); long-term study; ischemia (stroke);

Q7606: T. Okamoto, *et al.* Microbiome potentiates endurance exercise through intestinal acetate production. *American Journal of Physiology Endocrinology and Metabolism* 2019;316(5):E956-E966

Agents: Acetate; Butyrate **Vehicle:** Saline; **Route:** CSF/CNS; **Species:** Mice; **Strain:** C57BL/6J; **Pump:** 2001; **Duration:** 7 days; **ALZET Comments:** Dose (1 ul/h); Controls received mp w/ vehicle; animal info (Male, 10 week old,); dependence;

Q7562: G. Merlen, *et al.* Oxaloacetate Protects Rat Liver From Experimental Warm Ischemia/Reperfusion Injury by Improving Cellular Energy Metabolism. *Liver Transplantation* 2019;25(4):627-639

Agents: Oxaloacetate **Vehicle:** Not Stated; **Route:** SC; **Species:** Rat; **Strain:** SD; **Pump:** 2001D; **Duration:** Not stated; **ALZET Comments:** Dose (100 mg/kg); animal info (Male, ,); ischemia (Liver);

Q8598: N. Kashiyama, *et al.* Vasculogenically conditioned peripheral blood mononuclear cells inhibit mouse immune response to induced pluripotent stem cell-derived allogeneic cardiac grafts. *PLoS One* 2019;14(5):e0217076

Agents: Tacrolimus **Vehicle:** Not stated; **Route:** SC; **Species:** Mice; **Strain:** C57BL/6; **Pump:** Not stated; **Duration:** 7 days; **ALZET Comments:** Dose (0.5 mg/kg/day); animal info (male mice, 10 weeks old, 20-25 g); cardiovascular;

Q8031: H. W. He, *et al.* Soluble Nogo receptor 1 fusion protein protects neural progenitor cells in rats with ischemic stroke. *Neural Regen Res* 2019;14(10):1755-1764

Agents: Soluble Nogo66 receptor-Fc protein **Vehicle:** Saline; **Route:** SC; **Species:** Rat; **Strain:** SD; **Pump:** 1003D; **Duration:** 3d **ALZET Comments:** Dose (400 ug/kg); Controls received mp w/ vehicle; animal info (250-350 g, 10-12 weeks old); behavioral testing (Morris Water Maze Test); Soluble Nogo66 receptor-Fc protein aka sNgR-Fc; ischemia (Stroke);

Q8028: Y. Hayashi, *et al.* Stem Cell-Induced Pulp Regeneration Can Be Enhanced by Administration of CCL11-Neutralizing Antibody in the Ectopic Tooth Transplantation Model in the Aged Mice. *Rejuvenation Res* 2019;22(1):51-59

Agents: Porphyromonas gingivalis lipopolysaccharide **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Strain:** Not Stated; **Pump:** 1004; **Duration:** 28 days; **ALZET Comments:** Dose (2 ug/day); Controls received mp w/ vehicle; animal info (6 or 13 months old); ALZET brain infusion kit 3 used; bilateral cannula used; cyanoacrylate adhesive; neurodegenerative (Alzheimer's Disease);

Q8737: V. Hartwig, *et al.* Human skin-derived ABCB5(+) stem cell injection improves liver disease parameters in Mdr2KO mice. *Archives of Toxicology* 2019;93(9):2645-2660

Agents: Tacrolimus **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Strain:** Balb/c; **Pump:** 1002, 2004; **Duration:** 2, 4 weeks; **ALZET Comments:** Dose (1 mg/kg/day); 0.9% Saline used; Controls received mp w/ vehicle; animal info (16 weeks old);

Q8024: M. Hanoun, *et al.* Nestin(+)NG2(+) Cells Form a Reserve Stem Cell Population in the Mouse Prostate. *Stem Cell Reports* 2019;12(6):1201-1211

Agents: Testosterone **Vehicle:** Not stated; **Route:** SC; **Species:** Mice; **Strain:** C57BL6; **Pump:** Not stated; **Duration:** 3-4 weeks; **ALZET Comments:** Dose (1:875 g/hour); animal info (Male,);

Q7941: I. Aquila, *et al.* c-kit Haploinsufficiency impairs adult cardiac stem cell growth, myogenicity and myocardial regeneration. *Cell Death Dis* 2019;10(6):436

Agents: Uridine, 5-bromo-2'-deoxy-; Uridine, 5-Ethynyl-2'-deoxy-; Uracil, 5-fluoro- **Vehicle:** Water, Deionized, DMSO buffered; **Route:** SC; **Species:** Mice; **Strain:** C57BL/6J, Tg-myh6(MCM); Tg-myh6MCM: R26(mT-mG/+); **Pump:** Not stated;

Duration: 7, 25, 28 days;

ALZET Comments: Dose ((BrdU 50 mg/kg/day), (EdU 50 mg/kg/day), (5-FU 15 mg/kg/day)); 50% deionized water and 50% DMSO used; Controls received mp w/ vehicle; animal info (12 weeks, male); cardiovascular; mp used for BrdU and EdU labeling or for ISO + 5-FU induced cardiomyopathy;



- Q7938:** J. E. Ahlfors, *et al.* Examining the fundamental biology of a novel population of directly reprogrammed human neural precursor cells. *Stem Cell Res Ther* 2019;10(1):166
Agents: Cyclosporin A **Vehicle:** Ethanol, Cremophor buffered; **Route:** SC; **Species:** Mice; **Strain:** Shi(-/-); **Pump:** 1002;
Duration: 1, 2 weeks;
ALZET Comments: Dose (10 mg/kg/day); 65% ethanol: 35% Cremaphor used; Controls received mp w/ vehicle; animal info (8 weeks,); mp with CsA used to induce immunosuppression in Shiverer mice;
- Q8837:** H. Xu, *et al.* Utility of IL-2 Complexes in Promoting the Survival of Murine Orthotopic Forelimb Vascularized Composite Allografts. *Transplantation* 2018;102(1):70-78
Agents: Rapamycin **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice; **Strain:** C57BL/6; BALB/c; **Pump:** Not Stated;
Duration: 28 days;
ALZET Comments: Dose (2 mg/kg/day); Controls did not receive mp; animal info (male,); comparison of IP injection of FK506 vs mp; immunology; RPM monotherapy was about as effective as post-Tx IL-2C in prolonging survival. Co-administration of IL-2C and post-Tx RPM had additional benefits, with pre-Tx IL-C plus RPM causing a fivefold increase in survival, and post-Tx IL-2C plus RPM causing a threefold increase in survival;
- Q7542:** Q. Wu, *et al.* Human menstrual blood-derived stem cells promote functional recovery in a rat spinal cord hemisection model. *Cell Death & Disease* 2018;9(9):882
Agents: TrkB-IgG; immunoglobulin G, human **Vehicle:** PBS; **Route:** CSF/CNS (intrathecal); **Species:** Rat; **Strain:** Sprague-Dawley; **Pump:** 2002; **Duration:** 4 weeks;
ALZET Comments: Dose (3 µg/day); Controls received mp w/ vehicle; animal info (adult, female, , 220-250g); behavioral testing (BBB locomotion scale); pumps replaced at 3 weeks; enzyme inhibitor (BDNF-TrkB signaling); spinal cord injury;
- Q7507:** E. J. White, *et al.* Sialidase down-regulation reduces non-HDL cholesterol, inhibits leukocyte transmigration, and attenuates atherosclerosis in ApoE knockout mice. *J Biol Chem* 2018;293(38):14689-14706
Agents: DANA (sialidase inhibitor) **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Strain:** Apoe-/-; **Pump:** 2004; **Duration:** 6 weeks;
ALZET Comments: Dose (0.06 µg/h); Controls received mp w/ vehicle; animal info (8 months, male,); enzyme inhibitor (sialidase); cardiovascular;
- Q7885:** C. Vandebussche, *et al.* Tacrolimus-induced nephrotoxicity in mice is associated with microRNA deregulation. *Archivos de Zootecnia* 2018;92(4):1539-1550
Agents: Tacrolimus **Vehicle:** Serum, physiological; **Route:** SC; **Species:** Mice; **Strain:** CD-1; **Pump:** 2004; **Duration:** 28 days;
ALZET Comments: Dose (1 mg/kg/d); Controls received mp w/ vehicle; animal info (4 weeks, male,, 30-40g); enzyme inhibitor (Calcineurin); toxicology; Tacrolimus actively participates to chronic allograft dysfunction through miR-21-5p modulation.;
- Q7263:** L. Riemann, *et al.* Transplantation of Neural Precursor Cells Attenuates Chronic Immune Environment in Cervical Spinal Cord Injury. *Front Neurol* 2018;9(428)
Agents: Platelet-Derived Growth Factor, Epidermal Growth Factor, Basic Fibroblast Growth Factor **Vehicle:** Platelet-Derived Growth Factor, Epidermal Growth Factor, Basic Fibroblast Growth Factor; **Route:** CSF/CNS(Intrathecal); **Species:** Rat; **Strain:** Wistar; **Pump:** 1007D; **Duration:** 7 days;
ALZET Comments: Dose (PDGF-AA, 1 µg/100 µL; EGF, 3 µg/100 µL; bFGF, 3 µg/100mL); 0.1% rat serum albumin used; animal info (female rats 250 g); post op. care (moxifloxacin, buprenorphine); spinal cord injury;
- Q8157:** S. L. Payne, *et al.* In Vitro Maturation of Human iPSC-Derived Neuroepithelial Cells Influences Transplant Survival in the Stroke-Injured Rat Brain. *Tissue Eng Part A* 2018;24(3-4):351-360
Agents: Cyclosporine A **Vehicle:** Saline; **Route:** SC; **Species:** Rat; **Strain:** Sprague Dawley; **Pump:** 2ML4; **Duration:** 7 days;
ALZET Comments: Dose (15 mg/kg/day); Controls received mp w/ vehicle; animal info (10 weeks old, Male,); post op. care (ketoprofen); Cyclosporine A aka CsA ; neurodegenerative (Stroke);



Q7059: J. Patel, *et al.* Effect of irradiation and bone marrow transplantation on angiotensin II-induced aortic inflammation in ApoE knockout mice. *Atherosclerosis* 2018;276(74-82)

Agents: Angiotensin II **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice (knockout); **Strain:** BMT; non BMT; **Pump:** Not Stated; **Duration:** 14 days;

ALZET Comments: Dose (0.8, 1.5, or 3 mg/kg/day); animal info (male mice); cardiovascular;

Q8312: L. A. Orci, *et al.* Effects of the gut-liver axis on ischaemia-mediated hepatocellular carcinoma recurrence in the mouse liver. *J Hepatol* 2018;68(5):978-985

Agents: Tlr4 competitive inhibitor **Vehicle:** Not stated; **Route:** SC; **Species:** Mice; **Strain:** C57BL/6J; **Pump:** 2004; **Duration:** 2 w

ALZET Comments: Dose (15 mg/kg/week); animal info (Male,); CyP aka cyanobacterial LPS-like Tlr4 inhibitor; enzyme inhibitor (Tlr4 inhibitor); ischemia (liver);

Q8307: G. Oldani, *et al.* Chimeric liver transplantation reveals interspecific graft remodelling. *J Hepatol* 2018;69(5):1025-1036

Agents: Tacrolimus **Vehicle:** Not stated; **Route:** SC; **Species:** Mice; Rat; **Strain:** C57BL/6J; **Pump:** 1002 or 2002;

Duration: 14 days or 28 days;

ALZET Comments: Dose (0.3, 0.6, or 1.2 mg/kg); animal info (, 23-31 g, Male; Lewis. Male, 47-60 g); pumps replaced every 2 weeks; dependence;

Q7215: H. Li, *et al.* Fibroblast growth factor 21 increases insulin sensitivity through specific expansion of subcutaneous fat. *Nat Commun* 2018;9(1):272

Agents: Fibroblast growth factor 21, mouse recomb. **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Strain:** FGF21KO;

Pump: Not Stated; **Duration:** 4 weeks;

ALZET Comments: Dose (0.1 mg/kg/day); Controls received mp w/ vehicle; animal info (8 week old,); Resultant plasma level (1.5 ng/ml, which was 2–3 times of the 8-week HFD-induced endogenous FGF21 level of 0.6 ng/ml (Fig. 3f)); dependence;

Q8074: F. C. Lewis-McDougall, *et al.* Aged-senescent cells contribute to impaired heart regeneration. *Aging Cell*

2018;18(**Agents:** Uridine, bromodeoxy- **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Strain:** Not Stated; **Pump:** Not Stated;

Duration: 14 days;

ALZET Comments: Dose (0.2 M); animal info (22-32 months); Bromodeoxyuridine aka BrdU, thymidine analogue ; dependence;

Q7892: K. Kanekiyo, *et al.* Effects of Intrathecal Injection of the Conditioned Medium from Bone Marrow Stromal Cells on Spinal Cord Injury in Rats. *J Neurotrauma* 2018;35(3):521-532

Agents: Conditioned medium, bone marrow stromal cells **Vehicle:** Dulbecco's modified Eagle's medium (DMEM); **Route:** CSF/CNS (lateral ventricle); **Species:** Rat; **Strain:** Sprague Dawley; **Pump:** Not stated; **Duration:** 2 weeks;

ALZET Comments: Controls received mp w/ vehicle; animal info (, Female, 8 week old); Bone marrow stromal cells aka BMSCs; Brain coordinates (3mm caudal to bregma and 2mm to the left of midline); bilateral cannula used; spinal cord injury;

Q7755: R. W. Holdcraft, *et al.* A model for determining an effective in vivo dose of transplanted islets based on in vitro insulin secretion. *Xenotransplantation* 2018;25(6):e12443

Agents: Insulin, recomb. human **Vehicle:** Not Stated; **Route:** SC; **Species:** Rat; **Strain:** Not Stated; **Pump:** Not Stated;

Duration: 3-5 days;

ALZET Comments: Dose ((female 1.5-2.0 U/day), (males 3.0-4.5 U/day)); Controls consisted of rats that did not become diabetic during the initial study period; animal info (male and female, BioBreeding diabetes-prone); Multiple pumps per animal (2 if hyperglycemic state observed. see p.4); comparison of macrobead implant vs mp; diabetes; Pilot study for CGM calibration 3-5 days followed by 1 or 3 month study using microbeads. Pump models not stated but duration length was listed at 7 or 14 days;



Q7813: T. Fuhrmann, *et al.* Combined delivery of chondroitinase ABC and human induced pluripotent stem cell-derived neuroepithelial cells promote tissue repair in an animal model of spinal cord injury. *Biomedical Research* 2018;13(2):024103
Agents: Cyclosporin A **Vehicle:** Not Stated; **Route:** SC; **Species:** Rat; **Strain:** Sprague-Dawley; **Pump:** 2ML1; 2ML4; **Duration:** 2 weeks; 8 weeks;

ALZET Comments: Dose (10 mg/kg/day); animal info (female, , 300g); post op. care (Buprenorphine (0.05 mg/kg) every 12 h for 48 h); behavioral testing (BBB locomotor rating scale, ladder walk test); pumps replaced every 4 weeks; spinal cord injury; mp used to deliver cyclosporin A to aid transplant survival, implanted one day prior to cell transplantation.;

Q7808: S. Fabbiano, *et al.* Functional Gut Microbiota Remodeling Contributes to the Caloric Restriction-Induced Metabolic Improvements. *Cell Metabolism* 2018;28(6):907-921 e7

Agents: lipopolysaccharide **Vehicle:** Not stated; **Route:** SC; **Species:** Mice; **Strain:** C57BL/10J, C57BL/10ScNJ; C57BL/6JRj; **Pump:** 2004; **Duration:** 28 days;

ALZET Comments: Dose (200, 300 µg/kg/day); Controls received ad libitum diet and mp w/ agent; animal info (8 weeks, male,); Lipopolysaccharides (LPS) from *Escherichia coli* 0127:B8;

Q7128: L. Detti, *et al.* Xenotransplantation of pre-pubertal ovarian cortex and prevention of follicle depletion with anti-Müllerian hormone (AMH). *Journal of Assisted Reproduction and Genetics* 2018;35(10):1831-1841

Agents: anti-Müllerian hormone, recomb. **Vehicle:** Saline; **Route:** IP; **Species:** Mice (nude); **Strain:** NU/J; **Pump:** 1002; **Duration:** 2 weeks;

ALZET Comments: Dose (1.23 µg/d); Controls received mp w/ vehicle; animal info (10-week-old mice, or nude mice,); functionality of mp verified by residual volume;

Q7790: A. Citro, *et al.* Anti-Inflammatory Strategies in Intrahepatic Islet Transplantation: A Comparative Study in Preclinical Models. *Transplantation* 2018;102(2):240-248

Agents: Reparixin **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice; **Strain:** C57BL/6, Balb/c; **Pump:** Not Stated; **Duration:** 7 days; **ALZET Comments:** Dose (5.4 mg/h/kg); animal info (Male, , 8-9 weeks old, 24-6 g); Reparixin aka CXCR1/2 inhibitor; enzyme inhibitor (CXCR1/2 inhibitor); diabetes;

Q7097: A. Alastrue-Agudo, *et al.* FM19G11 and Ependymal Progenitor/Stem Cell Combinatory Treatment Enhances Neuronal Preservation and Oligodendrogenesis after Severe Spinal Cord Injury. *International Journal of Molecular Science* 2018;19(1):

Agents: FM19G11 **Vehicle:** DMSO; **Route:** CSF/CNS (intrathecal); **Species:** Rat; **Strain:** Sprague Dawley; **Pump:** 1007D; **Duration:** 3 days;

ALZET Comments: Controls received mp w/ vehicle; animal info (2-month-old rats weighing ~200 g); FM19G11 is an inhibitor of Hypoxia inducible factor-alpha protein expression; spinal cord injury;