



**Recent References (2019-Present) on Immunology Research
Using ALZET® Osmotic Pumps**

Q11029: J. Xu, *et al.* Anti-Inflammatory Actions of G-Protein-Coupled Estrogen Receptor 1 (GPER) and Brain-Derived Estrogen Following Cerebral Ischemia in Ovariectomized Rats. *Biology (Basel)* 2023;12(1):

Agents: G1; G36 **Vehicle:** Cotton seed oil; DMSO; **Route:** SC; **Species:** Rat; **Strain:** Sprague-Dawley; **Pump:** 2002; **Duration:** 14 days;

ALZET Comments: 1% DMSO used; animal info: Adult female ovariectomized rats; G1 is G-protein-coupled estrogen receptor agonist, G36 is GPER antagonist; immunology (inflammation); cerebral ischemia

Q11005: M. St Pierre, *et al.* Unbiased Quantitative Single-Cell Morphometric Analysis to Identify Microglia Reactivity in Developmental Brain Injury. *Life (Basel)* 2023;13(4):

Agents: U-46619 **Vehicle:** Ethanol; **Route:** IP; **Species:** Mice; **Strain:** C57BL/6J; **Pump:** 1007D; **Duration:** 24 hours;

ALZET Comments: Dose (4000 ng/ul); 0.5% ethanol used; Controls received mp w/ vehicle; animal info: pregnant mice; U-46619 is a thromboxane A2-analog; immunology; brain injury

Q10986: S. M. Robert, *et al.* The choroid plexus links innate immunity to CSF dysregulation in hydrocephalus. *Cell* 2023;186(4):764-785 e21

Agents: E. coli, wild type; E. coli, -LPS; lipopolysaccharide **Vehicle:** CSF, artificial; **Route:** CSF/CNS (right lateral ventricle);

Species: Rat; **Strain:** Wistar; **Pump:** 1003D; **Duration:** 72 hours;

ALZET Comments: Dose (10 ng/mL); Controls received mp w/ vehicle; animal info 8-week-old; ALZET brain infusion kit 2 used; Brain coordinates ((coordinates, x= -0.8, y= -1.7 mm from bregma)cyanoacrylate adhesive; gene therapy; immunology

Q10980: L. Pezhman, *et al.* PEPITEM modulates leukocyte trafficking to reduce obesity-induced inflammation. *Clinical and Experimental Immunology* 2023;212(1):1-10

Agents: PEPITEM **Vehicle:** PBS; **Route:** Not Stated; **Species:** Mice; **Strain:** C57BL/6J; **Pump:** 2006; **Duration:** 6 weeks;

ALZET Comments: Dose (3.5 mg/ml); Controls received mp w/ vehicle; animal info: Eight-week-old, male; peptides; obesity;

Q10978: R. Patel, *et al.* Signaling through the IL-6-STAT3 Pathway Promotes Proteolytically-Active Macrophage Accumulation Necessary for Development of Small AAA. *Vascular and Endovascular Surgery* 2023;57(5):433-444

Agents: Interleukin-6 **Vehicle:** Saline, sterile; **Route:** IP; **Species:** Mice; **Strain:** C57BL/6; IL-6KO; **Pump:** 1004; **Duration:** 21 days;

ALZET Comments: Dose: (4.36 µg/kg/day); Controls received mp w/ vehicle; animal info: wild-type mice; post op. care (subcutaneous injection of 0.05 mg/kg buprenorphine); functionality of mp verified by IL-6 plasma levels; cardiovascular; abdominal aortic aneurysm; immunology

Q10965: S. M. Mutchler, *et al.* Validation of commercially available antibodies directed against subunits of the epithelial Na(+) channel. *Physiological Reports* 2023;11(1):e15554

Agents: Aldosterone **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Strain:** C57BL/6; **Pump:** 2002; **Duration:** 2 weeks;

ALZET Comments: Dose (240 µg/kg/day); animal info: Male mice; nephrology; immunology

Q10954: K. Karino, *et al.* Inhibitor of NF-kappaB Kinase Subunit epsilon Contributes to Neuropsychiatric Manifestations in Lupus-Prone Mice Through Microglial Activation. *Arthritis & Rheumatology* 2023;75(3):411-423

Agents: MCC1 **Vehicle:** PBS; **Route:** CSF/CNS (right lateral ventricle); **Species:** Mice; **Strain:** MRL/lpr; **Pump:** Not Stated; **Duration:** 14 days;

ALZET Comments: Controls received mp w/ vehicle; animal info: 6 week old; ALZET brain infusion kit III used; Brain coordinates (1.1 mm lateral, -0.5 mm anteriorposterior to the bregma, and 2.5 mm deep to target the right lateral ventricle); behavioral testing (Open field test; Novel objective recognition test; Object location test); MCC1 is an IKBKe inhibitor; (lupus)



Q11080: B. Jiang, *et al.* Hedgehog-induced ZFYVE21 promotes chronic vascular inflammation by activating NLRP3 inflammasomes in T cells. *Science Signaling* 2023;16(**Agents:** Vismodegib; GANT61; MCC950; SAG **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice; **Strain:** SCID/bg; **Pump:** 1004; **Duration:** 28 days;

ALZET Comments: Dose (Vismodegib 12 mg/kg/day; GANT61 6 mg/kg/day; MCC950 4 mg/kg/day, SAG 15 mg/kg/day); Controls received mp w/ vehicle; animal info (Female; 6-12 weeks old); immunology;

Q11101: M. Falcinelli, *et al.* Propranolol reduces IFN-gamma driven PD-L1 immunosuppression and improves anti-tumour immunity in ovarian cancer. *Brain Behavior and Immunity* 2023;110(1-12

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

ALZET Comments: Dose (2 mg/kg/d); Controls received mp w/ vehicle; animal info (Female; 6-8 weeks old); cancer (Epithelial ovarian); immunology;

Q11065: Y. Bai, *et al.* Single-nucleus RNA sequencing unveils critical regulators in various hippocampal neurons for anti-N-methyl-D-aspartate receptor encephalitis. *Brain Pathology* 2023;33(4):e13156

Agents: Anti-N-methyl-D-aspartate receptor antibody **Vehicle:** Saline; **Route:** CSF/CNS (lateral ventricle); **Species:** Mice;

Strain: C57BL/6; **Pump:** 2002; **Duration:** Not Stated;

ALZET Comments: Dose (2 µg/ml); animal info (Female; 8-10 weeks old); behavioral testing (Shuttle box active escape experiment; Elevated plus-maze test; Open-field test; 3 chamber test; Forced swimming test; Marble burying test; Novel object recognition; Nest building test); ALZET brain infusion kit 3 used; good methods pg. 3; immunology

Q10928: F. Andreozzi, *et al.* Glucagon induces the hepatic expression of inflammatory markers in vitro and in vivo. *Diabetes Obesity & Metabolism* 2023;25(2):556-569

Agents: Glucagon **Vehicle:** Saline, sterile; **Route:** Not Stated; **Species:** Mice; **Strain:** Hsd:ICR (CD-1); **Pump:** 1004; **Duration:** 28 days;

ALZET Comments: Dose (1 µg/h); 0.9% saline used; Controls received mp w/ vehicle; animal info (Four-week-old male mice); functionality of pump verified by measuring residual volume; diabetes; immunology

Q10726: H. V. Willingenburg, *et al.* Validation of a Dried Blood Spot Method to Measure Tacrolimus Concentrations in Small Volumes of Mouse Blood. *Bioanalysis* 2022;

Agents: Tacrolimus **Vehicle:** DMSO; EtOH; **Route:** SC; **Species:** Mice; **Strain:** Not Stated; **Pump:** 2004; **Duration:** 28 days;

ALZET Comments: Dose (1 or 3 mg/kg/day); 50% DMSO and EtOH used; animal info (Female; Male; 12-20 months old); immunology;

Q10700: C. L. Thio, *et al.* The Ketone Body Beta-Hydroxybutyrate Mitigates ILC2-Driven Airway Inflammation by Regulating Mast Cell Function. *Cell Reports* 2022;40(13):111437

Agents: Beta-hydroxybutyrate **Vehicle:** PBS; **Route:** SC; **Species:** Mice; **Strain:** Not Stated; **Pump:** Not Stated; **Duration:** 14 days;

ALZET Comments: Dose: (2.5 mg/ml) Controls received mp w/ vehicle; animal info: Age-matched (6-8 weeks) female mice; immunology

Q10653: M. Radosevic, *et al.* Allosteric Modulation of NMDARs Reverses Patients' Autoantibody Effects in Mice. *Neurology Neuroimmunology & Neuroinflammation* 2022;9(1):

Agents: CSF, patient; CSF, control **Vehicle:** Not Stated; **Route:** CSF/CNS (intracerebroventricular); **Species:** Mice; **Strain:** C57BL/6J; **Pump:** 1002; **Duration:** 14 days;

ALZET Comments: animal info (141 male ; 8-10 weeks old); immunology; Therapeutic indication (Anti-NMDAR encephalitis);

Q10638: Y. Ozaki, *et al.* Neuron-Derived Neurotrophic Factor Protects Against Dexamethasone-Induced Skeletal Muscle Atrophy. *Biochemical and Biophysical Research Communications* 2022;593(5-12

Agents: Dexamethasone **Vehicle:** Not Stated; **Route:** Not Stated; **Species:** Mice; **Strain:** Wild-type; NDNF-KO; **Pump:** 2002; **Duration:** 14 days;

ALZET Comments: Dose (23 µg/day); Controls received mp w/ vehicle; animal info (; 8-10 weeks old); immunology; Therapeutic indication (Muscle atrophy);



Q10633: B. M. Oliveira, *et al.* Calcitriol Reduces the Inflammation, Endothelial Damage and Oxidative Stress in AKI Caused by Cisplatin. International Journal of Molecular Science 2022;23(24):

Agents: Calcitriol **Vehicle:** Saline; **Route:** SC; **Species:** Rat; **Strain:** Hannover; **Pump:** 2004; **Duration:** 5 days;

ALZET Comments: Dose (6 ng/day); (0.9% NaCl) used; Controls received mp w/ vehicle; animal info (male rats (200–300 g) immunology;

Q10585: T. Kumagawa, *et al.* Anti-Inflammatory Effect of P2Y1 Receptor Blocker MRS2179 in a Rat Model of Traumatic Brain Injury. Brain Research Bulletin 2022;181(46-54

Agents: MRS2179 **Vehicle:** CSF, artificial; **Route:** SC; **Species:** Rat; **Strain:** Not Stated; **Pump:** 2001; **Duration:** Not Stated;

ALZET Comments: Controls received mp w/ vehicle; animal info (Male; Weighed 258-462 g; 30 total used); behavioral testing (Beam walk test, Neurological response test, Plus maze test); ALZET brain infusion kit 2 used; immunology; Therapeutic indication (Cerebral contusion injury);

Q10584: K. Kudo, *et al.* Secreted Phospholipase A(2) Modifies Extracellular Vesicles and Accelerates B Cell Lymphoma. Cell Metabolism 2022;34(4):615-633 e8

Agents: Varespladib **Vehicle:** Sulfobutylether-beta-cyclodextrin; **Route:** Intraperitoneal; **Species:** Mice; **Strain:** NOG; **Pump:** 2006; 1004; **Duration:** 3 weeks;

ALZET Comments: Dose (1 ug/g body weight/day); Controls received mp w/ vehicle; mouse jugular catheter used; animal info: humanized mice; Varespladib is a sPLA2 inhibitor; immunology;

Q10580: H. Kosaka, *et al.* Role of Substance P-Dependent Chemotactic Signaling in Postoperative Adhesion Formation. Journal of Surgical Research 2022;270(49-57

Agents: SB225002 **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice; **Strain:** Wild-type BALB/c; **Pump:** 2001D; **Duration:** 24 hours;

ALZET Comments: Dose (800 ug/mouse); animal info (mice; 20 g); SB225002 is a CSCR2 antagonist; immunology;

Q10579: J. Kopecky, *et al.* Intratumoral Administration of the Antisecretory Peptide AF16 Cures Murine Gliomas and Modulates Macrophage Functions. Scientific Reports 2022;12(1):4609

Agents: Temozolomide; AF16 **Vehicle:** Not Stated; **Route:** CSF/CNS (intratumoral); **Species:** Mice; **Strain:** C57BL/6; **Pump:** 1003D; **Duration:** 3 days;

ALZET Comments: Dose (180 mg/72 ul; 300 ug/72 ul); animal info (Female; 8-10 weeks old); peptides; immunology; cancer (Glioblastoma);

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

Q10543: C. Hemmers, *et al.* Chemokine CCL9 Is Upregulated Early in Chronic Kidney Disease and Counteracts Kidney Inflammation and Fibrosis. Biomedicine 2022;10(2):

Agents: CCL6; CCL9 **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Pump:** 2002; **Duration:** Not Stated;

ALZET Comments: Dose (1 µg/day); 0.9% NaCl used; Controls received mp w/ vehicle; animal info (Female; 8-12 weeks old; C57BL/6J); immunology (chronic kidney disease)

Q10530: E. Gondoh, *et al.* Possible mechanism for improving the endogenous immune system through the blockade of peripheral mu-opioid receptors by treatment with naldemedine. British Journal of Cancer 2022;127(8):1565-1574

Agents: Methylnaltrexone **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Pump:** Not Stated; **Duration:** 21 days;

ALZET Comments: "Dose: (0.1 ml/10g) Controls received mp w/ vehicle; animal info: Male ICR mice (20–25 g) behavioral testing: Hot-plate test; methylnaltrexone is a peripheral MOR antagonist; immunology



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; **Pump:** 1004; **Duration:** 14 days; **ALZET Comments:** Dose: (.42 µg/h); animal info: NOD/SCID/IL2rg^{-/-} (NSG) 8–12-week-old; peptide; immunology;

Q10470: T. Emoto, *et al.* Colony stimulating factor-1 producing endothelial cells and mesenchymal stromal cells maintain monocytes within a perivascular bone marrow niche. *Immunity* 2022;55(5):862-878 e8

Agents: Immunoglobulin G1, rat isotype; anti-CSF-1 antibody; immunoglobulin G2b, rat isotype; anti-CD115 antibody **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice; **Pump:** 2001; **Duration:** 7 days;

ALZET Comments: Dose: (IgG1, anti-CSF-1: 50 µg/day; IgG2b, anti-CD115: 135 µg/day); Controls received mp w/ vehicle; animal info: wildtype: C57Bl/6J mice, 8–10 weeks of age, Female and male reporter mice; Immunoglobulin G1 aka (IgG1); immunology;

Q10464: P. Ding, *et al.* Toll-like receptor 9 deficiency induces osteoclastic bone loss via gut microbiota-associated systemic chronic inflammation. *Bone Research* 2022;10(1):42

Agents: TNFalpha antibody; IgG **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice; **Pump:** Not Stated; **Duration:** 6 weeks; **ALZET Comments:** animal info: 6-week-old male TLR9^{-/-} or WT mice; Immunoglobulin G aka (IgG); immunology

Q10599: L. Di Cesare Mannelli, *et al.* Neuronal Alarmin IL-1alpha Evokes Astrocyte-Mediated Protective Signals: Effectiveness in Chemotherapy-Induced Neuropathic Pain. *Neurobiology of Disease* 2022;168(105716

Agents: Interleukin-1a **Vehicle:** Saline; **Route:** CSF/CNS (intrathecal); **Species:** Rat; **Pump:** 1002; **Duration:** 10 days; **ALZET Comments:** Dose (0.25 mL/h); Controls received mp w/ vehicle; animal info (Male; Weighed about 200–250 g); behavioral testing (Paw pressure test; Cold plate test); immunology;

Q10369: U. Chalise, *et al.* S100A9 is a functional effector of infarct wall thinning after myocardial infarction. *Heart and Circulatory Physiology* 2022;322(2):H145–H155

Agents: S100A8, recombinant; S100A9, recombinant **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Pump:** 2001D; 1003D; **Duration:** 3 h; 24 h;

ALZET Comments: Dose (3.2 g/day); Controls received mp w/ vehicle; animal info (Male; 3–6 months old); immunology;

Q10414: L. Bourhy, *et al.* Silencing of amygdala circuits during sepsis prevents the development of anxiety-related behaviours. *Brain* 2022;145(4):1391–1409

Agents: Levetiracetam **Vehicle:** Saline; **Route:** CSF/CNS (right lateral ventricle); **Species:** Mice; **Pump:** 1003D; **Duration:** 3 days; **ALZET Comments:** Dose: (1 µl/h); Controls received mp w/ vehicle; animal info: Adult 2–5months old wild-type male C57Bl/6Jrj mice and adult male and female FOS-CreERT2; post op. care: treated with (0.1 mg/kg) buprenorphine 30 mins. before surgery; behavioral testing (Morris water maze; novel object location/recognition; Open field test; Light/dark box test; olfactory habituation; fear conditioning); Levetiracetam aka (LEV); ALZET brain infusion kit 3 used; Brain coordinates (stereotaxic coordinates relative to bregma, antero-posterior: –0.5 mm; medial lateral: 1 mm; dorsoventral: 2.5 mm); dental cement used; liquid bonding resin; dental acrylic; neurodegenerative (anxiety; PTSD); immunology

Q10447: J. A. Blakeley-Ruiz, *et al.* Morphine and high-fat diet differentially alter the gut microbiota composition and metabolic function in lean versus obese mice. *ISME Communications* 2022;2(1):

Agents: Morphine sulfate **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Pump:** Not Stated; **Duration:** 2 weeks;

ALZET Comments: Dose (10 mg/kg/day); Controls received mp w/ vehicle; animal info (18 total; Control group fed standard mouse diet; 2nd group w/ diet-induced obesity by eating 60% fat diet; 3rd group fed standard diet yet obese due to spontaneous mutation of leptin receptor); immunology; "This study shows that an antinociceptive dose of morphine administered continuously for two weeks via a subcutaneous osmotic pump altered the composition of the gut microbiota in mice."



Q10497: Q. Bi, *et al.* Microglia-derived PDGFB promotes neuronal potassium currents to suppress basal sympathetic tonicity and limit hypertension. *Immunity* 2022;55(8):1466-1482 e9

Agents: Diphtheria toxin; Growth factor, platelet-derived **Vehicle:** PBS; **Route:** CSF/CNS (intracerebroventricular); **Species:** Mice; **Pump:** 1002; **Duration:** 2 weeks;

ALZET Comments: Dose: (Diphtheria toxin 0.5 ng/g/day; PDGF 2.5 ng/g/day); animal info: CD11b- DTR mice; Blood pressure measured via: Tail cuff; Blood pressure measurement (p.1468) see fig.1F; Platelet-derived growth factor aka (PDGF)ALZET brain infusion kit 3 used; Brain coordinates (0.3-0.5 mm post Bregma; 1-1.5 mm lateral to the midline; 3 mm ventral to the dura); bio-adhesive glue; immunology;

Q10409: C. P. Basole, *et al.* Treatment of Experimental Autoimmune Encephalomyelitis with an Inhibitor of Phosphodiesterase-8 (PDE8). *Cells* 2022;11(4):

Agents: PF-04957325 **Vehicle:** DMSO; PBS; **Route:** SC; **Species:** Mice; **Pump:** Not Stated; **Duration:** 14 days;

ALZET Comments: Dose (15.5 mg/kg/day); Controls received mp w/ vehicle; animal info (Female; 4-6 weeks old); immunology; Therapeutic indication (Inflammatory disorders);

Q10401: N. Agarwal, *et al.* Heightened levels of plasma growth differentiation factor 15 in men living with HIV. *Physiological Reports* 2022;10(9):e15293

Agents: Synthetic Vpr **Vehicle:** Water, sterile; **Route:** SC; **Species:** Mice; **Pump:** Not Stated; **Duration:** 14 days;

ALZET Comments: "Dose: (5 ug/day); Controls received mp w/ vehicle; animal info: wild-type FVBN mice 14 to 16 week-old male mice; Synthetic Vpr aka (sVPR); peptides; immunology; HIV"

Q10400: K. M. Adusei, *et al.* Development of a high-color flow cytometry panel for immunologic analysis of tissue injury and reconstruction in a rat model. *Cells Tissues Organs* 2022;

Agents: Saline **Vehicle:** Not Stated; **Route:** SC; **Species:** Rat; **Pump:** 2ML4; **Duration:** 1 week;

ALZET Comments: animal info (Male; 10-12 weeks of age); post op. care (Buprenorphine 1mg/kg); immunology; Therapeutic indication (Tissue injury);

Q10835: B. Xu, *et al.* An Oncolytic Virus Expressing a Full-Length Antibody Enhances Antitumor Innate Immune Response to Glioblastoma. *Nature Communications* 2021;12(1):5908

Agents: aCD47-G1 **Vehicle:** Saline; **Route:** CSF/CNS; **Species:** Mice; **Pump:** 1003D; **Duration:** 72 hours;

ALZET Comments: Dose: 24 ug/day; Controls received mp w/ vehicle; animal info: Six- to eight-week-old female athymic nude mice CT2A GBM model; ALZET brain infusion kit 3 used; Brain coordinates (2mm lateral and 1mm anterior to bregma at a depth of 3 mm); immunology;

Q10728: H. Y. Won, *et al.* The Timing and Abundance of IL-2Rbeta (CD122) Expression Control Thymic iNKT Cell Generation and NKT1 Subset Differentiation. *Frontiers in Immunology* 2021;12(642856

Agents: Interleukin-15 **Vehicle:** PBS; **Route:** Not Stated; **Species:** Mice; **Pump:** 1002; **Duration:** Not Stated;

ALZET Comments: Dose: (3 µg); Controls received mp w/ vehicle; animal info: IL-2RBTg BALB/c mice; Interleukin -15 aka (IL-15)immunology; "the frequency of CD8 T cells and specifically the number of CD44hi CXCR3+ memoryphenotype CD8 T cells were substantially increased in mice that were implanted with IL-15- but not with PBS-releasing pumps"

Q10761: S. Wang, *et al.* Role of Extracellular MicroRNA-146a-5p in Host Innate Immunity and Bacterial Sepsis. *iScience* 2021;24(12):103441

Agents: microRNA-146a-5p **Vehicle:** Lipofectamine; **Route:** SC; **Species:** Mice; **Pump:** Not Stated; **Duration:** 3 days;

ALZET Comments: Dose (50 ug/mouse/day); animal info (Male; miR146a-KO; 9-12 weeks old; Weighed 20-30 g); immunology;

R0401: G. I. Vazquez Cervantes, *et al.* New Immunotherapeutic Approaches for Glioblastoma. *Journal of Immunology Research* 2021;2021(3412906

Agents: D2C7-exotoxin **Vehicle:** Not Stated; **Route:** Not Stated; **Species:** Mice; **Pump:** Not Stated; **Duration:** Not Stated;

ALZET Comments: Epidermal growth factor receptor also (EGFRvIII)immunology; cancer (immunotherapy)



Q10712: T. Utsunomiya, *et al.* Different Effects of Intramedullary Injection of Mesenchymal Stem Cells During the Acute vs. Chronic Inflammatory Phase on Bone Healing in the Murine Continuous Polyethylene Particle Infusion Model. *Frontiers in Cell and Developmental Biology* 2021;9(631063)

Agents: Polyethylene particles, contaminated **Vehicle:** BSA; PBS; **Route:** SC; **Species:** Mice; **Pump:** 2006; **Duration:** 6 weeks; **ALZET Comments:** Dose: 3.1×10^{10} particles/ml; 10% BSA/PBS vehicle used; Controls received mp w/ vehicle; animal info: 11–12-week-old BALB/c male mice; post op. care: (0.1 mg/kg of buprenorphine); Contaminated polyethylene particles aka (cPE)d; vinyl catheter used; pumps replaced every 3 weeks; immunology (chronic inflammation, bone healing)

Q10182: S. Hirose, *et al.* Impact of a Demyelination-Inducing Central Nervous System Virus on Expression of Demyelination Genes in Type 2 Lymphoid Cells. *Journal of Virology* 2021;95(4):

Agents: Interleukin 2 **Vehicle:** Not Stated; **Route:** CSF/CNS; **Species:** Mice; **Pump:** Not Stated; **Duration:** Not Stated; **ALZET Comments:** animal info: C57BL/6 mice/Interleukin-2 aka (IL-2); peptides; immunology;

Q9832: Y. Zhao, *et al.* Frontline Science: Characterization and regulation of osteoclast precursors following chronic *Porphyromonas gingivalis* infection. *Journal of Leukocyte Biology* 2020;108(4):1037–1050

Agents: *Porphyromonas gingivalis* **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Pump:** 1002; **Duration:** 14 days; **ALZET Comments:** Dose (100 ul); Controls received mp w/ vehicle; animal info (8–10 weeks old, C57BL/6); *Porphyromonas gingivalis* aka Pg ; immunology;

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; **Pump:** 1002; **Duration:** 15 days; **ALZET Comments:** Dose (1.5 mg/kg body weight); animal info (Adult male BALB/c mice (6–7 weeks old, 17–22 g)); pumps replaced every 13 days; immunology;

Q9561: C. B. Xie, *et al.* Complement-activated interferon-gamma-primed human endothelium transpresents interleukin-15 to CD8+ T cells. *Journal of Clinical Investigation* 2020;130(7):3437–3452

Agents: MCC950 **Vehicle:** DMSO; PBS; **Route:** SC; **Species:** Mice; **Pump:** 2002; **Duration:** 14 days; **ALZET Comments:** Dose (5mg/kg/day); Controls received mp w/ vehicle; MCC950 aka NLRP3 Inhibitor; immunology;

Q10781: Z. J. Wang, *et al.* Adipokine Omentin-1 Enhances Atherosclerotic Plaque Stability by Binding to Macrophage Integrin Receptor. *European Heart Journal* 2020;

Agents: Adipokine omentin-1 **Vehicle:** Not Stated; **Route:** IV (jugular); **Species:** Mice; **ALZET Comments:** animal info: ApoE^{-/-} mouse; immunology

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: IP; **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);

Q9978: A. Szeto, *et al.* Oxytocin reduces adipose tissue inflammation in obese mice. *Lipids in Health and Disease* 2020;19(1):188

Agents: Oxytocin **Vehicle:** Sodium Citrate; **Route:** SC; **Species:** Mice; **Pump:** 1004; **Duration:** 8 weeks; **ALZET Comments:** Dose (4.22 ug/day); Controls received mp w/ vehicle; animal info (Male, C57BLKS/J); pumps replaced every 6 weeks; immunology;

Q8912: C. Nocito, *et al.* Centrally Acting Angiotensin-Converting Enzyme Inhibitor Suppresses Type I Interferon Responses and Decreases Inflammation in the Periphery and the CNS in Lupus-Prone Mice. *Frontiers in Immunology* 2020;11(573677)

Agents: Interferon, alpha **Vehicle:** PBS; **Route:** SC; **Species:** Mice; **Pump:** Not Stated; **Duration:** 14 days; **ALZET Comments:** Dose (0.25 ul/h); Controls received mp w/ vehicle; animal info (NZB/W F1 female mice, 20 weeks old); behavioral testing (Forced Swim Test, Rotarod Test, Locomotor Activity Monitoring Test, Elevated Plus Maze Test); Interferon, alpha aka IFN α ; immunology;



Q8905: H. S. Nam, *et al.* Lrig1 expression prospectively identifies stem cells in the ventricular-subventricular zone that are neurogenic throughout adult life. *Neural Development* 2020;15(1):3

Agents: Ara-C **Vehicle:** CSF, artificial; **Route:** CSF/CNS (lateral ventricle); **Species:** Mice; **Pump:** Not Stated; **Duration:** 6 days;
ALZET Comments: 2% Artificial CSF used; immunology;

Q10230: R. Li, *et al.* Mapping accumulative whole-brain activities during environmental enrichment with manganese-enhanced magnetic resonance imaging. *NeuroImage* 2020;210(116588

Agents: Manganese chloride **Vehicle:** Saline; **Route:** IP; **Species:** Mice; **Pump:** 1007D; **Duration:** 7 days;

ALZET Comments: Controls received mp w/ vehicle; animal info: mice (about 8 weeks old 30.5–40.5 g); post op. care: followed by closure of the wound with surgical suture and disinfection with 75% ethanol; Manganese Chloride aka (MnCl₂)immunology;

Q8634: R. Li, *et al.* Mapping accumulative whole-brain activities during environmental enrichment with manganese-enhanced magnetic resonance imaging. *NeuroImage* 2020;210(116588

Agents: Manganese chloride **Vehicle:** Saline; **Route:** Abdomen; **Species:** Mice; **Pump:** 1007D; **Duration:** 7 days;

ALZET Comments: Dose (100 mg MnCl₂/kg); animal info (8 week old mice weighing 30.5–40.5 g); Manganese chloride aka MnCl₂; immunology;

Q8627: J. Leslie, *et al.* FPR-1 is an important regulator of neutrophil recruitment and a tissue-specific driver of pulmonary fibrosis. *JCI Insight* 2020;5(4):

Agents: Antibody, Ly6G; Antibody, IgG2a **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice; **Pump:** 2004; 1007D; **Duration:** 21 days; 1 day;

ALZET Comments: Dose (28.5 µg/ mouse/d; 57 µg/mouse/d); animal info (C57BL/6 and fpr1–/– mice (male, 8–10 weeks old)); Ly6G Antibody aka 2A3; IgG2a Antibody aka 1A8; immunology;

Q8618: J. Kwun, *et al.* Cultured thymus tissue implantation promotes donor-specific tolerance to allogeneic heart transplants. *JCI Insight* 2020;5(11):

Agents: Cyclosporine A **Vehicle:** Not Stated; **Route:** SC; **Species:** Rat; **Pump:** 2ML4; **Duration:** 4 months;

ALZET Comments: Dose (2.5 mg/kg/d); animal info (LW (RT-1l) and BN (RT-1n) rats); pumps replaced every month; Cyclosporine A aka CsA; immunology;

Q8592: T. Kohsaka, *et al.* Efficacy of relaxin for cisplatin-induced testicular dysfunction and epididymal spermatotoxicity. *Basic and Clinical Andrology* 2020;30(3

Agents: cis-Diammineplatinum (II) dichloride **Vehicle:** Saline; **Route:** SC; **Species:** Rat; **Pump:** 2001; **Duration:** 5 days;

ALZET Comments: Dose (500 ng/h); Controls received mp w/ vehicle; animal info (Sprague-Dawley male rats (7-weeks old));

Q9793: L. Kennedy, *et al.* Biliary damage and liver fibrosis are ameliorated in a novel mouse model lacking l-histidine decarboxylase/histamine signaling. *Laboratory Investigation* 2020;100(6):837-848

Agents: Histamine **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice; **Pump:** Not Stated; **Duration:** 2 weeks;

ALZET Comments: Dose (0.5 mg/kg/day); animal info (12 weeks old, Male); immunology;

Q10183: S. Hirose, *et al.* Type 2 Innate Lymphoid Cells Induce CNS Demyelination in an HSV-IL-2 Mouse Model of Multiple Sclerosis. *iScience* 2020;23(10):101549

Agents: Interleukin-2 **Vehicle:** Not Stated; **Route:** CSF/CNS; **Species:** Mice; **Pump:** Not Stated; **Duration:** Not Stated;

ALZET Comments: animal info: wild-type (WT) HSV-1Interleukin -2 aka (IL-2)peptides; immunology;

Q9265: Y. He, *et al.* hPTH(3-34)(29-34) selectively activated PKC and mimicked osteoanabolic effects of hPTH(1-34). *Bone* 2020;135(115326

Agents: Teripeptide; MY-1 **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Pump:** 2002; **Duration:** 14 days;

ALZET Comments: Dose (40 µg/kg/day hPTH(1-34); 400 µg/kg/day hPTH(3-34); 400 µg/kg/day MY-1); 0.9% Saline used; Controls received mp w/ vehicle; animal info (seven-week-old female C57BL mice); Teriparatide aka hPTH(1-34), MY-1 aka PTH analog; peptides; immunology;



Q8747: R. E. Hay, *et al.* Ghrelin Receptor Signaling Is Not Required for Glucocorticoid-Induced Obesity in Male Mice. *Endocrinology* 2020;161(3):

Agents: Ghrelin Receptor Antagonist **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Pump:** 1004; **Duration:** 28 days;

ALZET Comments: Dose (100 ug/day); Controls received mp w/ vehicle; animal info (C57BL, Male, 2-4 months old, 25-30 g);

Q8760: Z. Hai-Na, *et al.* Atorvastatin ameliorates depressive behaviors and neuroinflammatory in streptozotocin-induced diabetic mice. *Psychopharmacology (Berl)* 2020;237(3):695-705

Agents: Atorvastatin **Vehicle:** CSF, artificial; **Route:** CSF/CNS; **Species:** Mice; **Pump:** Not Stated; **Duration:** 3 weeks;

ALZET Comments: Dose (1 ug or 5 ug); animal info (Male, C57BL/6, 25-30 g, 2 months old); behavioral testing (Open Field Test, Tail Suspension Test, Sucrose Preference Test, Novelty Suppressed Feeding Test); Brain coordinates ((- 0.7 mm posterior to the bregma; ± 1.2 mm lateral to the sagittal; 2.0 mm below dura); bilateral cannula used; immunology;

Q8523: L. Guyonnet, *et al.* Deletion of the myeloid endothelin-B receptor confers long-term protection from angiotensin II-mediated kidney, eye and vessel injury. *Kidney Int* 2020;98(5):1193-1209

Agents: Angiotensin II **Vehicle:** Not stated; **Route:** SC; **Species:** Mice; **Pump:** 2006; **Duration:** 6 weeks;

ALZET Comments: Dose (1µg/kg/min); Blood pressure measured via radio-telemetry system; Angiotensin II aka ANG II;

Q9244: J. R. Godin, *et al.* A silent agonist of alpha7 nicotinic acetylcholine receptors modulates inflammation ex vivo and attenuates EAE. *Brain, Behavior, and Immunity* 2020;87(286-300

Agents: Mecamylamine; 1-ethyl-4-(3-(bromo)phenyl)piperazine **Vehicle:** DMSO; PBS; **Route:** SC; **Species:** Mice; **Pump:** 2002; **Duration:** 14 days;

ALZET Comments: Dose (6.5 mg/kg/day); 5% DMSO used; Controls received mp w/ vehicle; animal info (C57BL/6J mice); 1-ethyl-4-(3-(bromo)phenyl)piperazine aka m-bromo PEP; immunology;

Q8490: J. R. Godin, *et al.* A silent agonist of alpha7 nicotinic acetylcholine receptors modulates inflammation ex vivo and attenuates EAE. *Brain Behav Immun* 2020;87(286-300

Agents: Mecamylamine; 1-ethyl-4-(3-(bromo)phenyl)piperazine; **Vehicle:** PBS; DMSO; **Route:** SC; **Species:** Mice; **Pump:** 2002; **Duration:** 14 days;

ALZET Comments: Dose (6.5 mg/kg/day); 5% DMSO used; Controls received mp w/ vehicle; animal info (C57BL/6J mice); 1-ethyl-4-(3-(bromo)phenyl)piperazine aka m-bromo PEP; immunology;

Q8758: B. D. Gerlach, *et al.* Resolvin D1 promotes the targeting and clearance of necroptotic cells. *Cell Death & Differentiation* 2020;27(2):525-539

Agents: Angiotensin II **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice; **Pump:** 2004; **Duration:** 4 weeks;

ALZET Comments: Animal info (8 weeks old, Male, ApoE -/-); immunology;

Q8466: G. Fernandez Lahore, *et al.* Vitamin D3 receptor polymorphisms regulate T cells and T cell-dependent inflammatory diseases. *Proceedings of the National Academy of Sciences of the United States of America* 2020;117(40):24986-24997

Agents: Vitamin D3 **Vehicle:** Propylene, glycol; **Route:** SC; **Species:** Mice; **Pump:** Not stated; **Duration:** 1 day;

ALZET Comments: Dose (1000 IU/kg); Controls received mp w/ vehicle; animal info (QB Mice, 10 weeks old); immunology;

Q8458: J. Enriquez Perez, *et al.* Convection-enhanced delivery of temozolomide and whole cell tumor immunizations in GL261 and KR158 experimental mouse gliomas. *BMC Cancer* 2020;20(1):7

Agents: Temozolomide **Vehicle:** PBS; Saline; **Route:** CSF/CNS (intratumoral); **Species:** Mice; **Pump:** 1003D; **Duration:** 3 days;

ALZET Comments: Dose (2.4mg/Kg/day); 0.9% NaCl used; Controls received mp w/ vehicle; animal info (C57BL/6 female mice 8-10weeks old); temozolomide aka TMZ; ALZET brain infusion kit 3 used; Brain coordinates (1.5 mm to the right and 1.0 mm anterior of the bregma); immunology;



Q9763: J. C. DuBois, *et al.* Anti-Axl antibody treatment reduces the severity of experimental autoimmune encephalomyelitis. *Journal of Neuroinflammation* 2020;17(1):324

Agents: Growth arrest-specific gene 6 **Vehicle:** Not Stated; **Route:** CNS; **Species:** Mice; **Pump:** 1104; **Duration:** 28 days;

ALZET Comments: Dose (40 ug/day); animal info (C57BL6/J, 8-12 weeks old); Growth arrest-specific gene 6 aka Gas6; immunology;

Q9206: R. E. De la Vega, *et al.* Effects of FK506 on the healing of diaphyseal, critical size defects in the rat femur. *European Cells & Materials* 2020;40(160-171

Agents: FK-506 **Vehicle:** Not stated; **Route:** SC; **Species:** Rat; **Pump:** 2ML4; **Duration:** 4 weeks;

ALZET Comments: Dose (1 mg/kg/day); animal info (male Fischer F344 rats, 16 weeks old); post op. care (buprenorphine); FK506 aka Tacrolimus; immunology;

Q9568: Y. M. Chen, *et al.* Inhibition of Hypothalamic Inhibitor kappaB Kinase beta/Nuclear Transcription Factor kappaB Pathway Attenuates Metabolism and Cardiac Dysfunction in Type 2 Diabetic Rats. *Neuroendocrinology* 2020;110(11-12):899-913

Agents: IKK β inhibitor SC-514 **Vehicle:** CSF, artificial; **Route:** CSF/CNS; **Species:** Rat; **Pump:** 2006; **Duration:** Not Stated;

ALZET Comments: "Dose (4.5 mg/mL); animal info (Male, Sprague Dawley, 8 weeks old); Brain coordinates (bregma: 3.4–3.6 mm posterior, 0.1–0.2 mm lateral, and 9.7–10 mm ventral to the dura); bilateral cannula used; dental cement used; immunology; "

Q10141: T. Chen, *et al.* Astrocyte-microglia interaction drives evolving neuromyelitis optica lesion. *Journal of Clinical Investigation* 2020;130(8):4025-4038

Agents: Immunoglobulin G, human; Immunoglobulin G, mouse **Vehicle:** Not Stated; **Route:** CNS/CSF (intrathecal); **Species:** Mice; **Pump:** Not Stated; **Duration:** 5, 7 days;

ALZET Comments: Dose IgG (1.0–10 μ g/day); Controls received mp w/ vehicle; animal info (C57BL/6J, Cx3cr1) Female, (6–8 weeks old); behavioral testing (Rotarod performance test); Immunoglobulin G aka (IgG); immunology;

Q7496: J. P. Van Beusecum, *et al.* Isolation and Adoptive Transfer of High Salt Treated Antigen-presenting Dendritic Cells. *J Vis Exp* 2019;145):

Agents: Angiotensin II **Vehicle:** Saline, Acetic Acid; **Route:** SC; **Species:** Mice; **Pump:** 1002; **Duration:** 14 days;

ALZET Comments: Dose (140 ng/kg/min); animal info (naïve male 10 week-old C57bl/6 mice); immunology;

Q7493: O. K. Travis, *et al.* Chronic infusion of interleukin-17 promotes hypertension, activation of cytolytic natural killer cells, and vascular dysfunction in pregnant rats. *Physiol Rep* 2019;7(7):e14038

Agents: Interleukin-17, A-F **Vehicle:** Not Stated; **Route:** IP; **Species:** Rat; **Pump:** 2002; **Duration:** 7 days;

ALZET Comments: Dose (150 pg/day,); animal info (pregnant Sprague-Dawley rats 250-275g); immunology;

Q6798: B. Smith, *et al.* Generation of two high affinity anti-mouse Fc γ Rn antibodies: Inhibition of IgG recycling in wild type mice and effect in a mouse model of immune thrombocytopenia. *Int Immunopharmacol* 2019;66(362-365

Agents: Antibody, anti CD41 **Vehicle:** PBS; **Route:** SC; **Species:** Mice; **Pump:** Not Stated; **Duration:** 3 days;

ALZET Comments: Dose (1 μ g/day); animal info (male BALB/c mice (> 8 weeks of age)); 4470 and 4464 are anti-CD41 antibodies; immunology; Therapeutic indication (immune thrombocytopenia);

Q7483: Shwetank, *et al.* PD-1 Dynamically Regulates Inflammation and Development of Brain-Resident Memory CD8 T Cells During Persistent Viral Encephalitis. *Front Immunol* 2019;10(783

Agents: Immunoglobulin G, control rat; Immunoglobulin G, PD-L1 rat **Vehicle:** Not Stated; **Route:** Not Stated; **Species:** Mice; **Pump:** 2002; **Duration:** 14 days;

ALZET Comments: Dose (6 mg/ml); animal info (C57BL/6NCr (WT) female mice); ALZET brain infusion kit 3 used; Brain coordinates (1.0mm lateral to midline, 0.1mm posterior to bregma, and 3.0mm dorsoventral to the skull); cyanoacrylate adhesive; immunology;



- Q9024:** S. Sharma, *et al.* Dietary Methionine Restriction Reduces Inflammation Independent of FGF21 Action. *Obesity Biology and Integrated Physiology* 2019;27(8):1305-1313
Agents: Recomb. fibroblast growth factor 21 **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Pump:** Not Stated; **Duration:** 2 Weeks;
ALZET Comments: Dose (13.6 ug/day); Controls received mp w/ vehicle; animal info (5 weeks old, C57BL/6J, Male); Recombinant fibroblast growth factor 21 aka Recombinant FGF21; immunology;
- Q8832:** C. Rocha-Resende, *et al.* Immunomodulatory role of non-neuronal cholinergic signaling in myocardial injury. *JCI Insight* 2019;5(Agents: Pyridostigmine bromide **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Pump:** 1002; **Duration:** 7 days;
ALZET Comments: Dose (3 mg/kg/day); Controls received mp w/ vehicle; animal info (C57BL/6J, 8-10 weeks old); Pyridostigmine aka PYR; immunology;
- Q8825:** N. G. Reis, *et al.* Protective effect of calcitriol on rhabdomyolysis-induced acute kidney injury in rats. *Scientific Reports* 2019;9(1):7090
Agents: Calcitriol **Vehicle:** Saline; **Route:** SC; **Species:** Rat; **Pump:** 2004; **Duration:** 7 days;
ALZET Comments: Dose (6 ng/day); 0.9% Saline used; Controls received mp w/ vehicle; animal info (Male, Wistar Hannover, 180-200 g); immunology;
- Q8796:** A. Parker, *et al.* Elevated apoptosis impairs epithelial cell turnover and shortens villi in TNF-driven intestinal inflammation. *Cell Death & Disease* 2019;10(2):108
Agents: Tumor Necrosis Factor **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice; **Pump:** 2002; **Duration:** 2 weeks;
ALZET Comments: Dose (35 ng/hr); animal info (C57BL/6, Female, 10-12 weeks old, 25 g); Tumor Necrosis Factor aka TNF;
- Q8288:** C. M. Minutti, *et al.* A Macrophage-Pericyte Axis Directs Tissue Restoration via Amphiregulin-Induced Transforming Growth Factor Beta Activation. *Immunity* 2019;50(3):645-654 e6
Agents: Integrin-av inhibitor **Vehicle:** DMSO; **Route:** SC; **Species:** Mice; **Pump:** 1007D; **Duration:** Not stated;
ALZET Comments: Dose (100 mg/kg/day); 50% DMSO used; Controls received mp w/ vehicle; Integrin-av inhibitor aka CHWM12; enzyme inhibitor (Integrin-av inhibitor); immunology;
- Q7559:** T. Matsuo, *et al.* Strain-Specific Manifestation of Lupus-like Systemic Autoimmunity Caused by Zap70 Mutation. *J Immunol* 2019;202(11):3161-3172
Agents: Poly(I:C), LPS, imiquimod, CpG-ODN1668 **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice; **Pump:** 1002, 1004; **Duration:** 14 days, 28 days;
ALZET Comments: Dose (700 ug- Poly(I:C), 280 ug-LPS, 280 ug-imiquimod, 280 ug-CpG-ODN1668); animal info (C57BL/6J); LPS aka TLR4 agonist, imiquimod aka TLR7 agonist, CpG aka TLR9 agonist, Poly(I:C) aka TLR3 agonist; immunology;
- Q8280:** D. R. Mathern, *et al.* Absence of recipient C3aR1 signaling limits expansion and differentiation of alloreactive CD8(+) T cell immunity and prolongs murine cardiac allograft survival. *Am J Transplant* 2019;19(6):1628-1640
Agents: C3aR1 antagonist **Vehicle:** DMSO; **Route:** SC; **Species:** Mice; **Pump:** Not stated; **Duration:** 14 days;
ALZET Comments: Dose (1 mmol/L); 10% DMSO used; animal info (8 weeks old); immunology;
- Q8279:** F. Matheis, *et al.* Adrenergic Signaling in Muscularis Macrophages Limits Infection-Induced Neuronal Loss. *Cell* 2019;
Agents: Selective β 2-AR agonist **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Pump:** Not stated; **Duration:** 14 days;
ALZET Comments: Dose (400 ug/day); Controls received mp w/ vehicle; animal info (C57BL/6, 7-12 weeks old); Selective β 2-AR agonist aka Salbutamol Sulfate); immunology;
- Q8267:** M. Lombardi, *et al.* Detrimental and protective action of microglial extracellular vesicles on myelin lesions: astrocyte involvement in remyelination failure. *Acta Neuropathol* 2019;138(6):987-1012
Agents: Extracellular Vesicles **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Pump:** 1007D; **Duration:** 4 days;
ALZET Comments: Dose (1.5 ul/hr); Controls received mp w/ vehicle; animal info (2.5-4 months old, C57BL/6);