



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

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/6J 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

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);

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);

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;

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); Clozapine-N-oxide aka CNO; immunology;

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 (MnCl $_2$)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 MnCl $_2$ /kg); animal info (8 week old mice weighing 30.5–40.5 g); Manganese chloride aka MnCl $_2$; 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 μ g/ mouse/d; 57 μ g/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; immunology;

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: IKKβ 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 μg/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 FcRn 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 µg/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 (03 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; immunology;

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); Extracellular vesicles aka EV; immunology;

Q8261: Y. Liu, *et al.* Complementary Roles of GCN5 and PCAF in Foxp3+ T-Regulatory Cells. *Cancers (Basel)* 2019;11(4):

Agents: Tat peptide; H3-20-CoA-Tat **Vehicle:** Not stated; **Route:** SC; **Species:** Mice; **Pump:** Not stated; **Duration:** 14 days;

ALZET Comments: Dose (10 uM); Controls received mp w/ vehicle; animal info (BALB/c); peptides; immunology;

Q7620: N. Kokuho, *et al.* Analyses of alveolar epithelial injury via lipid-related stress in mammalian target of rapamycin inhibitor-induced lung disease. *Lab Invest* 2019;99(6):853-865

Agents: Bleomycin hydrochloride **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Pump:** 2001; **Duration:** 14 days;

ALZET Comments: Dose (100 mg/kg); Controls received i.p. injection w/ DMSO; animal info (7 weeks, female, C57BL/6); comparison of i.p. temsirolimus injection vs mp; BLM causes marked inflammation and epithelial injury in the lung; immunology; BLM dissolved in saline for pump (injury group) although controls used i.p. injected DMSO;

Q7599: Z. Huang, *et al.* Antibody neutralization of microbiota-derived circulating peptidoglycan dampens inflammation and ameliorates autoimmunity. *Nat Microbiol* 2019;4(5):766-773

Agents: glutamine, muramyl-l-alanyl-d-iso- **Vehicle:** PBS; **Route:** SC; **Species:** Mice; **Pump:** 2004; **Duration:** 24 days;

ALZET Comments: Dose (200 μ l of 1, 2.5, 5mg/ml MDP); Controls received mp w/ vehicle; animal info (8-10 weeks, male, DBA/1J); functionality of mp verified by icELISA of collected serum; muramyl-l-alanyl-d-iso-glutamine (MDP) is a conserved and minimal immunostimulatory structure of bacterial peptidoglycan; immunology; 1 and 5 mg/ml solutions used to assess the effect of stably elevated MDP levels on arthritis while 2.5 and 5 mg/ml solutions used to reach and maintain elevated levels of circulating PGN over an extended period for disease development;

Q7583: J. D. Hill, *et al.* Chronic Intrahippocampal Infusion of HIV-1 Neurotoxic Proteins: A Novel Mouse Model of HIV-1 Associated Inflammation and Neural Stem Cell Dysfunction. *J Neuroimmune Pharmacol* 2019;

Agents: envelope glycoprotein gp120; transactivator of transcription **Vehicle:** CSF, artificial; **Route:** CSF/CNS (hippocampus);

Species: Mice; **Pump:** 1002; **Duration:** 14 days;

ALZET Comments: Dose ((gp120 36 ng/day), (tat 18 ng/day)); Controls received mp w/ vehicle; animal info (12 weeks, male, C57BL/6); gp120 and tat are HIV-1 neurotoxic proteins; ALZET brain infusion kit 3 used; Brain coordinates (-2.0mm antero-posterior, +1.5mm medial-lateral, -1.5mm dorso-ventral); immunology;



Q7344: R. Gutierrez Jauregui, *et al.* IL-1beta Promotes Staphylococcus aureus Biofilms on Implants in vivo. *Front Immunol* 2019;10(1082)

Agents: Interleukin-1 beta; Interleukin-6; Interleukin-10; Interleukin-12; Interleukin-17; Interleukin-23; Interferon, gamma; Tumor Necrosis Factor, alpha; Interleukin-1 beta, anti; Transforming Growth Factor-B1, anti **Vehicle:** PBS; **Route:** SC; **Species:** Mice; **Pump:** 1007D; **Duration:** 10 Days;

ALZET Comments: Dose (IL-1b (83µg/ml); IL-6 (83µg/ml); IL-10 (166µg/ml); IL-12 (83µg/ml); IL-17 (125µg/ml); IL-23 (166µg/ml); IFNg (83µg/ml); TNFa (166µg/ml); anti-TGF-b1 (166µg/ml); anti-IL-1b (150µg/ml)); Controls received mp w/ vehicle; animal info (Eight- to twelve-week-old female C57BL/6 mice); Immunology ("evaluate the suitability of osmotic pumps as a model for biofilms in implant associated infections, we implanted osmotic pumps pre-colonized with bioluminescent Staphylococcus aureus");

Q8197: P. F. Fuchs, *et al.* Fibrin fragment E potentiates TGF-β-induced myofibroblast activation and recruitment. *bioRxiv* 2019;

Agents: Fibrin Degradation Product Fragment E **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Pump:** 1002; **Duration:** 2 weeks;

ALZET Comments: Dose (200ng/µl); 0.1% Saline used; Controls received mp w/ vehicle; animal info (10-week-old, female C57BL/6 (Crl) mice); Fibrin Degradation Product Fragment E aka FnE; immunology;

Q8181: P. Chandra, *et al.* Fatty acid oxidation impairs macrophage effector functions that control Mycobacterium tuberculosis. *Not Stated* 2019;

Agents: Temozolomide **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Pump:** 2002; **Duration:** 2 weeks;

ALZET Comments: Dose (16.8 mg/kg/day or 50 mg/kg/day); Controls received mp w/ vehicle; animal info (8-12 week old C57BL/6 mice); half-life (less than 1 hour); Temozolomide aka TMZ; immunology;

Q8690: L. P. Araujo, *et al.* The Sympathetic Nervous System Mitigates CNS Autoimmunity via beta2-Adrenergic Receptor Signaling in Immune Cells. *Cell Rep* 2019;28(12):3120-3130 e5

Agents: b2-Adrenergic receptor antagonist **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Pump:** 1002; **Duration:** 10 days;

ALZET Comments: Dose (10 mg/kg/day); Controls received mp w/ vehicle; animal info (Female, 7-8 weeks old, C57BL/6); b2-Adrenergic receptor antagonist aka Adbr2 ; immunology;

Q9007: N. Zhao, *et al.* After Treatment with Methylene Blue is Effective against Delayed Encephalopathy after Acute Carbon Monoxide Poisoning. *Basic & Clinical Pharmacology & Toxicology* 2018;122(5):470-480

Agents: Methylene blue **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice; **Pump:** 1007D; **Duration:** 7 days;

ALZET Comments: Dose (0.5 mg/kg/day); Controls received sham surgery; animal info (male, Sprague-Dawley); behavioral testing (Barnes maze); toxicology; immunology; Therapeutic indication (methylene blue treatment initiated 1 hr after CO exposure decreased pro-inflammatory cytokine levels, suppressed oxidative damage, preserved mitochondrial function, reduced neuronal apoptosis in the hippocampus and alleviated cognitive impairments in a rat model of severe CO poisoning);

Q8998: Z. Zhang, *et al.* Mouse macrophage specific knockout of SIRT1 influences macrophage polarization and promotes angiotensin II-induced abdominal aortic aneurysm formation. *Journal of Genetics and Genomics* 2018;45(1):25-32

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

ALZET Comments: Dose (1.44 mg/kg/day); Controls received sham surgery and mp w/ vehicle; animal info (9-12 weeks, male, SIRT1(flox/flox) and Lyz2-Cre(+/-);SIRT1(flox/flox)); cardiovascular; immunology; mp used to induce abdominal aortic aneurysm;

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

ALZET Comments: Dose (2 mg/kg/day); Controls did not receive mp; animal info (male, C57BL/6 and BALB/c); 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;



Q8780: A. Willeford, *et al.* CaMKII δ -mediated inflammatory gene expression and inflammasome activation in cardiomyocytes initiate inflammation and induce fibrosis. *JCI Insight* 2018;3(12):

Agents: Angiotensin II **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Pump:** 1007D; **Duration:** 7 days;

ALZET Comments: Dose (1.5 $\mu\text{g}/\text{kg}/\text{min}$); Controls received mp w/ vehicle; animal info (8-12 weeks, male, Camk2d(fl/fl), CaMKII δ KO, and Nlrp3(-/-)); comparison of IP injection vs mp; cardiovascular; immunology; AngII used to induce inflammatory and fibrotic responses;

Q8776: P. Wang, *et al.* Sodium butyrate triggers a functional elongation of microglial process via Akt-small RhoGTPase activation and HDACs inhibition. *Neurobiology of Disease* 2018;111(12-25)

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

ALZET Comments: Dose (5 $\mu\text{g}/\text{mL}$ at 0.5 $\mu\text{L}/\text{h}$); 3% DMSO in aCSF used; Controls received mp w/ vehicle; animal info (8-10 weeks, male, C57BL/6J); behavioral testing (forced swimming, tail suspension, sucrose preference); SB is a sodium salt form of butyrate produced by fermentation of dietary fibers in the gut; enzyme inhibitor (protein kinase B); Brain coordinates (-0.2 mm anterior and 1.0 mm lateral relative to bregma and 2.3 mm below the surface of the skull); Cannula placement verified via stereotaxic frame; immunology; mp model 2002 was used for chronic injections and model 1003D for acute injections;

Q7839: X. Wan, *et al.* Pancreatic islets communicate with lymphoid tissues via exocytosis of insulin peptides. *Nature* 2018;560(7716):107-111

Agents: S961 **Vehicle:** PBS; **Route:** SC; **Species:** Mice; **Pump:** 2001; **Duration:** 7 days;

ALZET Comments: Dose (20 nMol/week); Controls received mp w/ vehicle; animal info (3 weeks, female, NOD); S961 is an insulin receptor antagonist; immunology;

Q7929: S. B. Vasamsetti, *et al.* Sympathetic Neuronal Activation Triggers Myeloid Progenitor Proliferation and Differentiation. *Immunity* 2018;49(1):93-106 e7

Agents: ICI-118,551 hydrochloride; Toxin, Diphtheria; reserpine; captopril; norepinephrine **Vehicle:** PBS; **Route:** Intrasplenic; **Species:** Mice; **Pump:** 1002; **Duration:** 1, 2, 3 weeks;

ALZET Comments: "Dose ((ICI-118,551 12 mg/kg/hr), (Diphtheria Toxin 5 mg/kg/day), (reserpine 5mg/kg/day), (captopril 6mg/kg/day), (norepinephrine 5mg/kg/day)); Controls received mp w/ vehicle; animal info (10-12 weeks, Apoe(-/-)); comparison of intrasplenic injection vs mp; ICI-118,551 hydrochloride is a selective antagonist of the beta2 adrenergic receptor. angiotensin converting enzyme (ACE) inhibitor. Reserpine blocks the uptake of catecholamines into synaptic vesicles; Reserpine is an enzyme inhibitor (vesicular monoamine transporter 2); immunology; Diphtheria toxin used to deplete TH+ leukocytes. Splenic nerves were depleted by intrasplenic DT using mp for 7 days; Therapeutic indication (ICI-118,551 reduced splenic GMP proliferation and inflammatory myeloid cell generation); "

Q7858: T. F. Rowley, *et al.* Engineered hexavalent Fc proteins with enhanced Fc-gamma receptor avidity provide insights into immune-complex interactions. *Communications Biology* 2018;1(146)

Agents: Antibody, anti-CD41 **Vehicle:** PBS; **Route:** SC; **Species:** Mice; **Pump:** Not Stated; **Duration:** 7 days;

ALZET Comments: Dose (82.5 $\mu\text{g}/\text{ml}$ at 0.5 $\mu\text{l}/\text{h}$); Controls received mp w/ vehicle; animal info (6 weeks, male, BALB/c); immunology; minipumps used to induce chronic ITP (immune thrombocytic purpura);

Q7231: I. Michailidou, *et al.* Systemic inhibition of the membrane attack complex impedes neuroinflammation in chronic relapsing experimental autoimmune encephalomyelitis. *Acta Neuropathologica Communications* 2018;6(1):36

Agents: Oligonucleotide, antisense **Vehicle:** PBS; **Route:** SC; **Species:** Mice; **Pump:** 1002; **Duration:** 14 days;

ALZET Comments: Dose (5 mg/kg); animal info (Male 7 to 8-week-old Biozzi AB/H mice, 26.93 \pm 0.33 g); C6 antisense aka C6 Locked nucleic acid oligonucleotide; antisense (C6); immunology;



Q7769: F. Kurosaki, *et al.* AAV6-Mediated IL-10 Expression in the Lung Ameliorates Bleomycin-Induced Pulmonary Fibrosis in Mice. *Human Gene Therapy* 2018;29(11):1242-1251

Agents: bleomycin **Vehicle:** Saline, sterile; **Route:** SC; **Species:** Mice; **Pump:** 2001; **Duration:** 7 days;

ALZET Comments: Dose (1 µL/h of 125 mg/kg bleomycin); Controls received no vector and mp w/ vehicle; animal info (10-12 weeks, male, C57BL6/J, 25-30g); immunology;

Q7756: C. A. Huppe, *et al.* A sphingosine-1-phosphate receptor 1 agonist inhibits tertiary lymphoid tissue reactivation and hypersensitivity in the lung. *Mucosal Immunol* 2018;11(1):112-119

Agents: RP-001 **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Pump:** Not Stated; **Duration:** 3, 5 days;

ALZET Comments: Dose (1 mg/kg/day); Controls received mp w/ vehicle; animal info (8 weeks, female, C57BL/6); RP-001 is a S1P1 agonist; immunology; Therapeutic indication (interferes with TLT reactivation and alleviates critical pathognomonic features of an experimental hypersensitivity pneumonitis-like disease);

Q7828: H. Haselmann, *et al.* Human Autoantibodies against the AMPA Receptor Subunit GluA2 Induce Receptor Reorganization and Memory Dysfunction. *Neuron* 2018;100(1):91-105 e9

Agents: Immunoglobulin G, human; antibody, human IgG **Vehicle:** Saline; **Route:** CSF/CNS (lateral ventricle); **Species:** Mice; **Pump:** 1002; **Duration:** 14 days;

ALZET Comments: Dose (10mg/ml at 0.25 µl/h); Controls received mp w/ vehicle; animal info (male, C57BL/6J); behavioral testing (Novel object recognition, locomotor activity box, elevated plus maze, black-and-white test); comparison of stereotactic microinjection vs mp; a-GluA2 IgG are autoantibodies against only the GluA2 subunit of the AMPAR; Brain coordinates (0.2 mm posterior and ± 1.00 mm lateral from bregma, depth 2.2 mm); bilateral cannula used (PlasticsOne, model 3280PD-2.0/SP); neurodegenerative (Autoimmune encephalitis); immunology; purified IgG fraction and antibody sources described on page e2

Q7809: J. R. Ferdinand, *et al.* Cleavage of TL1A Differentially Regulates Its Effects on Innate and Adaptive Immune Cells. *J Immunol* 2018;200(4):1360-1369

Agents: TL1A, recombinant **Vehicle:** PBS; **Route:** SC; **Species:** Mice; **Pump:** 2006; **Duration:** 6 weeks;

ALZET Comments: Dose (500pg/day or 500 ng/day); Controls received mp w/ vehicle; animal info (8-10 or 12 weeks, C57NL/6-Jax); TL1A (TNFSF15) is a TNF superfamily cytokine; immunology; 500ng/day using 12-week-old mice listed on p.1361. 500pg/day using 8-10-week-old mice listed on p.1366.;

Q10078: A. Alizadeh, *et al.* Neuregulin-1 elicits a regulatory immune response following traumatic spinal cord injury. *Journal of Neuroinflammation* 2018;15(1):53

Agents: Neregulin-1 **Vehicle:** Bovine serum albumin, BSA in saline; **Route:** SC; **Species:** Rat; **Pump:** 1003D; 2001; 2002; 2006; **Duration:** 3 days; 7 days; 14 days; 42 days;

ALZET Comments: Dose (2ug/day); 0.1% bovine serum albumin, BSA, in 0.9% saline used; 2 sets of controls. 1 uninjured no pumps, 2 SCI injury received mp w/ vehicle; animal info (female, 8-10weeks, 250g Sprague-Dawley); post op. care (buprenorphine 0.05mg/kg; meloxicam 2mg/kg, 3 additional doses buprenorphine every 8h); Neuregulin-1 aka Nrg-1 aka rhNrg-1β1; delayed delivery (30min after SCI); spinal cord injury; immunology; We provide the first evidence of a significant regulatory role for Nrg-1 in neuroinflammation after SCI. Establishes the promise of systemic Nrg-1 treatment as a candidate immunotherapy for traumatic SCI and other CNS neuroinflammatory conditions.; Therapeutic indication (neuroinflammatory conditions);