Recent References (2021-Present) on Tolerance and Dependence Research Using ALZET® Osmotic Pumps

Q10571: L. Kennedy, *et al.* Secretin Alleviates Biliary and Liver Injury During Late-Stage Primary Biliary Cholangitis Via Restoration of Secretory Processes. Journal of Hepathology 2023;78(1):99-113
Agents: Secretin **Vehicle:** Not Stated; **Route:** IP; **Species:** Mice; **Pump:** 1004; **Duration:** 1 week; 8 weeks;
ALZET Comments: Dose: (4 ug/kg body weight/day); animal info: 32-week-old female and male dnTGFbRII and WT mice; Secretrin aka (SCT); dependence; Secretin- Primary biliary cholangitis (PBC)

Q10459: E. O. Cruz-Lopez, *et al.* Blood pressure-independent renoprotective effects of small interference RNA targeting liver angiotensinogen in experimental diabetes. British Pharmacological Society 2023;180(1):80-93
Agents: Valsartan; Captopril **Vehicle:** Not Stated; **Route:** SC; **Species:** Rat; **Pump:** 2ML4; **Duration:** 3 weeks;
ALZET Comments: "Dose: Valsartan (4 mg-kg/day); Captopril (6 mg-kg/day); animal info: Male, heterozygous Ren2 rats (10-week-old; weight 300–500 g); Blood pressure measured via: radiotelemetry
transmitters; Blood pressure results see (pg.5)antihypertensive; antisense (Oligonucleotides); dependence; "

Q10621: F. Navarrete, *et al.* Biomarkers of the Endocannabinoid System in Substance Use Disorders. Biomolecules 2022;12(3):
Agents: Nicotine **Vehicle:** Not Stated; **Route:** Not Stated; **Species:** Mice; **Pump:** Not Stated; **Duration:** 14 days;
ALZET Comments: Dose (25 mg/kg/day); animal info (Male C57BL/6J); toxicology; dependence;

Q10757: E. Y. P. Kung Huang, *et al.* Effect of Dextromethorphan on Nicotine-Induced Reward, Behavioral Sensitization, Withdrawal Signs, and Drug Seeking-Related behavior in Rats. Nicotine and Tobacco Research 2022;
Agents: Nicotine, Dextromethorphan **Vehicle:** Saline; **Route:** SC; **Species:** Rat; **Pump:** 2ML1; **Duration:** 7 Days;
ALZET Comments: Dose (Nicotine 9 mg/kg/day; DM 10 mg/kg/day); animal info (Male Sprague Dawley; 8 weeks old; Weighed 300-400 g); behavioral testing (Locomoter activity); dependence; Therapeutic indication (Nicotine dependence);

Q10609: C. M. Francisco, *et al.* Resveratrol Reverses Male Reproductive Damage in Rats Exposed to Nicotine During The Intrauterine Phase and Breastfeeding. Andrology 2022;10(5):951-972
Agents: Nicotine **Vehicle:** Not Stated; **Route:** SC; **Species:** Rat; **Pump:** 2ML4; **Duration:** 50 days;
ALZET Comments: Dose: Nicotine (2 mg/kg/day); Controls received mp w/ vehicle; animal info: Wistar rats pregnant female; cyanoacrylate glue used; pumps replaced after 28 days; dependence

Q10519: A. C. Dutra-Tavares, *et al.* Adolescent nicotine potentiates the inhibitory effect of raclopride, a D(2)R antagonist, on phencyclidine-sensitized psychotic-like behavior in mice. Toxicology and Applied Pharmacology 2022;456(116282
Agents: Nicotine **Vehicle:** Water, milli-Q; **Route:** SC; **Species:** Mice; **Pump:** 1002; **Duration:** 8 days;
ALZET Comments: Dose (24 mg/kg/day); Controls received mp w/ vehicle; animal info: C57BL/6 mice, post op. care: flunixin and enrofloxacin for pain and infection management; behavioral testing (Open field); dependence; no stress (see pg. 3)

Q10509: B. Cruz, *et al.* Alcohol self-administration and nicotine withdrawal alter biomarkers of stress and inflammation and prefrontal cortex changes in Gbeta subunits. The American Journal of Drug and Alcohol Abuse 2022;1-12
Agents: Nicotine, hydrogren ditartrate **Vehicle:** Saline; **Route:** SC; **Species:** Rat; **Pump:** 2ML2; **Duration:** 14 days;
ALZET Comments: Dose (3.2 mg/kg/day); 0.9% saline used; animal info (Male; Rats; Weighed 250-300 g); wound clips used; dependence;

Q10457: K. E. Claflin, *et al.* Pharmacological FGF21 signals to glutamatergic neurons to enhance leptin action and lower body weight during obesity. Molecular Metabolism 2022;64(101564
Agents: Fibroblast growth factor 21; Leptin; Leptin antagonist **Vehicle:** Not Stated; **Route:** SC; CSF/CNS; **Species:** Mice; **Pump:** 1002; 1004; **Duration:** 2 weeks;
ALZET Comments: Dose: FGF21 (1 mg/kg/day); Leptin (250 ng/h); Leptin antagonist (8 ug/day); Controls received mp w/ vehicle; animal info: mice: DIO WT mice: 16-18-week-old WTt; 12 week-old WT mice; Fibroblast growth factor 21 aka (FGF21); ALZET brain infusion kit 3 used; Brain coordinates (1 mm lateral, 0.34 mm caudal to bregma, and 2.5 mm ventral from the surface of the skull.); dental cement used; Vetbond (3 M); dependence;

Q10453: D. Chen, *et al.* Qingda granule alleviate angiotensin ii -induced hypertensive renal injury by suppressing oxidative stress and inflammation through NOX1 and NF-kappaB pathways. Biomedicine & Pharmacotherapy 2022;153(113407
Agents: Angiotensin II; Qingda granule **Vehicle:** Saline; **Route:** Not Stated; **Species:** Mice; **Pump:** 2002; **Duration:** Not Stated;
ALZET Comments: Dose: (500 ng/kg/min.)Controls received mp w/ vehicle; animal info: C57BL/6 mice aged 6–8 weeks; Blood pressure measured via: noninvasive BP monitor; Blood pressure measurement (pg.5) fig. 1Angiotensin II aka (Ang II)dependence; cardiovascular; (Hypertension)

Q10661: A. Rivera, *et al.* Dopamine D(4) Receptor Is a Regulator of Morphine-Induced Plasticity in the Rat Dorsal Striatum. Cells 2021;11(1):
Agents: Morphine; PD168077 **Vehicle:** DMSO; Saline; **Route:** SC; **Species:** Rat; **Pump:** Not Stated; **Duration:** 7 days; 14 days;
ALZET Comments: Dose: (morphine 20 mg/kg/d; PD168077 1 mg/kg/d); 2% DMSO, 0.9% NaCl vehicle used; animal info (1-2 months old; Male Sprague Dawley); post op. care: animals kept warm on heating pad; dependence

Q10641: F. Pantouli, *et al.* Comparison of Morphine, Oxycodone and the Biased MOR Agonist SR-17018 For Tolerance and Efficacy in Mouse Models of Pain. Neuropharmacology 2021;185(108439
Agents: Morphine **Vehicle:** Saline; **Route:** Not Stated; **Species:** Mice; **Pump:** 2001; **Duration:** 6 days;
ALZET Comments: Controls received mp w/ vehicle; animal info: C57BL/6J mice 10–20 weeks of age (23–32 g)dependence; pain

R0399: S. Mitra, *et al.* A Review of Techniques for Biodelivery of Nerve Growth Factor (NGF)
to the Brain in Relation to Alzheimer's Disease. Advances in Experimental Medicine and Biology 2021;1331(171-191
Agents: Nerve growth factor; Brain-derived neurotropic factor **Vehicle:** Not Stated; **Route:** CSF/CNS (intracerebral); **Species:** Rat; **Pump:** Not Stated; **Duration:** Not Stated;
ALZET Comments: "Nerve growth factor aka (NGF); dependence; Different invasive strategies of NGF delivery to the brain have been reported to show that indeed NGF could be a promising therapeutic in AD, either intracerebroventricular administration (pg.194)"

Q10533: T. E. Grieder, *et al.* Administration of BDNF in the ventral tegmental area produces a switch from a nicotine-non-dependent D1R-mediated motivational state to a nicotine-dependent-like D2R-mediated motivational state. European Journal of Neuroscience 2021;55(3):714-724
Agents: Nicotine hydrogen tartrate **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Pump:** 1002; **Duration:** 12 days;
ALZET Comments: Dose: (7 mg/kg/day)Controls received mp w/ vehicle; animal info: 10 weeks old C57BL/6 WT mice; dependence;

Q10430: M. Crespo-Masip, *et al.* Elimination of Vitamin D Signaling Causes Increased Mortality in a Model of Overactivation of the Insulin Receptor: Role of Lipid Metabolism. Nutrients 2022;14(7):
Agents: Glucose, D-(+); Mannitol, D- **Vehicle:** Not Stated; **Route:** CSF/CNS (intracerebroventricular); **Species:** Mice; **Pump:** 2006; **Duration:** 42 days;
ALZET Comments: Controls received mp w/ vehicle; animal info: Cre-negative littermates were used as controls (CNT). Twenty-one days after birth, dependence; Taken together, the results shown in the present paper point to the paramount role of an adequate (vitamin D) signaling pathway in hypoglycemia induced by overactivation of the insulin receptor. Thus, in T1 diabetic patients, especially in the lean phenotype, maintaining
correct levels of vitamin D could support proper lipid metabolism and decrease deaths induced by insulin dosing errors. (pg.13)"; diabetes

Q10367: S. Canpolat, *et al.* Irisin ameliorates male sexual dysfunction in paroxetine-treated male rats. Psychoneuroendocrinology 2022;136(105597
Agents: Irisin **Vehicle:** Water, deionized; **Route:** SC; **Species:** Rat; **Pump:** 2004; **Duration:** 28 days;
ALZET Comments: Dose (100 ng/kg/day); Controls received mp w/ vehicle; animal info (Male; 3-4 months old; Weighed 300-340 g; Female; Weighed 200-250 g); behavioral testing (Sexual behavior test); dependence; Therapeutic indication (Sexual dysfunction);

Q10407: S. L. Baringer, *et al.* Regulation of brain iron uptake by apo- and holo-transferrin is dependent on sex and delivery protein. Fluids Barriers CNS 2022;19(1):49
Agents: aCSF **Vehicle:** Not Stated; **Route:** CSF/CNS (lateral ventricle); **Species:** Mice; **Pump:** 2004; **Duration:** 48 hours;
ALZET Comments: Controls received mp w/ vehicle; animal info (3 months old; Wild-type); post op. care: The incision was then sutured with nylon sutures. The mice were then placed in a heated recovery chamber until they regained consciousness.; artificial cerebrospinal fluid aka aCSF; Brain coordinates (1 mm lateral to Bregma; 0.5 mm posterior to lateral ventricle); dependence;

Q10404: N. Baidoo, *et al.* Inhibition of noradrenergic and corticotrophin-releasing factor systems: Effects on enhancement of memory consolidation by unconditioned and conditioned heroin withdrawal. Neuropharmacology 2022;209(109018
Agents: Heroin **Vehicle:** Not Stated; **Route:** SC; **Species:** Rat; **Pump:** 2002; **Duration:** 14 days;
ALZET Comments: Dose (3.5 mg/kg/day); animal info (Male; Weighed 225-250 g); behavioral testing (Conditioning chambers; Y-apparatus); dependence;

Q10403: S. Arakaki, *et al.* Role of noradrenergic transmission within the ventral bed nucleus of the stria terminalis in nicotine withdrawal-induced aversive behavior. Neuropsychopharmacology Reports 2022;42(2):233-237
Agents: Nicotine **Vehicle:** Saline; **Route:** SC; **Species:** Rat; **Pump:** 2ML2; 2ML4; **Duration:** Not Stated;
ALZET Comments: "Dose: (13.7 mg/kg/d) as nicotine tartrate (4.8 mg/kg/d as a nicotine base; Controls received mp w/ vehicle; animal info: Sprague–Dawley rats weighing 190–250g; behavioral testing (elevated plus-maze test; CPA test); dependence; Nicotine dependence in rats was established in rats by subcutaneous implantation with a nicotine-filled osmotic minipump (2ML2) for microdialysis experiments, 2ML4 for behavioral experiments"

Q9828: Z. Zheng, *et al.* Involvement of 5-Hydroxytryptamine Receptor 2A in the Pathophysiology of Medication-Overuse Headache. Journal of Pain Research 2021;14(453-461
Agents: Sumatriptan **Vehicle:** Not Stated; **Route:** SC; **Species:** Rat; **Pump:** Not Stated; **Duration:** 7 days;
ALZET Comments: Dose (0.6mg/kg/day); animal info (Adult male Wistar rats, 8 weeks old, 180–200 g); dependence;

Q9874: A. Zamora-Moratalla, *et al.* Prolactin enhances hippocampal synaptic plasticity in female mice of reproductive age. Hippocampus 2021;31(3):281-293
Agents: Prolactin **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Pump:** 2001; **Duration:** 7 days;
ALZET Comments: Dose (150 ug/day); Controls received mp w/ vehicle; animal info (nulliparous female mice, 2-3 months old); Prolactin aka PRL; dependence;

Q10757: E. Y. P. Kung Huang, *et al.* Effect of Dextromethorphan on Nicotine-Induced Reward, Behavioral Sensitization, Withdrawal Signs, and Drug Seeking-Related behavior in Rats. Nicotine and Tobacco Research 2022;
Agents: Nicotine, Dextromethorphan **Vehicle:** Saline; **Route:** SC; **Species:** Rat; **Pump:** 2ML1; **Duration:** 7 Days;
ALZET Comments: Dose (Nicotine 9 mg/kg/day; DM 10 mg/kg/day); animal info (Male Sprague Dawley; 8 weeks old; Weighed 300-400 g); behavioral testing (Locomoter activity); dependence; Therapeutic indication (Nicotine dependence);

Q9545: C. Wang, *et al.* Salidroside and isorhamnetin attenuate urotensin II-induced inflammatory response in vivo and in vitro: Involvement in regulating the RhoA/ROCK II pathway. Oncology Letters 2021;21(4):292
Agents: Urotensin II **Vehicle:** Saline; **Route:** SC; **Species:** Rat; **Pump:** 2006D; **Duration:** 7 days;
ALZET Comments: Dose (10 ng/kg/min); Controls received mp w/ vehicle; animal info (healthy male Wistar rats, 180-200 g, 8 weeks old); Urotensin II aka UII; dependence;

Q9522: E. Walsh-Wilkinson, *et al.* Segmental analysis by speckle-tracking echocardiography of the left ventricle response to isoproterenol in male and female mice. PeerJ 2021;9(e11085
Agents: Isoproterenol **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Pump:** 1004; **Duration:** 21 days;
ALZET Comments: Dose (30 mg/kg/day); Controls received mp w/ vehicle; animal info (C57Bl6/J mice, 8 weeks old); Isoproterenol aka Iso; dependence;

Q9957: T. Wakamatsu, *et al.* Type I Angiotensin II Receptor Blockade Reduces Uremia-Induced Deterioration of Bone Material Properties. Journal of Bone & Mineral Research 2021;36(1):67-79
Agents: Olmesartan, Hydralazine Hydrochloride **Vehicle:** Saline; **Route:** SC; **Species:** Rat; **Pump:** 2ML2; **Duration:** 26 weeks;
ALZET Comments: Dose (Olmesartan- 3 mg/kg/day or Hydralazine Hydrochloride- 10 mg/kg/day); Controls received mp w/ vehicle; animal info (); pumps replaced every 2 weeks; long-term study; Blood pressure measured via Tail Cuff Method ;dependence;

Q9521: V. Vergote, *et al.* Chloroquine, an Anti-Malaria Drug as Effective Prevention for Hantavirus Infections. Frontiers in Cellular and Infection Microbiology 2021;11(580532
Agents: Chloroquine **Vehicle:** Not Stated; **Route:** SC; **Species:** Hamster; **Pump:** Not Stated; **Duration:** 17 days;
ALZET Comments: Dose (100 mg/kg/day); animal info (Five-week-old female Syrian hamsters); dependence;

Q9513: M. M. Uddin, *et al.* Neuroestradiol regulation of ventromedial hypothalamic nucleus 5'-AMP-activated protein kinase activity and counterregulatory hormone secretion in hypoglycemic male versus female rats. Neuroscience 2021;8(1):133-147
Agents: Letrozole **Vehicle:** CSF, artificial; DMSO; **Route:** CSF/CNS (left ventricle); **Species:** Rat; **Pump:** 1007D; **Duration:** 5 days;
ALZET Comments: Dose (1.678 ug/uL); 30% Artificial CSF, 70% DMSO used; Controls received mp w/ vehicle; animal info (Adult male and female Sprague Dawley rats, 3–4 months old); Letrozole aka Lz; ALZET brain infusion kit 1 used; Brain coordinates (0.0 mm posterior to bregma; 1.5 mm lateral to bregma; 3.5 mm ventral to brain surface); dependence;

Q10070: C. Y. Tsai, *et al.* Perinatal nicotine exposure alters lung development and induces HMGB1-RAGE expression in neonatal mice. Birth Defects Research 2021;113(7):570-578
Agents: Nicotine **Vehicle:** Saline, sterile; **Route:** SC; **Species:** Mice; **Pump:** 2001; 2004; **Duration:** 7 days; 28 days;
ALZET Comments: Dose (6 mg/kg/day); Controls received mp w/ vehicle; animal info (pregnant C57BL/6N mice); dependence;

Q9504: E. A. Townsend, *et al.* A drug-vs-food "choice" self-administration procedure in rats to investigate pharmacological and environmental mechanisms of substance use disorders. Journal of Neuroscience Methods 2021;354(109110
Agents: Buprenorphine **Vehicle:** Ethanol; DMSO; Sterile water; **Route:** SC; **Species:** Rat; **Pump:** 2001; 2ML1; **Duration:** 1 week;
ALZET Comments: Dose (0.01; 0.032 mg/kg/h); 15% ethanol, 20% DMSO, 65% sterile water used; Controls received mp w/ vehicle; animal info (Sprague-Dawley female rats, 240− 260 g, ~12 weeks old and male rats, 290− 310 g, ~11 weeks old);

Q9497: C. Tang, *et al.* Implantation of a mini-osmotic pump plus stereotactical injection of retrovirus to study newborn neuron development in adult mouse hippocampus. STAR Protocols 2021;2(1):100374
Agents: Pleiotrophin **Vehicle:** Saline; **Route:** CSF/CNS (hippocampus); **Species:** Mice; **Pump:** 1002; **Duration:** 2 weeks;
ALZET Comments: Controls received mp w/ vehicle; animal info (Adult C57BL/6 mice, 8–12 weeks old); ALZET brain infusion kit 3 used; cyanoacrylate adhesive; dependence;

Q9494: M. Tanaka, *et al.* Regular Article Ropinirole Prevents Light-Induced Retinal Photoreceptor Damage in Mice. BPB Reports 2021;
Agents: Ropinirole **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice; **Pump:** 2006; **Duration:** 1 week;
ALZET Comments: Dose (2 mg/kg/day); animal info (male black C57BL/6J mice); dependence;

Q10344: E. Starikova, *et al.* Protective Role of Mytilus edulis Hydrolysate in Lipopolysaccharide-Galactosamine Acute Liver Injury. Frontiers in Pharmacology 2021;12(667572
Agents: N2-01 **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice; **Pump:** 1003D; **Duration:** 3 days;
ALZET Comments: Dose: (0.05 ml/kg per hour or 1.2 ml/kg per day); Controls received mp w/ vehicle; animal info: 8 week-old male C57BL/6 mice, white mongrel female and CBA/ BALB male (F1) mice; N2-01 is *M. edulis* hydrolysate; dependence;

Q10340: M. K. Song, *et al.* Environmental enrichment modulates silent information regulator 1 (SIRT1) activity to attenuate central presbycusis in a rat model of normal aging. Experimental Gerontology 2021;155(111552
Agents: Dexamethasone **Vehicle:** Not Stated; **Route:** Not Stated; **Species:** Rat; **Pump:** Not Stated; **Duration:** 4 weeks;
ALZET Comments: Dose: (1 mg/kg/day); animal info: male Sprague-Dawley rats-aged eight weeks (weighing 250 g) and 62 weeks (weighing 550–650 g); behavioral testing: Hearing test; Dexamethasone aka (DX); dependence;

Q9163: B. Smith, *et al.* Trabecular and cortical bone are unaltered in response to chronic lipopolysaccharide exposure via osmotic pumps in male and female CD-1 mice. Plos One 2021;16(2):
Agents: Lipopolysaccharide **Vehicle:** PBS; **Route:** SC; **Species:** Mice; **Pump:** 2006; **Duration:** 42 days;
ALZET Comments: Dose (14.4, 3.6, or 0.9 µg/d); animal info (male and female 7-week old CD-1 mice, 27.1-32.2 g); Lipopolysaccharide aka LPS; dependence;

Q10329: N. Shahsavani, *et al.* Availability of neuregulin-1beta1 protects neurons in spinal cord injury and against glutamate toxicity through caspase dependent and independent mechanisms. Experimental Neurology 2021;345(113817
Agents: Neuregulin-1beta1 **Vehicle:** BSA; Saline; **Route:** CSF/CNS (intrathecal); **Species:** Rat; **Pump:** 1003D; 2001; **Duration:** 3 days; 7 days;
ALZET Comments: Dose: (1 µg/day); 0.1% BSA; 0.9% Saline vehicle used; Controls received mp w/ vehicle; animal info: adult female Sprague-Dawley (SD) rats (8–10 weeks, 250 g); Neuregulin-1beta 1 aka (Nrg-1β1); spinal cord injury; dependence;

Q10327: A. Servonnet, *et al.* Dopaminergic mechanisms underlying the expression of antipsychotic-induced dopamine supersensitivity in rats. Neuropharmacology 2021;197(108747
Agents: Haloperidol **Vehicle:** Not Stated; **Route:** SC; **Species:** Rat; **Pump:** 2ML2; **Duration:** 17 days;
ALZET Comments: Dose: (0.5 mg/kg/day); Controls received mp w/o vehicle; (sham surgery)animal info: Male Sprague-Dawley rats (200–275 g); dependence;

Q10324: Z. L. Sebo, *et al.* Testosterone metabolites differentially regulate obesogenesis and fat distribution. molecular Metabolism 2021;44(101141
Agents: Testosterone; Dihydrotestosterone; Estradiol; Letrozole; Bicalutamide **Vehicle:** 2-hydroxypropyl-B-cyclodextrin; PBS; DMSO; **Route:** SC; **Species:** Mice; **Pump:** 1004; **Duration:** Not Stated;
ALZET Comments: Dose: Testosterone (2 mg/kg body weight/day); Estradol (2 ug/kg body weight/day); Letrozole (0.4 mg/kg body weight/day); Dutasteride (0.5 mg/kg body weight/day); 10% DMSO vehicle used Controls received mp w/ vehicle; animal info: ARdY mice and mTmG mice 3 weeks of age; replacement therapy; (Testosterone)dependence;

Q8947: A. B. Schwartz, *et al.* Olfactory bulb-targeted quantum dot (QD) bioconjugate and Kv1.3 blocking peptide improve metabolic health in obese male mice. Journal of Neurochemistry 2021;157(6):1876-1896
Agents: Fluorescent quantum dots **Vehicle:** Saline; **Route:** CSF/CNS (olfactory bulb); **Species:** Mice; **Pump:** 1002; **Duration:** 14 days;
ALZET Comments: Controls received mp w/ vehicle; animal info (C57BL/6J); Fluorescent quantum dots aka QDMgTx/MgTx ; Brain coordinates (AP −0.25 mm from bregma, M/L ±0.075 and D/V −2.25 mm from dura); bilateral cannula used; dental cement used; dependence;

Q10065: C. Schnoz, *et al.* Deletion of the transcription factor Prox-1 specifically in the renal distal convoluted tubule causes hypomagnesemia via reduced expression of TRPM6 and NCC. Pflügers Archiv 2021;473(1):79-93
Agents: Bumetanide; Uridine, bromodeoxy- **Vehicle:** Water; PEG 300; **Route:** SC; **Species:** Mice; **Pump:** 2001; **Duration:** 3 days;
ALZET Comments: Dose (40 mg/kg/day Bumetanide; 40 mg/kg/day bromodeoxyuridine); dependence;

Q9438: B. Russell, *et al.* GPR52 agonists attenuate ropinirole-induced preference for uncertain outcomes. Behavioral Neuroscience 2021;135(1):8-23
Agents: Ropinirole **Vehicle:** Saline; **Route:** SC; **Species:** Rat; **Pump:** 2ML; **Duration:** 28 days;
ALZET Comments: Dose (5 mg/kg/day); 0.9% Saline used; Controls received mp w/ vehicle; animal info (male Long Evans rats, 275-300 g); behavioral testing (rat betting task); dependence;

Q8846: B. M. Rush, *et al.* Genetic or pharmacologic Nrf2 activation increases proteinuria in chronic kidney disease in mice. Kidney International 2021;99(1):102-116
Agents: Angiotensin II **Vehicle:** Acetic Acid; **Route:** SC; **Species:** Mice; **Pump:** 2004; **Duration:** 4 weeks;
ALZET Comments: Dose (1.5 mg/kg/day); Controls received mp w/ vehicle; animal info (C57BL/6J, 13 weeks old); Blood pressure measured via Telemetry ;dependence;

Q9430: R. Riquelme, *et al.* Huperzine-A administration recovers rat ovary function after sympathetic stress. Journal of Neuroendocrinology 2021;33(1):e12914
Agents: Huperzine-A **Vehicle:** Saline; **Route:** SC; **Species:** Rat; **Pump:** 2004; **Duration:** 28 days;
ALZET Comments: Dose (10 umol/L); Controls received mp w/ vehicle; animal info (female Sprague-Dawley rats, 250-300 g); Huperzine-A aka Hup-A; dependence;

Q8822: A. Recabal, *et al.* The FGF2-induced tanycyte proliferation involves a connexin 43 hemichannel/purinergic-dependent pathway. Journal of Neurochemistry 2021;156(2):182-199
Agents: Uridine, bromodeoxy-; Fibroblast Growth Factor 2; Gap27 **Vehicle:** CSF; **Route:** CSF/CNS; **Species:** Rat; **Pump:** 1007D; **Duration:** 7 days;
ALZET Comments: Dose (0.75 ug/h BrdU, 0.0125 ug/hr FGF2, 0.13 ug/h Gap27); Controls received mp w/ vehicle; animal info (Male, Sprague Dawley, 120-280 g); Bromodeoxyuridine aka BrdU, Fibroblast Growth Factor 2 aka FGF2, Gap27 aka selective Cx43HC inhibitor ; enzyme inhibitor (Cx43HC Inhibitor); dental cement used; dependence;

Q10307: F. Ravanetti, *et al.* SSC-ILD mouse model induced by osmotic minipump delivered bleomycin: effect of Nintedanib. Scientific Reports 2021;11(1):18513
Agents: Bleomycin **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Pump:** 1007D; **Duration:** 7 days;
ALZET Comments: Dose: (60 u/kg); Controls received mp w/ vehicle; animal info: 7–8-week-old C57BL/6 female mice; Bleomycin aka (BLM); dependence;

Q9415: C. B. Pietrobon, *et al.* Pancreatic steatosis in adult rats induced by nicotine exposure during breastfeeding. Endocrine 2021;72(1):104-115
Agents: Nicotine **Vehicle:** Saline; **Route:** SC; **Species:** Rat; **Pump:** 2ML2; **Duration:** 14 days;
ALZET Comments: Dose (6 mg/kg/d); 0.9% NaCl used; Controls received mp w/ vehicle; animal info (virgin female Wistar rats, 3 months old); Nicotine aka NIC; dependence;

Q9410: T. C. Peixoto, *et al.* Nicotine exposure during lactation causes disruption of hedonic eating behavior and alters dopaminergic system in adult female rats. Appetite 2021;160(105115
Agents: Nicotine **Vehicle:** Saline; **Route:** SC; **Species:** Rat; **Pump:** 2ML2; **Duration:** 14 days;
ALZET Comments: Dose (6 mg/kg body mass); Controls received mp w/ vehicle; animal info (Wistar rats, male and female); Nicotine aka Nic; dependence;

Q9408: W. I. Payette, *et al.* An anti-narcolepsy drug reveals behavioral and fitness costs of extreme activity cycles in arctic-breeding songbirds. Journal of Experimental Biology 2021;224(7):
Agents: Modafinil **Vehicle:** DMSO; PEG; **Route:** SC; **Species:** Bird; **Pump:** 1003D; **Duration:** 3 days;
ALZET Comments: Dose (75 mg/kg/day); 50% DMSO, 50% PEG used; Controls received mp w/ vehicle; animal info (zebra finches, Lapland longspurs); dependence;

Q10053: J. Pajarinen, *et al.* Interleukin-4 repairs wear particle induced osteolysis by modulating macrophage polarization and bone turnover. Journal of Biomedical Material Research Part A 2021;109(8):1512-1520
Agents: Polyethylene, ultra high molecular mass weight; Interleukin-4, mouse recombinant **Vehicle:** BSA; PBS; **Route:** SC; **Species:** Mice; **Pump:** 2006; **Duration:** 8 weeks;
ALZET Comments: Dose (15 mg/ml ultra high molecular mass weight polyethylene; 10 ug/ml Interleukin-4); 1% BSA-PBS used; Controls received mp w/ vehicle; animal info (male BALB/cByJ mice, 10-12 weeks); post op. care (buprenorphine); functionality of mp verified by residual volume; pumps replaced every 4 weeks; ultra high molecular mass weight polyethylene aka UHMWPE; mouse recombinant interleukin-4 aka IL-4; dependence;

Q10292: K. Ogata, *et al.* Club Cells Are the Primary Target for Permethrin-Induced Mouse Lung Tumor Formation. Toxicological Sciences 2021;184(1):15-32
Agents: Uridine, bromodeoxy- **Vehicle:** DMSO; **Route:** SC; **Species:** Mice; **Pump:** 2001; **Duration:** 7 days;
ALZET Comments: Dose:(200 uL); 10% DMSO vehicle used; Controls received mp w/ vehicle; animal info: Female mice, 10 weeks old; Bromodeoxyuridine aka (Brdu); dependence;

Q10287: T. Nemoto, *et al.* Prenatal Nicotine Exposure Induces Low Birthweight and Hyperinsulinemia in Male Rats. Frontiers in Endocrinology 2021;12(694336
Agents: Nicotine **Vehicle:** Saline; **Route:** SC; **Species:** Rat; **Pump:** 2004; **Duration:** 28 days;
ALZET Comments: Dose: (3 mg nicotine/kg bodyweight/day); Controls received mp w/ vehicle; animal info: Wistar female rats (9 weeks old)teratology; dependence;

Q9384: G. Nalesso, *et al.* Calcium calmodulin kinase II activity is required for cartilage homeostasis in osteoarthritis. Scientific Reports 2021;11(1):5682
Agents: KN-93 **Vehicle:** PBS; **Route:** SC; **Species:** Mice; **Pump:** Not Stated; **Duration:** 28 days;
ALZET Comments: Dose (5 umol/kg/day); Controls received mp w/ vehicle; animal info (Ten week old, male C57BL/6 mice);

Q10263: M. J. Mulcahy, *et al.* Protein profiling in the habenula after chronic (-)-menthol exposure in mice. Journal of Neurochemistry 2021;158(6):1345-1358
Agents: Nicotine **Vehicle:** Ethanol; Saline; **Route:** SC; **Species:** Mice; **Pump:** 1002; **Duration:** 10 days; 12 days;
ALZET Comments: Dose: (2 mg/kg/hr); (60% ethanol, 40% saline) vehicle used; Controls received mp w/ vehicle; animal info: Male C57/Bl6 mice 2.5–3.5 months of age and with weights of 20–32g; dependence;

Q9368: F. Meng, *et al.* Naloxone Facilitates Contextual Learning and Memory in a Receptor-Independent and Tet1-Dependent Manner. Cellular and Molecular Neurobiology 2021;41(5):1031-1038
Agents: Naloxone; Morphine **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Pump:** 2001; **Duration:** 7 days;
ALZET Comments: Dose (); animal info (Male mice, 2-3 months old); behavioral testing (Morris Water Maze Test); dependence;

Q10045: S. Z. McIntosh, *et al.* CXCR4 signaling at the fetal-maternal interface may drive inflammation and syncytia formation during ovine pregnancy dagger. Biology of Reproduction 2021;104(2):468-478
Agents: AMD3100 **Vehicle:** PBS; Saline; **Route:** Intrauterine; **Species:** Sheep; **Pump:** 2ML1; **Duration:** 7 days;
ALZET Comments: Dose (2060 ng); Controls received mp w/ vehicle; dependence;

Q9364: F. Matos-Ocasio, *et al.* Female rats display greater nicotine withdrawal-induced cellular activation of a central portion of the interpeduncular nucleus versus males: A study of Fos immunoreactivity within provisionally assigned interpeduncular subnuclei. Drug Alcohol Depend 2021;221(108640
Agents: Nicotine; Mecamylamine **Vehicle:** Saline; **Route:** SC; **Species:** Rat; **Pump:** 2ML2; **Duration:** 14 days;
ALZET Comments: Dose (3.2 mg/kg/day Nicotine; 3.0 mg/kg Mecamylamine); Controls received mp w/ vehicle; animal info (Fully outbred adult Wistar rats, 260 g females, 400 g males); dependence;

Q9354: T. Y. Liu, *et al.* Healing of Sub-Critical Femoral Osteotomies in Mice is Unaffected By Tacrolimus and Deletion of Recombination Activating Gene 1. European Cells and Materials 2021;
Agents: Tacrolimus **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Pump:** 1003D; 1007D; **Duration:** 3, 7 days;
ALZET Comments: Dose (1 or 10 mg/kg/day); Controls received mp w/ vehicle; animal info (male C57BL/6 mice, 11 weeks old);

Q9349: H. Li, *et al.* Local continuous glial cell derived neurotrophic factor release using osmotic pump promotes parasympathetic nerve rehabilitation in an animal model of cavernous nerve injury induced erectile dysfunction. Translational Andrology and Urology 2021;10(1):258-271
Agents: Glial-derived neurotrophic factor **Vehicle:** Saline; **Route:** Prostate; **Species:** Rat; **Pump:** 1004; **Duration:** 28 days;
ALZET Comments: Dose (0, 0.1, 1, or 10 µg/100 µL); animal info (Eight-week-old male Sprague-Dawley rats); behavioral testing (sexual behavior tests); Glial-derived neurotrophic factor aka GDNF; dependence;

Q10004: M. A. Kwiatkowski, *et al.* Chronic nicotine, but not suramin or resveratrol, partially remediates the mania-like profile of dopamine transporter knockdown mice. European Neuropsychopharmacology 2021;42(75-86
Agents: Nicotine Hydrogen Tartrate **Vehicle:** Saline, Sterile; **Route:** SC; **Species:** Mice; **Pump:** 2004; **Duration:** 26 days;
ALZET Comments: Dose (40 mg/kg/day); 0.9% Sterile Saline used; Controls received mp w/ vehicle; animal info (male wildtype C57BL6/J mice, 50 to 60 weeks old); behavioral testing (Behavioral Pattern Monitor); dependence;

Q9318: H. J. Kulbeth, *et al.* Automated quantification of opioid withdrawal in neonatal rat pups using Ethovision(R) XT software. Neurotoxicology and Teratology 2021;84(106959
Agents: Buprenorphine, nor-; Morphine **Vehicle:** DMSO; PEG 400; Saline, Sterile; **Route:** SC; **Species:** Rat; **Pump:** 2ML2;
ALZET Comments: Dose (15 or 20 mg/kg/day Morphine; 0.3, 1.0, 3.0, or 10 mg/kg/day norbuprenorphine); Controls received mp w/ vehicle; animal info (timed-pregnant Long-Evans rats); norbuprenorphine aka NorBUP; dependence;

Q9309: B. Kim, *et al.* Chronic nicotine impairs sparse motor learning via striatal fast-spiking parvalbumin interneurons. Addiction Biology 2021;26(3):e12956
Agents: Nicotine ditartrate **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Pump:** 1004; **Duration:** 2 weeks;
ALZET Comments: Dose (24 mg/kg/day); Controls received mp w/ vehicle; animal info (2- to 3-month-old C57BL/6J male mice); behavioral testing (Open field test; light-dark transition; rotarod test); dependence;

Q9303: B. M. Keegan, *et al.* Chronic phenmetrazine treatment promotes D2 dopaminergic and alpha2-adrenergic receptor desensitization and alters phosphorylation of signaling proteins and local cerebral glucose metabolism in the rat brain. Brain Research 2021;1761(147387
Agents: Phenmetrazine **Vehicle:** Saline; **Route:** SC; **Species:** Rat; **Pump:** 2001; **Duration:** 2, 14 days;
ALZET Comments: Dose (25 mg/kg/day); Controls received mp w/ vehicle; animal info (male Sprague-Dawley rats, 280-300 g);

Q9131: T. Kawakami, *et al.* Vasopressin escape and memory impairment in a model of chronic syndrome of inappropriate secretion of antidiuretic hormone in mice. Endocrine Journal 2021;68(1):31-43
Agents: Vasopressin, 1-desamino-8-D arginine **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Pump:** 1004; **Duration:** 1 week;
ALZET Comments: Dose (0.03 ng/h, 0.3 ng/h, 0.5 ng/h); dose-response (p. 8); Controls received mp w/ vehicle; animal info (Male 8-week-old C57BL/6J mice); 1-desamino-8-D arginine-vasopressin aka dDAVP; dependence;

Q9296: M. Jiang, *et al.* SIRT1 Alleviates Aldosterone-Induced Podocyte Injury by Suppressing Mitochondrial Dysfunction and NLRP3 Inflammasome Activation. Kidney Diseases (Basel) 2021;7(4):293-305
Agents: Aldosterone **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice; **Pump:** Not Stated; **Duration:** 14 days;
ALZET Comments: Dose (300 ug/kg/day); animal info (8-12-week-old WT and cKO male mice, 25-30 g); dependence;

Q9291: I. J. Jacobs, *et al.* A phytic acid analogue INS-3001 prevents ectopic calcification in an Abcc6(-/-) mouse model of pseudoxanthoma elasticum. Experimental Dermatology 2021;30(6):853-858
Agents: INS-3001 **Vehicle:** Not stated; **Route:** SC; **Species:** Mice; **Pump:** 2006; **Duration:** 6 weeks;
ALZET Comments: Dose (0.16, 0.8, 4, 20, or 100 mg/kg/day); animal info (6-week-old or 12-week-old Abcc6−/− mice);

Q9290: Y. Ito, *et al.* Vitamin D improves pulmonary function in a rat model for congenital diaphragmatic hernia. Archives of Biochemistry and Biophysics 2021;700(108769
Agents: Calcitriol **Vehicle:** Not Stated; **Route:** SC; **Species:** Rat; **Pump:** 2002; **Duration:** 12 days;
ALZET Comments: Dose (0.03 ug/kg/day); animal info (pregnant Sprague Dawley rats); dependence;

Q10318: H. S. Huang, *et al.* Insuline-Like Growth Factor-2 (IGF2) and Hepatocyte Growth Factor (HGF) Promote Lymphomagenesis in p53-null Mice in Tissue-specific and Estrogen-signaling Dependent Manners. Journal of Cancer Research and Clinical Oncology 2021;12(20):6021-6030
Agents: Estrogen **Vehicle:** PBS; **Route:** SC; **Species:** Mice; **Pump:** 1004; **Duration:** 28 days;
ALZET Comments: Dose: (80 nM); Controls received mp w/ vehicle; animal info: male Trp53-/- mice, wild type strain C57BL6/J; cancer (Lymphoma); dependence;

Q10317: H. Huang, *et al.* Liraglutide via Activation of AMP-Activated Protein Kinase-Hypoxia Inducible Factor-1alpha-Heme Oxygenase-1 Signaling Promotes Wound Healing by Preventing Endothelial Dysfunction in Diabetic Mice. Frontiers in Physiology 2021;12(660263
Agents: Liraglutide; Compound C; 2-methoxyestradiol **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Pump:** 1002; **Duration:** 4 wk
ALZET Comments: Dose: Lira (200 µg/kg/day); Cpd C (1.5 mg/kg/day); 2-ME (40 mg/kg/day); Controls received mp w/ vehicle; animal info: 8-week-old mice Diabetic db/db mice; dependence;

Q9262: H. Hassani Lahsinoui, *et al.* Soluble syndecan-1 and glycosaminoglycans in preeclamptic and normotensive pregnancies. Scientific Reports 2021;11(1):4387
Agents: sFlt-1 **Vehicle:** PBS; **Route:** Not Stated; **Species:** Mice; **Pump:** Not Stated; **Duration:** 2 weeks;
ALZET Comments: Dose (500 ng/h); Controls received mp w/ vehicle; animal info (adult male C57/BL6N mice, 12-14 weeks old); Blood pressure measured via tail-cuff method;117 mmHg - 154 mmHg;sFlt-1 aka soluble receptor, vascular endothelial growth factor receptor 1; dependence;

Q9261: Y. Hasegawa, *et al.* The endogenous and exogenous brain-derived neurotrophic factor plays pivotal roles in the pathogenesis of stroke onset in high salt-loaded hypertensive rats. Experimental Gerontology 2021;147(111286
Agents: Brain-derived neurotrophic factor **Vehicle:** PBS; **Route:** CSF/CNS; **Species:** Rat; **Pump:** 2004; **Duration:** 28 days;
ALZET Comments: Dose (2.1 ug/day); Controls received mp w/ vehicle; animal info (male spontaneously hypertensive stroke-prone rats, 224-282 g); Blood pressure measured via tail cuff method;184 mmHg - 234 mmHg; Brain-derived neurotrophic factor aka BDNF; ALZET brain infusion kit 2 used; dependence;

Q8732: L. R. Goldberg, *et al.* Paternal nicotine enhances fear memory, reduces nicotine administration, and alters hippocampal genetic and neural function in offspring. Addiction Biology 2021;26(1):E12859
Agents: Nicotine Hydrogen Tartrate Salt **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Pump:** 1004; **Duration:** 28 days;
ALZET Comments: Dose (12.6 mg/kg/day); 0.9% Saline used; Controls received mp w/ vehicle; animal info (Male, 8 weeks old); dependence;

Q9237: S. G. Galvin, *et al.* Peptidomics of enteroendocrine cells and characterisation of potential effects of a novel preprogastrin derived-peptide on glucose tolerance in lean mice. Peptides 2021;140(170532
Agents: Gastrin-releasing peptide **Vehicle:** BSA; **Route:** SC; **Species:** Mice; **Pump:** 2004; **Duration:** 4 days;
ALZET Comments: Controls received mp w/ vehicle; animal info (C57BL/6 N J Mice, male); Gastrin-releasing peptide aka Gast p59-79; peptides; dependence;

Q9235: R. P. Gale, *et al.* Use of molecularly-cloned haematopoietic growth factors in persons exposed to acute high-dose, high-dose rate whole-body ionizing radiations. Blood Reviews 2021;45(100690
Agents: Granulocyte macrophage colony-stimulating factor, recomb. human **Vehicle:** Not Stated; **Route:** SC; **Species:** Monkey; **Pump:** Not Stated; **Duration:** 7 days;
ALZET Comments: Recombinant Human Granulocyte Macrophage Colony-Stimulating Factor aka rhG/M-CSF; dependence;

Q9231: J. Fukuda, *et al.* Effects of Betahistine on the Development of Vestibular Compensation after Unilateral Labyrinthectomy in Rats. Brain Sciences 2021;11(3):
Agents: Betahistine dihydrochloride **Vehicle:** Saline; **Route:** IP; **Species:** Rat; **Pump:** Not Stated; **Duration:** 14 days;
ALZET Comments: Dose (100 or 200 mg/kg/day); 0.9% Saline used; Controls received mp w/ vehicle; animal info (adult male Wistar rats, 150 - 200 g); behavioral testing (eye movements); dependence;

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; **Pump:** 2004; **Duration:** 28 days;
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;

Q9271: M. Fakhoury, *et al.* Intracranial Self-Stimulation and the Curve-Shift Paradigm: A Putative Model to Study the Brain Reward System. The Brain Reward System 2021;
Agents: Cocaine **Vehicle:** Not Stated; **Route:** SC; **Species:** Rat; **Pump:** 2ML2; **Duration:** Not Stated;
ALZET Comments: Dose (4 mg/kg); Controls received mp w/ vehicle; dependence;

Q9766: M. El-Etr, *et al.* Nestorone((R)) , a 19nor-progesterone derivative boosts remyelination in an animal model of demyelination. CNS Neuroscience & Therapeutics 2021;27(4):464-469
Agents: Nestorone **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice; **Pump:** 2004; **Duration:** 3 weeks;
ALZET Comments: Dose (8 ug/day); animal info (8 weeks old, C57/Bl6, Female); Nestorone aka synthetic progesterone;

Q9765: M. Ejarque, *et al.* Adipose tissue is a key organ for the beneficial effects of GLP-2 metabolic function. British Journal of Pharmacology 2021;178(10):2131-2145
Agents: Teduglutide **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Pump:** Not Stated; **Duration:** 14 days;
ALZET Comments: Dose (10 ug/mouse); Controls received mp w/ vehicle; animal info (Male, C57BL/6); dependence;

Q9215: M. M. Edwards, *et al.* Chronic hindbrain administration of oxytocin elicits weight loss in male diet-induced obese mice. American Journal of Physiology, Regulatory, Integrative and Comparative Physiology 2021;320(4):R471-R487
Agents: Oxytocin **Vehicle:** Saline; **Route:** CSF/CNS (fourth ventricle); **Species:** Mice; **Pump:** 2004; **Duration:** 28 days;
ALZET Comments: Dose (16 nmol/day); Controls received mp w/ vehicle; animal info (Adult male C57BL/6J mice, 5.25–6.5 months oldd, 25.7–51.3 g); Oxytocin aka OT; Brain coordinates (5.9 mm caudal to bregma; 0.4mm lateral to the midline, and 3.7 mm ventral to the skull surface); dental cement used; dependence;

Q9208: E. I. Dedkov. Large- and Medium-sized Arteries Remaining in Transmural Scar Distal to Permanent Coronary Ligation Undergo Neointimal Hyperplasia and Inward Remodeling. Journal of Histochemistry & Cytochemistry 2021;69(5):321-338
Agents: Uridine, 5-bromo-2'-deoxy- **Vehicle:** PBS; **Route:** Not Stated; **Species:** Rat; **Pump:** Not Stated; **Duration:** 3 days;
ALZET Comments: Dose (12.5 mg/kg/day); animal info (12-month-old male Sprague-Dawley rats);

Q9204: L. S. Dalboge, *et al.* Evaluation of VGF peptides as potential anti-obesity candidates in pre-clinical animal models. Peptides 2021;136(170444
Agents: NERP-1; HHPD-41; TLQP-21; PGH-NH2; NERP-2; TLQP-62; Glucagon-like peptide-1 (7-37); Ghrelin **Vehicle:** Not Stated; **Route:** CSF/CNS (intracerebral); IV; **Species:** Mice; **Pump:** 1007D; **Duration:** 7 days;
ALZET Comments: Dose (2 nmol/mouse/day Glucagon-like peptide-1 (7-37); 3 nmol/mouse/day Ghrelin); Controls received mp w/ vehicle; animal info (male and female C57BL/6J mice, 13 weeks old); Glucagon-like peptide-1 aka GLP-1 (7-37); peptides; Brain coordinates (-0.7 mm posterior, -1.2 mm lateral [left], and -2.0 mm ventral); dependence;

Q9203: H. B. Dai, *et al.* Adrenomedullin Attenuates Inflammation in White Adipose Tissue of Obese Rats Through Receptor-Mediated PKA Pathway. Obesity (Silver Spring) 2021;29(1):86-97
Agents: Tacrolimus **Vehicle:** Saline; **Route:** SC; **Species:** Rat; **Pump:** 1004; **Duration:** 4 weeks;
ALZET Comments: Dose (0.25 mg/kg/day); Controls received mp w/ vehicle; animal info (Male NSG mice, age 12–18 weeks);

Q9200: M. W. Cunningham, Jr., *et al.* Investigation of interleukin-2-mediated changes in blood pressure, fetal growth restriction, and innate immune activation in normal pregnant rats and in a preclinical rat model of preeclampsia. Biology of Sex Differences 2021;12(1):4
Agents: Interleukin-2 **Vehicle:** Not Stated; **Route:** IP; **Species:** Rat; **Pump:** 2002; **Duration:** 5 days;
ALZET Comments: Dose (0.05, 0.10, or 0.20 ng/ml); dose-response (p. 3); animal info (Timed-pregnant Sprague Dawley rats); 98 mmHg - 111 mmHg;Interleukin-2 aka IL-2; dependence;

Q9199: A. M. Costa, *et al.* Relationship between Delta Rhythm, Seizure Occurrence and Allopregnanolone Hippocampal Levels in Epileptic Rats Exposed to the Rebound Effect. Pharmaceuticals (Basel) 2021;14(2):
Agents: Levetiracetam **Vehicle:** Saline; **Route:** SC; **Species:** Rat; **Pump:** 2ML1; **Duration:** 1 week;
ALZET Comments: Dose (); Controls received mp w/ vehicle; animal info (); Levetiracetam aka LEV; dependence;

Q9195: Z. A. Cope, *et al.* Chronic antipsychotic treatment exerts limited effects on the mania-like behavior of dopamine transporter knockdown mice. Behavioural Brain Research 2021;405(113167
Agents: Asenapine **Vehicle:** Saline; **Route:** Not Stated; **Species:** Mice; **Pump:** 2004; **Duration:** 28 days;
ALZET Comments: Dose (0.03 or 0.1 mg/kg/day); Controls received mp w/ vehicle; animal info (Male adult DAT KD and WT mice, 3 months old); behavioral testing (Plexiglas chamber); dependence;

Q8713: P. S. Cassidy, *et al.* siRNA targeting Schlemm's canal endothelial tight junctions enhances outflow facility and reduces IOP in a steroid-induced OHT rodent model. Molecular Therapy: Methods & Clinical Development 2021;20(86-94
Agents: Dexamethasone **Vehicle:** Cyclodextrin; **Route:** SC; **Species:** Mice; **Pump:** Not stated; **Duration:** 4 weeks;
ALZET Comments: Dose (2 mg/kg/day); Controls received mp w/ vehicle; animal info (C57BL/6J); Dexamethasone aka DEX; dependence;

Q9148: J. Y. Cao, *et al.* Autophagosome protects proximal tubular cells from aldosterone-induced senescence through improving oxidative stress. Renal Failure 2021;43(1):556-565
Agents: Aldosterone; Rapamycin; Choroquine **Vehicle:** DMSO; PBS; **Route:** IP; **Species:** Rat; **Pump:** 2004; **Duration:** 4 weeks;
ALZET Comments: Dose (1 mg/kg/day Rapamycin; 60 mg/kg/day Aldosterone); 0.5% DMSO, 99.5% PBS used; Controls received mp w/ vehicle; animal info (healthy male Sprague-Dawley rats, 180-200 g); Aldosterone aka Aldo, Rapamycin aka Rap, Choroquine aka CQ; dependence;

Q8709: M. J. Cano-Cebrian, *et al.* Efficacy of N-acetylcysteine in the prevention of alcohol relapse-like drinking: Study in long-term ethanol-experienced male rats. Journal of Neuroscience Research 2021;99(2):638-648
Agents: N-acetylcysteine **Vehicle:** Not Stated; **Route:** SC; **Species:** Rat; **Pump:** 2002; **Duration:** 14 days;
ALZET Comments: Dose (0 or 1 mg/hr); animal info (275 g, Male, Wistar); N-acetylcysteine aka NAC; dependence;

Q9168: C. Burgos-Aguilar, *et al.* Metabotropic glutamate 2,3 receptor stimulation desensitizes agonist activation of G-protein signaling and alters transcription regulators in mesocorticolimbic brain regions. Synapse 2021;75(4):e22190
Agents: LY379268 **Vehicle:** Not stated; **Route:** SC; **Species:** Rat; **Pump:** Not Stated; **Duration:** 2 days; 14 days;
ALZET Comments: Dose (3.0 mg/kg/day); animal info (Male Sprague Dawley rats, 300-350 g); dependence;

Q9164: D. M. Bovee, *et al.* Dietary salt modifies the blood pressure response to renin-angiotensin inhibition in experimental chronic kidney disease. American Journal of Physiology Renal Physiology 2021;320(4):F654-F668
Agents: Dexamethasone; Losartan **Vehicle:** Ethanol; DMSO; PEG; **Route:** SC; **Species:** Rat; **Pump:** Not Stated; **Duration:** 3 weeks;
ALZET Comments: Dose (12 ug/kg/day Dexamethasone; 30 mg/kg/day Losartan); 10% Ethanol, 15% DMSO, 75% PEG used; Controls received mp w/ vehicle; animal info (Male Sprague-Dawley rats, 6 weeks old, 200 g); Blood pressure measured via radiotelemetry transmitters; dependence;

Q9155: A. Benitez, *et al.* Nerve Growth Factor: A Dual Activator of Noradrenergic and Cholinergic Systems of the Rat Ovary. Frontiers in Endocrinology 2021;12(636600
Agents: Nerve growth factor **Vehicle:** Saline; **Route:** Intraovarian; **Species:** Rat; **Pump:** 2004; **Duration:** 28 days;
ALZET Comments: Controls received mp w/ vehicle; animal info (adult female rats, 3.5 months old); functionality of mp verified by position; Nerve growth factor aka NGF; peptides; dependence;

Q9147: A. Bakhti-Suroosh, *et al.* A buprenorphine-validated rat model of opioid use disorder optimized to study sex differences in vulnerability to relapse. Psychopharmacology (Berl) 2021;238(4):1029-1046
Agents: Buprenorphine **Vehicle:** Water; **Route:** SC; **Species:** Rat; **Pump:** 2ML4; **Duration:** 14 days;
ALZET Comments: Dose (3 mg/kg/day); Controls received mp w/ vehicle; animal info (sexually mature male and female Sprague-Dawley rats, 370 g (male) and 270 g (female)); dependence;

Q8337: L. D. Asico, *et al.* Elucidating the Role of Lipid Rafts on G Protein-Coupled Receptor Function in the Mouse Kidney: An In Vivo Approach. Methods Mol Biol 2021;2187(187-206
Agents: Cyclodextrin, methyl-b-; **Vehicle:** Saline; **Route:** Abdomen; **Species:** Mice; **Pump:** Not stated; **Duration:** 7 days;
ALZET Comments: Dose (40 mg/kg/day); Controls received mp w/ vehicle; animal info (Adult (8-10 week) male mice); methyl-b-cyclodextrin aka B-MCD; dependence;