Recent References (2020-2021) on Tolerance and Dependence Research Using ALZET® Osmotic Pumps

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;

Q8315: K. Pearce*, et al.* Influence of Betaeta-Cryptoxanthin Supplementation on Ovarian Reserve and Fertility Status in Aged Wistar Rats. J Diet Suppl 2020;17(3):273-285
Agents: B-cryptoxanthin **Vehicle:** Saline; **Route:** SC; **Species:** Rat; **Pump:** Not Stated; **Duration:** 3 months;
ALZET Comments: Dose (5 ug/kg/day); Controls received mp w/ vehicle; animal info (Wistar, Albino, 4-7months old); dependence;

Q8492: F. S. Matsuo*, et al.* RANKL induces beige adipocyte differentiation in preadipocytes. Am J Physiol Endocrinol Metab 2020;318(6):E866-E877
Agents: Receptor activator of nuclear factor-kB Ligand **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Pump:** Not stated; **Duration:** 28 days;
ALZET Comments: Dose (1 ug/mouse); Controls received mp w/ vehicle; animal info (8 weeks old, Male); Receptor activator of nuclear factor-kB Ligand aka RANKL ; dependence;

Q8250: E. M. Lefevre*, et al.* Interruption of continuous opioid exposure exacerbates drug-evoked adaptations in the mesolimbic dopamine system. Neuropsychopharmacology 2020;
Agents: Morphine Hydrochloride **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Pump:** 2001; **Duration:** 7 days;
ALZET Comments: Dose (63.2mg/kg/day); 0.9% Saline used; Controls received mp w/vehicle; animal info (C57BL/6J, Oprm1 KO,); dependence;

Q8621: B. G. Lake*, et al.* Piperonyl butoxide: Mode of action analysis for mouse liver tumour formation and human relevance. Toxicology 2020;439(152465
Agents: Uridine, 5-bromo-5'-deoxy- **Vehicle:** PBS; **Route:** SC; **Species:** Mice; **Pump:** 2001; **Duration:** 7 days;
ALZET Comments: Dose (15 mg/mL); animal info (Male Crl:CD-1 mice, approximately 42 days old); 5-bromo-5'-deoxyuridine aka BrdU; dependence;

Q8236: K. Kyritsi*, et al.* Modulation of the Tryptophan Hydroxylase 1/Monoamine Oxidase-A/5-Hydroxytryptamine/5-Hydroxytryptamine Receptor 2A/2B/2C Axis Regulates Biliary Proliferation and Liver Fibrosis During Cholestasis. Hepatology 2020;71(3):990-1008
Agents: Seretonin receptor 2TR2A/2B/2C agonists/antagonists **Vehicle:** Saline; **Route:** SC; **Species:** Rat; **Pump:** Not stated; **Duration:** 1 week;
ALZET Comments: Dose (100nmol/kg/day); Controls received mp w/ vehicle; animal info (Male, Sprague Dawley, 200-225 g); Seretonin receptor aka 5HT ; dependence;

Q8616: Y. Y. Kuo*, et al.* Glibenclamide restores dopaminergic reward circuitry in obese mice through interscauplar brown adipose tissue. Psychoneuroendocrinology 2020;118(104712
Agents: Glibenclamide **Vehicle:** PEG 400; DMSO; Tween; **Route:** SC; **Species:** Mice; **Pump:** 1002; **Duration:** 2 weeks;
ALZET Comments: Dose (0.4 mg/ kg body weight); 88% PEG 400, 10% DMSO used, 2% Tween; animal info (C57BL/6N mice); Glibenclamide aka GB; dependence;

Q8612: A. Krishnan*, et al.* Effect of DHT-Induced Hyperandrogenism on the Pro-Inflammatory Cytokines in a Rat Model of Polycystic Ovary Morphology. Medicina (Kaunas) 2020;56(3):
Agents: Dihydrotestosterone **Vehicle:** Not stated; **Route:** SC; **Species:** Rat; **Pump:** Not stated; **Duration:** 90 days;

ALZET Comments: Dose (83 µg/day); Controls received mp w/ vehicle; animal info (female Wistar albino rats, 21 days old); long-term study; Dihydrotestosterone aka DHT; dependence;

Q8610: J. C. Kreutzmann*, et al.* Chronic inhibition of GABA synthesis in the infralimbic cortex facilitates conditioned safety memory and reduces contextual fear. Transl Psychiatry 2020;10(1):120
Agents: Allylglycine, L-; Allylglycine, D-; **Vehicle:** Not stated; **Route:** CNS/CSF; **Species:** Rat; **Pump:** Not stated; **Duration:** 14 days;
ALZET Comments: Dose (7.0 nmoles/ 0.25 µl/h); animal info (adult male Sprague Dawley rats, aged 8 weeks); behavioral testing (Startle setup); Brain coordinates (AP, +2.5; ML, ±0; DV, −5.0); dependence;

Q8609: L. M. H. Krause*, et al.* Renal functional effects of the highly selective AT2R agonist, beta-Pro7 Ang III, in normotensive rats. Clin Sci (Lond) 2020;134(7):871-884
Agents: Candesartan **Vehicle:** Dextrose; **Route:** SC; **Species:** Rat; **Pump:** 2001D; **Duration:** 24 hours;
ALZET Comments: Dose (0.01 mg/kg/min); 5% dextrose used; animal info (12-week-old female Sprague-Dawley rats); Candesartan aka CAND; dependence;

Q8580: J. E. Kim*, et al.* Blockade of 67-kDa Laminin Receptor Facilitates AQP4 Down-Regulation and BBB Disruption via ERK1/2-and p38 MAPK-Mediated PI3K/AKT Activations. Cells 2020;9(7):
Agents: Immunoglobin G; SB202190; Wortmannin; 3-chloroacetyl indole; U0126 **Vehicle:** Not stated; **Route:** CSF/CNS (right lateral ventricle); **Species:** Rat; **Pump:** 1003D; 1007D; **Duration:** 3 days;
ALZET Comments: Dose (0.3 mg/mL SB202190, 0.1 nmol wortmannin; 25 uM 3-chloroacetyl indole; 25 uM U0126); Controls received mp w/ vehicle; animal info (Adult male Sprague-Dawley rats, 7 weeks old); Immunoglobin G aka IgG; SB202190 aka p38 MAPK inhibitor; Wortmannin aka P13K inhibitor; 3-chloroacetyl indole aka 3CAI; U0126 aka ERK1/2; ALZET brain infusion kit 1 used; Brain coordinates (1 mm posterior; 1.5 mm lateral; -3.5 mm depth to bregma); dependence;

Q8579: J. E. Kim*, et al.* CDDO-Me Inhibits Microglial Activation and Monocyte Infiltration by Abrogating NFkappaB- and p38 MAPK-Mediated Signaling Pathways Following Status Epilepticus. Cells 2020;9(5):
Agents: 2-cyano-3,12-dioxooleana-1,9-dien-28-oic acid methyl ester **Vehicle:** Not stated; **Route:** CNS/CSF (right lateral ventricle); **Species:** Rat; **Pump:** 1007D; **Duration:** 7 days;
ALZET Comments: Dose (0.5 nmol/kg/day); Controls received mp w/ vehicle; animal info (Adult male Sprague–Dawley rats (7 weeks old)); 2-cyano-3,12-dioxooleana-1,9-dien-28-oic acid methyl ester aka CDDO-Me; ALZET brain infusion kit 1 used; Brain coordinates (1 mm posterior; 1.5 mm lateral; 3.5 mm depth); dependence;

Q8576: J. E. Kim*, et al.* PLPP/CIN-mediated Mdm2 dephosphorylation increases seizure susceptibility via abrogating PSD95 ubiquitination. Exp Neurol 2020;331(113383
Agents: siRNA, Mdm2 **Vehicle:** Not stated; **Route:** CNS/CSF (lateral cerebral ventricle); **Species:** Mice; **Pump:** 1007D; **Duration:** 1 day;
ALZET Comments: Dose (20 µM); animal info (PLPP/CIN−/− mice); ALZET brain infusion kit 3 used; Brain coordinates (2.0 mm depth from bregma); dependence;

Q8577: J. Kim*, et al.* Therapeutic Effect of a Novel Chimeric Molecule Targeting Both Somatostatin and Dopamine Receptors on Growth Hormone-Secreting Pituitary Adenomas. Endocrinol Metab (Seoul) 2020;35(1):177-187
Agents: Lanreotide; Cabergoline; BIM23B065 **Vehicle:** Not stated; **Route:** SC; **Species:** Mice; **Pump:** Not stated; **Duration:** 7 days;
ALZET Comments: Dose (0.82 mg/kg/day Cabergoline; 2.257 mg/kg/day Lanreotide; 3 mg/kg/day BIM23B065); Controls received mp w/ vehicle; animal info (male mice, 40 weeks of age); BIM23B065 aka Chimeric Molecule; dependence;

Q8581: B. Kim*, et al.* Chronic nicotine impairs sparse motor learning via striatal fast-spiking parvalbumin interneurons. Addict Biol 2020;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;

Q8607: B. Khatua*, et al.* Ringer's Lactate Prevents Early Organ Failure by Providing Extracellular Calcium. J Clin Med 2020;9(1):
Agents: Caerulein **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Pump:** Not stated; **Duration:** 3 days;
ALZET Comments: Dose (50 mcg/kg/h); Controls received mp w/ vehicle; animal info (11–12 week old, 54 ± 2 g, ob/ob mice); Caerulein aka CER; dependence;

Q8565: N. Kawamura*, et al.* Reduced brain fractalkine-CX3CR1 signaling is involved in the impaired cognition of streptozotocin-treated mice. IBRO Rep 2020;9(233-240
Agents: Dexamethasone **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Pump:** 1007D; **Duration:** 7 days;
ALZET Comments: Dose (10, 30, and 100 ug/day); Controls received mp w/ vehicle; animal info (Male C57BL/6 J mice, 10-12 weeks old); behavioral testing (Y-maze test); Dexamethasone aka DEX; dependence;

Q8597: T. Kasamatsu*, et al.* Ocular dominance plasticity: Molecular mechanisms revisited. J Comp Neurol 2020;528(17):3039-3074
Agents: Dopamine, hydroxy-6 **Vehicle:** Not stated; **Route:** CSF/CNS (visual cortex); **Species:** Cat; **Pump:** Not stated; **Duration:** Not stated;
ALZET Comments: Controls received mp w/ vehicle; animal info (young kittens); 6-hydroxydopamine aka 6-OHDA; dependence;

Q8593: Y. Kamata*, et al.* Paclitaxel Induces Upregulation of Transient Receptor Potential Vanilloid 1 Expression in the Rat Spinal Cord. Int J Mol Sci 2020;21(12):
Agents: siRNA, TRPV1 **Vehicle:** CSF, Artificial; **Route:** CSF/CNS (intrathecal); **Species:** Rat; **Pump:** Not stated; **Duration:** 3 days;
ALZET Comments: Dose (0.5 nmol/µL/h); Controls received mp w/ vehicle; animal info (Male Wistar rats weighing 250 to 320 g); behavioral testing (Mechanical or Thermal Stimulation); dependence;

Q8558: V. Joseph*, et al.* Progesterone decreases apnoea and reduces oxidative stress induced by chronic intermittent hypoxia in ovariectomized female rats. Exp Physiol 2020;105(6):1025-1034
Agents: Progesterone **Vehicle:** Cyclodextrin, 2-ß-Hydroxypropl-; **Route:** SC; **Species:** Rat; **Pump:** 2ML4; **Duration:** 28 days;
ALZET Comments: Dose (4 mg/kg/day); Controls received mp w/ vehicle; animal info (Sprague-Dawley female rats (220-250g/57-70 days old)); post op. care (buprenorphine); Blood pressure measured via tail cuff method;93.3 mmHg - 105.2 mmHg;Progesterone aka prog; dependence;

Q8555: A. E. John*, et al.* Translational pharmacology of an inhaled small molecule alphavbeta6 integrin inhibitor for idiopathic pulmonary fibrosis. Nat Commun 2020;11(1):4659
Agents: GSK3008348 **Vehicle:** Saline, Sterile; **Route:** SC; **Species:** Mice; **Pump:** 2004; **Duration:** 14 days;
ALZET Comments: Dose (15 mg/kg/day); Controls received mp w/ vehicle; animal info (Male C57BL/6 mice, 6-12 weeks old); GSK3008348 aka selective small molecule αvβ6 RGD-mimetic; dependence;

Q8551: A. Jarneborn*, et al.* Tofacitinib treatment aggravates Staphylococcus aureus septic arthritis, but attenuates sepsis and enterotoxin induced shock in mice. Sci Rep 2020;10(1):10891
Agents: Tofacitinib **Vehicle:** DMSO; PEG 300; Water; **Route:** SC; **Species:** Mice; **Pump:** 2002; **Duration:** 3 days;
ALZET Comments: Dose (15 mg/kg/day); 10% Peg 300, 40% water used; Controls received mp w/ vehicle; animal info (Female NMRI mice and female BALB/c mice, 6-12 weeks old); dependence;

Q8214: L. L. Jantzie*, et al.* Prenatal opioid exposure: The next neonatal neuroinflammatory disease. Brain Behav Immun 2020;84(45-58
Agents: Methadone **Vehicle:** Saline; **Route:** SC; **Species:** Rat; **Pump:** Not stated; **Duration:** 28 days;
ALZET Comments: Dose (8 mg/kg, 12 mg/kg or 16 mg/kg); Controls received mp w/ vehicle; animal info (male and female Sprague Dawley rat pups); dependence;

Q8547: L. Hu*, et al.* Microglia-Derived NLRP3 Activation Mediates the Pressor Effect of Prorenin in the Rostral Ventrolateral Medulla of Stress-Induced Hypertensive Rats. Neurosci Bull 2020;36(5):475-492
Agents: MCC950; PRO20 **Vehicle:** CSF, Artificial; **Route:** CSF/CNS (intracisternal); **Species:** Rat; **Pump:** 1007D; **Duration:** 1 week;
ALZET Comments: Controls received mp w/ vehicle; animal info (Adult Sprague-Dawley rats (male, 8 weeks old, 250–300 g)); Blood pressure measured via tail-cuff method;115 mmHg - 140 mmHg;MCC950 aka NLRP3 inhibitor, PRO20 aka PRR antagonist; dependence;

Q8544: K. Hu*, et al.* Boron agents for neutron capture therapy. Coordination Chemistry Reviews 2020;405(**Agents:** N5-2OH; BPA **Vehicle:** Not stated; **Route:** CSF/CNS (intracerebral); IV; **Species:** Rat; **Pump:** Not stated; **Duration:** Not stated;
ALZET Comments: animal info (F98 glioma-bearing rats); dependence;

Q8543: Y. H. Hsieh*, et al.* Brainstem inflammation modulates the ventilatory pattern and its variability after acute lung injury in rodents. J Physiol 2020;598(13):2791-2811
Agents: Indomethacin **Vehicle:** DMSO; **Route:** CSF/CNS (intracisternal); **Species:** Rat; **Pump:** Not stated; **Duration:** 14 days;
ALZET Comments: Dose (100 ug/day); 50% DMSO used; Controls received mp w/ vehicle; animal info (adult (150–175 g) rats); Brain coordinates (0.8 mm posterior to bregma, 1.5 mm lateral to the midline and 3.5 mm ventral to the surface of the skull); dependence;

Q8537: M. Hecker*, et al.* Immunomodulation by an Omega-6 Fatty Acid Reduced Mixed Lipid Emulsion in Murine Acute Respiratory Distress Syndrome. J Clin Med 2020;9(7):
Agents: Triglycerides, long-chain; Triglycerides, medium chain **Vehicle:** Saline; **Route:** IV (external jugular); **Species:** Mice; **Pump:** Not stated; **Duration:** 3 days;
ALZET Comments: Dose (1.5 mg/kg/day); Controls received mp w/ vehicle; animal info (13-15 week old mice, 22-24 g); long-chain Triglycerides aka LCT; medium chain Triglycerides aka SMOF; dependence;

Q8536: D. He*, et al.* Asthmatic Airway Vagal Hypertonia Involves Chloride Dyshomeostasis of Preganglionic Neurons in Rats. Front Neurosci 2020;14(31
Agents: Minocycline **Vehicle:** CSF, Artifical; **Route:** CSF/CNS (intracerebral); IV; **Species:** Rat; **Pump:** 2002; **Duration:** 15 days;
ALZET Comments: Dose (172 ng/mL); animal info (Male Sprague–Dawley rats, seven-week-old, 170–190 g); Minocycline aka MC; ALZET brain infusion kit 2 used; Brain coordinates (0.8 mm caudal to the bregma; 1.5 mm lateral to the midline; 4 mm below the surface of the skull); dependence;

Q8533: M. Hayashi-Hori*, et al.* Therapeutic Effect of Rapamycin on Aortic Dissection in Mice. Int J Mol Sci 2020;21(9):
Agents: Angiotensin II; Aminopropionitrile, B-; Gefitinib; Rapamycin **Vehicle:** DMSO; **Route:** IP; **Species:** Mice; **Pump:** 1002; **Duration:** 14 days;
ALZET Comments: Dose (1000 ng/kg/min Angiontensin II; 150 mg/kg/day B-aminopropionitrile; 1000 mg/kg/day Gefitinib; 2 mg/kg/day Rapamycin); Controls received mp w/ vehicle; animal info (male mice aged 11–14 weeks); B-aminopropionitrile aka BAPN, Angiotensin II aka AngII; dependence;

Q8527: R. Hamati*, et al.* Serotonin-2B receptor antagonism increases the activity of dopamine and glutamate neurons in the presence of selective serotonin reuptake inhibition. Neuropsychopharmacology 2020;45(12):2098-2105
Agents: Escitaloporam **Vehicle:** Water; **Route:** SC; **Species:** Rat; **Pump:** 1003D; 2ML2; **Duration:** 2 days; 14 days;
ALZET Comments: Dose (2 mg/kg/day); animal info (Male Sprague-Dawley rats, 250 - 350 g); dependence;

Q8517: F. Gulcu Bulmus*, et al.* Kisspeptin and RF9 prevent paroxetine-induced changes in some parameters of seminal vesicle fluid in the male rats. Andrologia 2020;52(4):e13538
Agents: Kisspeptin; Peptide, RFamide **Vehicle:** Saline; **Route:** CSF/CNS (intracerebral); IV; **Species:** Rat; **Pump:** Not stated; **Duration:** 10 days;
ALZET Comments: Dose (1 nmol Kisspeptin and 20 nmol RF9); Controls received mp w/ vehicle; animal info (male Sprague Dawley rats (21-day-old) weighing 40 ± 2 g); RFamide Peptide aka RF9; peptides; Brain coordinates (according to the

bregma, in the anterior– posterior plane: 0.90 mm; in the lateral plane: 1.4 mm; and 4 mm on the vertical plane); dependence;

Q8515: C. J. Greig*, et al.* The M1 muscarinic acetylcholine receptor in the crypt stem cell compartment mediates intestinal mucosal growth. Exp Biol Med (Maywood) 2020;245(14):1194-1199
Agents: McN-A-343 **Vehicle:** Saline; **Route:** Not stated; **Species:** Mice; **Pump:** Not stated; **Duration:** 7 days;
ALZET Comments: Dose (5 mg/kg/day); Controls received mp w/ vehicle; animal info (Wild type C57BL/6 male mice, 12-14 weeks old); McN-A-343 aka M1 mAChR agonist; dependence;

Q8512: F. Gourgue*, et al.* Obesity and triple-negative-breast-cancer: Is apelin a new key target? J Cell Mol Med 2020;24(17):10233-10244
Agents: Apelin-13 **Vehicle:** PBS; **Route:** SC; **Species:** Mice; **Pump:** 2006; **Duration:** 6 weeks;
ALZET Comments: Dose (0.1 umol/kg/day); Controls received mp w/ vehicle; animal info (9-week-old Balb/cJRj or Balb/c nude mice); dependence;

Q8508: G. Gomez-Correa*, et al.* Chronic Bumetanide Infusion Alters Young Neuron Morphology in the Dentate Gyrus Without Affecting Contextual Fear Memory. Front Neurosci 2020;14(514
Agents: Bumetanide **Vehicle:** Propylene Glycol; **Route:** CNS/CSF (lateral ventricle); **Species:** Rat; **Pump:** 2002; **Duration:** 28 days;
ALZET Comments: Dose (0.4 mg/kg/day); Controls received mp w/ vehicle; animal info (male Wistar rats (250–350 g)); Multiple pumps per animal (2 pumps); ALZET brain infusion kit used; Brain coordinates (AP −1.4 mm; ML −2.0 mm); dependence;

Q8488: Z. Geng*, et al.* Exacerbated pressor and sympathoexcitatory effects of central Elabela in spontaneously hypertensive rats. Am J Physiol Heart Circ Physiol 2020;318(1):H124-H134
Agents: F13A; Elabela-21 **Vehicle:** Not stated; **Route:** SC; CSF/CNS (paraventricular nucleus); **Species:** Rat; **Pump:** 2004, 1004; **Duration:** 4 weeks;
ALZET Comments: Dose (12 nmol/day, 2 nmol/?L F13A; 5.28 nmol/day, 2 nmol/?L ELA-21); animal info (Male Wistar-Kyoto rats, spontaneously hypertensive rats); Blood pressure measured via tail cuff system;F13A aka Angiotensin II type 1 receptor antagonist, ELA-21 aka Elabela-21; ALZET brain infusion kit 1 used; Brain coordinates (1.8 mm caudal, 0.4 mm lateral from the bregma, and 7 mm ventral from the skull surface); dependence;

Q8477: 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 Rev 2020;100690
Agents: Granulocyte Macrophage Colony-Stimulating Factor, Recombinant 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;

Q8475: K. Fukuyama*, et al.* Effects of Carbamazepine, Lacosamide and Zonisamide on Gliotransmitter Release Associated with Activated Astroglial Hemichannels. Pharmaceuticals (Basel) 2020;13(6):
Agents: Carbamazepine; Lacosamide; Zonisamide **Vehicle:** DMSO; Ethanol; **Route:** CSF/CNS (orbitofrontal cortex); **Species:** Rat; **Pump:** 2ML1; **Duration:** 7 days;
ALZET Comments: Dose (25 mg/kg/day); 0.2% DMSO, 1% Ethanol used; animal info (Sprague-Dawley rats); Carbamazepine aka CBZ, Lacosamide aka LCM, Zonisamide aka ZNS; dependence;

Q8468: A. Fraga*, et al.* Temperature but not leptin prevents semi-starvation induced hyperactivity in rats: implications for anorexia nervosa treatment. Sci Rep 2020;10(1):5300
Agents: leptin, recomb. rat; **Vehicle:** PBS; **Route:** SC; **Species:** Rat; **Pump:** 2001; **Duration:** 14 days;
ALZET Comments: Dose (1.29 mg/ml); Controls received mp w/ vehicle; animal info (Male Sprague-Dawley rats (130–190 g)); dependence;

Q8467: E. Fielder*, et al.* Anti-inflammatory treatment rescues memory deficits during aging in nfkb1(-/-) mice. Aging Cell 2020;19(10):e13188
Agents: Ibuprofen **Vehicle:** PEG; DMSO; **Route:** SC; **Species:** Mice; **Pump:** 2004; **Duration:** 2 months;
ALZET Comments: Dose (50 mg/kg/day); Controls received mp w/ vehicle; animal info (male C57BL/6 mice, 6 months old); pumps replaced every 28 days; dependence;

Q8465: M. B. Fernandes*, et al.* Reprogramming of Lipid Metabolism as a New Driving Force Behind Tauroursodeoxycholic Acid-Induced Neural Stem Cell Proliferation. Front Cell Dev Biol 2020;8(335
Agents: Tauroursodeoxycholic acid **Vehicle:** CSF, Artificial; **Route:** CNS/CSF (lateral ventricle); **Species:** Rat; **Pump:** Not stated; **Duration:** 28 days;
ALZET Comments: Dose (300 µM); Controls received mp w/ vehicle; animal info (6- weeks old male Wistar rats); Tauroursodeoxycholic acid aka TUCDA; Brain coordinates (anterior-posterior: –0.4 mm, medial-lateral: 1.2 mm, dorso-ventral: 3.5 mm); dependence;

Q8454: E. A. Dulka*, et al.* Chemogenetic Suppression of GnRH Neurons during Pubertal Development Can Alter Adult GnRH Neuron Firing Rate and Reproductive Parameters in Female Mice. eNeuro 2020;7(3):
Agents: Clozapine-N-oxide **Vehicle:** DMSO; **Route:** SC; **Species:** Mice; **Pump:** 1007D; **Duration:** 7 days;
ALZET Comments: Dose (0.3 mg/kg); 2.75% DMSO used; Controls received mp w/ vehicle; animal info (Transgenic mice (C57Bl6/J), 2 weeks old); Clozapine-N-oxide aka CNO; dependence;

Q8453: K. A. Duggan*, et al.* Vasoactive intestinal peptide infusion reverses existing renal interstitial fibrosis via a blood pressure independent mechanism in the rat. Eur J Pharmacol 2020;873(172979
Agents: Vasoactive intestinal peptide **Vehicle:** Hartmann's Solution; **Route:** IV (iliac); **Species:** Rat; **Pump:** Not stated; **Duration:** 14 weeks;
ALZET Comments: Dose (5 pmol/kg/min); Controls received mp w/ vehicle; animal info (Fourteen week old spontaneous hypertensive rat); long-term study; Blood pressure measured via tail cuff plethysmography;193 mmHg - 200 mmHg;Vasoactive intestinal peptide aka VIP; peptides; dependence;

Q8190: C. M. Duan*, et al.* SRT2104 attenuates chronic unpredictable mild stress-induced depressive-like behaviors and imbalance between microglial M1 and M2 phenotypes in the mice. Behav Brain Res 2020;378(112296
Agents: SRT2104 **Vehicle:** Cyclodextrin, Hydroxypropyl; **Route:** CSF/CNS (hippocampus); **Species:** Mice; **Pump:** 1002; **Duration:** 12 days;
ALZET Comments: Controls received mp w/ vehicle; animal info (Adult male C57BL/6 mice (age: 6 weeks; weight: 18–22 g)); behavioral testing (swim test); Sirtuin 1 agonist aka SRT2104; dependence;

Q8446: V. Dobrocsyova*, et al.* AVE0991, a Nonpeptide Angiotensin 1-7 Receptor Agonist, Improves Glucose Metabolism in the Skeletal Muscle of Obese Zucker Rats: Possible Involvement of Prooxidant/Antioxidant Mechanisms. Oxid Med Cell Longev 2020;2020(6372935
Agents: AVE0991 **Vehicle:** Cyclodextrin; **Route:** Not stated; **Species:** Rat; **Pump:** Not stated; **Duration:** 2 weeks;
ALZET Comments: Dose (0.5mg/kg BW/day); 30% Cyclodextrin used; Controls received mp w/ vehicle; animal info (male obese Zucker rats); Resultant plasma level (2.75 uM/(min*mg); AVE0991 aka nonpeptide Mas receptor agonist; dependence;

Q8441: G. Dezfuli*, et al.* alpha4beta2 nicotinic acetylcholine receptors intrinsically influence body weight in mice. Neuropharmacology 2020;166(107921
Agents: Erythroidine, dihydro-beta **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Pump:** 2004; **Duration:** 28 days;
ALZET Comments: Dose (8 mg/kg/day); 0.9% NaCl used; Controls received mp w/ vehicle; animal info (Four-week-old wildtype C57BL/6J mice); dihydro-beta-Erythroidine aka DHβE; dependence;

Q8439: T. Develi*, et al.* Preventive and therapeutic effects of relaxin on bisphosphonaterelated osteonecrosis of the jaw: an experimental study in rats. Brazilian Dental Science 2020;23(1):
Agents: Relaxin **Vehicle:** Saline; **Route:** IP; **Species:** Rat; **Pump:** Not stated; **Duration:** 12 weeks;

ALZET Comments: Dose (0.17 µg/hr); Controls received mp w/ vehicle; animal info (Sprague Dawley rats); pumps replaced every 4 weeks; long-term study; dependence;

Q8433: S. Das*, et al.* Depletion of cyclic-GMP levels and inhibition of cGMP-dependent protein kinase activate p21(Cip1) /p27(Kip1) pathways and lead to renal fibrosis and dysfunction. FASEB J 2020;34(9):11925-11943
Agents: A71915; Rp-8-Br-cGMPS **Vehicle:** Not stated; **Route:** SC; **Species:** Mice; **Pump:** Not stated; **Duration:** 15 days;
ALZET Comments: Dose (1 ug/kg/day; 5 ug/kg/day); animal info (adult, 12-16 week old male mice); Blood pressure measured via tail-cuff method;95.4 mmHg - 138.6 mmHg;dependence;

Q8432: C. Dai*, et al.* Tacrolimus- and sirolimus-induced human beta cell dysfunction is reversible and preventable. JCI Insight 2020;5(1):
Agents: Tacrolimus **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **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); Tacrolimus aka TAC; dependence;

Q8431: P. P. C. Costa*, et al.* Antihypertensive potential of cis-[Ru(bpy)2(ImN)(NO)](3+), a ruthenium-based nitric oxide donor. Res Vet Sci 2020;130(153-160
Agents: cis-[Ru(bpy)2ImN(NO)]3+ **Vehicle:** Saline; **Route:** SC; **Species:** Rat; **Pump:** 1002; **Duration:** 14 days;
ALZET Comments: Dose (240 nmoles/kg/day); Controls received mp w/ vehicle; animal info (Male Wistar rats, 250–275 g); Blood pressure measured via tail cuff method;107 mmHg - 162 mmHg;cis-[Ru(bpy)2ImN(NO)]3+ aka FOR0811; dependence;

Q8430: W. D. Cornwell*, et al.* Tobacco smoke and morphine alter peripheral and CNS inflammation following HIV infection in a humanized mouse model. Sci Rep 2020;10(1):13977
Agents: Morphine **Vehicle:** Not stated; **Route:** Not stated; **Species:** Mice; **Pump:** Not stated; **Duration:** 28 days;
ALZET Comments: Dose (1 mg/kg/day); dependence;

Q8316: A. Cheung*, et al.* Relationship between Early Vasopressor Administration and Spinal Cord Hemorrhage in a Porcine Model of Acute Traumatic Spinal Cord Injury. J Neurotrauma 2020;37(15):1696-1707
Agents: 25(OH)D3 or 1,25(OH)2D3 **Vehicle:** PEG; **Route:** SC; **Species:** Mice; **Pump:** 2006; **Duration:** 6 weeks;
ALZET Comments: Dose (25(OH)D3- 75 ug/kg/day or1,25(OH)2D3- 60 ng/kg/day); Controls received mp w/ vehicle; animal info (C57BL/6, Ctns-/-, 12 months old); dependence;

Q8413: I. J. Chen*, et al.* The Circadian Hormone Melatonin Inhibits Morphine-Induced Tolerance and Inflammation via the Activation of Antioxidative Enzymes. Antioxidants (Basel) 2020;9(9):
Agents: Morphine **Vehicle:** DMSO; Saline; **Route:** CSF/CNS (intrathecal); **Species:** Rat; **Pump:** Not stated; **Duration:** 10 days;
ALZET Comments: 0.9% Saline used; Controls received mp w/ vehicle; animal info (adult male wistar rats, 300-350 g); behavioral testing (Nociceptive Test); dependence;

Q8408: P. Chandra*, et al.* Inhibition of Fatty Acid Oxidation Promotes Macrophage Control of Mycobacterium tuberculosis. mBio 2020;11(4):
Agents: Trimetazidine **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Pump:** 2002; **Duration:** 2 weeks;
ALZET Comments: Dose (10.66 mg/kg/day); Controls received mp w/ vehicle; animal info (8 to 12 week old C57BL/6 mice); Trimetazidine aka TMZ; dependence;

Q8407: T. D. Challa*, et al.* A Genetic Model to Study the Contribution of Brown and Brite Adipocytes to Metabolism. Cell Rep 2020;30(10):3424-3433 e4
Agents: fibroblast growth factor 21, recominant human **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Pump:** 1002; **Duration:** 2 days;
ALZET Comments: Dose (1 mg/kg/day); Controls received mp w/ vehicle; animal info (UCP1-DTR-eGFP mice); recombinant human fibroblast growth factor 21 aka recombinant human FGF21; dependence;

Q8406: H. Chai*, et al.* IKK Epsilon Deficiency Attenuates Angiotensin II-Induced Abdominal Aortic Aneurysm Formation in Mice by Inhibiting Inflammation, Oxidative Stress, and Apoptosis. Oxid Med Cell Longev 2020;2020(3602824
Agents: Angiotensin II **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Pump:** 2004; **Duration:** 28 days;
ALZET Comments: Dose (1000 ng/kg/min); Controls received mp w/ vehicle; animal info (Apoe–/− mice); Blood pressure measured via tail-cuff method;110 mmHg - 145 mmHg;Angiotensin II aka Ang II; dependence;

Q8402: M. Carceles-Cordon*, et al.* NMDAR Antibodies Alter Dopamine Receptors and Cause Psychotic Behavior in Mice. Ann Neurol 2020;88(3):603-613
Agents: NMDAR-CSF **Vehicle:** CSF; **Route:** CNS/CSF (lateral ventricle); **Species:** Mice; **Pump:** Not stated; **Duration:** 14 days;
ALZET Comments: Controls received mp w/ vehicle; animal info (male C57BL/6J mice, 8 to 10 weeks old (25–30g)); behavioral testing (prepulse inhibition of the acoustic startle reflex; novel object location; general locomotor activity); Multiple pumps per animal (2 pumps); NMDAR aka anti-N-methyl-D-aspartate receptor; dependence;

Q8391: J. M. Bossert*, et al.* In a Rat Model of Opioid Maintenance, the G Protein-Biased Mu Opioid Receptor Agonist TRV130 Decreases Relapse to Oxycodone Seeking and Taking and Prevents Oxycodone-Induced Brain Hypoxia. Biol Psychiatry 2020;88(12):935-944
Agents: Buprenophrine; TRV130 **Vehicle:** Not stated; **Route:** SC; **Species:** Rat; **Pump:** Not stated; **Duration:** 14 days;
ALZET Comments: Dose (0, 3, 6, or 9 mg/kg/day); Controls received mp w/ vehicle; animal info (Sprague Dawley rats, 250 to 350 g (males) or 175 to 225 g (females)); TRV130 aka G protein–biased mu opioid receptor agonist; dependence;

Q8168: H. L. Bi*, et al.* Inhibition of UCHL1 by LDN-57444 attenuates Ang II-Induced atrial fibrillation in mice. Hypertens Res 2020;43(3):168-177
Agents: Angiotensin II **Vehicle:** Saline; **Route:** Not stated; **Species:** Mice; **Pump:** 1004; **Duration:** 3 weeks;
ALZET Comments: Dose (2000 ng/kg/min); Controls received mp w/ vehicle; animal info (Eight-week-old male C57BL/6 mice); Angiotensin II aka Ang II; dependence;

Q8348: R. Bautista-Perez*, et al.* The Role of P2X7 Purinergic Receptors in the Renal Inflammation Associated with Angiotensin II-induced Hypertension. Int J Mol Sci 2020;21(11):
Agents: Angiotensin II **Vehicle:** Not stated; **Route:** SC; **Species:** Rat; **Pump:** 2002; **Duration:** 2 weeks;
ALZET Comments: Dose (435 ng/kg/min); Controls received mp w/ vehicle; animal info (Male Wistar rats (350–360 g)); Blood pressure measured via tail-cuff method;125 mmHg - 200 mmHg;Angiotensin II aka Ang II; dependence;

Q8346: J. Basta*, et al.* Pharmacologic inhibition of RGD-binding integrins ameliorates fibrosis and improves function following kidney injury. Physiol Rep 2020;8(7):e14329
Agents: CWHM-12 **Vehicle:** DMSO; **Route:** SC; **Species:** Mice; **Pump:** Not stated; **Duration:** 27 days;
ALZET Comments: Dose (100 mg/kg per day); Controls received mp w/ vehicle; animal info (8- to 10-week-old wild-type male ICR outbred mice); CWHM-12 aka RGD integrin antagonist; dependence;

Q8344: F. Bai*, et al.* Conservation of glucagon like peptide-1 level with liraglutide and linagilptin protects the kidney against angiotensin II-induced tissue fibrosis in rats. Eur J Pharmacol 2020;867(172844
Agents: Angiotensin II **Vehicle:** Saline; **Route:** SC; **Species:** Rat; **Pump:** 2004; **Duration:** 4 week;
ALZET Comments: Dose (500 ng/kg/min); 0.9% saline used; Controls received mp w/ vehicle; animal info (Male Sprague-Dawley rats, 200–250g); Angiotensin II aka Ang II; dependence;

Q8340: J. Avraam*, et al.* Perinatal Nicotine Reduces Chemosensitivity of Medullary 5-HT Neurons after Maturation in Culture. Neuroscience 2020;446(80-93
Agents: Nicotine Bitartrate **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Pump:** 1002; **Duration:** 2 weeks;
ALZET Comments: Dose (6 mg/kg/day or 60 mg/kg/day); 0.9% NaCl used; Controls received mp w/ vehicle; animal info (pregnant ePET-EYFP mice); dependence;

Q8339: D. K. Atchison*, et al.* Hypertension induces glomerulosclerosis in phospholipase C-epsilon1 deficiency. Am J Physiol Renal Physiol 2020;318(5):F1177-F1187

Agents: Angiotensin II **Vehicle:** Not stated; **Route:** SC; **Species:** Mice; **Pump:** 1002, 1004; **Duration:** 2, 4 weeks;
ALZET Comments: Dose (1.5 mg/kg/day); Controls received mp w/ vehicle; animal info (Global Plce1?/? mice on a C57BL/6J background); Blood pressure measured via tail-cuff system;130 mmHg - 210 mmHg;Angiotensin II aka ANG II; dependence;

Q8329: F. Aguirre*, et al.* Protective Effect of Angiotensin 1-7 on Sarcopenia Induced by Chronic Liver Disease in Mice. Int J Mol Sci 2020;21(11):
Agents: Angiotensin (1-7) **Vehicle:** Not stated; **Route:** SC; **Species:** Mice; **Pump:** Not stated; **Duration:** 6 weeks;
ALZET Comments: Dose (100 ng/kg/min); animal info (Male mice C57BL/6J (16 weeks old)); behavioral testing (weightlifting test, running test, rotarod); Angiotensin (1-7) aka Ang-(1-7); dependence;