Recent References on the Administration of Drugs of Abuse (including Amphetamines, Barbiturates, Cocaine, GHB, Heroin, Nicotine, and PCP) Using ALZET® Osmotic Pumps

Amphetamines (2011-Present)

Q9516: T. C. Uzuneser, *et al.* Presynaptic vesicular accumulation is required for antipsychotic efficacy in psychotic-like rats. Journal of Psychopharmacology 2021;35(1):65-77
Agents: Amphetamine sulfate, d- **Vehicle:** Saline; **Route:** CSF/CNS (lateral ventricle); **Species:** Rat; **Pump:** 2001; **Duration:** 7 days;
ALZET Comments: Dose (); 0.9% Saline used; Controls received mp w/ vehicle; animal info (Male Sprague-Dawley rats, 300-350 g); behavioral testing (locomotion test); d-amphetamine sulfate aka AMPH; ALZET brain infusion kit 2 used; Brain coordinates (0.8 mm posterior, 1.4 mm lateral, 4.5 mm ventral frrom the bregma); cyanoacrylate adhesive;

Q7057: P. Petschner, *et al.* Gene expression analysis indicates reduced memory and cognitive functions in the hippocampus and increase in synaptic reorganization in the frontal cortex 3 weeks after MDMA administration in Dark Agouti rats. BMC Medicine 2018;19(1):580
Agents: Methamphetamine, 3,4-methylenedioxy- **Vehicle:** Saline; **Route:** SC; **Species:** Rat; **Pump:** 2001; **Duration:** Not Stated;
ALZET Comments: Controls received mp w/ vehicle; animal info (8-week old Dark Agouti rats weighing 152 +/- 3.58 g);

Q7766: A. R. Johnson, *et al.* Amphetamine maintenance differentially modulates effects of cocaine, methylenedioxypyrovalerone (MDPV), and methamphetamine on intracranial self-stimulation and nucleus accumbens dopamine in rats. Neuropsychopharmacology 2018;43(8):1753-1762
Agents: amphetamine **Vehicle:** saline, bacteriostatic; **Route:** SC; **Species:** Rat; **Pump:** 2ML2; **Duration:** 7, 13 days;
ALZET Comments: Dose (0.1 or 0.32 mg/kg/h), (2ML2 pump 0.5 µl/h); Controls received mp w/ vehicle; animal info (male, Sprague-Dawley, 300-350g); behavioral testing (operant chambers); comparison of IP injection vs mp; dependence;

Q6700: D. Moller, *et al.* Discovery of G Protein-Biased Dopaminergics with a Pyrazolo[1,5-a]pyridine Substructure. J Med Chem 2017;60(7):2908-2929
Agents: Amphetamine **Vehicle:** DMSO; acetic acid; water; **Route:** SC; **Species:** Rat; **Pump:** 2ML1; **Duration:** 7 days;
ALZET Comments: Dose (1.5 mg/kg/day); 2% acetic acid, 25% DMSO used; Controls received mp w/ vehicle; animal info (Male Sprague−Dawley rats weighing 300−350 g); dependence

Q6443: S. V. Kyosseva, *et al.* Chronic adminsitration of MDMA ("ECSTASY") increases insulin-regulated glucose transporter GLUT4 in rat brain and heart. Comptes Rendus de l'Académie bulgare des Sciences 2017;
Agents: Methamphetamine, 3,4-methylenedioxy **Vehicle:** Saline; **Route:** SC; **Species:** Rat; **Pump:** 2ML2; **Duration:** 10 days;
ALZET Comments: Dose (0.3 or 3 mg/kg/day); animal info (Sprague-Dawley rats);

Q6649: E. E. Reichard, *et al.* PEGylation of a High-Affinity Anti-(+)Methamphetamine Single Chain Antibody Fragment Extends Functional Half-Life by Reducing Clearance. Pharm Res 2016;33(12):2954-2966
Agents: Methamphetamine **Vehicle:** Saline; **Route:** SC; **Species:** Rat; **Pump:** Not Stated; **Duration:** 2 weeks;
ALZET Comments: Dose (3.2 mg/kg/day); animal info (Adult male Sprague-Dawley rats (275-320 g));

Q4545: N. Nanaware-Kharade, *et al.* A Nanotechnology-Based Platform for Extending the Pharmacokinetic and Binding Properties of Anti-methamphetamine Antibody Fragments. SCIENTIFIC REPORTS 2015;5(U1-U10
Agents: Methamphetamine **Vehicle:** Not Stated; **Route:** SC; **Species:** Rat; **Pump:** Not Stated; **Duration:** 10 days;
ALZET Comments: Animal info (male, Sprague Dawley, adult, 280-310g); functionality of mp verified by blood levels;

Q4443: A. C. Harris, *et al.* The Anti-(+)-Methamphetamine Monoclonal Antibody mAb7F9 Attenuates Acute (+)-Methamphetamine Effects on Intracranial Self-Stimulation in Rats. PLoS One 2015;10(U408-U420
Agents: Methamphetamine hydrochloride **Vehicle:** Saline; **Route:** SC; **Species:** Rat; **Pump:** 2ML2; **Duration:** 7 days;
ALZET Comments: Controls received mp w/ vehicle; animal info (male, Sprague Dawley, 275-300g); functionality of mp verified by elevations in ICSS; behavioral testing (ICSS); dependence; pumps removed after 7 days;

Q4390: P. W. Czoty, *et al.* Effects of the dopamine/norepinephrine releaser phenmetrazine on cocaine self-administration and cocaine-primed reinstatement in rats. PSYCHOPHARMACOLOGY 2015;232(2405-2414
Agents: Amphetamine, D-; phenmetrazine **Vehicle:** Saline; **Route:** SC; **Species:** Rat; **Pump:** 2001; **Duration:** 14 days;
ALZET Comments: Controls received mp w/ vehicle; animal info (male, Sprague-Dawley, 300-350g); pumps replaced every 7 days; behavioral testing (cocaine self-administration, food self-administration); dependence;

Q3632: B. A. Zimmer, *et al.* Reduction of the reinforcing effectiveness of cocaine by continuous D-amphetamine treatment in rats: importance of active self-administration during treatment period. Psychopharmacology 2014;231(5):949-954
Agents: Amphetamine, D- **Vehicle:** Saline, sterile; **Route:** SC; **Species:** Rat; **Pump:** 2001; **Duration:** 7 days;
ALZET Comments: Controls received mp w/ vehicle; animal info (male, Sprague Dawley, 12 week old, 350g); behavioral testing (cocaine self-administration); dependence; pumps removed on day 7; used amphetamine concentration of approx 73ug/ul.

Q3319: T. F. Rau, *et al.* Administration of low dose methamphetamine 12 h after a severe traumatic brain injury prevents neurological dysfunction and cognitive impairment in rats. Experimental Neurology 2014;253(;):31-40
Agents: Methamphetamine **Vehicle:** Not Stated; **Route:** IV (femoral); **Species:** Rat; **Pump:** 2001D; **Duration:** 24 hours;
ALZET Comments: Controls received mp w/ vehicle; animal info (male, Wistar, 350-500g); functionality of mp verified by plasma serum levels; dose-response (pg.33); behavioral testing (foot fault assessment, morris water maze); pumps implanted in inguinal crease; catheter preloaded with 50% dextrose/50% heparin; pumps removed after 61-65hours;

Q3814: I. D. Blum, *et al.* A highly-tunable dopaminergic oscillator generates ultradian rhythms of behavioral arousal. eLife Journal 2014;3(U146-U189
Agents: Methamphetamine **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Pump:** 1002; **Duration:** 2 weeks;
ALZET Comments: Animal info (Bmal1 -/-,); behavioral testing (locomotor activity running wheels); dependence; delayed delivery; catheter filled with saline for 4 day recovery; used plastics one catheter;

Q3416: C. T. Bauer, *et al.* The effect of chronic amphetamine treatment on cocaine-induced facilitation of intracranial self-stimulation in rats. Psychopharmacology 2014;231(2461-2470
Agents: Amphetamine **Vehicle:** Saline; **Route:** SC; **Species:** Rat; **Pump:** 2ML4; **Duration:** 14 days;
ALZET Comments: Controls received mp w/ vehicle; animal info (male, Sprague Dawley, 311-406g); post op. care (Ketoprofen 5 mg/kg); behavioral testing (cocaine self administration); dependence; pumps removed after 14 days;

Q5002: M. Iijima, *et al.* Effect of an mGlu2/3 receptor antagonist on depressive behavior induced by withdrawal from chronic treatment with methamphetamine. Behavioural Brain Research 2013;246(24-8
Agents: methamphetamine (MAP) **Vehicle:** saline; **Route:** SC; **Species:** Rat; **Pump:** 2ML1; **Duration:** 5 days;
ALZET Comments: animal info: male, Sprague-Dawley, 5 wks old; tolerance studies; dependence; behavioral testing: forced swimming test, locomotor activity; mp used to infuse methamphetamine to induce a withdrawal-like effect in rats to study the effect of LY341495 (mGlu2/3 receptor antagonist) on withdrawal-induced depressive behavior; dose: 2.5, or 5 mg/kg/day

Q2909: G. L. Ding, *et al.* MRI of Neuronal Recovery after Low-Dose Methamphetamine Treatment of Traumatic Brain Injury in Rats. PLoS One 2013;8(4):U175-U183
Agents: Methamphetamine **Vehicle:** Not Stated; **Route:** IV; **Species:** Rat; **Pump:** Not Stated; **Duration:** 24 hours;
ALZET Comments: Controls received mp w/ saline; animal info. (male, wistar rats, 200-300 g); functionality of mp verified by MRI measurement of fractional anisotropy

Q2683: T. F. Rau, *et al.* Treatment with low-dose methamphetamine improves behavioral and cognitive function after severe traumatic brain injury. JOURNAL OF TRAUMA AND ACUTE CARE SURGERY 2012;73(;):S165-S172
Agents: Methamphetamine **Vehicle:** Not Stated; **Route:** IV (femoral); **Species:** Rat; **Pump:** 2001D; **Duration:** 24 hours;
ALZET Comments: Control animals received mp w/ saline; animal info (Wistar, male, adult, 400 g); PE50 tubing used

Q1237: H. Miyata, *et al.* Decreases in Brain Reward Function Reflect Nicotine- and Methamphetamine-Withdrawal Aversion in Rats. Current Neuropharmacology 2011;9(1):63-67
Agents: Nicotine; Methamphetamine **Vehicle:** Saline; **Route:** SC; **Species:** Rat; **Pump:** 2001; **Duration:** 7 days;
ALZET Comments: Controls received mp w/ vehicle; animal info (Sprague Dawley, male, 332-396 g)

Q10024: H. Hasan*, et al.* Rodent Models of Methamphetamine Misuse: Mechanisms of Methamphetamine Action and Comparison of Different Rodent Paradigms. Methods and Protocols, Methods in Molecular Biology 2011;
Agents: Methamphetamine **Vehicle:** Saline; **Route:** SC; **Species:** Rat; **Pump:** Not Stated; **Duration:** 7 days;
ALZET Comments: Dose (7 mg/kg/day); Controls received mp w/ vehicle; animal info (adult male Sprague-Dawley rats); Methamphetamine aka METH; dependence;

Q1707: K. S. Bhatia*, et al.* Reversal of long-term methamphetamine sensitization by combination of pergolide with ondansetron or ketanserin, but not mirtazapine. Behavioural Brain Research 2011;223(1):227-232
Agents: Methamphetamine hydrochloride **Vehicle:** Saline; **Route:** SC; **Species:** Rat; **Pump:** 2ML1; **Duration:** 7 days;
ALZET Comments: Controls received mp w/ vehicle; animal info (Sprague Dawley, male, 275-300 g); functionality of mp verified via residual volume

Cocaine (2011-Present)

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;

Q8149: K. Ouk*, et al.* Chronic paroxetine treatment prevents disruption of methamphetamine-sensitive circadian oscillator in a transgenic mouse model of Huntington's disease. Neuropharmacology 2018;131(337-350
Agents: Cocaine hydrochloride **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Pump:** 1004; **Duration:** 4 weeks;
ALZET Comments: Dose (30 mg/kg/day); 0.9% Saline used; Controls received mp w/ vehicle; animal info (12 weeks old); neurodegenerative (Huntington's Disease);

R0335: R. M. Post. Epigenetic basis of sensitization to stress, affective episodes, and stimulants: implications for illness progression and prevention. Biorheology 2016;18(4):315-24
Agents: Cocaine **Vehicle:** Not Stated; **Route:** Not Stated; **Species:** Not Stated; **Pump:** Not Stated; **Duration:** Not Stated;
ALZET Comments:

Q4278: A. K. Radke*, et al.* Cocaine withdrawal in rats selectively bred for low (LoS) versus high (HiS) saccharin intake. PHARMACOLOGY BIOCHEMISTRY AND BEHAVIOR 2015;129(51-55
Agents: Cocaine hydrochloride **Vehicle:** Saline, sterile; **Route:** SC; **Species:** Rat; **Pump:** 2ML2; **Duration:** 2 weeks;
ALZET Comments: Controls received mp w/ vehicle; animal info (male, Holtzmann/Harlan Sprague Dawley); no stress (see pg.53); post op. care (topical antibiotic ointment); behavioral testing (saccharin intake);

Q3606: C. M. Pudiak*, et al.* Tolerance to cocaine in brain stimulation reward following continuous cocaine infusions. Pharmacology Biochemistry and Behavior 2014;122(246-252
Agents: Cocaine **Vehicle:** Saline; sodium metabisulfate; **Route:** SC; **Species:** Rat; **Pump:** 2ML2; **Duration:** 14 days;
ALZET Comments: Controls received mp w/ vehicle; animal info (male, Long-Evans, 275-350g); functionality of mp verified by residual volume; 0.3% sodium metabisulfate used to prevent degredation; stress/adverse reaction: (see pg.294); post op. care (neosporin); dependence; "Cocaine delivered continuously via osmotic minipump may better mimic the high drug-plasma concentrations maintained by an addict during a binge than daily administered cocaine injections." pg 250; pumps removed after 14 days; pumps primed at 37C for at least 4 hours;

Q3579: P. A. Narayana*, et al.* Chronic cocaine administration causes extensive white matter damage in brain: Diffusion tensor imaging and immunohistochemistry studies. PSYCHIATRY RESEARCH-NEUROIMAGING 2014;221(3):220-230
Agents: Cocaine **Vehicle:** Saline; **Route:** SC; **Species:** Rat; **Pump:** 2ML4; **Duration:** 28 days;
ALZET Comments: Controls received mp w/ vehicle; animal info (male, SD, 280-300g); behavioral testing (fine motor movement; ambulation; rearing activities; general motor behavior); dependence; MRI; pumps primed for 24 hours in 37C saline;

Q3428: F. F. Caputi, *et al.* Dynorphin/KOP and nociceptin/NOP gene expression and epigenetic changes by cocaine in rat striatum and nucleus accumbens. PROGRESS IN NEURO-PSYCHOPHARMACOLOGY & BIOLOGICAL PSYCHIATRY 2014;49(;):36-46
Agents: Cocaine **Vehicle:** Not Stated; **Route:** SC; **Species:** Rat; **Pump:** 2001; **Duration:** 7 days;
ALZET Comments: Controls received mp w/ saline; animal info (male, Sprague Dawley, 200-250g);

Q2161: A. K. Stoker, *et al.* Involvement of metabotropic glutamate receptor 5 in brain reward deficits associated with cocaine and nicotine withdrawal and somatic signs of nicotine withdrawal. Psychopharmacology 2012;221(2):317-327
Agents: Nicotine; cocaine hydrochloride **Vehicle:** Saline, sterile; **Route:** SC; IP; **Species:** Mice; **Pump:** 2004; 1003D; **Duration:** 3, 28 days;
ALZET Comments: Controls received mp w/ vehicle; animal info (mGlu5 KO, wt)

Q1704: A. K. Stoker, *et al.* Withdrawal from chronic cocaine administration induces deficits in brain reward function in C57BL/6J mice. Behavioural Brain Research 2011;223(1):176-181
Agents: Cocaine hydrochloride **Vehicle:** Saline, sterile; **Route:** IP; **Species:** Mice; **Pump:** 1003D; **Duration:** 3 days;
ALZET Comments: Controls received mp w/ saline; animal info (C57BL/6, male, 7-8 wks old) withdrawal; "continuous cocaine administration via intraperitoneal osmotic minipumps is an excellent tool for the assessment of the effects of cocaine administration and withdrawal on various behavioral measures." pg 180

GHP (Gamma-hydroxybutyrate)

P6690: S. T. Szabo, *et al.* Effects of sustained gamma-hydroxybutyrate treatments on spontaneous and evoked firing activity of locus coeruleus norepinephrine neurons. Biological Psychiatry 2004;55(9):934-939
Agents: Hydroxybutyrate, gamma- **Vehicle:** Saline; **Route:** SC; **Species:** Rat; **Pump:** Not Stated; **Duration:** 2,10 days;
ALZET Comments: Controls received mp w/ vehicle; dependence; agent is a drug of abuse, known as "liquid ecstacy" or GHB (sodium oxybate); pump model not listed

Q7544: Y. Basaki, *et al.* gamma-Hydroxybutyric acid and 5-fluorouracil, metabolites of UFT, inhibit the angiogenesis induced by vascular endothelial growth factor. Angiogenesis 2001;4(3):163-73
Agents: Hydroxybutyrate, gamma- **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Pump:** Not Stated; **Duration:** 5 days;
ALZET Comments: Dose (2.5, 12.6, 63 mg/kg/day); Controls received mp w/ vehicle; animal info (female, BALB/cA or ICR); cardiovascular; Therapeutic indication (inhibition of VEGF-induced angiogenesis); GHB is a metabolite of tegafur;

Heroin

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;

Q4818: S. Daniels, *et al.* Alterations of naltrexone-induced conditioned place avoidance by pre-exposure to high fructose corn syrup or heroin in Sprague–Dawley rats. Psychopharmacology 2016;233):425-433
Agents: Heroin **Vehicle:** Not Stated; **Route:** SC; **Species:** Rat; **Pump:** 2ML2; **Duration:** 14 days;
ALZET Comments: Controls received mp w/ vehicle; animal info (male, Spargue Dalwley, 175-200g); behavioral testing (place conditioning); used wound clips; Dose (3.5 mg/kg/day);

Q2457: A. M. Williams, *et al.* The effect of intermittent alcohol vapor or pulsatile heroin on somatic and negative affective indices during spontaneous withdrawal in Wistar rats. Psychopharmacology 2012;223(1):75-88
Agents: Heroin **Vehicle:** Saline; **Route:** SC; **Species:** Rat; **Pump:** 2ML4; **Duration:** 30 days;
ALZET Comments: Control animals received mp w/ vehicle; animal info (Wistar, male, 70 days old); pulsatile delivery; "By filling the pumps with saline and attaching polyethylene (PE60) tubing to the pump, based on the tubing inner diameter and pump flow rate characteristics, the volume needed for different infusion periods (e.g., 14- or 10-h periods) could be determined"; "the tubing was filled with alternating heroin solution and mineral oil"; pulsatile delivery; good methods, pg 78; image of pump with connected Lynch coil; wound clips used; post op. care (Baytril); behavioral testing (elevated plus mazel forced swim test)

P9748: G. Klein, *et al.* The contribution of MOR-1 exons 1-4 to morphine and heroin analgesia and dependence. Neuroscience Letters 2009;457(3):115-119
Agents: Heroin hydrochloride; morphine sulfate **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Pump:** 2001; **Duration:** Not Stated;
ALZET Comments: Controls received mp w/vehicle; dependence; animal info (adult, male, CD-1)

Q0587: B. Kest, *et al.* Gnao1 (G-alpha$_o$ PROTEIN) IS A LIKELY GENETIC CONTRIBUTOR TO VARIATION IN PHYSICAL DEPENDENCE ON OPIOIDS IN MICE. Neuroscience 2009;162(4):1255-1264
Agents: Morphine; heroin **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Pump:** 2001; **Duration:** 7 days;
ALZET Comments: Animal info (Naive, adult, 7-12 wks old, male, AcB/BcA)

P6278: M. R. Azar, *et al.* A non-invasive gating device for continuous drug delivery that allows control over the timing and duration of spontaneous opiate withdrawal. Journal of Neuroscience Methods 2004;135(1-2):129-135
Agents: Heroin **Vehicle:** Saline; **Route:** SC; **Species:** Rat; **Pump:** 2ML2; **Duration:** 192 hours;
ALZET Comments: Comparison of sc injections & pellet vs. mp; dependence; 3 day recovery period; pumps connected to a novel gating device to allow on-off delivery; assembly schematic (p. 131); infusions were delivered in 48 hour intervals; animal info (m, wistar, 300-380 grams)

P3132: Y. Shaham, *et al.* Relapse to heroin-seeking in rats under opioid maintenance: the effects of stress, heroin priming, and withdrawal. J. Neurosci 1996;16(5):1957-1963
Agents: Heroin **Vehicle:** Not Stated; **Route:** SC; **Species:** Rat; **Pump:** 2002; **Duration:** Not Stated;
ALZET Comments: Controls received mp with saline or sham operation; dependence

P0588: W. K. Schmidt, *et al.* Nalbuphine. Drug and Alcohol Dependence 1985;14(339-362
Agents: Ethylketocyclazocine; Heroin; Meperidine; Oxymorphone; Pentazocine; Propoxyphene; Bremazocine; Buprenorphine; Butorphanol; Methadone; Morphine; Nalbuphine; U-50,488H **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice; **Pump:** Not Stated; **Duration:** 3 days;
ALZET Comments: Comparison of sc morphine pellets vs. mp infusion; comparison of agents effects; controls received unspecified placebo infusion

Nicotine (2020-Present)

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"

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;

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;

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;

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;

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;

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;

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;

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);

Q9852: P. Zhang*, et al.* Inhibition of Autophagy Signaling via 3-methyladenine Rescued Nicotine-Mediated Cardiac Pathological Effects and Heart Dysfunctions. International Journal of Biological Sciences 2020;16(8):1349-1362
Agents: Nicotine **Vehicle:** Saline; **Route:** SC; **Species:** Rat; **Pump:** 2ML4; **Duration:** 30 days;
ALZET Comments: Dose (4 µg/kg/min); Controls received mp w/ vehicle; animal info (Sprague-Dawley male rats (8-months-old)); ischemia (cardiac injury);

Q10070: P. C. Tsai, *et al.* Sympathetic activation of splenic T-lymphocytes in hypertension of adult offspring programmed by maternal high fructose exposure. Chinese Journal of Physiology 2020;63(6):263-275
Agents: Nicotine **Vehicle:** Saline; **Route:** Abdomen; **Species:** Rat; **Pump:** 1007D; **Duration:** 7 days;
ALZET Comments: Dose (1 mg/kg/day); Controls received mp w/ vehicle; animal info (male and virgin female adult Sprague-Dawley rats, 12-14 weeks old); Blood pressure measured via tail-cuff method;105 mmHg - 130 mmHg;cardiovascular;

Q8943: T. Sato, *et al.* Suppressive effect of ghrelin on nicotine-induced clock gene expression in the mouse pancreas. Endocrine Journal 2020;67(1):73-80
Agents: Nicotine **Vehicle:** Saline; **Route:** IP; **Species:** Mice; **Pump:** 1007D; **Duration:** 7 days;
ALZET Comments: Dose (1.67 ng/0.5 uL/hr/20 g); Controls received mp w/ vehicle; animal info (Male C57BL/6J Jcl mice); Resultant plasma level (23 fmol/mL Ghrelin); dependence;

Q9431: M. A. Robble, *et al.* Differential Effects of Nicotine and Nicotine Withdrawal on Fear Conditioning in Male Rats. International Journal of Neuropsychopharmacology 2020;23(7):469-479
Agents: Nicotine **Vehicle:** Saline; **Route:** SC; **Species:** Rat; **Pump:** SMP-200; **Duration:** 21 days;
ALZET Comments: Dose (1.0 mg/d or 0.3 mg/d); Controls received mp w/ vehicle; animal info (Male Long-Evans rats , 300–350 g); dependence;

Q8847: T. C. Peixoto, *et al.* Nicotine exposure during breastfeeding reduces sympathetic activity in brown adipose tissue and increases in white adipose tissue in adult rats: Sex-related differences. Food and Chemical Toxicology 2020;140(111328
Agents: Nicotine **Vehicle:** Saline; **Route:** SC; **Species:** Rat; **Pump:** 2ML2; **Duration:** 14 days;
ALZET Comments: Dose (6 mg/kg of nicotine per day); Controls received mp w/ vehicle; animal info (Lactating Wistar rats); teratology;

Q8667: R. A. Miranda, *et al.* Thyroid redox imbalance in adult Wistar rats that were exposed to nicotine during breastfeeding. Scientific Reports 2020;10(1):15646
Agents: Nicotine **Vehicle:** Saline; **Route:** SC; **Species:** Rat; **Pump:** 2ML2; **Duration:** 14 days;
ALZET Comments: Dose (6 mg/kg/day); 0.9% NaCl used; Controls received mp w/ vehicle; animal info (Pregnant female Wistar rats); Nicotine aka NIC; 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;

Q9791: R. J. Keeley, *et al.* Intrinsic differences in insular circuits moderate the negative association between nicotine dependence and cingulate-striatal connectivity strength. Neuropsychopharmacology 2020;45(6):1042-1049
Agents: Nicotine **Vehicle:** Saline; **Route:** SC; **Species:** Rat; **Pump:** 2ML4; **Duration:** 14 days;
ALZET Comments: Dose (1.2 or 4.8 mg/kg/day); 0.9% Saline used; Controls received mp w/ vehicle; animal info (Sprague Dawley, 275-300 g); dependence;

Q8865: T. Kazemi, *et al.* Investigating the influence of perinatal nicotine exposure on genetic profiles of neurons in the sub-regions of the VTA. Scientific Reports 2020;10(1):2419
Agents: Nicotine hydrogen tartate **Vehicle:** Saline; **Route:** SC; **Species:** Rat; **Pump:** Not Stated; **Duration:** 14 days;
ALZET Comments: Dose (6 mg/kg/day); Controls received mp w/ vehicle; animal info (Pregnant female Sprague Dawley rats); dependence;

Q8553: G. Jia, *et al.* Nicotine induces cardiac toxicity through blocking mitophagic clearance in young adult rat. Life Sciences 2020;257(118084
Agents: Nicotine **Vehicle:** Not stated; **Route:** SC; **Species:** Rat; **Pump:** Not stated; **Duration:** 6 weeks;
ALZET Comments: Dose (3 mg/kg/day); Controls received mp w/ vehicle; animal info (Sprague-Dawly rats, 2-4 months old); toxicology;

Q9250: I. Gorna*, et al.* Electronic Cigarette Use and Metabolic Syndrome Development: A Critical Review. Toxics 2020;8(4):
Agents: Nicotine **Vehicle:** Saline; **Route:** SC; **Species:** Mice; Rat; **Pump:** Not Stated; **Duration:** 28 days;
ALZET Comments: Dose (0.8 mg/kg/d; 4 mg/kg/d); Controls received mp w/ vehicle; animal info (Male C57BL/6J mice, 8 weeks old; Female and Male Sprague Dawley OFA rats); dependence;

Q8474: K. Fukuyama*, et al.* Upregulated Connexin 43 Induced by Loss-of-Functional S284L-Mutant alpha4 Subunit of Nicotinic ACh Receptor Contributes to Pathomechanisms of Autosomal Dominant Sleep-Related Hypermotor Epilepsy. Pharmaceuticals (Basel) 2020;13(4):
Agents: Zonisamide; Nicotine **Vehicle:** Not stated; **Route:** SC; **Species:** Rat; **Pump:** 2ML1; **Duration:** 7 days;
ALZET Comments: Dose (40 mg/kg/day Zonisamide, 10, 25 and 50 mg/kg/day Nicotine); animal info (Male S286L-TG and wild-type littermates); Zonisamide aka ZNS; neurodegenerative (Epilepsy);

Q8848: R. J. Flores*, et al.* Estradiol promotes and progesterone reduces anxiety-like behavior produced by nicotine withdrawal in female rats. Psychoneuroendocrinology 2020;119(104694
Agents: Nicotine **Vehicle:** Not Stated; **Route:** Not Stated; **Species:** Rat; **Pump:** 2ML2; **Duration:** 14 days;
ALZET Comments: Dose (3.2 mg/kg/day); animal info (Male and female Wistar rats); behavioral testing (physical signs test, Anxiety-like behavior assessments); replacement therapy (Estradiol, progesterone);

Q8379: F. Diaz*, et al.* Simultaneous nicotine and oral contraceptive exposure alters brain energy metabolism and exacerbates ischemic stroke injury in female rats. J Cereb Blood Flow Metab 2020;271678X20925164
Agents: Nicotine Hydrogen Tartrate **Vehicle:** Salline; **Route:** CNS/CSF; **Species:** Rat; **Pump:** 2ML2; **Duration:** 21 days;
ALZET Comments: Dose (4.5 mg/kg/day); Controls received mp w/ vehicle; animal info (Sprague Dawley, 6 or 14 weeks old); ischemia (Stroke);

Q8722: N. d'Adesky*, et al.* Nicotine Exposure Along with Oral Contraceptive Treatment in Female Rats Exacerbates Post-cerebral Ischemic Hypoperfusion Potentially via Altered Histamine Metabolism. Translational Stroke Research 2020;
Agents: Nicotine Hydrogen Tartrate **Vehicle:** Saline; **Route:** SC; **Species:** Rat; **Pump:** ML2; **Duration:** 16, 21 days;
ALZET Comments: Dose (4.5 mg/kg/day); Controls received mp w/ vehicle; animal info (Female, Sprague Dawley, 6 or 14 weeks old); ischemia (Hypoperfusion);

Q8388: D. Bhattacharya*, et al.* Concurrent nicotine exposure to prenatal alcohol consumption alters the hippocampal and cortical neurotoxicity. Heliyon 2020;6(1):e03045
Agents: Nicotine **Vehicle:** Alcohol, Saline; **Route:** SC; **Species:** Rat; **Pump:** Not stated; **Duration:** Not stated;
ALZET Comments: Dose (6 mg/kg/day); Controls received mp w/ vehicle; animal info (Sprague Dawley (Time pregnant) rats); behavioral testing (Y maze); toxicology;

Q8387: I. M. Bertasso*, et al.* Programming of hepatic lipid metabolism in a rat model of postnatal nicotine exposure - Sex-related differences. Environmental Pollution 2020;258(113781
Agents: Nicotine **Vehicle:** Saline; **Route:** SC; **Species:** Rat; **Pump:** 2ML2; **Duration:** 14 days;
ALZET Comments: Dose (6 mg/kg/ day); 0.9% NaCl used; Controls received mp w/ vehicle; animal info (pregnant lactating Wistar rat); toxicology;

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;

Pentobarbital

P5450: Y. Kim, *et al.* Changes of the level of G protein alpha-subunit mRNA by tolerance to and withdrawal from pentobarbital in rats. Neurochemical Research 2002;27(6):527-533
Agents: Pentobarbital **Vehicle:** Saline; **Route:** CSF/CNS; **Species:** Rat; **Pump:** 2001; **Duration:** 7 days;
ALZET Comments: Controls received mp w/ vehicle; tolerance; dependence; one week recovery period after cannula placement

P4317: C.-G. Jang, *et al.* Autoradiography of [^{3}H] glutamate binding during pentobarbital tolerance and withdrawal in the rat. Brain Research Bulletin 1999;48(1):99-102
Agents: Pentobarbital **Vehicle:** Saline; **Route:** CSF/CNS; **Species:** Rat; **Pump:** 2ML1; **Duration:** 6 days;
ALZET Comments: Controls received mp with vehicle; tolerance; dependence; animals allowed one week recovery after cannula placement

P4177: S. Oh, *et al.* Changes in (3H)forskolin binding to adenylate cyclase and (3H)phorbol dibutyrate binding to protein kinase c in pentobarbital tolerant/dependent rats. Neurochem. Res 1998;23(4):463-467
Agents: Pentobarbital **Vehicle:** Not Stated; **Route:** CSF/CNS; **Species:** Rat; **Pump:** 2ML1; **Duration:** 7 days;
ALZET Comments: guide cannula implanted; rats were allowed 1 week recovery before implantation of pump; tolerance; dependence

P4188: C.-G. Jang, *et al.* Changes in NMDAR2 subunit mRNA levels during pentobarbital tolerance/withdrawal in the rat brain: an in situ hybridization study. Neurochem. Res 1998;23(11):1371-1377
Agents: Pentobarbital **Vehicle:** Saline; **Route:** CSF/CNS; **Species:** Rat; **Pump:** 2ML1; **Duration:** 6 days;
ALZET Comments: controls received mp w/saline; tolerance

P3852: S. Oh, *et al.* Role of NMDA receptors in pentobarbital tolerance/dependence. Neurochem. Res 1997;22(7):767-774
Agents: Pentobarbital **Vehicle:** Saline; **Route:** CSF/CNS; **Species:** Rat; **Pump:** 2ML1; **Duration:** 7 days;
ALZET Comments: controls received mp w/saline; tolerance; dependence

P3421: T. Suzuki, *et al.* An autoradiographic study of [3H]flunitrazepam binding sites in the brain of rat made tolerant to and dependent on pentobarbital. European Journal of Pharmacology 1996;295(169-179
Agents: Pentobarbital **Vehicle:** Saline; **Route:** CSF/CNS; **Species:** Rat; **Pump:** 2ML1; **Duration:** 6 days;
ALZET Comments: controls received vehicle infusion; tolerance; dependence; recipe for equithesin anesthesia provided on p. 170

P3422: T. Ito, *et al.* Chronic pentobarbital administration alters g-aminobutyric acid(A) receptor a(6)-subunit mRNA levels and diazepam-insensitive [3H]Ro15-4513 binding. Synapse 1996;22(106-113
Agents: Pentobarbital **Vehicle:** Not Stated; **Route:** CSF/CNS; **Species:** Rat; **Pump:** 2ML1; **Duration:** 6 days;
ALZET Comments: tolerance; dependence

P3351: T. Suzuki, *et al.* Changes in [3H] Flunitrazepam binding in the brain of rats made tolerant to and dependent upon pentobarbital. Life Sci 1995;57(5):L-69
Agents: Pentobarbital **Vehicle:** Not Stated; **Route:** CSF/CNS; **Species:** Rat; **Pump:** 2ML1; **Duration:** 6 days;
ALZET Comments: controls received mp w/saline; tolerance; dependence; animals allowed 1 week recovery after cannula placement

P3112: Y. T. Tseng, *et al.* In situ hybridization evidence of differential modulation by pentobarbital of GABAA receptor a1- and B3-subunit mRNAs. J. Neurochem 1994;63(301-309
Agents: Pentobarbital **Vehicle:** Not Stated; **Route:** CSF/CNS; **Species:** Rat; **Pump:** 2ML1; **Duration:** 6 days;
ALZET Comments: tolerance

P3173: T. Miyaoka*, et al.* Binding characteristics of [3H]flunitrazepam in pentobarbital-withdrawal rats. Neurochem. Res 1994;19(1):37-42
Agents: Pentobarbital **Vehicle:** Not Stated; **Route:** CSF/CNS; **Species:** Rat; **Pump:** 2ML1; **Duration:** 6 days;
ALZET Comments: controls received mp with saline; animals allowed 1 week recovery after cannula placement

P3111: Y. T. Tseng*, et al.* Differential effects on GABAA receptor y2-subunit messenger RNA by tolerance to and withdrawal from pentobarbital -- an in situ hybridization study. Life Sci 1993;53(L321-L326
Agents: Pentobarbital **Vehicle:** Not Stated; **Route:** CSF/CNS; **Species:** Rat; **Pump:** Not Stated; **Duration:** Not Stated;
ALZET Comments: Tolerance

P3113: Y. T. Tseng*, et al.* Region-specific changes of GABAA receptors by tolerance to and dependence upon pentobarbital. European Journal of Pharmacology 1993;236(23-30
Agents: Pentobarbital **Vehicle:** Saline; **Route:** CSF/CNS; **Species:** Rat; **Pump:** 2ML1; **Duration:** 6,7 days;
ALZET Comments: controls received mp with saline; tolerance; dependence; animals allowed 1 week recovery after cannula placement; brain and serum samples taken at 0, 2, 4, 7 days during infusion & 6, 24, 48 hrs. after withdrawal

P2338: K. Toshiyuki*, et al.* Induction of tolerance to and physical dependence on phentobarbital continuous intracerebroventricular administration. J. Pharmacol. Exp. Ther 1993;266(3):1300-1305
Agents: Pentobarbital **Vehicle:** Saline; **Route:** CSF/CNS; **Species:** Rat; **Pump:** 2ML1; **Duration:** 6 days;
ALZET Comments: tolerance; dependence

P3675: T. Kimura*, et al.* Induction of tolerance to and physical dependence on pentobarbital continuous intracerebroventricular administration. J. Pharmacol. Exp. Ther 1993;266(3):1300-1305
Agents: Pentobarbital, sodium **Vehicle:** Saline, normal; **Route:** CSF/CNS; **Species:** Rat; **Pump:** 2ML1; **Duration:** 6 days;
ALZET Comments: controls received mp w/ filtered, normal saline; tolerance; dependence; good illustration of pump placement (p. 1301)

Phencyclidine

Q9018: S. Takahashi*, et al.* ASP2905, a specific inhibitor of the potassium channel Kv12.2 encoded by the Kcnh3 gene, is psychoactive in mice. Behavioural Brain Research 2020;378(112315
Agents: Phencyclidine **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Pump:** 1002; **Duration:** 14 days;
ALZET Comments: Dose (1.2 mg/day/mouse); Controls received mp w/ vehicle; animal info (male ddY mice aged 4–5 weeks); behavioral testing (Forced Swim Test; Water-Finding Task); Phencyclidine aka PCP; neurodegenerative (Schizophrenia);

Q9086: S. Thomson*, et al.* Reduced expression of synapsin II in a chronic phencyclidine preclinical rat model of schizophrenia. Synapse 2019;73(5):e22084
Agents: Phencyclidine **Vehicle:** Saline; **Route:** SC; **Species:** Rat; **Pump:** 2ML2; **Duration:** 14 days;
ALZET Comments: Dose (5 mg/kg/day); 0.9% Saline used; Controls received mp w/ vehicle; animal info (Male, Sprague Dawley, 250-300 g, 3 months old); Phencyclidine aka PCP; gene therapy;

Q2590: A. Balla*, et al.* Effects of novel, high affinity glycine transport inhibitors on frontostriatal dopamine release in a rodent model of schizophrenia. European Neuropsychopharmacology 2012;22(12):902-910
Agents: Phencyclidine hydrochloride **Vehicle:** Saline, sterile, physiological; **Route:** SC; **Species:** Rat; **Pump:** 2ML4;
ALZET Comments: Control animals received mp w/ vehicle; animal info (Sprague Dawley, male, wks old, 160-200 g, 280-320 g)

Q0375: C. S. Pedersen*, et al.* Chronic infusion of PCP via osmotic mini-pumps: A new rodent model of cognitive deficit in schizophrenia characterized by impaired attentional set-shifting (ID/ED) performance. Journal of Neuroscience Methods 2009;185(1):66-69
Agents: Phencyclidine **Vehicle:** Not Stated; **Route:** SC; **Species:** Rat; **Pump:** Not Stated; **Duration:** 14 days;
ALZET Comments: Controls received mp w/saline; animal info (Lister hooded, male); post op. care (Baitril, Rimadyl); "Using PCP mini-pump infusion instead of the well described intraperitoneal dosing bears the advantage of reducing the animal's stress levels, bypasses the risk of potential mis-dosing that could arise from multiple dosing events and consequently may reduce the number of animals needed." pg 69

P7825: G. Pitas*, et al.* Anti-phencyclidine monoclonal antibody binding capacity is not the only determinant of effectiveness, disproving the concept that antibody capacity is easily surmounted. Drug Metabolism and Disposition 2006;34(6):906-912
Agents: Phencyclidine HCL **Vehicle:** Saline, sterile; **Route:** SC; **Species:** Rat; **Pump:** 2ML1; **Duration:** 4 days;
ALZET Comments: Functionality of mp verified by serum PCP concentrations; half-life (pg. 907) 3.9 hours in rats; tolerance; animal info (male, Sprague-Dawley, 270-300g.)

P6979: F. Sams-Dodd. (+) MK-801 and phencyclidine induced neurotoxicity do not cause enduring behaviours resembling the positive and negative symptoms of schizophrenia in the rat. Basic & Clinical Pharmacology & Toxicology 2004;95(5):241-246
Agents: MK-801; phencyclidine hydrochloride **Vehicle:** Sodium chloride; **Route:** SC; **Species:** Rat; **Pump:** 2ML2; **Duration:** 6 days;
ALZET Comments: Controls received mp w/ vehicle; dose-response; comparison of SC injections vs. mp; post op. care (wound plast); NMDA antagonists

P5913: E. M. Laurenzana*, et al.* Treatment of adverse effects of excessive phencyclidine exposure in rats with a minimal dose of monoclonal antibody. The Journal of Pharmacology and Experimental Therapeutics 2003;306(3):1092-1098
Agents: Phencyclidine; phencyclidine HCL; **Vehicle:** Saline; sterile; **Route:** SC; **Species:** Rat; **Pump:** 2ML2; **Duration:** 14 days;
ALZET Comments: Controls received mp w/ vehicle; serum levels taken; good methods p. 1093; half-life (p. 1093) =3.9 h in rats; dependence; behavioral study

P6200: A. Balla*, et al.* Subchronic continuous phencyclidine administration potentiates amphetamine-induced frontal cortex dopamine release. Neuropsychopharmacology 2003;28(1):34-44
Agents: Phencyclidine, HCL **Vehicle:** Saline, sterile physiological; **Route:** SC; **Species:** Rat; **Pump:** 2ML4; **Duration:** 3,14 days;
ALZET Comments: Controls received mp w/ vehicle; functionality of mp verified by serum PCP levels

P5135: A. K. Jebelli*, et al.* Prenatal phencyclidine induces heightened neurodegeneration in rats in some brain regions, especially during 2nd trimester, but possible anti-apoptotic effects in others. Pharmacol Toxicol 2002;90(20-25
Agents: Phencyclidine **Vehicle:** Saline; **Route:** SC; **Species:** Rat (pregnant); **Pump:** 2ML1; **Duration:** 5 days;
ALZET Comments: controls received a saline pellet as a "sham minipump"; teratology

P4816: S. V. Kyosseva*, et al.* Differential and region-specific activation of mitogen-activated protein kinases following chronic administration of phencyclidine in rat brain. Neuropsychopharmacology 2001;24(267-277
Agents: Phencyclidine HCl **Vehicle:** Saline; **Route:** SC; **Species:** Rat; **Pump:** 2ML2; **Duration:** 3,10, 20 days;
ALZET Comments: Controls received mp w/ vehicle; dose-response p. 270-271

P4936: A. Balla*, et al.* Continuous phencyclidine treatment induces schizophrenia-like hyperreactivity of striatal dopamine release. Neuropsychopharmacology 2001;25(2):157-164
Agents: Phencyclidine HCl **Vehicle:** Saline, sterile; **Route:** SC; **Species:** Rat; **Pump:** 2ML4; **Duration:** 2,3 weeks;
ALZET Comments: Controls received mp w/ vehicle; functionality of mp verified by serum PCP levels; dose response (graphs p. 160); schizophrenia

P5180: A. Balla*, et al.* Phencyclidine-induced dysregulation of dopamine response to amphetamine in prefrontal cortex and striatum. Neurochem. Res 2001;26(8-9):1001-1006
Agents: Phencyclidine HCl **Vehicle:** Saline; **Route:** SC; **Species:** Rat; **Pump:** 2ML4; **Duration:** 2 weeks;
ALZET Comments: Controls received mp w/ vehicle; functionality of mp verified by PCP serum levels; NMDA antagonist

P4348: Z. A. Martinez, *et al.* Effects of sustained phencyclidine exposure on sensorimotor gating of startle in rats. Neuropsychopharmacology 1999;21(28-39
Agents: Phencyclidine HCl **Vehicle:** Not Stated; **Route:** SC; **Species:** Rat; **Pump:** Not Stated; **Duration:** 5 days;
ALZET Comments: Controls received silastic polymer pellets ~ the same size and shape as mps; comparison of repeated IP injections vs. mp

R0133: G. Ellison. The N-methyl-D-aspartate antagonists phencyclidine, ketamine and dizocilpine as both behavioral and anatomical models of the dementias. Brain Research Reviews 1995;20(250-267
Agents: Phencyclidine; MK-801 **Vehicle:** Not Stated; **Route:** Not Stated; **Species:** Not Stated; **Duration:** 1,5 days;
ALZET Comments: schizophrenia models; brief mention of mp on p. 256

P2961: T. F. Burke, *et al.* [3H]MK-801 binding to well-washed rat brain membranes following cessation of chronic phencyclidine treatment. Pharmacology, Biochemistry and Behavior 1995;51(2&3):435-438
Agents: Phencyclidine **Vehicle:** Not Stated; **Route:** SC; **Species:** Rat; **Pump:** 2ML2; **Duration:** 10 days;
ALZET Comments: Controls received mp with saline; dependence

P3907: G. Ellison. Competitive and non-competitive NMDA antagonists induce similar limbic degeneration. NeuroReport 1994;5(18):2688-2692
Agents: Phencyclidine HCl; MK-801; LY-235959 **Vehicle:** Not Stated; **Route:** Not Stated; **Species:** Rat; **Pump:** Not Stated; **Duration:** 1, 5 days;
ALZET Comments: controls received empty mp; comparison of single injections vs. mp

P2952: P. Saransaari, *et al.* Phencyclidine treatment in mice: effects on phencyclidine binding sites and glutamate uptake in cerebral cortex preparations. J. Neural Transm 1993;93(47-59
Agents: Phencyclidine HCl **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice; **Pump:** 2001; **Duration:** 3 days;
ALZET Comments: Controls received empty mp

P2840: M. S. Owens, *et al.* Dose- and time-dependent changes in phencyclidine metabolite covalent binding in rats and the possible role of CYP2D1. The Journal of Pharmacology and Experimental Therapeutics 1993;265(3):1261-1266
Agents: Phencyclidine HCl **Vehicle:** Saline; **Route:** SC; **Species:** Rat; **Pump:** 2ML2; **Duration:** 1, 2, 3, 4, 10, 20 days;
ALZET Comments: Controls received mp with saline, no treatment or sham surgery; pumps replaced at 10 days

P3777: G. Ellison, *et al.* Dissimilar patterns of degeneration in brain following four different addictive stimulants. NeuroReport 1993;5(17-20
Agents: Phencyclidine HCl **Vehicle:** Not Stated; **Route:** SC; **Species:** Rat; **Pump:** Not Stated; **Duration:** 5 days;
ALZET Comments: comparison of pellets vs. mp

P2714: S. M. Lillrank, *et al.* Phencyclidine treatments differentially affect dopamine and D-aspartate release from frontal cortical and striatal slices from mice. Int. J. Neurosci 1992;64(69-81
Agents: Phencyclidine HCl **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice; **Pump:** 2001; **Duration:** 3,7 days;
ALZET Comments: Controls received sham operations

P2225: M. E. Bronson, *et al.* Withdrawal from chronic phencyclidine produces a pentylenetetrazol-like discriminative stimulus. Life Sci 1992;50(7):499-504
Agents: Phencyclidine **Vehicle:** Water; **Route:** SC; **Species:** Rat; **Pump:** 2ML2; **Duration:** 10 days;
ALZET Comments: controls received mp w/water; dependence; phencyclidine is PCP

P1877: W. D. Wessinger, *et al.* Chronic administration of phencyclidine: pharmacokinetic comparison of intravenous and subcutaneous infusions in Sprague-Dawley rats. Drug Metabolism and Disposition 1991;19(3):719-721
Agents: Phencyclidine **Vehicle:** Saline; **Route:** SC; **Species:** Rat; **Pump:** 2ML2; **Duration:** 10 days;
ALZET Comments: comparison of iv infusion by external infusion pump vs. sc infusion by ALZET pump; sc infusion data were much more reproducible (p. 719)

P1819: B. W. Massey, *et al.* Alterations in rat brain [3H]-TCP binding following chronic phencyclidine adminstration. Life Sci 1990;47(L139-L143
Agents: Phencyclidine **Vehicle:** Not Stated; **Route:** Not Stated; **Species:** Rat; **Pump:** 2ML2; **Duration:** 10 days;
ALZET Comments: no comment posted

P1767: B. W. Massey, *et al.* Effects of terminating chronic phencyclidine on schedule-controlled behavior in rats. Pharmacol. Biochem. Behav 1990;36(117-121
Agents: Phencyclidine **Vehicle:** Saline; **Route:** SC; **Species:** Rat; **Pump:** 2ML4; **Duration:** 10 days;
ALZET Comments: dependence

P0225: T. Nabeshima, *et al.* Development of dispositional tolerance to phencyclidine by osmotic minipump in the mouse. Journal of Pharmacological Methods 1982;7(239-253
Agents: Phencyclidine **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice; **Pump:** 1701; **Duration:** 1, 5 days;
ALZET Comments: no comment posted

P0183: T. Nabeshima, *et al.* Calcium-dependent GABA release from mouse brain slices following acute and chronic phencyclidine administration. Research Communications in Substances of Abuse 1981;2(4):343-354
Agents: Phencyclidine HCl **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Pump:** 1701; **Duration:** 2, 6 days;
ALZET Comments: Comparison of acute ip injections vs. chronic infusion