



Recent References (2015-Present) on the Administration of Antidepressants  
Using ALZET® Osmotic Pumps

### Amitriptyline

**Q6164:** T. Jeanson, *et al.* Potentiation of Amitriptyline Anti-Hyperalgesic-Like Action By Astroglial Connexin 43 Inhibition in Neuropathic Rats. *Sci Rep* 2016;6(38766)

**Agents:** Amitriptyline **Vehicle:** Saline; **Route:** SC; **Species:** Rat; **Pump:** Not Stated; **Duration:** 14 days;

**ALZET Comments:** Dose (12 mg/kg/day); Controls received mp w/ vehicle; animal info (Sprague-Dawley rats weighing 175–200 g); Resultant plasma level (brain AMIT levels reached  $1350 \pm 210 \mu\text{g/g}$  (corresponding to  $4.87 \pm 0.76 \mu\text{M}$ ), a value about 25 fold higher than that in serum:  $55.3 \pm 5.4 \text{ ng/ml}$  (corresponding to  $199.35 \pm 19.47 \text{ nM}$ );

### Bupropion

**Q7076:** A. Levy, *et al.* Bupropion and naltrexone combination alters high fructose corn syrup self-administration and gene expression in rats. *Neuropharmacology* 2018;135(547-554)

**Agents:** Bupropion hydrochloride, naltrexone hydrochloride **Vehicle:** Saline; **Route:** SC; **Species:** Rat; **Pump:** 2ML2; **Duration:** 12 days;

**ALZET Comments:** Dose (40 mg/kg/day BUP, 4 mg/kg/day NTX); Controls received sham surgery; animal info (Adult male Sprague-Dawley rats weighing 200-250 g); behavioral testing (locomotion tests); Drugs administered together or in separate pumps; Contrave® is an adjunct pharmacotherapy for obesity that contains bupropion and naltrexone.;

**Q3871:** M. El Mansari, *et al.* Restoration of Serotonin Neuronal Firing Following Long-Term Administration of Bupropion but Not Paroxetine in Olfactory Bulbectomized Rats. *INTERNATIONAL JOURNAL OF NEUROPSYCHOPHARMACOLOGY* 2015;18(U87-U94)

**Agents:** Bupropion; paroxetine **Vehicle:** Water; ethanol; **Route:** SC; **Species:** Rat; **Duration:** 2 days; 14 days; 28 days;

**ALZET Comments:** Controls received mp w/ vehicle; animal info (male, Sprague Dawley, 300-500g, olfactory bulbectomized); 50% ethanol used; behavioral testing (open field);

### Citalopram

**Q7631:** J. J. Tackett, *et al.* Potentiation of serotonin signaling protects against intestinal ischemia and reperfusion injury in mice. *Neurogastroenterol Motil* 2019;31(3):e13498

**Agents:** Citalopram hydrobromide **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Pump:** Not Stated; **Duration:** 7 days; 14 days;

**ALZET Comments:** Dose (10 mg/kg/day); animal info (Eight-week-old, young adult male mice); ischemia (intestinal);

**Q6255:** C. J. Greig, *et al.* Improved capacity to evaluate changes in intestinal mucosal surface area using mathematical modeling. *Microsc Res Tech* 2017;80(7):793-798

**Agents:** Citalopram hydrobromide **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice (knockout); **Duration:** 7 days;

**ALZET Comments:** Dose (10 mg/kg/day); animal info (WT, SERTKO mice were bred on a C57BL/6 background);

**Q6046:** Y. Ikawa, *et al.* Effects of citalopram on jaw-closing muscle activity during sleep and wakefulness in mice. *Neurosci Res* 2016;113(48-55)

**Agents:** Citalopram **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Pump:** 2002; **Duration:** 6 days;

**ALZET Comments:** Controls receive mp w/ vehicle; animals C57BL/6J; 18-23 grams, 7-10wk); Citalopram (10, 100 mg/kg/day);

**Q8201:** C. J. Greig, *et al.* Enhanced serotonin signaling increases intestinal neuroplasticity. *Journal of Surgical Research* 2016;206(1):151-158

**Agents:** Citalopram hydrobromide **Vehicle:** Not stated; **Route:** SC; **Species:** Mice; **Pump:** Not Stated; **Duration:** 7 days;

**ALZET Comments:** Dose (10 mg/kg/d); animal info (8-10wk old male mice); dependence;



**Q5814:** A. Frey, *et al.* Early citalopram treatment increases mortality due to left ventricular rupture in mice after myocardial infarction. *J Mol Cell Cardiol* 2016;98(28-36

**Agents:** Citalopram **Vehicle:** Saline; **Route:** Not Stated; **Species:** Mice; **Pump:** 1002; **Duration:** 4 weeks, 6 weeks;  
**ALZET Comments:** Controls received mp w/ vehicle; animal info (6-9 weeks) cardiovascular; Therapeutic indication (MI, Myocardial Infarction); Dose (9.6 mg/kg/day);

**Q4832:** Achikam Haima, *et al.* The effects of gestational stress and Selective Serotonin reuptake inhibitor antidepressant treatment on structural plasticity in the postpartum brain — A translational model for postpartum depression. *Hormones and Behavior* 2016;77(124-131

**Agents:** Citalopram HBr **Vehicle:** Saline; **Route:** SC; **Species:** Rat; **Strain:** Sprague-Dawley **Pump:** 2ML4; **Duration:** 21 days;  
**ALZET Comments:** Controls received mp w/ vehicle; animal info (female, GD); functionality of mp verified by residual volume; post op. care (ibuprofen 15 mg/kg in water 7 days); teratology; Dose (10 mg/kg/day);

**Q4628:** A. K. D. Visser, *et al.* Serotonin-2C antagonism augments the effect of citalopram on serotonin and dopamine levels in the ventral tegmental area and nucleus accumbens. *NEUROCHEMISTRY INTERNATIONAL* 2015;81(10-15

**Agents:** Citalopram HBr **Vehicle:** Water, Ultra Pure; **Route:** SC; **Species:** Rat; **Pump:** Not Stated; **Duration:** 2 days;  
**ALZET Comments:** Controls received mp w/ vehicle; animal info (male, Wistar, 10 weeks old, 332+/-14g);

**Q4426:** S. D. Geddes, *et al.* Time-dependent modulation of glutamate synapses onto 5-HT neurons by antidepressant treatment. *NEUROPHARMACOLOGY* 2015;95(130-143

**Agents:** Citalopram **Vehicle:** Cyclodextrin, 2-hydroxypropyl-b-; **Route:** SC; **Species:** Rat; **Duration:** 2 days; 7 days;  
**ALZET Comments:** Controls received mp w/ vehicle; animal info (Sprague Dawley, 50-90g, 26-29 days old)

### Clomipramine

**Q6771:** S. Schreiber, *et al.* Interaction between methylphenidate, methadone and different antidepressant drugs on antinociception in mice, and possible clinical implications. *World J Biol Psychiatry* 2017;18(4):300-307

**Agents:** methadone; escitalopram; venlafaxine; desipramine; clomipramine **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice;  
**Pump:** 2002; **Duration:** 14 days;  
**ALZET Comments:** Dose: methadone (0.5 mg/kg) venlafaxine (2.5 mg/kg); escitalopram (20mg/kg); desipramine (1mg/kg); clomipramine (0.5 mg/kg); animal info (Male ICR mice, 25-35g); dependence

**Q5784:** K. Deseure, *et al.* Differential drug effects on spontaneous and evoked pain behavior in a model of trigeminal neuropathic pain. *J Pain Res* 2017;10(279-286

**Agents:** Carbamazepine, baclofen, clomipramine **Vehicle:** DMSO, PEG, Ethyl Alcohol, Acetone; **Route:** SC; **Species:** Rat;  
**Pump:** 2ML1; **Duration:** Not Stated;  
**ALZET Comments:** Controls received mp w/ vehicle; animal info (7 weeks old); dimethyl sulfoxide, propylene glycol, ethyl alcohol, and acetone at a ratio of 42:42:15:1; post op. care (morphine 5 mg/day); behavioral testing (Facial grooming); Therapeutic indication (Trigeminal neuralgia, neuropathic pain); Dose (30 mg/day carbamazepine (the first-line drug treatment for trigeminal neuralgia), 1.06 mg/day baclofen, 4.18 mg/day clomipramine, and 5 mg/day morphine);

### Desipramine

**Q11336:** T. Magdy, *et al.* Identification of Drug Transporter Genomic Variants and Inhibitors That Protect Against Doxorubicin-Induced Cardiotoxicity. *Circulation* 2022;145(4):279-294

**Agents:** Desipramine **Vehicle:** Water; **Route:** Not Stated; **Species:** Mice; **Strain:** C57BL/6J; **Pump:** Not Stated; **Duration:** 3 w  
**ALZET Comments:** Dose: 20 mg/kg/day; Controls received mp w/ vehicle; animal info: 10-week-old male; cardiovascular

**Q6946:** C. Alba-Delgado, *et al.* The onset of treatment with the antidepressant desipramine is critical for the emotional consequences of neuropathic pain. *Pain* 2018;159(12):2606-2619

**Agents:** Desipramine **Vehicle:** Saline; **Route:** SC; **Species:** Rat; **Pump:** 2ML2; **Duration:** 2 weeks;  
**ALZET Comments:** Dose (10 mg/kg/day); Controls received mp w/ vehicle; animal info (45-55 day old male Sprague-Dawley rats weighing 200-250 g); Therapeutic indication (neuropathy);



**Q6771:** S. Schreiber, *et al.* Interaction between methylphenidate, methadone and different antidepressant drugs on antinociception in mice, and possible clinical implications. *World J Biol Psychiatry* 2017;18(4):300-307

**Agents:** methadone; escitalopram; venlafaxine; desipramine; clomipramine **Route:** SC **Species:** Mice; **Pump:** 2002; **Duration:** 14d

**ALZET Comments:** Dose: methadone (0.5 mg/kg) venlafaxine (2.5 mg/kg); escitalopram (20mg/kg); desipramine (1mg/kg); clomipramine (0.5 mg/kg); animal info (Male ICR mice, 25-35g); dependence

**Q9008:** A. P. Shah, *et al.* Role of TrkB in the anxiolytic-like and antidepressant-like effects of vagal nerve stimulation: Comparison with desipramine. *Neuroscience* 2016;322(273-86

**Agents:** Desipramine HCl **Vehicle:** Distilled Water; **Route:** IP; **Species:** Rat; **Pump:** 2ML4; **Duration:** 24 days;

**ALZET Comments:** Dose (10 mg/kg/day); Controls received mp w/ vehicle; animal info (Adult male Sprague-Dawley rats, 250-400 g, 8 weeks old); behavioral testing (Novelty Suppressed Feeding Test; Forced Swim Test); dependence;

**Q6094:** L. Deng, *et al.* Prophylactic treatment with the tricyclic antidepressant desipramine prevents development of paclitaxel-induced neuropathic pain through activation of endogenous analgesic systems. *Pharmacol Res* 2016;114(75-89

**Agents:** Desipramine, naloxone, AM251, AM630 **Vehicle:** Water, saline, PEG 400, DMSO; **Route:** SC; **Species:** Rat; **Pump:** 2ML4; **Duration:** 28 days;

**ALZET Comments:** Dose: Desipramine (10 mg/kg/d), Naloxone (12 mg/kg/d), AM251 (3 mg/kg/d), AM630 (3 mg/kg/day); Desipramine dissolved distilled water, naloxone dissolved in saline, AM251 and AM630 dissolved in 50% PEG400 and 50% DMSO; Controls received mp w/ vehicle; animal info (Sprague-Dawley rats weighing 275-350 g); Multiple pumps per animal (2 when given the treatment of 2 different agents), Desipramine, vehicle, all antagonists delivered in separate osmotic pumps;

**Q5315:** L. Bravo, *et al.* Effect of DSP4 and desipramine in the sensorial and affective component of neuropathic pain in rats. *Prog Neuropsychopharmacol Biol Psychiatry* 2016;70(57-67

**Agents:** Desipramine **Vehicle:** Saline; **Route:** SC; **Species:** Rat; **Pump:** 2ML2; **Duration:** 2 weeks;

**ALZET Comments:** Controls received mp w/ vehicle; animal info (Adult male Harlan Sprague-Dawley rats, 200-250 g); functionality of mp verified by pain level measurements; functionality of mp verified by pain level measurements; Noradrenaline reuptake inhibitor; Chronic Constriction Injury (CCI); Therapeutic indication (Pain); Dose (10 mg/kg/d);

## Escitalopram

**Q8863:** J. L. Jiang, *et al.* Triple reuptake inhibition of serotonin, norepinephrine, and dopamine increases the tonic activation of alpha2-adrenoceptors in the rat hippocampus and dopamine levels in the nucleus accumbens. *Progress in Neuropsychopharmacology & Biological Psychiatry* 2020;103(109987

**Agents:** Nomifensine; Escitalopram **Vehicle:** 2-Hydroxypropyl-B-cyclodextrin; **Route:** SC; **Species:** Rat; **Pump:** Not Stated; **Duration:** 2 days; 14 days;

**ALZET Comments:** Dose (5 mg/kg/day Nomifensine; 10 mg/kg/day Escitalopram); 20% 2-Hydroxypropyl-B-Cyclodextrin used; Controls received mp w/ vehicle; animal info (Adult male Sprague-Dawley rats weighing 250-350 g); Multiple pumps per animal (2 pumps); dependence;

**Q8649:** M. El Mansari, *et al.* Long-term administration of cariprazine increases locus coeruleus noradrenergic neurons activity and serotonin1A receptor neurotransmission in the hippocampus. *Journal of Psychopharmacology* 2020;34(10):1143-1154

**Agents:** Escitalopram **Vehicle:** Not Stated **Route:** SC **Species:** Rat **Strain:** SD **Pump:** 1003D; 2ML2; **Duration:** 2; 14d

**ALZET Comments:** Dose (5 and 10 mg/kg/day); Controls received mp w/ vehicle; animal info (Male rats, 280-320 g)

**Q6998:** K. L. Smith, *et al.* Opioid system modulators buprenorphine and samidorphan alter behavior and extracellular neurotransmitter concentrations in the Wistar Kyoto rat. *Neuropharmacology* 2019;146(316-326

**Agents:** Escitalopram **Vehicle:** Not Stated; **Route:** SC; **Species:** Rat; **Strain:** Wistar Kyoto **Pump:** 2ML4; **Duration:** 14 days;

**ALZET Comments:** Dose (10 mg/kg/day); behavioral testing (Forced swim test, Marble burying test); dependence;



**Q6975:** M. Ebrahimzadeh, *et al.* Synergistic effect of aripiprazole and escitalopram in increasing serotonin but not norepinephrine neurotransmission in the rat hippocampus. *Neuropharmacology* 2019;146(12-18

**Agents:** Escitalopram **Vehicle:** Not Stated; **Route:** SC; **Species:** Rat; **Pump:** 1003D, 2ML2; **Duration:** 2days, 14 days;  
**ALZET Comments:** Dose (5 mg/kg/day); animal info (Male Sprague-Dawley rats, 280-320 gr);

**Q7732:** N. Papp, *et al.* Acute and chronic escitalopram alter EEG gamma oscillations differently: relevance to therapeutic effects. *European Journal of Pharmaceutical Sciences* 2018;121(347-355

**Agents:** Escitalopram-oxalate **Vehicle:** 0.3 N HCl; Distilled Water; **Route:** SC; **Species:** Rat; **Pump:** 2ML4; **Duration:** 21 days;  
**ALZET Comments:** "Dose (10 mg/kg/day); Controls received mp w/ vehicle; animal info (Male Wistar Rats 250–280 g); no stress (see pg. 348 "All efforts were made to minimize pain, suffering and discomfort of the animals." ); Depression study; "

**Q6771:** S. Schreiber, *et al.* Interaction between methylphenidate, methadone and different antidepressant drugs on antinociception in mice, and possible clinical implications. *World J Biol Psychiatry* 2017;18(4):300-307

**Agents:** methadone; escitalopram; venlafaxine; desipramine; clomipramine **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice;  
**Pump:** 2002; **Duration:** 14 days;

**ALZET Comments:** Dose: methadone (0.5 mg/kg) venlafaxine (2.5 mg/kg); escitalopram (20mg/kg); desipramine (1mg/kg); clomipramine (0.5 mg/kg); animal info (Male ICR mice, 25-35g); dependence

**Q5741:** M. S. Riga, *et al.* Subchronic vortioxetine treatment -but not escitalopram- enhances pyramidal neuron activity in the rat prefrontal cortex. *Neuropharmacology* 2017;113(Pt A):148-155

**Agents:** Escitalopram **Vehicle:** Not Stated; **Route:** SC; **Species:** Rat; **Pump:** 2ML2; **Duration:** 2 weeks;

**ALZET Comments:** Controls received mp w/ vehicle; animal info (175-200 g); post op. care (an analgesic (Buprenorphine: 0.5 mg/kg p.o every 12 h) and a prophylactic antibiotic (Enofloxacin 7.5 mg/kg s.c.) given during 2-3 consecutive days after surgery); Therapeutic indication (medial prefrontal cortex, electrophysiology); Dose (10 mg/kg/day);

**Q5182:** G. Qesseveur, *et al.* Genetic dysfunction of serotonin 2A receptor hampers response to antidepressant drugs: A translational approach. *Neuropharmacology* 2016;105(142-53

**Agents:** Fluoxetine hydrochloride; escitalopram hydrochloride **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Pump:** 1007D; 1002;  
**Duration:** 2, 21, 28 days;

**ALZET Comments:** animal info (male, WT or 5-HT2A mutant, 10-14 weeks old, 25-35g); behavioral testing (tail suspension test; novelty surpassed feeding); fluoxetine dose (18 mg/kg, free base)

**Q4925:** M. El Mansari, *et al.* Effects of acute and sustained administration of vortioxetine on the serotonin system in the hippocampus: electrophysiological studies in the rat brain. *Psychopharmacology (Berl)* 2015;232(13):2343-52

**Agents:** Vortioxetine; escitalopram **Vehicle:** Not Stated; **Route:** SC; **Species:** Rat; **Pump:** Not Stated; **Duration:** 2 days; 14 days;  
**ALZET Comments:** Controls received mp w/ vehicle; animal info (male, Sprague Dawley, adult, 250-300g); Dose (Vortioxetine 5 mg/kg/day; escitalopram 5 mg/kg/day);

**Q4511:** D. E. Ehrlich, *et al.* Prenatal stress, regardless of concurrent escitalopram treatment, alters behavior and amygdala gene expression of adolescent female rats. *NEUROPHARMACOLOGY* 2015;97(251-258

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

**ALZET Comments:** Controls received mp w/ vehicle; animal info (female, nulliparous Sprague Dawley, 200-225g); behavioral testing (open field, social interaction, novel object recognition, elevated plus maze; teratology);



## Fluoxetine

**Q10412:** V. Biancardi, *et al.* Prenatal fluoxetine has long-lasting, differential effects on respiratory control in male and female rats. *Journal of Applied Physiology* 2022;133(2):371-389

**Agents:** Fluoxetine **Vehicle:** Not Stated; **Route:** SC; **Species:** Rat; **Pump:** 2ML1; **Duration:** 7 days;

**ALZET Comments:** Dose: (10  $\mu$ L/h/7 days) animal info: Wistar rats, pregnant female; behavioral testing (Jaw Opening test; Righting reflexes test); Fluoxetine aka (FLX);

**Q7959:** W. W. Chen, *et al.* Increased Axin expression enhances adult hippocampal neurogenesis and exerts an antidepressant effect. *Sci Rep* 2019;9(1):1190

**Agents:** XAV939; Fluoxetine **Vehicle:** DMSO, PBS and Tween 20; **Route:** CSF/CNS (lateral ventricle); **Species:** Mice; **Pump:** 1004; **Duration:** 7 days;

**ALZET Comments:** Dose ((XAV939 1mM at 0.5  $\mu$ L/h), (fluoxetine 18 mg/kg/day)); 3% DMSO, 0.2% Tween 20 in PBS (pH 7.4); Controls received mp w/ vehicle; animal info (10-12 weeks, male, C57); behavioral testing (open field, sucrose preference, novelty-suppressed feeding, forced swim test); therapeutic indication (inc amplification of adult neural progenitor cells and neuron production in hippocampus and ameliorated depression-like behaviors induced by chronic restraint stress);

**Q7074:** C. Li, *et al.* Chronic fluoxetine treatment accelerates kindling epileptogenesis in mice independently of 5-HT2A receptors. *Epilepsia* 2018;59(7):e114-e119

**Agents:** Fluoxetine hydrochloride **Vehicle:** DMSO; Saline; **Route:** SC; **Species:** Mice; **Pump:** Not Stated; **Duration:** Not Stated;

**ALZET Comments:** 50% DMSO used; Controls received mp w/ vehicle; animal info (Male mice aged 11-14 weeks);

**Q5182:** G. Qesseveur, *et al.* Genetic dysfunction of serotonin 2A receptor hampers response to antidepressant drugs: A translational approach. *Neuropharmacology* 2016;105(142-53

**Agents:** Fluoxetine hydrochloride; escitalopram hydrochloride **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Pump:** 1007D; 1002; **Duration:** 2, 21, 28 days;

**ALZET Comments:** animal info (male, WT or 5-HT2A mutant, 10-14 weeks old, 25-35g); behavioral testing (tail suspension test; novelty surpassed feeding); behavioral testing (tail suspension test; novelty surpassed feeding); fluoxetine dose (18 mg/kg)

**Q5631:** K. Bravo, *et al.* Perinatal Fluoxetine Exposure Impairs the CO<sub>2</sub> Chemoreflex. Implications for Sudden Infant Death Syndrome. *American Journal of Respiratory Cell and Molecular Biology* 2016;55(3):368-76

**Agents:** Fluoxetine **Vehicle:** DMSO; **Route:** SC; **Species:** Mice (pregnant); **Pump:** 2004; **Duration:** Not Stated;

**ALZET Comments:** Controls received mp w/ vehicle (dimethyl sulfoxide 40%); animal info (CF-1 mice: 5-7 days of gestation); functionality of mp verified by Plasma fluoxetine concentration determined by HPLC with a diode array detector; 40% DMSO used; teratology; "Delivering fluoxetine by osmotic minipumps was less stressful for dams than were oral gavages or injections; this avoided maternal stress, which has consequences on fetal brain development. The plasma concentration of fluoxetine in dams was similar to the reported plasma level in patients under fluoxetine treatment" pg 372; Therapeutic indication (Hypercapnia; respiration); Dose (7 mg/kg/day);

**Q4580:** S. M. Schumacher, *et al.* Paroxetine-Mediated GRK2 Inhibition Reverses Cardiac Dysfunction and Remodeling After Myocardial Infarction. *JOURNAL OF CARDIAC FAILURE* 2015;21(S109-S109

**Agents:** Paroxetine; fluoxetine **Vehicle:** DMSO; water; **Route:** SC; **Species:** Mice; **Pump:** 1002; **Duration:** 4 weeks;

**ALZET Comments:** Controls received mp w/ vehicle; animal info (male, C57BL6, myocardial infarction); functionality of mp verified by serum levels; ischemia (cardiac); Dose: paroxetine or fluoxetine (5 mg/kg/d)

**Q4282:** I. Rayen, *et al.* Developmental exposure to SSRIs, in addition to maternal stress, has long-term sex-dependent effects on hippocampal plasticity. *PSYCHOPHARMACOLOGY* 2015;232(1231-1244

**Agents:** Fluoxetine **Vehicle:** Propylenediol; saline; **Route:** SC; **Species:** Rat; **Pump:** 2ML4; **Duration:** 4 weeks;

**ALZET Comments:** Controls received mp w/ vehicle; animal info (female, Sprague Dawley, adult, 250-300g); 50% propylenediol used; teratology; "These implants also reduced the effect of stress associated with repeated injections or oral gavage." pg 1233;





### Imipramine

**Q5976:** R. Biswas, *et al.* Imipramine blocks acute silicosis in a mouse model. *Part Fibre Toxicol* 2017;14(1):36  
**Agents:** Imipramine **Vehicle:** PBS; **Route:** SC; **Species:** Mice; **Pump:** Not Stated; **Duration:** 6 weeks, 10 weeks;  
**ALZET Comments:** Controls received mp w/ vehicle; animal info (C57Bl/6, 6-8 weeks); The incision was closed with vetbond. Post-op treatment: buprenorphine (0.05-0.10 mg/kg SC; Therapeutic indication (Pulmonary disease, silicosis);

### Lithium

**Q9257:** E. F. Halff, *et al.* Effects of chronic exposure to haloperidol, olanzapine or lithium on SV2A and NLGN synaptic puncta in the rat frontal cortex. *Behavioural Brain Research* 2021;405(113203

**Agents:** Haloperidol; Lithium Chloride; Olanzapine **Vehicle:** Cyclodextrin, 2-Hydroxypropyl-B-; **Route:** SC; **Species:** Rat; **Pump:** 2ML4; **Duration:** 28 days;

**ALZET Comments:** Dose (0.5 mg/kg/day Haloperidol; 2 mmol/L/kg/day Lithium Chloride; 7.5 mg/kg/day Olanzapine); Controls received mp w/ vehicle; animal info (Male Sprague-Dawley rats, 220-270 g, 6-10 weeks old);

**Q8686:** I. A. Akkouh, *et al.* Exploring lithium's transcriptional mechanisms of action in bipolar disorder: a multi-step study. *Neuropsychopharmacology* 2020;45(6):947-955

**Agents:** Lithium chloride **Vehicle:** Not Stated; **Route:** SC; **Species:** Rat; **Pump:** 2ML4; **Duration:** 4 days;

**ALZET Comments:** Dose (84.8 mg/kg/day); Controls received mp w/ vehicle; animal info (Female, Sprague Dawley);

**Q7135:** G. Frindt, *et al.* Na restriction activates epithelial Na channels in rat kidney through two mechanisms and decreases distal Na(+) delivery. *J Physiol* 2018;596(16):3585-3602

**Agents:** Lithium Chloride **Vehicle:** Water; **Route:** SC; **Species:** Rat; **Pump:** 2001D; **Duration:** 1 day;

**ALZET Comments:** Dose (750 mM/day); Controls received mp w/ vehicle; animal info (Sprague-Dawley, 150-250 g);

### Milnacipran

**Q6550:** Y. Yoshino, *et al.* Endothelial nitric oxide synthase in rat brain is downregulated by sub-chronic antidepressant treatment. *Psychopharmacology (Berl)* 2017;234(11):1663-1669

**Agents:** Paroxetine hydrochloride; Milnacipran hydrochloride; Mirtazapine **Vehicle:** Saline; **Route:** SC; **Species:** Rat; **Pump:** 2ML4; **Duration:** 14 days;

**ALZET Comments:** Dose (Paroxetine: 10 mg/kg; milnacipran: 30 mg/kg; mirtazapine 10 mg/kg); Controls received mp w/ vehicle; animal info (Male adult Wistar rats weighing 180-200 g);

### Mirtazapine

**Q6550:** Y. Yoshino, *et al.* Endothelial nitric oxide synthase in rat brain is downregulated by sub-chronic antidepressant treatment. *Psychopharmacology (Berl)* 2017;234(11):1663-1669

**Agents:** Paroxetine hydrochloride; Milnacipran hydrochloride; Mirtazapine **Vehicle:** Saline; **Route:** SC; **Species:** Rat; **Pump:** 2ML4; **Duration:** 14 days;

**ALZET Comments:** Dose (Paroxetine: 10 mg/kg; milnacipran: 30 mg/kg; mirtazapine 10 mg/kg); Controls received mp w/ vehicle; animal info (Male adult Wistar rats weighing 180-200 g);

**Q5373:** N. A. Holtz, *et al.* Pharmacologically distinct pramipexole-mediated akinesia vs. risk-taking in a rat model of Parkinson's disease. *Prog Neuropsychopharmacol Biol Psychiatry* 2016;70(77-84

**Agents:** Pramipexole HCL; Mirtazapine **Vehicle:** Pramipexole HCL; Mirtazapine; **Route:** SC; **Species:** Rat; **Pump:** 2002, 2ML4; **Duration:** 12 - 14 days;

**ALZET Comments:** Controls received mp w/ vehicle; animal info (250-300 g, male Sprague-Dawley rats); For mirtazapine, saline brought to 5.5-6.0 pH with 1 N NaOH; good methods (pg. 79); neurodegenerative (Parkinson's disease); behavioral testing (forelimb step task); Dose (PPX 0.3 and 1.2 mg/kg/day; Mirtazapine 5 mg/kg/day);



### Nomifensine

**Q8863:** J. L. Jiang, *et al.* Triple reuptake inhibition of serotonin, norepinephrine, and dopamine increases the tonic activation of alpha2-adrenoceptors in the rat hippocampus and dopamine levels in the nucleus accumbens. *Progress in Neuropsychopharmacology & Biological Psychiatry* 2020;103(109987)

**Agents:** Nomifensine; Escitalopram **Vehicle:** 2-Hydroxypropyl-B-cyclodextrin; **Route:** SC; **Species:** Rat; **Duration:** 2, 14 days; **ALZET Comments:** Dose (5 mg/kg/day Nomifensine; 10 mg/kg/day Escitalopram); 20% 2-Hydroxypropyl-B-Cyclodextrin used; Controls received mp w/ vehicle; animal info (Adult male Sprague-Dawley rats weighing 250–350 g);

### Paroxetine

**Q6550:** Y. Yoshino, *et al.* Endothelial nitric oxide synthase in rat brain is downregulated by sub-chronic antidepressant treatment. *Psychopharmacology (Berl)* 2017;234(11):1663-1669

**Agents:** Paroxetine hydrochloride; Milnacipran hydrochloride; Mirtazapine **Vehicle:** Saline; **Route:** SC; **Species:** Rat; **Pump:** 2ML4; **Duration:** 14 days;

**ALZET Comments:** Dose (Paroxetine: 10 mg/kg; milnacipran: 30 mg/kg; mirtazapine 10 mg/kg); Controls received mp w/ vehicle; animal info (Male adult Wistar rats weighing 180–200 g);

**Q4595:** J. P. Steiner, *et al.* Interaction of Paroxetine with Mitochondrial Proteins Mediates Neuroprotection. *Neurotherapeutics* 2015;12(200-216)

**Agents:** Paroxetine **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice (transgenic); **Pump:** 2004; **Duration:** Not Stated; **ALZET Comments:** Controls received mp w/ saline; animal info (male, bp120 tg, adult, 8-9 weeks old);

**Q4580:** S. M. Schumacher, *et al.* Paroxetine-Mediated GRK2 Inhibition Reverses Cardiac Dysfunction and Remodeling After Myocardial Infarction. *JOURNAL OF CARDIAC FAILURE* 2015;21(S109-S109)

**Agents:** Paroxetine; fluoxetine **Vehicle:** DMSO; water; **Route:** SC; **Species:** Mice; **Pump:** 1002; **Duration:** 4 weeks; **ALZET Comments:** Controls received mp w/ vehicle; animal info (male, C57BL6, myocardial infarction); functionality of mp verified by serum levels; ischemia (cardiac); Dose: paroxetine or fluoxetine (5 mg/kg/d)

**Q3871:** M. El Mansari, *et al.* Restoration of Serotonin Neuronal Firing Following Long-Term Administration of Bupropion but Not Paroxetine in Olfactory Bulbectomized Rats. *INTERNATIONAL JOURNAL OF NEUROPSYCHOPHARMACOLOGY* 2015;18(U87-U94)

**Agents:** Bupropion; paroxetine **Vehicle:** Water; ethanol; **Route:** SC; **Species:** Rat; **Duration:** 2 days; 14 days; 28 days; **ALZET Comments:** Controls received mp w/ vehicle; animal info (male, Sprague Dawley, 300-500g, olfactory bulbectomized);

### Phenelzine

**Q8055:** J. R. Kulbe, *et al.* Continuous Infusion of Phenelzine, Cyclosporine A, or Their Combination: Evaluation of Mitochondrial Bioenergetics, Oxidative Damage, and Cytoskeletal Degradation following Severe Controlled Cortical Impact Traumatic Brain Injury in Rats. *J Neurotrauma* 2018;35(11):1280-1293

**Agents:** Cyclosporine A, Phenelzine **Vehicle:** Saline; Cremophor; EtOH; **Route:** SC; **Species:** Rat; **Pump:** 2ML1; **Duration:** 3 d **ALZET Comments:** Dose (10 mg/kg/day); Controls received mp w/ vehicle; animal info (3 months old, Sprague Dawley); neurodegenerative (Traumatic Brain Injury); 50mg/mL in saline/650 mg Cremophor/32.9% ethanol/ mL;

### Reboxetine

**Q8510:** M. Gonzalez-Prieto, *et al.* Microglial CX3CR1 production increases in Alzheimer's disease and is regulated by noradrenaline. *Glia* 2021;69(1):73-90

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

**ALZET Comments:** Dose (10 mg/kg/day); Controls received mp w/ vehicle; animal info (7 month old male WT and heterozygous 5xFAD mice); half-life (p. 2; 12.5 hr); neurodegenerative (Alzheimer's);



**Q8019:** I. L. Gutierrez, *et al.* Reboxetine Treatment Reduces Neuroinflammation and Neurodegeneration in the 5xFAD Mouse Model of Alzheimer's Disease: Role of CCL2. *Mol Neurobiol* 2019;56(12):8628-8642

**Agents:** Reboxetine Mesylate **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Pump:** 2004; **Duration:** 28 days;

**ALZET Comments:** Dose (10 mg/kg/day); Controls received mp w/ vehicle; animal info (CCL2KO); (Alzheimer's Disease);

### Sertraline

**Q4868:** O. Otlivanchik, *et al.* Orexin signaling is necessary for hypoglycemia-induced prevention of conditioned place preference. *American Journal of Physiology Regulatory, Integrative, and Comparable Physiology* 2016;310(R66-R73)

**Agents:** Sertraline **Vehicle:** Ethanol; **Route:** SC; **Species:** Rat; **Pump:** 2001; **Duration:** 1 week;

**ALZET Comments:** Controls received mp w/ vehicle; animal info (male, Sprague Dawley, 7-8 weeks old, 250-400g); 50% ethanol used; behavioral testing (open field); diabetes; Dose (7.5 mg/kg/day);

### Venlafaxine

**Q6771:** S. Schreiber, *et al.* Interaction between methylphenidate, methadone and different antidepressant drugs on antinociception in mice, and possible clinical implications. *World J Biol Psychiatry* 2017;18(4):300-307

**Agents:** methadone; escitalopram; venlafaxine; desipramine; clomipramine **Route:** SC; **Species:** Mice; **Pump:** 2002; **Duration:** 14 days;

**ALZET Comments:** Dose: methadone (0.5 mg/kg) venlafaxine (2.5 mg/kg); escitalopram (20mg/kg); desipramine (1mg/kg); clomipramine (0.5 mg/kg); animal info (Male ICR mice, 25-35g); dependence