



References on the Administration of Antidepressants Using ALZET® Osmotic Pumps

1. Acetylphenelzine

P2832: K. F. McKenna, *et al.* Chronic administration of the antidepressant phenelzine and its N-acetyl analogue: effects on GABAergic function. *J. Neural Transm* 1994;41(115-122)

ALZET Comments: Phenelzine sulfate; Acetylphenelzine, N2-; SC; Rat; 2ML2; 28 days; antidepressant; controls received mp with water.

P2971: R. L. Sherry-McKenna, *et al.* Monoamine oxidase inhibitors: effects on tryptophan concentrations in the rat brain. *J. Neural Transm* 1994;41(155-163)

ALZET Comments: Phenelzine; Tranylcypromine, 4-methoxy-; Acetylphenelzine, N2-; Tranylcypromine, 4-fluoro-; Tranylcypromine; Deprenyl; SC; IP; Rat; 28 days; antidepressant; controls received mp with vehicle; comparison of TCP and PLZ ip injections vs. mp.

2. Adinazolam

P0433: A. Turmel, *et al.* Sensitization of rat forebrain neurons to serotonin by adinazolam, an antidepressant triazolobenzodiazepine. *Eur. J. Pharmacol* 1984;99(241-244)

ALZET Comments: Adinazolam; Diazepam; Benzyl alcohol; Ethanol; Propylene glycol; Sodium benzoate; Water; IP; Rat; 2002; 5 and 14 days; comparison of adinazolam. iv injec vs. mp infusion; comparison of agents effects; adinazolam. used with water vehicle, Diaz. with combination vehicle.

3. 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 $199.35 \pm 19.47 \text{ nM}$);

Q0004: L. Bjartmar, *et al.* Long-term treatment with antidepressants, but not environmental stimulation, induces expression of NP2 mRNA in hippocampus and medial habenula. *Brain Research* 2010;1328(;):25-33

Agents: Amitriptyline; moclobemide; citalopram hydrobromide; maprotiline **Vehicle:** Not Stated; **Route:** SC; **Species:** Rat; **Pump:** Not Stated; **Duration:** 3, 21 days;

ALZET Comments: Controls received mp w/isotonic saline; enzyme inhibitor (monoamine oxidase-A); animal info (male, Sprague-Dawley, 200-250 g); "This method of delivery was chosen to avoid daily injections and thus manipulation of the animals." (p. 30); antidepressants

P9075: Y. H. Tai, *et al.* Amitriptyline induces nuclear transcription factor-kappa B-dependent glutamate transporter upregulation in chronic morphine-infused rats. *Neuroscience* 2008;153(3):823-831

Agents: Morphine; amitriptyline **Vehicle:** Not Stated; **Route:** CSF/CNS (intrathecal); **Species:** Rat; **Pump:** 2001; **Duration:** Not Stated;

ALZET Comments: Controls received mp w/ saline; animal info (male, Wistar, 350-400 g.); intrathecal catheter constructed using polyethylene (0.008 in ID, 0.014 in OD) and silastic tube; behavioral testing (antinociception assay, hot water immersion, tail flick latency)



P8246: R. Sud, *et al.* Uncovering molecular elements of brain-body communication during development and treatment of neuropathic pain. *Brain, Behavior, and Immunity* 2007;21(1):112-124

Agents: Tumor necrosis Factor- α , recomb. rat: tumor necrosis factor- α , recomb. rat, heat-inactivated; amitriptyline **Vehicle:** CSF, artificial; **Route:** CSF/CNS; **Species:** Rat; **Pump:** Not Stated; **Duration:** 8 days;

ALZET Comments: Controls received mp w/ vehicle, or heat-inactivated rr-TNF α ; comparison of ip injections vs. mp; peptides; animal info (male, Sprague-Dawley, 300-350g); chronic constriction injury to the right sciatic nerve; neuropathic pain

P8011: Y. H. Tai, *et al.* Amitriptyline suppresses neuroinflammation and up-regulates glutamate transporters in morphine-tolerant rats. *Pain* 2006;124(1-2):77-86

Agents: Amitriptyline; morphine **Vehicle:** Saline; **Route:** CSF/CNS (intrathecal); SC; **Species:** Rat; **Pump:** 2001; **Duration:** 5 days;

ALZET Comments: Tolerance; animal info (male, Wistar, 350-400 grams); behavioral study

4. Befloxadone

P4052: N. Haddjeri, *et al.* Effect of the reversible monoamine oxidase-A inhibitor befloxadone on the rat 5-hydroxytryptamine neurotransmission. *Eur. J. Pharmacol* 1998;343(179-192)

ALZET Comments: Befloxadone; Pindolol; Water; Ethanol; SC; Rat; 2, 21 days; controls received mp w/vehicle; befloxadone is an antidepressant; agents infused separately or concomitantly; antihypertensive.

P2843: R. Mongeau, *et al.* Electrophysiologic evidence for desensitization of α_2 -adrenoceptors on serotonin terminals following long-term treatment with drugs increasing norepinephrine synaptic concentration. *Neuropsychopharm* 1994;10(1):41-51

ALZET Comments: Befloxadone; Nisoxetine; Paroxetine; SC; Rat; 3 weeks; antidepressant; controls received mp with saline; in vitro studies were also done (p49).

P2644: P. Blier, *et al.* Modulation of 5-HT release in the guinea-pig brain following long-term administration of antidepressant drugs. *Br. J. Pharmacol* 1994;113(485-495)

ALZET Comments: Paroxetine; Befloxadone; Ethanol; Water; Guinea pig; 2 or 21 days; antidepressant; controls received mp w/ vehicles; Paroxetine is a selective 5-HT reuptake inhibitor (SSRI) and Befloxadone is a Type A monoamine oxidase inhibitor (MAOI).

5. 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.; Therapeutic indication (Obesity);

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; **Pump:** Not Stated; **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);

Q1431: C. H. K. West, *et al.* Effects of chronic antidepressant drug administration and electroconvulsive shock on activity of dopaminergic neurons in the ventral tegmentum. INTERNATIONAL JOURNAL OF NEUROPSYCHOPHARMACOLOGY 2011;14(2):201-210

Agents: Desipramine hydrochloride; imipramine hydrochloride; fluoxetine hydrochloride; paroxetine hydrochloride; sertraline hydrochloride; venlafaxine hydrochloride; bupropion hydrochloride; phenelzine sulfate **Vehicle:** Polyethylene glycol; DMSO; water; water, distilled; **Route:** SC; IP; **Species:** Rat; **Pump:** 2ML2; **Duration:** 14 days;

ALZET Comments: Controls received mp w/ vehicle; animal info (male, albino, Sprague-Dawley, 550-700 g); functionality of mp verified by drug levels in circulation; good methods, pg 4; 25% DMSO used; IP catheter used; silastic tubing used; "The distal end of the silastic tubing, including the bulb, was then introduced surgically into the peritoneal cavity and the peritoneal wall sutured closed so that the bulb prevented the tubing from being withdrawn back into the subcutaneous space, thereby enabling... delivery of drug from the pump into the peritoneal cavity." pg 4;

Q1534: R. Ghanbari, *et al.* Enhancement of serotonergic and noradrenergic neurotransmission in the rat hippocampus by sustained administration of bupropion. Psychopharmacology 2011;217(1):61-73

Agents: Bupropion **Vehicle:** Not Stated; **Route:** SC; **Species:** Rat; **Pump:** Not Stated; **Duration:** 2, 14 days;

ALZET Comments: Controls received mp w/ saline; animal info (Sprague Dawley, male, 270-320 g)

P9434: N. E. Paterson, *et al.* Chronic bupropion differentially alters the reinforcing, reward-enhancing and conditioned motivational properties of nicotine in rats. NICOTINE & TOBACCO RESEARCH 2008;10(6):995-1008

Agents: Bupropion HCl **Vehicle:** Saline; **Route:** SC; **Species:** Rat; **Pump:** 2ML2; **Duration:** 14 days;

ALZET Comments: Dose-response (fig 4); dependence; post op. care (antibacterial lotion); animal info (male, Wistar, 300-350 g.); "minipumps were used in the present study to deliver two bupropion doses... with the aim of establishing constantly high bupropion levels that may mitigate species differences in pharmacokinetics." (p. 1006)

6. 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); **Pump:** Not Stated; **Duration:** 7 days;

ALZET Comments: Dose (10 mg/kg/day); animal info (Wild type (WT) and SERT knockout (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 received mp w/ vehicle; animal info (C57BL/6J; 18-23 grams, 7-10 weeks); Dose (Citalopram (10 or 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 (8-10ewk old male mice); dependence;



Q5857: C. J. Greig, *et al.* Enhanced serotonin signaling increases intestinal neuroplasticity. *J Surg Res* 2016;206(1):151-158
Agents: Citalopram hydrobromide **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice (knockout); **Pump:** 1007D; **Duration:** 7 days;

ALZET Comments: Controls received mp w/ vehicle; animal info (8-10 weeks old) ; Dose (10 mg/kg/day);

7. 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);

P5490: E. Dremencov, *et al.* Effects of chronic antidepressants and electroconvulsive shock on serotonergic neurotransmission in the rat hypothalamus. *PROGRESS IN NEURO-PSYCHOPHARMACOLOGY & BIOLOGICAL PSYCHIATRY* 2002;26(6):1029-1034

Agents: Clomipramine; venlafaxine **Vehicle:** Not Stated; **Route:** Not Stated; **Species:** Mice; **Pump:** Not Stated; **Duration:** 28 days;

ALZET Comments: Antidepressants

P3352: K. G. Todd, *et al.* Chronic administration of the antidepressants phenelzine, desipramine, clomipramine, or maprotiline decreases binding to 5-hydroxytryptamine_{2A} receptors without affecting benzodiazepine binding sites in rat brain. *Cellular and Molecular Neurobiology* 1995;15(3):361-370

Agents: Clomipramine; Fluoxetine; Desipramine; Phenelzine; Maprotiline **Vehicle:** Not Stated; **Route:** SC; **Species:** Rat; **Pump:** 2ML4; **Duration:** 21 days;

ALZET Comments: antidepressant; no comment posted

P3187: C. S. Aulakh, *et al.* Long-term antidepressant treatments alter 5-HT_{2A} and 5-HT_{2C} receptor-mediated hyperthermia in fawn-hooded rats. *Eur. J. Pharmacol* 1995;282(65-70

Agents: Imipramine; Clomipramine; Clorgyline **Vehicle:** Not Stated; **Route:** SC; **Species:** Rat; **Pump:** 2002; **Duration:** 21 days;

ALZET Comments: antidepressant; controls received mp with saline

8. Desipramine

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 **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

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, and all antagonists were 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);

Q4096: A. Shah, *et al.* Influence of acute or chronic administration of ovarian hormones on the effects of desipramine in the forced swim test in female rats. *Psychopharmacology* 2014;231(3685-3694

Agents: Desipramine hydrochloride **Vehicle:** Water, distilled; **Route:** IP; **Species:** Rat; **Pump:** 2ML4; **Duration:** 18 days;

ALZET Comments: Controls received mp w/ vehicle; animal info (female, Sprague Dawley, 250-350g, ovariectomized); functionality of mp verified by serum levels; comparison of injection vs mp; dose-response (pg 3690); post op. care (penicillin and saline injection; atipamezol 1 mg/kg); behavioral testing (forced swimming test; locomotor activity); replacement therapy (estradiol pellets); solutions filtered through 0.9 um nitrocellulose filters; pumps primed at room temperature saline; used sutures;

9. Duloxetine

Q4103: M. J. Skelly, *et al.* Chronic treatment with prazosin or duloxetine lessens concurrent anxiety-like behavior and alcohol intake: evidence of disrupted noradrenergic signaling in anxiety-related alcohol use. *BRAIN AND BEHAVIOR* 2014;4(468-483

ALZET Comments: Prazosin; propranolol; duloxetine; DMSO; saline, sterile; SC; Rat; 2ML4; 4 weeks; Controls received mp w/ vehicle; animal info (male, Long Evans, adult, 300g); functionality of mp verified by residual volume; 10% DMSO used; stress/adverse reaction: (see pg. 472); post op. care (ketoprofen 3 mg/kg SC); behavioral testing (ethanol intake, open field test, locomotor activity, elevated plus maze); dependence; "Drug doses were calculated based on the estimated mean weight of animals in each group halfway through the drug delivery period (taking the mean weight at baseline and adding projected weight gain across 2 weeks)" pg 470; pumps removed after 4 weeks;

Q2005: C. ba-Delgado, *et al.* Analgesic antidepressants promote the responsiveness of locus coeruleus neurons to noxious stimulation: Implications for neuropathic pain. *Pain* 2012;153(7):1438-1449



ALZET Comments: Desipramine; duloxetine; Saline; cyclodextrin, methyl-beta; SC; Rat; 2ML1; 1 week; Controls received mp w/ vehicle; animal info (Sprague Dawley, male, 250-300 g).

P8117: G. G. Gould, *et al.* Effect of chronic administration of duloxetine on serotonin and norepinephrine transporter binding sites in rat brain. *Biological Psychiatry* 2007;61(2):210-215

ALZET Comments: Duloxetine; desipramine; paroxetine; Ethanol; water; SC; Rat; 2ML4; 21 days; Controls received mp w/ vehicle; functionality of mp verified by serum agent concentrations; dose-response (p.211); animal info (male, Sprague-Dawley, 125-150g).

P7266: L. Grandoso, *et al.* Alpha₂-Adrenoceptor involvement in the in vitro inhibitory effect of citalopram on a subpopulation of rat locus coeruleus neurons. *European Journal of Pharmacology* 2005;517(1-2):51-58

ALZET Comments: Citalopram; duloxetine; Saline; SC; Rat; 14 days; Controls received mp w/ vehicle; 5-HT reuptake inhibitor, noradrenaline reuptake inhibitor.

P4238: L. E. Rueter, *et al.* Electrophysiological characterization of the effect of long-term duloxetine administration on the rat serotonergic and noradrenergic systems. *J. Pharmacol. Exp. Ther* 1998;285(2):404-412

ALZET Comments: Duloxetine; Ethanol; Water; SC; Rat; 2,21 days; controls received mp w/vehicle; antidepressant; 50% ethanol used, which is not recommended by the manufacturer;.

10. Escitalopram

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; **Pump:** 2ML4; **Duration:** 14 days;

ALZET Comments: Dose (10 mg/kg/day); animal info (Wistar Kyoto rat); 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:** 2 days, 14 days;

ALZET Comments: Dose (5 mg/kg/day); animal info (Male Sprague-Dawley rats, 280-320 gr);

Q8152: N. Papp, *et al.* Acute and chronic escitalopram alter EEG gamma oscillations differently: relevance to therapeutic effects. *Eur J Pharm Sci* 2018;121(347-355

Agents: Escitalopram **Vehicle:** Not stated; **Route:** SC; **Species:** Rat; **Pump:** 2ML4; **Duration:** 21 days;

ALZET Comments: Dose (10 mg/kg/day); Controls received mp w/ vehicle; animal info (Wistar, Male, 250-280 g); dependence;

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

11. Fluoxetine

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 buffered; **Route:** CSF/CNS (lateral ventricle); **Species:** Mice; **Pump:** 1004; **Duration:** 7 days;

ALZET Comments: Dose ((XAV939 1mM at 0.5 µL/h), (fluoxetine 18 mg/kg/day)); 3% DMSO and 0.2% Tween 20 in PBS (pH 7.4) used; Controls received mp w/ vehicle; animal info (10-12 weeks, male, C57); behavioral testing (open field, sucrose preference, novelty-suppressed feeding, forced swim test); XAV939 is a small molecule Axin stabilizer; enzyme inhibitor (tankyrase); Therapeutic indication (increased the amplification of adult neural progenitor cells and neuron production in the 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, free base)

Q5631: K. Bravo, *et al.* Perinatal Fluoxetine Exposure Impairs the CO2 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, C57BL/6, myocardial infarction); functionality of mp verified by serum levels; ischemia (cardiac); Dose: paroxetine or fluoxetine (5 mg/kg/d)

12. 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);



Q2124: N. Carrier, *et al.* Testosterone and imipramine have antidepressant effects in socially isolated male but not female rats. *Hormones and Behavior* 2012;61(5):678-685

Agents: Imipramine hydrochloride **Vehicle:** Saline, sterile; **Route:** SC; **Species:** Rat; **Pump:** 2ML4; **Duration:** 28 days;
ALZET Comments: Controls received mp w/ vehicle; animal info (adult, male, 250-270 g, female, 200-225 g, 2-3 mo old); replacement therapy (gonadectomy)

Q1848: N. Carrier, *et al.* Extracellular Signal-Regulated Kinase 2 Signaling in the Hippocampal Dentate Gyrus Mediates the Antidepressant Effects of Testosterone. *Biological Psychiatry* 2012;71(7):642-651

Agents: Imipramine hydrochloride **Vehicle:** Saline; **Route:** SC; **Species:** Rat; **Pump:** 2ML4; **Duration:** 30 days;
ALZET Comments: Controls received mp w/ vehicle; animal info (Sprague Dawley, male, adult, 250-270 g)

Q1431: C. H. K. West, *et al.* Effects of chronic antidepressant drug administration and electroconvulsive shock on activity of dopaminergic neurons in the ventral tegmentum. *INTERNATIONAL JOURNAL OF NEUROPSYCHOPHARMACOLOGY* 2011;14(2):201-210

Agents: Desipramine hydrochloride; imipramine hydrochloride; fluoxetine hydrochloride; paroxetine hydrochloride; sertraline hydrochloride; venlafaxine hydrochloride; bupropion hydrochloride; phenelzine sulfate **Vehicle:** Polyethylene glycol; DMSO; water; water, distilled; **Route:** SC; IP; **Species:** Rat; **Pump:** 2ML2; **Duration:** 14 days;
ALZET Comments: Controls received mp w/ vehicle; animal info (male, albino, Sprague-Dawley, 550-700 g); functionality of mp verified by drug levels in circulation; good methods, pg 4; 25% DMSO used; IP catheter used; silastic tubing used; "The distal end of the silastic tubing, including the bulb, was then introduced surgically into the peritoneal cavity and the peritoneal wall sutured closed so that the bulb prevented the tubing from being withdrawn back into the subcutaneous space, thereby enabling... delivery of drug from the pump into the peritoneal cavity." pg 4;

Q0978: A. Blugeot, *et al.* Vulnerability to Depression: From Brain Neuroplasticity to Identification of Biomarkers. *Journal of Neuroscience* 2011;31(36):12889-12899

Agents: Flavone, 7,8-dihydroxy; imipramine **Vehicle:** Saline, sterile; **Route:** CSF/CNS; SC; **Species:** Rat; **Pump:** 2004; 2002; **Duration:** 14, 22 days;
ALZET Comments: Controls received mp w/ saline; animal info (male, Sprague Dawley, 324-349 g); 7,8-DHF is a TrkB receptor antagonist

13. Lithium

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); cardiovascular;

Q3369: Q. Wu, *et al.* NR2B subunit of the NMDA glutamate receptor regulates appetite in the parabrachial nucleus. *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA* 2013;110(36):14765-14770

Agents: Lithium chloride; RO25-6981; bretazenil **Vehicle:** Saline; **Route:** CSF/CNS (fourth ventricle; parabrachial nucleus); **Species:** Mice; **Pump:** 1002; **Duration:** 14 days;
ALZET Comments: Controls received mp w/ vehicle or sham surgery; animal info (male, Agrp DTR/+ or WT); bilateral cannula used; dose-response (pg.14766, fig.3; pg.14769, fig.6); behavioral testing (food intake); tissue perfusion (fourth ventricle; parabrachial nucleus); Cannula placement verified; RO25-6981 is a NR2B antagonist; bilateral infusion;

P9250: J. Dill, *et al.* Inactivation of glycogen synthase kinase 3 promotes axonal growth and recovery in the CNS. *Journal of Neuroscience* 2008;28(36):8914-8928

Agents: Lithium Chloride **Vehicle:** Saline, physiological; **Route:** SC; **Species:** Mice; **Pump:** 2004; **Duration:** 28 days;



ALZET Comments: Controls received mp w/ vehicle; enzyme inhibitor (Glycogen synthase kinase-3); animal info (female, C57BL/6, 8-10 wks old, spinal cord injury/laminectomy); behavioral testing (BBB locomotor scale, grid walking, foot print analysis)

P9776: D. J. Pulford, *et al.* Chronic lithium administration down regulates transthyretin mRNA expression in rat choroid plexus. *Neuropsychiatric Disease and Treatment* 2006;2(4):549-555

Agents: Lithium chloride **Vehicle:** Water, sterile; **Route:** SC; **Species:** Rat; **Pump:** Not Stated; **Duration:** 28 days; **ALZET Comments:** Controls received mp w/ vehicle; animal info (male, Lister hooded, 257 g.)

P5723: S. C. Benoit, *et al.* Assessment of the aversive consequences of acute and chronic administration of the melanocortin agonist, MTII. *International Journal of Obesity* 2003;27(5):550-556

Agents: MTII; Lithium chloride **Vehicle:** **Route:** IP; **Species:** Rat; **Pump:** Not Stated; **Duration:** 7 days;

ALZET Comments: Controls received mp w/ saline; comparison of IP, IV, SC injections vs. IP mp; MTII is a melanocortin agonist

14. Maprotiline

Q0004: L. Bjartmar, *et al.* Long-term treatment with antidepressants, but not environmental stimulation, induces expression of NP2 mRNA in hippocampus and medial habenula. *Brain Research* 2010;1328(:):25-33

ALZET Comments: Amitriptyline; moclobemide; citalopram hydrobromide; maprotiline; SC; Rat; 3, 21 days; Controls received mp w/isotonic saline; enzyme inhibitor (monoamine oxidase-A); animal info (male, Sprague-Dawley, 200-250 g); "This method of delivery was chosen to avoid daily injections and thus manipulation of the animals." (p. 30); antidepressants.

P3352: K. G. Todd, *et al.* Chronic administration of the antidepressants phenelzine, desipramine, clomipramine, or maprotiline decreases binding to 5-hydroxytryptamine_{2A} receptors without affecting benzodiazepine binding sites in rat brain. *Cell. Molec. Neuro* 1995;15(3):361-370

ALZET Comments: Clomipramine; Fluoxetine; Desipramine; Phenelzine; Maprotiline; SC; Rat; 2ML4; 21 days; antidepressant; no comment posted.

P0694: K. G. Lloyd, *et al.* Upregulation of gamma-aminobutyric acid (GABA) B binding sites in rat frontal cortex: a common action of repeated administration of different classes of antidepressants and electroshock. *J. Pharmacol. Exp. Ther* 1985;235(1):191-199

ALZET Comments: Maprotiline; Nomifensine; Amitriptyline; Citalopram; Desipramine; Pargyline; Trazodone; Viloxazine; Zimeldine; SC; Rat; 2002; 6-18 days; comparison of agents effects; comparison of single dose ip injec vs. mp infusion and repeated ip injec of other psychotropic drugs vs. electroshock treatment; antihypertensive.

15. Mianserin

P2365: P. J. Mitchell, *et al.* Chronic treatment with clomipramine and mianserin increases the hierarchical position of subdominant rats housed in triads. *Behav. Pharmacology* 1992;3(239-247)

ALZET Comments: Clomipramine; Mianserin; Water; SC; Rat; 2002; 7/14 days; antidepressant; controls received mp w/ water or sham op; no stress (see pg. 241).

P1695: H. Kubota, *et al.* Mechanisms of the B-adrenoceptor down-regulation by the treatment with antidepressants in the rat cerebral cortex: effects of continuous administration of antidepressants by an osmotic pump. *Jpn. J. Psychiatry Neurol* 1990;44(1):135-136

ALZET Comments: Tunicamycin; Cycloheximide; Desipramine; Fluoxetine; Mianserin; Trazodone; CSF/CNS; SC; Rat; 2001; 2ML1; 4-7 days; comparison of sc injections vs. mp; cyclo. and tunica. delivered icv for 5 days.



P1756: K. Kurata, *et al.* Heterogeneous distribution of mianserin in rat brain during chronic continuous infusion. *Pharmacology* 1989;39(285-290)

ALZET Comments: Mianserin; DMSO; SC; Rat; 2ML2; 2, 14 days; functionality of mp verified by measuring residual volume, serum drug levels; tetracyclic antidepressant, 5HT antagonists.

P0338: M. Williams, *et al.* Chronic in vivo treatment with desmethylmipramine and mianserin does not alter adenosine A-1 radioligand binding in rat cortex. *Neurosci. Lett* 1983;35(47-51)

ALZET Comments: Desipramine; Mianserin; SC; Rat; 2ML2; 2-3 weeks; comparison of agents effects; DMI 2 wks, Mianserin 3 wks.

16. 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

ALZET Comments: Paroxetine hydrochloride; Milnacipran hydrochloride; Mirtazapine; Saline; SC; Rat; 2ML4; 14 days; 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);.

P9846: R. Takeda, *et al.* Analgesic effect of milnacipran is associated with c-Fos expression in the anterior cingulate cortex in the rat neuropathic pain model. *NEUROSCIENCE RESEARCH* 2009;64(4):380-384

ALZET Comments: Milnacipran; Saline; SC; Rat; 2ML2; Controls received sham operation; animal info (Sprague Dawley, 320-350 g.); behavioral testing (withdrawal response); "The pump makes it possible to precisely and continuously administer systemic drug-delivery without any repeated harmful treatment" pg. 381.

P2179: M. B. Assie, *et al.* Effects of prolonged administration of milnacipran, a new antidepressant, on receptors and monoamine uptake in the brain of the rat. *Neuropharmacology* 1992;31(2):149-155

ALZET Comments: Milnacipran; Desipramine; PEG 300; Water; Rat; 2ML4; 27 days; antidepressant; controls received mp w/vehicle; functionality of mp verified by blood levels (p. 151); comparison of oral administration vs. mp; stress/adverse reaction: skin necrosis w/desipramine pumps; route not stated.

17. 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); PPX is a dopamine D2 receptor agonist; Mirtazapine is an atypical antidepressant; akinesia and risk-taking rat model; Dose (PPX 0.3 and 1.2 mg/kg/day; Mirtazapine 5 mg/kg/day);

Q5063: N. Ito, *et al.* Contribution of protein binding, lipid partitioning, and asymmetrical transport to drug transfer into milk in mouse versus human. *Pharm Res* 2013;30(9):2410-22



Agents: acetaminophen, cephalothin sodium salt, clindamycin hydrochloride, disopyramide phosphate salt, labetalol hydrochloride, nitrofurantoin +-propranolol hydrochloride, terbutaline hemisulfate salt, verapamil hydrochloride, Acyclovir, alprazolam, atenolol, anhydrous caffeine, cefotaxime sodium salt, cephalirin sodium salt, diltiazem hydrochloride, metronidazole, nitrazepam, prednisolone, 6-propyl-2-thiouracil, trazadone hydrochloride, chloramphenicol, cimetidine, theophylline, fluconazole, metoprolol, mirtazapine, praziquantel, quetiapine fumarate, triprolidine hydrochloride, metformin, moclobemide. **Vehicle:** DMSO; water; **Route:** IP; **Species:** mice; **Pump:** 1003D; **Duration:** Not Stated; **ALZET Comments:** animal info: lactating mice, postnatal age of 14 days; functionality of mp verified by measurement of drug concentration in milk and plasma; mp were used to infuse study lactational drug transfer.

Q0899: S. Yamamura, *et al.* Different actions for acute and chronic administration of mirtazapine on serotonergic transmission associated with raphe nuclei and their innervation cortical regions. *Neuropharmacology* 2011;60(4):550-560
Agents: Mirtazapine **Vehicle:** HCl; Ringer's solution; **Route:** SC; **Species:** Rat; **Pump:** 2ML4; **Duration:** 21 days;
ALZET Comments: Animal info (Sprague-Dawley, male, 5 wks old)

P9610: C. H. K. West, *et al.* Antidepressant drugs with differing pharmacological actions decrease activity of locus coeruleus neurons. *INTERNATIONAL JOURNAL OF NEUROPSYCHOPHARMACOLOGY* 2009;12(5):627-641
Agents: Desipramine; mirtazapine; chlorpheniramine; Paroxetine; scopolamine; amphetamine; escitalopram; chlordiazepoxide **Vehicle:** Not Stated; **Route:** SC; IP; **Species:** Rat; **Pump:** 2ML2; **Duration:** 14, 21 days;
ALZET Comments: Controls received mp w/vehicle; dose-response (Fig 2-5); pumps replaced on day 14; good methods pg 629; animal info (male, Sprague Dawley, 5-7 mo old, 550-700g); "Importantly, use of minipumps also eliminates the need for repeated handling and injection of animals to administer the drug chronically." pg. 628; IP catheter used

18. Nomifensine

P0694: K. G. Lloyd, *et al.* Upregulation of gamma-aminobutyric acid (GABA) B binding sites in rat frontal cortex: a common action of repeated administration of different classes of antidepressants and electroshock. *J. Pharmacol. Exp. Ther* 1985;235(1):191-199
ALZET Comments: Maprotiline; Nomifensine; Amitriptyline; Citalopram; Desipramine; Pargyline; Trazodone; Viloxazine; Zimeldine; SC; Rat; 2002; 6-18 days; comparison of agents effects; comparison of single dose ip injec vs. mp infusion and repeated ip injec of other psychotropic drugs vs. electroshock treatment; antihypertensive.

19. Nortriptyline

P2654: K. Brodin, *et al.* Clomipramine and clonazepam increase cholecystokinin levels in rat ventral tegmental area and limbic regions. *Eur. J. Pharmacol* 1994;263(175-180)
ALZET Comments: Nortriptyline; Amitriptyline; Clomipramine; Alaproclate; Clonazepam; Alcohol; Saline; SC; Rat; 2ML2; 14 days; antidepressant; controls received mp w/ vehicle; functionality of mp verified by plasma levels; dose-response (Table 1; pg. 177); enzyme inhibitor; clonazepam is a benzodiazepene; the others are monoamine uptake inhibitors.

20. 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); functionality of mp verified by residual volume; pumps primed overnight at 37C;

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; **Pump:** Not Stated; **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);

Q2570: D. Geroe, *et al.* Cell-Based Screening Identifies Paroxetine as an Inhibitor of diabetic Endothelial Dysfunction. *Diabetes* 2013;62(3):953-964

Agents: Paroxetine **Vehicle:** Not Stated; **Route:** Not Stated; **Species:** Rat; **Pump:** Not Stated; **Duration:** 28 days;
ALZET Comments: Control animals received mp w/ vehicle; animal info (Sprague Dawley, male, 225-250 g); pumps replaced after 2 weeks

21. Phenzelzine

Q8055: J. R. Kulbe, *et al.* Continuous Infusion of Phenzelzine, 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, Phenzelzine **Vehicle:** Saline; Cremophor; Ethanol; **Route:** SC; **Species:** Rat; **Pump:** 2ML1; **Duration:** 3 days;

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;

Q1811: M. L. Rovin, *et al.* Influence of chronic administration of antidepressant drugs on mRNA for galanin, galanin receptors, and tyrosine hydroxylase in catecholaminergic and serotonergic cell-body regions in rat brain. *Neuropeptides* 2012;46(2):81-91

Agents: Phenzelzine; desipramine; paroxetine **Vehicle:** DMSO; PEG; water, distilled; **Route:** SC; IP; **Species:** Rat; **Pump:** 2ML2; **Duration:** 14 days;

ALZET Comments: Controls received mp w/ vehicle; animal info (Sprague Dawley, adult, 5-7 mo old); Osmotic minipumps were chosen for AD delivery because they slowly release drug over 14 days, thus eliminating the stress animals would experience by daily injections of the AD" pg 83; IP catheter used; wound clips used; enzyme inhibitor (monoamine oxidase); 50% DMSO used; 25% PEG used

Q1431: C. H. K. West, *et al.* Effects of chronic antidepressant drug administration and electroconvulsive shock on activity of dopaminergic neurons in the ventral tegmentum. *INTERNATIONAL JOURNAL OF NEUROPSYCHOPHARMACOLOGY* 2011;14(2):201-210



Agents: Desipramine hydrochloride; imipramine hydrochloride; fluoxetine hydrochloride; paroxetine hydrochloride; sertraline hydrochloride; venlafaxine hydrochloride; bupropion hydrochloride; phenelzine sulfate **Vehicle:** Polyethylene glycol; DMSO; water; water, distilled; **Route:** SC; IP; **Species:** Rat; **Pump:** 2ML2; **Duration:** 14 days;

ALZET Comments: Controls received mp w/ vehicle; animal info (male, albino, Sprague-Dawley, 550-700 g); functionality of mp verified by drug levels in circulation; good methods, pg 4; 25% DMSO used; IP catheter used; silastic tubing used; "The distal end of the silastic tubing, including the bulb, was then introduced surgically into the peritoneal cavity and the peritoneal wall sutured closed so that the bulb prevented the tubing from being withdrawn back into the subcutaneous space, thereby enabling... delivery of drug from the pump into the peritoneal cavity." pg 4;

P9373: F. Chenu, *et al.* Long-term administration of monoamine oxidase inhibitors alters the firing rate and pattern of dopamine neurons in the ventral tegmental area. INTERNATIONAL JOURNAL OF NEUROPSYCHOPHARMACOLOGY 2009;12(4):475-485

Agents: Clorgyline; phenelzine; deprenyl **Vehicle:** Not Stated; **Route:** SC; **Species:** Rat; **Pump:** Not Stated; **Duration:** 2, 21 days;

ALZET Comments: Controls received mp w/ saline; enzyme inhibitor (MAO, monoamine oxidase); animal info (male, Sprague Dawley, 250-300 g.)

P7514: C. H. K. West, *et al.* A selective test for antidepressant treatments using rats bred for stress-induced reduction of motor activity in the swim test. Psychopharmacology 2005;182(1):9-23

Agents: Amitriptyline HCl; venlafaxine HCl; clordiazepoxide HCl; imipramine HCl; phenelzine sulfate; scopolamine HBr; desipramine HCl; bupropion HCl; chlorpheniramine maleate; fluoxetine HCl; sertraline; amphetamine sulfate, D- **Vehicle:** Water, sterile distilled; PEG; **Route:** SC; **Species:** Rat; **Pump:** 2ML2; **Duration:** 6,14 days;

ALZET Comments: Controls received mp w/ vehicle; functionality of mp verified by agent blood levels; dose-response (fig. 5); animal info (male, female, susceptible, selectively bred); some animals had saline-filled catheter attached to mp to delay drug infusion by 5 days; "The most notable advantage of minipump delivery is that it eliminates stress resulting from daily injection of drug....minipumps also provide constant infusion of drug" (pg. 22)

22. Reboxetine

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); neurodegenerative (Alzheimer's Disease);

Q2003: Y. C. Ku, *et al.* Different involvement of ventral and dorsal norepinephrine pathways on norepinephrine reuptake inhibitor-induced locomotion and antidepressant-like effects in rats. Neuroscience Letters 2012;514(2):179-184

Agents: Reboxetine **Vehicle:** Saline; **Route:** SC; **Species:** Rat; **Pump:** 2004; **Duration:** 14 days;

ALZET Comments: Controls received mp w/ vehicle; animal info (Sprague Dawley, male, adult)

Q2721: A. A. Fossa, *et al.* Improved preclinical cardiovascular therapeutic indices with long-term inhibition of norepinephrine reuptake using reboxetine. TOXICOLOGY AND APPLIED PHARMACOLOGY 2012;264(3):343-350

Agents: Reboxetine **Vehicle:** Water, sterile; **Route:** SC; **Species:** Rat; **Pump:** 2ML4; **Duration:** 28 days;

ALZET Comments: Control animals received mp w/ vehicle; functionality of mp verified via residual volume

P9879: Z. Zhao, *et al.* Association of Changes in Norepinephrine and Serotonin Transporter Expression with the Long-Term Behavioral Effects of Antidepressant Drugs. Neuropsychopharmacology 2009;34(6):1467-1481

Agents: Protriptyline; reboxetine; sertraline; venlafaxine **Vehicle:** DMSO; saline; ethanol; **Route:** SC; **Species:** Rat; **Pump:** 2ML2; 2ML4; **Duration:** 14, 42 days;

ALZET Comments: Controls received mp w/ vehicle; long-term study; pumps replaced after 21 days; animal info (male, Sprague Dawley, 300-350 g.); 50% DMSO used; 10% ethanol used



P9743: T. Arunrut, *et al.* Differential behavioral and neurochemical effects of exercise, reboxetine and citalopram with the forced swim test. LIFE SCIENCES 2009;84(17-18):584-589

Agents: Reboxetine; citalopram **Vehicle:** Saline; **Route:** SC; **Species:** Rat; **Pump:** Not Stated; **Duration:** 7 days;

ALZET Comments: Controls received mp w/vehicle; animal info (male, Sprague Dawley)

23. Ritanserin

P3916: M. M. El, *et al.* In vivo electrophysiological characterization of 5-HT receptors in the guinea pig head of caudate nucleus and orbitofrontal cortex. Neuropharmacology 1997;36(4/5):577-588

ALZET Comments: Metergoline; Ritanserin; SC; Guinea pig; 4 day; antidepressant; controls received mp w/ NaCl; comparison of IV injections vs. mp.

24. 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);

Q1779: H. Furmaga, *et al.* Comparison of Delta FosB Immunoreactivity Induced by Vagal Nerve Stimulation with That Caused by Pharmacologically Diverse Antidepressants. Journal of Pharmacology and Experimental Therapeutics 2012;341(2):317-325

Agents: Desipramine; sertraline **Vehicle:** Not Stated; **Route:** Not Stated; **Species:** Rat; **Pump:** 2ML2; **Duration:** 14 days;

ALZET Comments: Controls received mp w/ vehicle; animal info (Sprague Dawley, male, 250-350 g)

Q2136: H. Furmaga, *et al.* Vagal Nerve Stimulation Rapidly Activates Brain-Derived Neurotrophic Factor Receptor TrkB in Rat Brain. PLoS One 2012;7(5):U65-U74

Agents: Sertraline; desipramine **Vehicle:** Ethanol; saline; **Route:** IP; **Species:** Rat; **Pump:** 2ML2; **Duration:** 14 days;

ALZET Comments: Controls received mp w/ vehicle; animal info (Sprague Dawley, adult, male, 250-350 g); nitrocellulose filters used; 10% ethanol used

Q1431: C. H. K. West, *et al.* Effects of chronic antidepressant drug administration and electroconvulsive shock on activity of dopaminergic neurons in the ventral tegmentum. INTERNATIONAL JOURNAL OF NEUROPSYCHOPHARMACOLOGY 2011;14(2):201-210

Agents: Desipramine hydrochloride; imipramine hydrochloride; fluoxetine hydrochloride; paroxetine hydrochloride; sertraline hydrochloride; venlafaxine hydrochloride; bupropion hydrochloride; phenelzine sulfate **Vehicle:** Polyethylene glycol; DMSO; water; water, distilled; **Route:** SC; IP; **Species:** Rat; **Pump:** 2ML2; **Duration:** 14 days;

ALZET Comments: Controls received mp w/ vehicle; animal info (male, albino, Sprague-Dawley, 550-700 g); functionality of mp verified by drug levels in circulation; good methods, pg 4; 25% DMSO used; IP catheter used; silastic tubing used; "The distal end of the silastic tubing, including the bulb, was then introduced surgically into the peritoneal cavity and the peritoneal wall sutured closed so that the bulb prevented the tubing from being withdrawn back into the subcutaneous space, thereby enabling... delivery of drug from the pump into the peritoneal cavity." pg 4;

P9879: Z. Zhao, *et al.* Association of Changes in Norepinephrine and Serotonin Transporter Expression with the Long-Term Behavioral Effects of Antidepressant Drugs. Neuropsychopharmacology 2009;34(6):1467-1481

Agents: Protriptyline; reboxetine; sertraline; venlafaxine **Vehicle:** DMSO; saline; ethanol; **Route:** SC; **Species:** Rat; **Pump:** 2ML2; 2ML4; **Duration:** 14, 42 days;



ALZET Comments: Controls received mp w/ vehicle; long-term study; pumps replaced after 21 days; animal info (male, Sprague Dawley, 300-350 g.); 50% DMSO used; 10% ethanol used

25. Sulpiride

P2115: L.-W. Zhou, *et al.* Triazolam blocks the initial rotational effects of quinpirole but permits the later developing reduction of dopamine D2-mediated rotational behavior and dopamine D2 receptors. *Eur. J. Pharmacol* 1992;218(219-227

ALZET Comments: Quinpirole HCl; Sulpiride; Triazolam; Ascorbic acid; DMSO; SC; mice; 2001; 6 days; Quinpirole is a dopamine agonist; antidepressant; stability verified in vitro for 7 days.

P1444: H. Ueda. Time course study of changes in the activity of rats during intraventricular infusion of 6-hydroxydopamine, haloperidol and sulpiride: a study of the relationship between an origin of the negative symptoms in schizophrenia and catecholamines. *J. Iwate Med. Assoc* 1988;40(3):385-398

ALZET Comments: Dopamine, 6-hydroxy-; Haloperidol; Sulpiride; CSF/CNS; Rat; 8 days; Japanese, English abstract.

P0630: B. Costall, *et al.* The continuity of dopamine receptor antagonism can dictate the long-term behavioural consequences of a mesolimbic infusion of dopamine. *Neuropharmacology* 1985;2(3):193-197

ALZET Comments: Dopamine HCl; Sulpiride; Nitrogen; Sodium metabisulfite; CSF/CNS (nucleus accumbens); IP; Rat; 13 days; mp model not stated; comparison of Sulp ip injec vs. mp infusion; 2 mp/rat - bilateral infusion; mp primed overnight; vehicles listed used w/DOP; concomitant Sulp admin. ip.

26. Tandspirone

P2873: S. Wieland, *et al.* Effect of chronic treatments with tandospirone and imipramine on serotonin-mediated behavioral responses and monoamine receptors. *Neuropharmacology* 1993;32(6):561-573

ALZET Comments: Tandsospirone; Imipramine; 1-PP; Water, deionized; SC; Rat; 2ML2; 14 days, 24 hours; antidepressant; controls received mp with saline; comparison of sc injections vs. mp; 1-PP is a tandospirone metabolite; tandospirone is an azapirone; multiple pumps per animal (2).

P2279: R. Godbout, *et al.* Tandsospirone and its metabolite, 1-(2-pyrimidinyl)-piperazine-I. effects of acute and long-term administration of tandospirone on serotonin neurotransmission. *Neuropharmacology* 1991;30(7):679-690

ALZET Comments: Tandsospirone; Saline; SC; Rat; 2ML2; 14 days; controls received mp w/saline; tandospirone is SM-3997, a 5-HT1A receptor ligand.

27. Tianeptine

P2785: G. Pineyro, *et al.* Effect of prolonged administration of tianeptine on 5-HT neurotransmission: an electrophysiological study in the rat hippocampus and dorsal raphe. *Naunyn-Schmiedeberg's Arch. Pharmacol* 1995;351(119-125

ALZET Comments: Tianeptine; SC; Rat; 14 days; controls received mp w/ saline; tianeptine is a tricyclic antidepressant.

P3325: G. Pineyro, *et al.* Effect of acute and prolonged tianeptine administration on the 5-HT transporter: electrophysiological, biochemical and radioligand binding studies in the rat brain. *Naunyn-Schmiedeberg's Arch. Pharmacol* 1995;351(111-118

ALZET Comments: Tianeptine; SC; Rat; 14 days; antidepressant; controls received mp w/saline; comparison of IV injections vs. mp; half-life of tianeptine is 2.5 hrs, (p.117).



28. Tranylcypromine

Q0143: S. Argueelles, *et al.* Degeneration of dopaminergic neurons induced by thrombin injection in the substantia nigra of the rat is enhanced by dexamethasone: Role of monoamine oxidase enzyme. *Neurotoxicology* 2010;31(1):55-66

Agents: Tranylcypromine **Vehicle:** Saline; **Route:** SC; **Species:** Rat; **Pump:** 2002; **Duration:** 12 days;

ALZET Comments: Animal info (female, albino, Wistar, 200-250 g.)

P5193: S. C. Stout, *et al.* Regulation of corticotropin-releasing factor neuronal systems and hypothalamic-pituitary-adrenal axis activity by stress and chronic antidepressant treatment. *Journal of Pharmacology and Experimental Therapeutics* 2002;300(3):1085-1092

Agents: Reboxetine methanesulfonate; fluoxetine HCl; Venlafaxine HCl; Tranylcypromine HCl **Vehicle:** Saline; DMSO; **Route:** SC; **Species:** Rat; **Pump:** 2ML2; 2ML4; **Duration:** 26 or 27 days;

ALZET Comments: antidepressant; Controls received mp w/ vehicle; functionality of mp verified by drug serum levels; 2ML2 pumps replaced after 2 weeks; 2ML4 pumps used for all antidepressants except fluoxetine, which required serial 2ML2 implantation due to solubility problems; venlafaxine given for 27 days; all other drugs infused for 26 days; fluoxetine vehicle was 12% DMSO

P2971: R. L. Sherry-McKenna, *et al.* Monoamine oxidase inhibitors: effects on tryptophan concentrations in the rat brain. *J. Neural Transm* 1994;41(155-163

Agents: Phenelzine; Tranylcypromine, 4-methoxy-; Acetylphenelzine, N2-; Tranylcypromine, 4-fluoro-; Tranylcypromine; Deprenyl **Vehicle:** Not Stated; **Route:** SC; IP; **Species:** Rat; **Pump:** Not Stated; **Duration:** 28 days;

ALZET Comments: antidepressant; controls received mp with vehicle; comparison of TCP and PLZ ip injections vs. mp

P2735: D. B. Goodnough, *et al.* Effects of low- and high-dose tranylcypromine on [3H]tryptamine binding sites in the rat hippocampus and striatum. *Neurochem. Res* 1994;19(1):5-8

Agents: Tranylcypromine **Vehicle:** Water, distilled; **Route:** SC; **Species:** Rat; **Pump:** 2ML2; **Duration:** 4,10 or 28 days;

ALZET Comments: antidepressant; controls received mp w/ water; enzyme inhibitor

P2734: D. B. Goodnough, *et al.* Comparisons of the actions of high and low doses of the MAO inhibitor tranylcypromine on 5-HT₂ binding sites in rat cortex. *J. Neural Transm* 1994;41(Suppl):127-134

Agents: Tranylcypromine **Vehicle:** Water, distilled; **Route:** SC; **Species:** Rat; **Pump:** 2ML2; **Duration:** 4,10 or 28 days;

ALZET Comments: antidepressant; controls received mp w/ water; enzyme inhibitor

29. Trazodone

Q2088: R. Ghanbari, *et al.* Electrophysiological impact of trazodone on the dopamine and norepinephrine systems in the rat brain. *European Neuropsychopharmacology* 2012;22(7):518-526

ALZET Comments: Trazodone; Cyclodextrin, hydroxypropyl beta; SC; Rat; 2, 14 days; Controls received mp w/ vehicle; animal info (Wistar, male, 280-320 g); 20% cyclodextrin used; electrophysiology.

Q1569: R. Ghanbari, *et al.* Sustained Administration of Trazodone Enhances Serotonergic Neurotransmission: In Vivo Electrophysiological Study in the Rat Brain. *Journal of Pharmacology and Experimental Therapeutics* 2010;335(1):197-206

ALZET Comments: Trazodone; Cyclodextrin, hydroxypropyl, beta-; SC; Rat; 2, 14 days; Controls received mp w/ vehicle; animal info (Sprague Dawley, male, 250-350 g); 20% cyclodextrin used; dose-response.

P1695: H. Kubota, *et al.* Mechanisms of the B-adrenoceptor down-regulation by the treatment with antidepressants in the rat cerebral cortex: effects of continuous administration of antidepressants by an osmotic pump. *Jpn. J. Psychiatry Neurol* 1990;44(1):135-136

ALZET Comments: Tunicamycin; Cycloheximide; Desipramine; Fluoxetine; Mianserin; Trazodone; CSF/CNS; SC; Rat; 2001; 2ML1; 4-7 days; comparison of sc injections vs. mp; cyclo. and tunica. delivered icv for 5 days.



P0694: K. G. Lloyd, *et al.* Upregulation of gamma-aminobutyric acid (GABA) B binding sites in rat frontal cortex: a common action of repeated administration of different classes of antidepressants and electroshock. *J. Pharmacol. Exp. Ther* 1985;235(1):191-199

ALZET Comments: Maprotiline; Nomifensine; Amitriptyline; Citalopram; Desipramine; Pargyline; Trazodone; Viloxazine; Zimeldine; SC; Rat; 2002; 6-18 days; comparison of agents effects; comparison of single dose ip injec vs. mp infusion and repeated ip injec of other psychotropic drugs vs. electroshock treatment; antihypertensive.

30. Tryptophan, Hydroxy

P1882: A. Baron, *et al.* Reduction in the elevated blood pressure of Dahl salt-sensitive rats treated chronically with L-5-hydroxytryptophan. *Pharmacology* 1991;42(15-22)

ALZET Comments: Tryptophan, L-5-hydroxy; SC; Rat; 2001; no duration posted; pumps replaced four times during study; incorrectly states model 2001 pumps at 2ul/hr, early study showed compound stability for 1 week.

P2495: M. J. Fregly, *et al.* Chronic treatment with L-5-hydroxytryptophan prevents the development of DOCA-salt-induced hypertension in rats. *J. Hypertens* 1987;5(621-628)

ALZET Comments: Tryptophan, L-5-hydroxy; SC; Rat; 2001; no duration posted; stability verified by HPLC after 6.5 days in pumps.

31. Tryptophan

Q3951: T. Laeger, *et al.* Leucine acts in the brain to suppress food intake but does not function as a physiological signal of low dietary protein. *American Journal of Physiology-Regulatory Integrative and Comparative Physiology* 2014;307(R310-R320)

ALZET Comments: Arginine; cystine, histidine; isoleucine; leucine; lysine; methionine; phenylalanine; threonine; tryptophan; tyrosine; valine; CSF/CNS; Rat; 2002; 6 days; Animal info (male, Sprague Dawley, 5-7 weeks old);.

Q3425: D. Burger, *et al.* Effects of a domain-selective ACE inhibitor in a mouse model of chronic angiotensin II-dependent hypertension. *Clinical Science* 2014;127(57-63)

ALZET Comments: Lisinopril; lisinopril-tryptophan; Saline; Mice (transgenic); 2 weeks; Controls received mp w/ vehicle; animal info (TtRhRen, 2-3 months old); cardiovascular; antihypertensive; lisinopril-tryptophan aka lisW-S; bp measured using tail cuff and radiotelemetry;.

P2512: E. H. Y. Lee. Effects of tryptophan administration on tetrahydrobiopterin level in rat caudate nucleus. *Neurochem. Int* 1991;19(3):363-366

ALZET Comments: Tryptophan, I-; SC; Rat; 2001; 7 days; 24 hours; antidepressant; controls received sc injections of saline; comparison of sc injections vs. mp; stress/adverse reaction: pg. 364; connective tissue grew over mp opening.

P1254: R. I. Peters, *et al.* Tryptophan and serotonin metabolism after sustained tryptophan infusion. *Neurochem. Int* 1984;6(5):685-691

ALZET Comments: Tryptophan, I-; Ammonium hydroxide; SC; mice; 2001; 24, 96 hours; controls received mp w/ vehicle; dose-response (graph); NH4OH was used as vehicle for TRP due to the limited solubility of TRP in water and saline; no stress.

32. 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 **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

Q4126: V. Tamasi, *et al.* Transcriptional Evidence for the Role of Chronic Venlafaxine Treatment in Neurotrophic Signaling and Neuroplasticity Including also Glutamatergic- and Insulin-Mediated Neuronal Processes. PLoS One 2014;9(U773-U796)

Agents: Venlafaxine **Vehicle:** NaCl; **Route:** SC; **Species:** Rat; **Pump:** 2001; **Duration:** 3 weeks;

ALZET Comments: Controls received sham surgery; animal info (male, Dark Agouti, 8 weeks old; 150g); diabetes;

Q1431: C. H. K. West, *et al.* Effects of chronic antidepressant drug administration and electroconvulsive shock on activity of dopaminergic neurons in the ventral tegmentum. INTERNATIONAL JOURNAL OF NEUROPSYCHOPHARMACOLOGY 2011;14(2):201-210

Agents: Desipramine hydrochloride; imipramine hydrochloride; fluoxetine hydrochloride; paroxetine hydrochloride; sertraline hydrochloride; venlafaxine hydrochloride; bupropion hydrochloride; phenelzine sulfate **Vehicle:** Polyethylene glycol; DMSO; water; water, distilled; **Route:** SC; IP; **Species:** Rat; **Pump:** 2ML2; **Duration:** 14 days;

ALZET Comments: Controls received mp w/ vehicle; animal info (male, albino, Sprague-Dawley, 550-700 g); functionality of mp verified by drug levels in circulation; good methods, pg 4; 25% DMSO used; IP catheter used; silastic tubing used; "The distal end of the silastic tubing, including the bulb, was then introduced surgically into the peritoneal cavity and the peritoneal wall sutured closed so that the bulb prevented the tubing from being withdrawn back into the subcutaneous space, thereby enabling... delivery of drug from the pump into the peritoneal cavity." pg 4;

P9879: Z. Zhao, *et al.* Association of Changes in Norepinephrine and Serotonin Transporter Expression with the Long-Term Behavioral Effects of Antidepressant Drugs. Neuropsychopharmacology 2009;34(6):1467-1481

Agents: Protriptyline; reboxetine; sertraline; venlafaxine **Vehicle:** DMSO; saline; ethanol; **Route:** SC; **Species:** Rat; **Pump:** 2ML2; 2ML4; **Duration:** 14, 42 days;

ALZET Comments: Controls received mp w/ vehicle; long-term study; pumps replaced after 21 days; animal info (male, Sprague Dawley, 300-350 g.); 50% DMSO used; 10% ethanol used

P9571: P. Vollmar, *et al.* The antidepressant venlafaxine ameliorates murine experimental autoimmune encephalomyelitis by suppression of pro-inflammatory cytokines. INTERNATIONAL JOURNAL OF NEUROPSYCHOPHARMACOLOGY 2009;12(4):525-536

Agents: Venlafaxine **Vehicle:** PBS; **Route:** SC; **Species:** Mice; **Pump:** 2002; **Duration:** 14 days;

ALZET Comments: Controls received mp w/vehicle; animal info (female, SJL/J, 6-12 wks)

33. Viloxazine

P0694: K. G. Lloyd, *et al.* Upregulation of gamma-aminobutyric acid (GABA) B binding sites in rat frontal cortex: a common action of repeated administration of different classes of antidepressants and electroshock. J. Pharmacol. Exp. Ther 1985;235(1):191-199

ALZET Comments: Maprotiline; Nomifensine; Amitriptyline; Citalopram; Desipramine; Pargyline; Trazodone; Viloxazine; Zimeldine; SC; Rat; 2002; 6-18 days; comparison of agents effects; comparison of single dose ip injec vs. mp infusion and repeated ip injec of other psychotropic drugs vs. electroshock treatment; antihypertensive.

P0552: A. Pilc, *et al.* Chronic antidepressants and GABA 'B' receptors: a GABA hypothesis of antidepressant drug action. Life Sci 1984;35(21):2149-2154

ALZET Comments: Amitriptyline; Citalopram; Desipramine; Pargyline; Viloxazine; Saline; SC; Rat; 2002; 18 days; comparison of acute ip injec vs. mp infusion; comparison of agents effects; antihypertensive.



34. Zimeldine

P0694: K. G. Lloyd, *et al.* Upregulation of gamma-aminobutyric acid (GABA) B binding sites in rat frontal cortex: a common action of repeated administration of different classes of antidepressants and electroshock. *J. Pharmacol. Exp. Ther* 1985;235(1):191-199

ALZET Comments: Maprotiline; Nomifensine; Amitriptyline; Citalopram; Desipramine; Pargyline; Trazodone; Viloxazine; Zimeldine; SC; Rat; 2002; 6-18 days; comparison of agents effects; comparison of single dose ip injec vs. mp infusion and repeated ip injec of other psychotropic drugs vs. electroshock treatment; antihypertensive.