Recent References (2018-Present) on the Administration of Nicotine Using ALZET® Osmotic Pumps


**Agents:** Nicotine  
**Vehicle:** Saline, sterile  
**Route:** SC  
**Species:** Mice  
**Pump:** 2001; 2004  
**Duration:** 7 days; 28 days  
**ALZET Comments:** Dose (6 mg/kg/day); Controls received mp w/ vehicle; animal info (pregnant C57BL/6N mice); dependence;


**Agents:** Nicotine  
**Vehicle:** Saline  
**Route:** SC  
**Species:** Rat  
**Pump:** 2ML2  
**Duration:** 14 days  
**ALZET Comments:** Dose (6 mg/kg/d); 0.9% NaCl used; Controls received mp w/ vehicle; animal info (virgin female Wistar rats, 3 months old); Nicotine aka NIC; dependence;

Q9410: T. C. Peixoto, et al. Nicotine exposure during lactation causes disruption of hedonic eating behavior and alters dopaminergic system in adult female rats. Appetite 2021;160(105115

**Agents:** Nicotine  
**Vehicle:** Saline  
**Route:** SC  
**Species:** Rat  
**Pump:** 2ML2  
**Duration:** 14 days  
**ALZET Comments:** Dose (6 mg/kg body mass); Controls received mp w/ vehicle; animal info (Wistar rats, male and female); Nicotine aka Nic; dependence;


**Agents:** Nicotine, Mecamylamine  
**Vehicle:** Saline  
**Route:** SC  
**Species:** Rat  
**Pump:** 2ML2  
**Duration:** 14 days  
**ALZET Comments:** Dose (3.2 mg/kg/day Nicotine; 3.0 mg/kg Mecamylamine); Controls received mp w/ vehicle; animal info (Fully outbred adult Wistar rats, 260 g females, 400 g males); dependence;

Q10004: M. A. Kwiatkowski, et al. Chronic nicotine, but not suramin or resveratrol, partially remediates the mania-like profile of dopamine transporter knockdown mice. European Neuropsychopharmacology 2021;42(75-86

**Agents:** Nicotine Hydrogen Tartrate  
**Vehicle:** Saline, Sterile  
**Route:** SC  
**Species:** Mice  
**Pump:** 2004  
**Duration:** 26 days  
**ALZET Comments:** Dose (40 mg/kg/day); 0.9% Sterile Saline used; Controls received mp w/ vehicle; animal info (male wildtype C57BL6/J mice, 50 to 60 weeks old); behavioral testing (Behavioral Pattern Monitor); dependence;


**Agents:** Nicotine ditartrate  
**Vehicle:** Saline  
**Route:** SC  
**Species:** Mice  
**Pump:** 1004  
**Duration:** 2 weeks  
**ALZET Comments:** Dose (24 mg/kg/day); Controls received mp w/ vehicle; animal info (2- to 3-month-old C57BL/6J male mice); behavioral testing (Open field test; light-dark transition; rotarod test); dependence;


**Agents:** Nicotine Hydrogen Tartrate Salt  
**Vehicle:** Saline  
**Route:** SC  
**Species:** Mice  
**Pump:** 1004  
**Duration:** 28 days  
**ALZET Comments:** Dose (12.6 mg/kg/day); 0.9% Saline used; Controls received mp w/ vehicle; animal info (Male, 8 weeks old); dependence;


**Agents:** Nicotine  
**Vehicle:** Saline  
**Route:** SC  
**Species:** Rat  
**Pump:** 2ML4  
**Duration:** 30 days  
**ALZET Comments:** Dose (4 μg/kg/min); Controls received mp w/ vehicle; animal info (Sprague-Dawley male rats (8-months-old)); ischemia (cardiac injury);
Agents: Nicotine Vehicle: Saline; Route: Abdomen; Species: Rat; Pump: 1007D; Duration: 7 days;
ALZET Comments: Dose (1 mg/kg/day); Controls received mp w/ vehicle; animal info (male and virgin female adult Sprague-Dawley rats, 12-14 weeks old); Blood pressure measured via tail-cuff method; 105 mmHg - 130 mmHg; cardiovascular;

Agents: Nicotine Vehicle: Saline; Route: IP; Species: Mice; Pump: 1007D; Duration: 7 days;
ALZET Comments: Dose (1.67 ng/0.5 uL/hr/20 g); Controls received mp w/ vehicle; animal info (Male C57BL/6J Jcl mice); Resultant plasma level (23 fmol/mL Ghrelin); dependence;

Agents: Nicotine Vehicle: Saline; Route: SC; Species: Rat; Pump: SMP-200; Duration: 21 days;
ALZET Comments: Dose (1.0 mg/d or 0.3 mg/d); Controls received mp w/ vehicle; animal info (Male Long-Evans rats, 300–350 g); dependence;

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

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

Agents: Nicotine ditartrate Vehicle: Saline; Route: SC; Species: Mice; Pump: 1004; Duration: 2 weeks;
ALZET Comments: Dose (24 mg/kg/day); Controls received mp w/ vehicle; animal info (2- to 3-month-old C57BL/6J male mice); behavioral testing (Open field test; light-dark transition; rotarod test); dependence;

Agents: Nicotine Vehicle: Saline; Route: SC; Species: Rat; Pump: 2ML4; Duration: 14 days;
ALZET Comments: Dose (1.2 or 4.8 mg/kg/day); 0.9% Saline used; Controls received mp w/ vehicle; animal info (Sprague Dawley, 275-300 g); dependence;

Agents: Nicotine hydrogen tartate Vehicle: Saline; Route: SC; Species: Rat; Pump: Not Stated; Duration: 14 days;
ALZET Comments: Dose (6 mg/kg/day); Controls received mp w/ vehicle; animal info (Pregnant female Sprague Dawley rats); dependence;

Q8553: G. Jia, et al. Nicotine induces cardiac toxicity through blocking mitophagic clearance in young adult rat. Life Sciences 2020;257(118084
Agents: Nicotine Vehicle: Not stated; Route: SC; Species: Rat; Pump: Not stated; Duration: 6 weeks;
ALZET Comments: Dose (3 mg/kg/day); Controls received mp w/ vehicle; animal info (Sprague-Dawley rats, 2-4 months old); toxicology;
Agents: Nicotine Vehicle: Saline; Route: SC; Species: Mice; Rat; Pump: Not Stated; Duration: 28 days;
ALZET Comments: Dose (0.8 mg/kg/d; 4 mg/kg/d); Controls received mp w/ vehicle; animal info (Male C57BL/6J mice, 8 weeks old; Female and Male Sprague Dawley OFA rats); dependence;

Agents: Zonisamide; Nicotine Vehicle: Not stated; Route: SC; Species: Rat; Pump: 2ML1; Duration: 7 days;
ALZET Comments: Dose (40 mg/kg/day Zonisamide, 10, 25 and 50 mg/kg/day Nicotine); animal info (Male S286L-TG and wild-type littermates); Zonisamide aka ZNS; neurodegenerative (Epilepsy);

Agents: Nicotine Vehicle: Not stated; Route: Not Stated; Species: Rat; Pump: 2ML2; Duration: 14 days;
ALZET Comments: Dose (3.2 mg/kg/day); animal info (Male and female Wistar rats); behavioral testing (physical signs test, Anxiety-like behavior assessments); replacement therapy (Estradiol, progesterone);

Agents: Nicotine Vehicle: Not stated; Route: Not Stated; Species: Rat; Pump: 2ML2; Duration: 14 days;
ALZET Comments: Dose (3.2 mg/kg/day); animal info (Male and female Wistar rats); behavioral testing (physical signs test, Anxiety-like behavior assessments); replacement therapy (Estradiol, progesterone);

Agents: Nicotine Hydrogen Tartrate Vehicle: Saline; Route: SC; Species: Rat; Pump: ML2; Duration: 16, 21 days;
ALZET Comments: Dose (4.5 mg/kg/day); animal info (Female, Sprague Dawley, 6 or 14 weeks old); ischemia (Hypoperfusion);

Agents: Nicotine Hydrogen Tartrate Vehicle: Saline; Route: SC; Species: Rat; Pump: ML2; Duration: 21 days;
ALZET Comments: Dose (4.5 mg/kg/day); Controls received mp w/ vehicle; animal info (Female, Sprague Dawley, 6 or 14 weeks old); ischemia (Hypoperfusion);

Agents: Nicotine Vehicle: Alcohol, Saline; Route: SC; Species: Rat; Pump: Not stated; Duration: Not stated;
ALZET Comments: Dose (6 mg/kg/day); animal info (Sprague Dawley (Time pregnant) rats); behavioral testing (Y maze); toxicology;

Agents: Nicotine Vehicle: Saline; Route: SC; Species: Rat; Pump: 2ML2; Duration: 14 days;
ALZET Comments: Dose (6 mg/kg/ day); 0.9% NaCl used; Controls received mp w/ vehicle; animal info (pregnant lactating Wistar rat); toxicology;

Agents: Nicotine Bitartrate Vehicle: Saline; Route: SC; Species: Mice; Pump: 1002; Duration: 2 weeks;
ALZET Comments: Dose (6 mg/kg/day or 60 mg/kg/day); 0.9% NaCl used; Controls received mp w/ vehicle; animal info (pregnant ePET-EYFP mice); dependence;
Agents: Nicotine, (-) hydrogen tartrate salt Vehicle: Saline, Physiological; Route: SC; Species: Mice; Pump: Not Stated; Duration: 14 days;
ALZET Comments: Dose (24 mg/kg/day); Controls received mp w/ vehicle; animal info (10-12 weeks, female, CD-1 and G72 transgenic, 31-35g); dependence; pump model not stated;

Agents: Nicotine hydrogen tartrate, (-) Vehicle: Saline; Route: SC; Species: Mice; Pump: 1004; Duration: 28 days;
ALZET Comments: Dose (18 mg/kg/day); Controls received mp w/ vehicle; animal info (6-8 weeks, male and female, C57BL/6NTac, 20-30g); behavioral testing (stress exposure); dependence; "While the minipump does not recapitulate the pulsatile mode of NIC delivery experienced by human smokers, it does provide several experimental advantages. For example, minipumps allow for consistent administration of NIC doses across subjects, precise temporal control over the initiation and termination of NIC treatment, and their ease of use facilitated replication across cohorts." pg.143 ; pumps implanted for PND 28–56 before being removed. Stress exposure tests described in supplementary data although access to pages is limited;

Agents: Nicotine Hydrogen Tartrate Vehicle: Saline; Route: CSF/CNS; Species: Mice; Pump: 2002; Duration: 14 days;
ALZET Comments: Dose (48 mg/kg/hour); Controls received mp w/ vehicle; animal info (Male, 4-6 months old); neurodegenerative (Alzheimer's Disease);

Agents: Nicotine; Mecamylamine Vehicle: Saline; Route: SC; Species: Rat; Pump: Not Stated; Duration: 14 days;
ALZET Comments: Dose (3.16 mg/kg/day nicotine; 1 mg/kg mecamylamine); 0.9% NaCl used; Controls received mp w/ vehicle; animal info (Wistar rats, males 200-225 g, females 175-200 g); behavioral testing (Large Open Field Test; Elevated Plus Maze Test); dependence;

Agents: Nicotine bitartarate; Benzo[a]pyrene; Both Vehicle: H2O; DMSO; Route: SC; Species: Rat; Pump: 2ML4; Duration: 4 weeks;
ALZET Comments: Nicotine bitartarate or Benzo[a]pyrene or both

Agents: Nicotine hydrogen tartate salt Vehicle: Saline; Route: SC; Species: Mice; Pump: 2002; Duration: 14 days;
ALZET Comments: Dose (25 mg/kg/day); animal info (8-weeks old male C57BL/6J mice (Charles River).); dependence;

Agents: Nicotine Bitartarate Salt Vehicle: Saline; Route: SC; Species: Rat; Pump: 2002; Duration: 2 weeks;
ALZET Comments: Dose (15 mg/kg/day); Controls received mp w/ vehicle; animal info (3-4 week old, Male); post op. care (Buprenorphine); Blood pressure measured via Tail-cuff Plethysmography;cardiovascular;

Agents: Nicotine Vehicle: Not Stated; Route: SC; Species: Mice; Pump: 2004; Duration: 14 days;
ALZET Comments: Dose (24 mg/kg/day); animal info (8-16 weeks old, 20-30 g, C57BL/6J); dependence;

**Agents:** Nicotine bitartrate  
**Vehicle:** Saline;  
**Route:** SC;  
**Species:** Rat;  
**Pump:** 2ML1;  
**Duration:** 7 days;  
**ALZET Comments:** Dose (9 mg/kg/day); Controls received mp w/ vehicle; animal info (male Sprague-Dawley rats, 284 to 323 g); behavioral testing (Fisher’s LSD and Dunnett’s tests); dependence;


**Agents:** Nicotine Ditartrate  
**Vehicle:** Saline;  
**Route:** SC, IV (jugular);  
**Species:** Rat;  
**Pump:** 2ML4;  
**Duration:** 4 weeks;  
**ALZET Comments:** Dose (2.5 mg/kg/day); animal info (Young adult female Sprague-Dawley rats); post op. care (ketoprofen, bupivacaine); behavioral testing (dual-lever experiment);


**Agents:** Nicotine hydrogen tartrate salt  
**Vehicle:** Saline;  
**Route:** SC;  
**Species:** Rat (pregnant);  
**Duration:** 28 days;  
**ALZET Comments:** Dose (6 mg/kg/d); Controls received mp w/ vehicle; animal info (Pregnant female Sprague–Dawley rats); behavioral testing (Precipitated withdrawal test); dependence;


**Agents:** Nicotine Hydrogen Bitartrate salt  
**Vehicle:** Saline;  
**Route:** SC;  
**Species:** Rat;  
**Duration:** 14 days;  
**ALZET Comments:** Dose (1.2 mg/kg/d or 4.8 mg/kg/d); Controls received mp w/ vehicle; animal info (Male Sprague-Dawley rats, p25-p28 or p59-p62); post op. care (buprenorphine); behavioral testing (Precipitated withdrawal); dependence;


**Agents:** Nicotine hydrogen tartrate salt  
**Vehicle:** Saline;  
**Route:** IP;  
**Species:** Rat;  
**Duration:** 14 days;  
**ALZET Comments:** Dose (1.2, 4.8 mg/kg/day); saline pH adjusted to 7.2+/-.5 used; Controls received mp w/ vehicle; animal info (Male Sprague-Dawley rats, 275-300g); behavioral testing (Precipitated withdrawal); pulsed delivery


**Agents:** Nicotine  
**Vehicle:** Saline;  
**Route:** SC;  
**Species:** Mice;  
**Pump:** 1002;  
**Duration:** 12 days;  
**ALZET Comments:** Dose (12.6 mg/kg/day); Controls received mp w/ vehicle; animal info (preadolescent (P23), adolescent (P38), or adult (P54), male, C57BL/6J); behavioral testing (fear conditioning); dependence; “While noncontingent nicotine administration does not recapitulate all aspects of human smoking, this dose and method of nicotine administration was used because it maintains blood plasma levels of nicotine similar to levels reported in smokers and it ensures that all mice receive identical doses of nicotine.” pg.3; pumps were removed on day 12 of infusion;


**Agents:** Nicotine  
**Vehicle:** Saline;  
**Route:** SC;  
**Species:** Rat;  
**Pump:** 2ML4;  
**Duration:** 56 days;  
**ALZET Comments:** Dose (2 mg/kg/day); Controls received mp w/ vehicle; animal info (Male, Sprague Dawley, 200-250 g); behavioral testing (Housing and behavioral test, Elevated plus maze test, Figure 8 apparatus test); pumps replaced every 4wks


**Agents:** Nicotine or benzo [a]pyrene, or Nicotine +BaP  
**Vehicle:** DMSO;  
**Route:** SC;  
**Species:** Rat;  
**Pump:** 2ML4;  
**Duration:** 4 weeks;  
**ALZET Comments:** Dose (Nicotine-2 mg/kg/day or BaP- 0.03 mg/kg/day); Controls received mp w/ vehicle; animal info (Sprague Dawley, Female); behavioral testing (Elevated Plus Maze Test, Radial Maze Test); neurodegenerative

**Agents:** Nicotine  
**Vehicle:** Saline  
**Route:** SC  
**Species:** Rat  
**Pump:** 2ML4  
**Duration:** 12 weeks;  
**ALZET Comments:** Dose (36 mg/ml); 0.9% Saline used; Controls received mp w/ vehicle; animal info (Sprague Dawley, 10-13 weeks old, 367-425 g); long-term study; dependence;


**Agents:** Nicotine  
**Vehicle:** Saline;  
**Route:** SC;  
**Species:** Mice;  
**Pump:** 1002;  
**Duration:** 12 days;  
**ALZET Comments:** Dose (0.7 mg/kg/h); Controls received mp w/ vehicle; animal info (2-5 months old, Male); dependence;


**Agents:** Not stated  
**Vehicle:** Saline;  
**Route:** SC;  
**Species:** Rat;  
**Pump:** 2ML2;  
**Duration:** 14 days;  
**ALZET Comments:** Dose (3.2 mg/kg/day); animal info (Male and female Wistar rats); behavioral testing (assessments of physical signs of withdrawal); dependence;


**Agents:** Nicotine  
**Vehicle:** Saline;  
**Route:** SC;  
**Species:** Rat;  
**Pump:** 2002;  
**Duration:** 21 days;  
**ALZET Comments:** Dose (6 mg/kg/day); Controls received mp w/ vehicle; animal info (Sprague Dawley); post op. care (buprenorphine); dependence;


**Agents:** Nicotine  
**Vehicle:** Saline;  
**Route:** SC;  
**Species:** Rat;  
**Pump:** 2002;  
**Duration:** 2 weeks;  
**ALZET Comments:** Dose (3 mg/kg/day); Controls received mp w/ vehicle; animal info (Sprague Dawley); dependence;


**Agents:** Nicotine  
**Vehicle:** Saline;  
**Route:** Not Stated;  
**Species:** Mice;  
**Pump:** 2006;  
**Duration:** 4 weeks;  
**ALZET Comments:** Dose (5 mg/kg/day); Controls received mp w/ vehicle; animal info (8 weeks of age, WT and Sirt1Super mice); cardiovascular;


**Agents:** nicotine hydrogen tartrate  
**Vehicle:** Saline;  
**Route:** SC;  
**Species:** Mice;  
**Pump:** 1002;  
**Duration:** 2 weeks;  
**ALZET Comments:** Dose (3.0 mg/kg/d - adolescent, 6.3 mg/kg/d-adult); Controls received mp w/ vehicle; animal info (adolescent, adult); stability verified by (measuring the residual volume following surgical removal at the end of the exposure period for each time point); half-life 10 min (p.841); dependence;

**Agents:** Nicotine, (-) hydrogen tartrate salt **Vehicle:** Saline, heparin buffered; **Route:** SC; **Species:** Rat; **Pump:** 2ML2; **Duration:** 14 days;

**ALZET Comments:** Dose (2.1 mg/kg/day); saline (pH 7.4 with sodium hydroxide) with 25IU heparin used; Controls received sham surgery; animal info (male, Sprague-Dawley and Long Evans, 175–200g and 200–250g); post op. care (betadine ointment and recovery on a heating pad); behavioral testing (cue-reinstatement test); functionality of mp verified by weight after mp removal; dependence; pumps removed and reinstated on days 7 and 13. procedure listed on p.366;


**Agents:** Nicotine **Vehicle:** Saline; **Route:** SC; **Species:** Rat; **Pump:** 2ML4; **Duration:** 3 months;

**ALZET Comments:** Dose (61 mg/mL); Controls received mp w/ vehicle; animal info (adult male Sprague-Dawley rats 400-450g); pumps replaced every 4 weeks;


**Agents:** Nicotine Tartrate, Bi- **Vehicle:** Saline; **Route:** SC; **Species:** Rat; **Pump:** 1007D; **Duration:** 16 days;

**ALZET Comments:** Dose (6 mg/kg/d); Controls received mp w/ vehicle; animal info (Sprague Dawley rat pups of either sex, ranging in age from P1 through P7); dependence;

Q7398: M. Biet, et al. In utero exposure to nicotine abolishes the postnatal response of the cardiac sodium current to isoproterenol in newborn rabbit atrium. Heart Rhythm 2019;16(4):494-501

**Agents:** Nicotine **Vehicle:** Saline; **Route:** SC; **Species:** Rabbit; **Pump:** 2ML2; **Duration:** 14 days;

**ALZET Comments:** Controls received mp w/ vehicle; animal info (New Zealand, female); Multiple pumps per animal (2); Resultant plasma level ((100 and 150 ng/mL)); cardiovascular;


**Agents:** Nicotine hydrogen tartrate **Vehicle:** Saline; **Route:** SC; **Species:** Rat (pregnant); **Pump:** 2004; **Duration:** 14 days;

**ALZET Comments:** Dose (4 mg/kg/day); 0.9% saline used; Controls received mp w/ vehicle; animal info (Timed-pregnant Sprague-Dawley rats 250 g- 300 g); pumps implanted during gestation; behavioral testing (open field test, forced swim test); dependence;


**Agents:** Nicotine hydrogen-tartrate **Vehicle:** Saline; **Route:** SC; **Species:** Rat; **Pump:** 1007D; **Duration:** Not Stated;

**ALZET Comments:** Dose (6 mg/kg/day); animal info (6-24 weeks old); dependence;


**Agents:** nicotine bitrate **Vehicle:** Saline; **Route:** SC; **Species:** Rat; **Pump:** 1004D; **Duration:** 16-21 days;

**ALZET Comments:** Dose (6 mg/kg/day); Controls received no mp or mp w/ vehicle; animal info (pregnant, female, Sprague-Dawley); pumps were implanted on gestational day 5 to expose pups through remaining gestation (16 days) and postnatal (0-5 days);


**Agents:** Nicotine bitrate **Vehicle:** Saline; **Route:** SC; **Species:** Rat (pregnant); **Pump:** 1007D; **Duration:** Not Stated;

**ALZET Comments:** (6 mg/kg/day); Controls received mp w/ vehicle; animal info (pregnant dams on gestational day 5); post op. care (buprenorphine sc 0.5 mg/kg); dependence;

Agents: Nicotine Vehicle: PBS; Route: SC; Species: Mice; Pump: Not Stated; Duration: 10, 40 days;
ALZET Comments: Dose (20, 25 mg/kg/day); Controls received mp w/ vehicle; animal info (10 weeks, male, C57BL/6, 24-26g); functionality of mp verified by cotinine level measurement; cardiovascular; pump model not stated. Abstract lists 20 mg/kg/day while methods states 25 mg/kg/day used;


Agents: Nicotine hydrogen tartrate Vehicle: Saline; Route: SC; Species: Mice; Pump: 1002; Duration: 7 days;
ALZET Comments: Dose (12.6 mg/kg/day); Controls received sham surgery; animal info (8-10 weeks, male and female, C57BL/6J); behavioral testing (contextual fear conditioning);


Agents: Nicotine Vehicle: Saline; Route: SC; Species: Mice; Pump: 2004; Duration: 1 or 6 months;
ALZET Comments: Dose (0.4 mg/kg/h and 2.0 mg/kg/h); dose-response (); dose-response (); pumps replaced every 4 weeks; long-term study; stress/adverse reaction: Mice treated with the higher nicotine dose (2.0 mg/kg/h) lost weight after surgery and 50% died after one week. This was as a result of combined toxic effects of isoflurane and a higher dose of nicotine. Therefore, pentobarbital was used instead of isoflurane for induction of anesthesia, which reduced the mortality rate and improved weight gain in the higher dose group. (see pg. 172);


Agents: Nicotine Vehicle: Saline; Route: SC; Species: Rat; Pump: 2ML4; Duration: 20 days;
ALZET Comments: Dose (1.2, 3.16, or 6.32 mg/kg/dau); animal info (male Wistar rats weighing 320-360g); dependence;


Agents: Nicotine Vehicle: Saline; Route: SC; Species: Not Stated; Pump: Not Stated; Duration: Not Stated;
ALZET Comments: Dose (10 mg/day/kg); 0.9% Saline used; Controls received mp w/ vehicle; animal info (8-12 weeks old, C57BL/6); spinal cord injury;


Agents: Nicotine Vehicle: Not stated; Route: SC; Species: Mice; Pump: 1002; Duration: 14 days;
ALZET Comments: Dose (12.6, 18, or 24 mg/kg/day); Controls received mp w/ vehicle; animal info (C57BL/6J, 8-12 weeks old);
neurodegenerative (Post Traumatic Stress Disorder);


Agents: Morphine sulfate, Nicotine bitartrate Vehicle: Saline, isotonic; Route: SC; Species: Rat; Pump: 2ML1; Duration: 7 days;
ALZET Comments: Dose (morphine at 0.3 and 0.6 mg/kg/hr, nicotine at 9 mg/kg/day); Controls received mp w/ vehicle; animal info (male Sprague-Dawley rats averaging 234 g); dependence;


Agents: Nicotine Vehicle: Saline; Route: SC; Species: Rat; Pump: Not Stated; Duration: 7 days;
ALZET Comments: Dose (2 mg/kg/day); Controls received mp w/ vehicle; animal info (Male Sprague-Dawley rats);

Agents: Nicotine Vehicle: Saline; Route: SC; Species: Rat (pregnant); Pump: 2ML4; Duration: Not Stated;
ALZET Comments: Dose (6 mg/kg/day); Controls received mp w/ vehicle; animal info (female Sprague-Dawley dams);


Agents: Nicotine Vehicle: Saline; Route: SC; Species: Mice; Pump: 1004; Duration: 14 days;
ALZET Comments: Dose (1 mg/kg/hr); 9% NaCl used; animal info (male C57BL/6 mice, 6–8 weeks of age); dependence;


Agents: Nicotine Vehicle: Saline; Route: SC; Species: Mice; Pump: 1007D; Duration: 7 day;
ALZET Comments: Dose (12.6 mg/kg/d); 0.9% Saline used; animal info (Male, 8-10 weeks old, C57BL/6J); dependence;


Agents: Nicotine hydrogen tartrate Vehicle: Saline; Route: SC; Species: Mice; Pump: 2002; Duration: 14 days;
ALZET Comments: Dose (24 mg/kg/day); Controls received mp w/ vehicle; animal info (Male, C57BL/6J); dependence;


Agents: Nicotine hydrogen tartrate Vehicle: Saline; Route: SC; Species: Rat (pregnant); Pump: Not Stated; Duration: 4 weeks;
ALZET Comments: Dose (6 mg/kg/day); Controls received mp w/ vehicle; animal info (pregnant female Sprague-Dawley rats); minipumps released nicotine for 4 weeks from gestational day 6 to postnatal day 14;


Agents: Nicotine Vehicle: Saline; Route: SC; Species: Mice; Pump: 2004; Duration: 4 weeks;
ALZET Comments: Dose (5 mg/kg/day); Controls received mp w/ vehicle; animal info (9 week old, Male, C57BL/6J); cardiovascular;


Agents: Nicotine hydrogen tartrate Vehicle: Saline; Route: SC; Species: Mice; Pump: 2002; Duration: 14 days;
ALZET Comments: Dose (24 mg/kg/day); Controls receiveJackson mp w/ vehicle; animal info (8 week old ICR male mice;


Agents: Nicotine Vehicle: Saline; Route: SC; Species: Rat; Pump: 2006; Duration: Not Stated;
ALZET Comments: Dose (3 mg/kg/day); 0.9% sterile saline solution used; Controls received mp w/ vehicle; animal info (male Long Evans rats); post op. care (NSAID analgesic, an antibiotic);


Agents: Nicotine Vehicle: Saline; Route: SC; Species: Rat; Pump: 2ML4; Duration: 28 days;
ALZET Comments: Dose (3 mg/kg/day); 0.9% sterile saline solution used; Controls received mp w/ vehicle; animal info (male Long Evans rats); post op. care (NSAID analgesic, an antibiotic);
Agents: Nicotine hydrogen tartrate Vehicle: Saline; Route: SC; Species: Rat; Pump: 2ML2; Duration: 16-21 days;
ALZET Comments: Dose (4.5 mg/kg/day); Controls received mp w/ vehicle; animal info (adult female Sprague–Dawley rats); ischemia (brain);

Agents: Nicotine Vehicle: Saline; Route: SC; Species: Rats; Pump: 2ML1; Duration: 1 week;
ALZET Comments: Dose (9 mg/kg/day); 0.9% saline used; Controls received mp w/ vehicle; animal info (Male, Sprague-Dawley, 6 weeks old, 200-250 g); behavioral testing (Open Field Test); Brain coordinates (3.8 mm posterior to bregma, 2.5 mm lateral to midline); neurodegenerative (Concussion);

Agents: Nicotine hydrog n tartrate salt Vehicle: Saline; Route: Saline; Species: Rat; Pump: 2ML2; Duration: 14 days;
ALZET Comments: 0.9% saline used; animal info (Adult male and female Wistar rats); post op. care (analgesic flunixin- 2.5 mg/kg); dependence;

Agents: Nicotine, Metformin Vehicle: Saline; Route: CSF/CNS (lateral ventricle); Species: Mice; Pump: 1002; Duration: 2 weeks;
ALZET Comments: Dose (18 mg/kg/day-nicotine, 50 ug/day-metformin); 0.85% saline used; Controls received mp w/ vehicle; behavioral testing (Marble Burying Test, Novelty-Induced Hypophagia Test); Brain coordinates (anteroposterior, −0.8 mm; mediolateral, +1.5 mm); dependence;

Q10108: D. Bhattacharya, et al. Assessment of the cerebellar neurotoxic effects of nicotine in prenatal alcohol exposure in rats. Life Sciences 2018;194(177-184
Agents: Nicotine Vehicle: Saline; Route: SC; Species: Rat; Pump: 1004; Duration: Not Stated;
ALZET Comments: Dose: Nicotine (6 mg/kg/day.); 10% Alcohol; 95% Ethy alcohol used; animal info (Time pregnant Sprague Dawley); behavioral testing (Straub tail, tremor and ataxic behaviors);

Agents: Nicotine Vehicle: Saline; Route: SC; Species: Mice; Pump: 2000; Duration: 14 days; 28 days;
ALZET Comments: Dose (24 mg/kg/day 14 day; 36mg/kg/day 28 day); Controls received mp w/ vehicle; animal info (ICR male, 8 weeks old; genetically modified male and female for nAChRs); dependence; No stress (see pg. ); Therapeutic indication (varenicline for nicotine withdrawal);