



References on the Administration of Cocaine Using ALZET® Osmotic Pumps

R0335: R. M. Post. Epigenetic basis of sensitization to stress, affective episodes, and stimulants: implications for illness progression and prevention. *Bipolar Disord* 2016;18(4):315-24

ALZET Comments: Cocaine;

Q4278: A. K. Radke, *et al.* Cocaine withdrawal in rats selectively bred for low (LoS) versus high (HiS) saccharin intake. *PHARMACOLOGY BIOCHEMISTRY AND BEHAVIOR* 2015;129(51-55)

ALZET Comments: Cocaine hydrochloride; Saline, sterile; SC; Rat; 2ML2; 2 weeks; Controls received mp w/ vehicle; animal info (male, Holtzman/Harlan Sprague Dawley); no stress (see pg.53); post op. care (topical antibiotic ointment); behavioral testing (saccharin intake); dependence; pumps removed after 2 weeks;

Q3606: C. M. Pudiak, *et al.* Tolerance to cocaine in brain stimulation reward following continuous cocaine infusions. *Pharmacology Biochemistry and Behavior* 2014;122(246-252)

ALZET Comments: Cocaine; Saline; sodium metabisulfate; SC; Rat; 2ML2; 14 days; Controls received mp w/ vehicle; animal info (male, Long-Evans, 275-350g); functionality of mp verified by residual volume; 0.3% sodium metabisulfate used to prevent degradation; stress/adverse reaction: (see pg.294); post op. care (neosporin); dependence; "Cocaine delivered continuously via osmotic minipump may better mimic the high drug-plasma concentrations maintained by an addict during a binge than daily administered cocaine injections." pg 250; pumps removed after 14 days; pumps primed at 37C for at least 4 hours;

Q3579: P. A. Narayana, *et al.* Chronic cocaine administration causes extensive white matter damage in brain: Diffusion tensor imaging and immunohistochemistry studies. *PSYCHIATRY RESEARCH-NEUROIMAGING* 2014;221(3):220-230

ALZET Comments: Cocaine; Saline; SC; Rat; 2ML4; 28 days; Controls received mp w/ vehicle; animal info (male, Sprague Dawley, 280-300g); behavioral testing (fine motor movement; ambulation; rearing activities; general motor behavior); dependence; MRI; pumps primed for 24 hours in 37C saline;

Q3428: F. F. Caputi, *et al.* Dynorphin/KOP and nociceptin/NOP gene expression and epigenetic changes by cocaine in rat striatum and nucleus accumbens. *PROGRESS IN NEURO-PSYCHOPHARMACOLOGY & BIOLOGICAL PSYCHIATRY* 2014;49(1):36-46

ALZET Comments: Cocaine; SC; Rat; 2001; 7 days; Controls received mp w/ saline; animal info (male, Sprague Dawley, 200-250g); dependence; pumps primed overnight in 37C saline;

Q2161: A. K. Stoker, *et al.* Involvement of metabotropic glutamate receptor 5 in brain reward deficits associated with cocaine and nicotine withdrawal and somatic signs of nicotine withdrawal. *Psychopharmacology* 2012;221(2):317-327

ALZET Comments: Nicotine; cocaine hydrochloride; Saline, sterile; SC; IP; Mice; 2004; 1003D; 3, 28 days; Controls received mp w/ vehicle; animal info (mGlu5 KO, wt).

Q1704: A. K. Stoker, *et al.* Withdrawal from chronic cocaine administration induces deficits in brain reward function in C57BL/6J mice. *Behavioural Brain Research* 2011;223(1):176-181

ALZET Comments: Cocaine hydrochloride; Saline, sterile; IP; Mice; 1003D; 3 days; Controls received mp w/ saline; animal info (C57BL/6, male, 7-8 wks old) withdrawal; "continuous cocaine administration via intraperitoneal osmotic minipumps is an excellent tool for the assessment of the effects of cocaine administration and withdrawal on various behavioral measures." pg 180.

P9733: P. A. Narayana, *et al.* Diffusion tensor imaging of cocaine-treated rodents. *PSYCHIATRY RESEARCH-NEUROIMAGING* 2009;171(3):242-251

ALZET Comments: Cocaine; SC; Rat; 2ML4; 28 days; Controls received mp w/saline; good methods pg. 243; animal info (male, Sprague Dawley, 250-300 g); microdialysis fiber attached to exit port to prevent development of necrotic skin.



P8166: M. Di Benedetto, *et al.* Alterations of CREB and DARPP-32 phosphorylation following cocaine and monoaminergic uptake inhibitors. *Brain Research* 2007;1128(1):33-39

ALZET Comments: Cocaine; fluoxetine; GBR12909; nisoxetine; Water, sterile; SC; CSF/CNS; Rat; 2001; 2ML1; 7 days; Controls received mp w/ vehicle; no stress (see pg. 37); animal info (male, Sprague-Dawley, 200-250 grams).

P8233: C. D'Addario, *et al.* Role of serotonin in the regulation of the dynorphinergic system by a kappa-opioid agonist and cocaine treatment in rat CNS. *Neuroscience* 2007;144(1):157-164

ALZET Comments: Cocaine; Water, sterile; CSF/CNS; Rat; 7 days; Controls received mp w/ vehicle; animal info (male, Sprague-Dawley, 200-250 grams).

P6682: M. S. Matell, *et al.* Differential modulation of clock speed by the administration of intermittent versus continuous cocaine. *Behavioral Neuroscience* 2004;118(1):150-156

ALZET Comments: Cocaine, hydrochloride; Saline; SC; Rat; 2ML2; 2 weeks; Controls received mp w/ vehicle; functionality of mp verified by residual volume; comparison of IP injections vs. SC mp; tolerance; "The cocaine pumps were slightly modified by adding a microdialysis fiber to the output portal to minimize tissue necrosis from the cocaine." p. 151; behavioral study.

P7061: G. R. King, *et al.* The effects of continuous cocaine dose, treatment, and withdrawal duration on the induction of behavioral tolerance and dopamine autoreceptor function. *Pharmacology Biochemistry and Behavior* 2004;78(2):293-300

ALZET Comments: Cocaine HCL; Saline, isotonic; SC; Rat; 2ML2; 3,7 days; Controls received mp w/ vehicle; dose-response; tolerance; "mp slightly modified by adding a microdialysis fiber to the output portal to eliminate tissue necrosis from the cocaine." (pg. 294); mp primed in 37 degree Celsius water for 4 hours.

P5441: G. R. King, *et al.* The effects of continuous cocaine duration on the induction of behavioral tolerance and dopamine autoreceptor function. *European Journal of Pharmacology* 2002;446(1-3):111-118

ALZET Comments: Cocaine HCl; Saline, isotonic; SC; Rat; 2ML2; 14 days; Controls received mp w/ vehicle; tolerance; dependence; "The pumps were slightly modified by adding a microdialysis fiber to the output portal to eliminate tissue necrosis from the cocaine." (p. 112).

P5446: S. Izenwasser, *et al.* Tolerance and sensitization to the locomotor-activating effects of cocaine are mediated via independent mechanisms. *Pharmacology Biochemistry and Behavior* 2002;73(4):877-882

ALZET Comments: Cocaine; SC; Rat; 2001; 7 days; Tolerance.

P5488: E. H. Ellinwood, *et al.* Effect of daily dosing duration of direct and indirect dopamine receptor agonists: cocaine cross-tolerance following chronic regimens. *European Neuropsychopharmacology* 2002;12(5):407-415

ALZET Comments: Cocaine; pramipexole; Saline; SC; Rat; 2ML2; 14 days; Functionality of mp verified by measuring residual volume; pulsed delivery - drugs administered either continuously or for 16 or 20 hrs per day (p. 409); study included behavioral testing; pramipexole is a direct dopamine agonist; microdialysis fiber attached to pump via catheter to minimize tissue necrosis caused by the cocaine (p. 408); intermittent delivery made possible by disconnecting and reconnecting an externalized catheter.

P6339: S. L. Collins, *et al.* Chronic Cocaine Increases k-Opioid Receptor Density: Lack of Effect by Selective Dopamine Uptake Inhibitors. *Synapse* 2002;45(153-158)

ALZET Comments: Cocaine; RTI-117; GBR 12909; Saline; DMSO; water, sterile; SC; Rat; 2ML1; 2ML2; 7, 14 days; Controls received mp w/ vehicle; brain tissue distribution; 50% DMSO used for GBR12909.

P4779: L. L. Howell, *et al.* Fetal development in rhesus monkeys exposed prenatally to cocaine. *Neurotoxicol. Teratol* 2001;23(133-140)

ALZET Comments: Cocaine;; Saline;; SC;; monkey (pregnant);; 2ML4;; ~ 180 days;; Controls received mp w/ vehicle; functionality of mp verified by cocaine serum levels; dose-response (table 4 p. 136); long-term study, pumps replaced every 28 days for up to 180 days (until birth); teratology;.



P4882: E. H. Ellinwood, *et al.* The dopamine D-2/D-3 antagonist DS121 potentiates the effect of cocaine on locomotion and reduces tolerance in cocaine tolerant rats. *Behavioural Brain Research* 2000;116(169-175

ALZET Comments: Cocaine HCl; Saline; SC; Rat; 2ML2; 14 days; controls received mp w/ vehicle; functionality of mp verified by residual volume; "The pumps were modified by adding a microdialysis fiber to the output portal to eliminate cocaine-induced tissue necrosis". p. 170.

P4517: T. H. Lee, *et al.* Altered activity of midbrain dopamine neurons following 7-day withdrawal from chronic cocaine abuse is normalized by D₂ receptor stimulation during the early withdrawal phase. *Neuropsychopharmacology* 1999;21(127-136

ALZET Comments: Cocaine;; Saline;; SC;; Rat;; 2ML2;; 14 days;; comparison of SC injections vs. mp; tolerance; modified flow moderators used;.

P4518: G. R. King, *et al.* Blockade of accumbens 5-HT₃ receptor down-regulation by ondansetron administered during continuous cocaine administration. *European Journal of Pharmacology* 1999;364(79-87

ALZET Comments: Cocaine HCl;; Saline, isotonic;; SC;; Rat;; 2ML2;; 14 days;; controls received mp w/vehicle; functionality of mp verified by measuring residual volume; comparison of SC injections vs. mp; tolerance; microdialysis; pumps were modified by adding a microdialysis fiber to eliminate tissue necrosis from cocaine administration.

P4300: S. Izenwasser, *et al.* Continuous infusion of selective dopamine uptake inhibitors or cocaine produces time-dependent changes in rat locomotor activity. *Behav. Brain Res* 1999;99(201-208

ALZET Comments: Cocaine; GBR 12909; Fluoxetine HCl; Nisoxetine HCl, RTI-117;; DMSO; Water, sterile;; SC;; Rat;; 2001; 2ML1; 2ML2;; 7, 14 days; antidepressant; controls received mp w/ saline; RTI-117 is a dopamine uptake inhibitor; 2ML1 used to deliver GBR 12909, due to its limited solubility;.

P4563: M.-Y. Li, *et al.* Continuous cocaine treatment and monoamine transmission measured by microdialysis in the rat ventral tegmental area. *Addiction Biology* 1998;3(447-451

ALZET Comments: Cocaine;; Saline;; SC;; Rat;; 2ML2;; 2 weeks;; controls received mp w/vehicle; functionality of mp verified by residual volume; no stress (P. 448); tolerance; At the end of the experiment, the tissue surrounding the minipumps was inspected and found to be normal (p. 448);.

P4179: P. M. Kunko, *et al.* Alterations in locomotor activity during chronic cocaine administration: effect of dopamine receptors and interaction with opioids. *J. Pharmacol. Exp. Ther* 1998;285(1):277-284

ALZET Comments: Cocaine; Naltrexone HCl; Morphine sulfate; Saline; SC; Rat; 2001; 7 days; controls received mp w/vehicle; functionality of mp verified by plasma levels; dose-response (p. 279-280); tolerance.

P3955: G. R. King, *et al.* Blockade of the expression of sensitization and tolerance by aldosterone, a 5-HT₃ receptor antagonist, administered during withdrawal from intermittent and continuous cocaine. *Psychopharmacology* 1998;135(263-269

ALZET Comments: Cocaine HCl; Saline, sterile; SC; Rat; 2ML2; 14 days; controls received mp w/vehicle; functionality of mp verified by residual volume; good methods (p.265); dependence; microdialysis.

P4191: A. V. Azaryan, *et al.* Transient upregulation of m opioid receptor mRNA levels in nucleus accumbens during chronic cocaine administration. *Can. J. Physiol. Pharmacol* 1998;76(278-283

ALZET Comments: Cocaine HCl; SKF-82958; Bromocriptine; Hydrobromide, R(+)-6-bromo-APB; PD 128907; Saline; SC; Rat; 2ML1; 24,48,66,72,90,96,168,336 hours; controls received mp w/vehicle; dopamine agonists.

P3484: M. S. Matell, *et al.* 5-HT(3) receptor mediated dopamine release in the nucleus accumbens during withdrawal from continuous cocaine. *Psychopharmacology* 1997;130(242-248

ALZET Comments: Cocaine HCl; Saline; SC; Rat; 2ML2; 14 days; controls received mp w/ saline; functionality of mp verified by residual solution; tolerance; microdialysis fiber added to delivery port to eliminate tissue necrosis.



P3749: P. M. Kunko, *et al.* Chronic administration of the selective dopamine uptake inhibitor GBR 12909, but not cocaine, produces marked decreases in dopamine transporter density. *Naunyn-Schmiedeberg's Arch. Pharmacol* 1997;356(562-569)
ALZET Comments: Cocaine HCl; GBR 12909; Saline; DMSO; Water, sterile; SC; Rat; 2001; 2ML1; 7 days; controls received mp w/ vehicle; tolerance.

P3863: G. R. King, *et al.* Blockade of cocaine sensitization and tolerance by the co-administration of odansetron, a 5-HT₃ receptor antagonist, and cocaine. *Psychopharmacology* 1997;130(159-165)
ALZET Comments: Cocaine HCl; Saline, sterile isotonic; SC; Rat; 2ML2; 14 days; controls received saline injection; functionality of mp verified by measuring residual volume; comparison of injections vs mp; tolerance; microdialysis.

P3558: C. M. Bernards, *et al.* Effect of chronic cocaine administration on the hemodynamic response to acute hemorrhage in awake and anesthetized sheep. *J. Trauma: Injury, Infection and Crit. Care* 1997;42(1):42-48
ALZET Comments: Cocaine HCl; SC; sheep; 2ML2; 15, 18 days; no comment posted.

P3502: P. Romualdi, *et al.* Chronic intracerebroventricular cocaine differentially affects prodynorphin gene expression in rat hypothalamus and caudate-putamen. *Mol. Brain Research* 1996;40(153-156)
ALZET Comments: Cocaine HCl; CSF/CNS; Rat; 2001; 7 days; controls received mp w/ aCSF.

P3466: J. L. Neisewander, *et al.* Changes in behavioral sensitivity to SKF-38393 and quinpirole following withdrawal from continuous cocaine administration in rats. *Pharmacol. Biochem. Behav* 1996;53(4):935-942
ALZET Comments: Cocaine HCl; Saline; SC; Rat; 2ML2; 2 weeks; functionality of mp verified by measuring residual volume; no stress (see p. 936) - no observed skin necrosis.

P3513: M. Lundien, *et al.* Dextrorphan effects on cocaine and brainstem perturbation. *Integrative Physiological and Behavioral Science* 1996;31(3):224-230
ALZET Comments: Cocaine; IV (femoral); Rat; 2001; 3 days; no comment posted.

P3428: S. Izenwasser, *et al.* Continuous cocaine administration enhances m- but not d-opioid receptor-mediated inhibition of adenylyl cyclase activity in nucleus accumbens. *Eur. J. Pharmacol* 1996;297(187-191)
ALZET Comments: Cocaine HCl; SC; Rat; 2001; 7 days; no comment posted.

P3520: A. Hitri, *et al.* Effect of cocaine on dopamine transporter receptors depends on routes of chronic cocaine administration. *Neuropsychopharm* 1996;14(3):205-210
ALZET Comments: Cocaine HCl; SC; Rat; 2ML2; 14 days; controls received saline infusion; comparison of intermittent sc injections vs. mp; pump connected to 3 cm of dialysis tubing.

P3313: A. V. Azaryan, *et al.* Effect of chronic cocaine treatment on m- and d-opioid receptor mRNA levels in dopaminergically innervated brain regions. *J. Neurochem* 1996;66(443-448)
ALZET Comments: Cocaine HCl; Eticlopride; SCH-23390; Saline; SC; Rat; 2001; 3 days; controls received mp w/saline; eticlopride is a D1 & D2 receptor antagonist.

P3446: A. V. Azaryan, *et al.* Mu opioid receptor mRNA in nucleus accumbens is elevated following dopamine receptor activation. *Neurochem. Res* 1996;21(11):1411-1415
ALZET Comments: Hydrobromide, R(+)-6-bromo-APB-SKF-38393; Nafadotride, (5)-bromocriptine; Cocaine HCl; Saline; Rat; 2ML1; 3 days; controls received mp w/ saline.

P2807: G. R. King, *et al.* 5-HT₃ agonist-induced dopamine overflow during withdrawal from continuous or intermittent cocaine administration. *Psychopharmacology* 1995;117(458-465)
ALZET Comments: Cocaine HCl; Saline; SC; Rat; 2ML2; 14 days; controls received mp with saline; comparison of sc injections vs. mp; tolerance.



P3070: J. L. Neisewander, *et al.* Time-dependent changes in sensitivity to apomorphine and monoamine receptors following withdrawal from continuous cocaine administration in rats. *Synapse* 1994;16(1-10)

ALZET Comments: Cocaine HCl; Saline, sterile; SC; Rat; 2ML2; 2 weeks; controls received mp with saline; functionality of mp verified by residual volume; possible minipump failure noted.

P3270: P. R. Mahone, *et al.* Cocaine and metabolites in amniotic fluid may prolong fetal drug exposure. *Am. J. Obstet. Gynecol* 1994;171(2):465-469

ALZET Comments: Cocaine; sheep (fetus); no duration posted; functionality of mp verified by plasma, amniotic fluid, and meconium samples; stability verified by in vitro testing at 39 degrees; teratology; pump released drug into amniotic fluid; pump placed on fetal back; ampicillin added to amniotic fluid.

P2576: C. H. Kinsley, *et al.* Cocaine alters the onset and maintenance of maternal behavior in lactating rats. *Pharmacol. Biochem. Behav* 1994;47(4):857-864

ALZET Comments: Cocaine; Saline; SC; Rat (pregnant); 2ML2; 14 days; controls received mp w/ saline; comparison of sc injections vs. mp.

P2575: G. R. King, *et al.* 5-HT₃ receptor modulation of behavior during withdrawal from continuous or intermittent cocaine. *Pharmacol. Biochem. Behav* 1994;47(3):399-407

ALZET Comments: Cocaine HCl; Saline, sterile; SC; Rat; 2ML2; 14 days; functionality of mp verified by measuring residual amount; comparison of ip injections vs mp; no stress (pg. 400); good methods: "minipumps were modified by adding a microdialysis fiber . . . to increase surface area over which cocaine is delivered." This allowed higher dose delivery without necrotic skin lesion.

P2808: G. R. King, *et al.* Continuous or intermittent cocaine administration: effects of flupenthixol treatment during withdrawal. *Pharmacol. Biochem. Behav* 1994;49(4):883-889

ALZET Comments: Cocaine HCl; Saline; SC; Rat; 2ML2; 14 days; functionality of mp verified by residual volume; comparison of sc injections vs. mp; tolerance; microdialysis fiber added to pump's outflow portal to increase surface area distribution, and to avoid necrotic skin lesions.

P2875: Y. K. Fung, *et al.* Behavioural consequences of cocaine withdrawal in rats. *J. Pharm. Pharmacol* 1994;46(150-152)

ALZET Comments: Cocaine; Saline; SC; Rat; 2ML4; 28 days; controls received mp with saline; dependence; pump incision site covered with an antibiotic and 5% lignocaine to prevent discomfort and infection.

P2339: G. R. King, *et al.* Dopamine efflux during withdrawal from continuous or intermittent cocaine. *Psychopharmacology* 1993;111(179-184)

ALZET Comments: Cocaine HCl; Saline; SC; Rat; 2ML2; 14 days; functionality of mp verified measuring residual amount; comparison of SC injections vs. mp; no stress (see pg. 180); tolerance; microdialysis fiber.

P2398: G. R. King, *et al.* Withdrawal from continuous or intermittent cocaine: effects of NAN-190 on cocaine-induced locomotion. *Pharmacol. Biochem. Behav* 1993;44(253-262)

ALZET Comments: Cocaine HCl; Saline; SC; Rat; 2ML2; 14 days; Controls received mp w/ saline; comparison of sc injections vs. mp; tolerance; animal info (male, Sprague-Dawley, 100-125 grams).

P2328: C. Joyner, *et al.* Technique for the continuous infusion of high doses of cocaine by osmotic minipump. *Pharmacol. Biochem. Behav* 1993;44(4):971-973

ALZET Comments: Cocaine; Saline; SC; Rat; 14 days; good methods; microdialysis; pump modified; modification eliminated necrosis.

P3149: J. L. Gingras, *et al.* Prenatal cocaine exposure alters postnatal ornithine decarboxylase activity in rabbit brain. *Biochem. Med. Meta. Bio* 1993;50(284-291)

ALZET Comments: Cocaine; Water, sterile; rabbit (pregnant); 22 days; controls received mp with water; teratology; 2 mps implanted.



P2260: E. M. Factor, *et al.* Neurochemical development of the raphe after continuous prenatal cocaine exposure. *Brain Res. Bull* 1993;31(49-56)

ALZET Comments: Cocaine; SC; Rat (pregnant); 2ML2; 14 days; controls received sham op; functionality of mp verified by plasma levels; no stress (see p. 50).

P2672: N.-H. Chen, *et al.* Dopamine and serotonin release-regulating autoreceptor sensitivity in A9/A10 cell body and terminal areas after withdrawal of rats from continuous infusion of cocaine. *J. Pharmacol. Exp. Ther* 1993;267(3):1445-1453

ALZET Comments: Cocaine HCl; Saline; SC; Rat; 2ML2; 14 days; controls received mp w/ saline; functionality of mp verified by residual volume; tolerance; gentamicin applied after surgery; no tissue necrosis seen.

P2218: S. T. Cain, *et al.* Chronic continuous or intermittent infusion of cocaine differentially alter the concentration of neurotensin-like immunoreactivity in specific rat brain regions. *Neuropsychopharmacology* 1993;8(259-265)

ALZET Comments: Cocaine HCl; Saline; SC; Rat; 2ML2; 14 days; controls received mp w/saline; functionality of mp verified upon removal; stability verified upon removal; tolerance.

P2185: L. Y. Burger, *et al.* Day/night differences in D1 but not D2 DA receptor protection from EEDQ denaturation in rats treated with continuous cocaine. *Synapse* 1993;13(20-29)

ALZET Comments: SCH-23390; Cocaine HCl; Raclopride; Water; SC; Rat; 2ML2; 14 days; no comment posted.

P2445: G. Torres, *et al.* Cocaine-induced ACTH secretion: dependence of plasma levels of the drug and mode of exposure. *Brain Res. Bull* 1992;29(1):51-56

ALZET Comments: Cocaine HCl; Sodium chloride; IP; Rat; 2001; 6 days; controls received mp w/ vehicle; functionality of mp verified by residual pump volume and plasma levels; comparison of iv injections vs. mp.

P2010: G. Torres, *et al.* Differential effects of intermittent or continuous exposure to cocaine on the hypothalamic-pituitary-adrenal axis and c-fos expression. *Brain Research* 1992;571(2):204-211

ALZET Comments: Cocaine HCl; Saline; IV (jugular); Rat; 2001; 2,4,6 days; comparison of intermittent injections vs mp.

P2340: G. R. King, *et al.* Intermittent and continuous cocaine administration: residual behavioral states during withdrawal. *Pharmacol. Biochem. Behav* 1992;43(243-248)

ALZET Comments: Cocaine HCl; Saline; SC; Rat; 2ML2; 14 days; functionality of mp verified by residual volume upon explant; comparison of sc injections vs. mp; tolerance; advantages of mp (pg. 247).

P2028: S. Izenwasser, *et al.* Inhibition of dopamine uptake by cocaine and nicotine: tolerance to chronic treatments. *Brain Research* 1992;573(119-125)

ALZET Comments: Cocaine HCl; Nicotine tartrate; Saline; SC; Rat; 2001; 7 days; tolerance.

P2581: T. Inada, *et al.* Behavioral and neurochemical effects of continuous infusion of cocaine in rats. *Neuropharmacology* 1992;31(7):701-708

ALZET Comments: Cocaine; Saline; IV (vena cava); Rat; 2ML2; 11 or 12 days; controls received mp w/ saline; tolerance; loop of catheter tubing exposed to terminate infusion.

P1977: D. E. Weese-Mayer, *et al.* Effects of prenatal cocaine exposure on perinatal morbidity and postnatal growth in the rabbit. *Dev. Pharmacol. Ther* 1991;4(221-230)

ALZET Comments: Cocaine HCl; Water; SC; rabbit; 2ML4; 22 days; teratology.

P1901: M. E. A. Reith, *et al.* Sertraline and cocaine-induced locomotion in mice. *Psychopharmacology* 1991;103(306-313)

ALZET Comments: Cocaine HCl; Saline; SC; mice; 2002; 3 weeks; no comment posted.

P3494: M. Maillet, *et al.* Myocardial damage induced by cocaine administration of a week's duration in the rat. In 'Advances in the Biosciences', Pergamon Press 1991;80(187-197)



ALZET Comments: Cocaine HCl; Rat; 8 days; controls received mp w/ saline; cardiovascular.

P1881: R. J. Krueger, *et al.* Effect of chronic administration of nicotine or cocaine on steroidogenesis in rat adrenocortical cells. *J. Pharm. Pharmacol* 1991;43(200-203

ALZET Comments: Cocaine HCl; Nicotine tartrate; Saline; SC; Rat; 2002; 14 days; no comment posted.

P4170: P. Digeon, *et al.* Cardiovascular tolerance to cocaine and b2 lymphocytes adrenoreceptors. *Advances Biosciences* 1991;80(177-185

ALZET Comments: Cocaine; IP; Rat; 7-14 days; controls received mp w/saline; dose-response; comparison of injections vs. mp; tolerance.

P2194: P. Di Francesco, *et al.* Effect of acute or daily cocaine administration on cellular immune response and virus infection in mice. *Nat. Immun. Cell Growth Regul* 1990;9(397-405

ALZET Comments: Cocaine HCl; Hank's solution; SC; mice; 2001; 7 days; no comment posted.

P1484: D. K. Pitts, *et al.* Chronic cocaine reduces alpha2-adrenoceptor elicited mydriasis and inhibition of locus coeruleus neurons. *Eur. J. Pharmacol* 1989;160(201-209

ALZET Comments: Cocaine; Water; SC; Rat; 2001; 1, 2 weeks; controls received plastic sham pumps; stress/adverse reaction (localized vasoconstriction); pump replaced.

P1490: L. L. Howell, *et al.* Behavioral effects of chronically administered cocaine in squirrel monkeys. *Psychopharmacology* 1989;97(12-16

ALZET Comments: Cocaine HCl; Saline; SC; monkey; 2002; 14 days; dose-response; functionality of mp verified by plasma levels; pump replaced > than or = to 2 months elapsed between implants; toxicology/teratology.

P1516: Y. K. Fung, *et al.* Prenatal cocaine exposure fails to modify neurobehavioral responses and the striatal dopaminergic system in newborn rats. *Gen. Pharmacol* 1989;20(5):689-693

ALZET Comments: Cocaine; Saline; SC; Rat (pregnant); 2ML4; 28 days; toxicology/teratology.

P1547: L. J. Ryan, *et al.* Continuous amphetamine administration induces tyrosine hydroxylase immunoreactive patches in the adult rat neostriatum. *Brain Research* 1988;21(133-137

ALZET Comments: Amphetamine sulfate, d-; Cocaine HCl; Saline; IV (jugular); SC; Rat; 2ML1; 3, 30 days; controls received silastic plug implant.

P1249: M. Kleven, *et al.* Behavioral and neurochemical effects of repeated or continuous exposure to cocaine. *NIDA Res. Monogr. Ser.* 81 1988;81(86-93

ALZET Comments: Cocaine; IV (jugular); Rat; 2ML4; 21 days; tolerance.

P1120: M. E. A. Reith, *et al.* Cocaine disposition in the brain after continuous or intermittent treatment and locomotor stimulation in mice. *J. Pharmacol. Exp. Ther* 1987;243(1):281-287

ALZET Comments: Cocaine HCl; Saline; SC; mice; no duration posted; no comment posted.

P1244: A. Shah, *et al.* Effect of chronic exposure of cocaine on antipyrine disposition in rats. *Res. Common. Subst. Abuse* 1985;6(1):59-62

ALZET Comments: Cocaine HCl; Saline; SC; Rat; 2 weeks; pump model not stated; controls received mp w/ saline.