



References on the Administration of Dopamine Using ALZET® Osmotic Pumps

Q10418: A. B. Caglayan, *et al.* The Unconventional Growth Factors Cerebral Dopamine Neurotrophic Factor and Mesencephalic Astrocyte-Derived Neurotrophic Factor Promote Post-ischemic Neurological Recovery, Perilesional Brain Remodeling, and Lesion-Remote Axonal Plasticity. *Translational Stroke Research* 2022;

Agents: Cerebral dopamine neurotrophic factor, recombinant human; Mesencephalic astrocyte-derived neurotrophic factor, recombinant human **Vehicle:** NaCl; **Route:** CSF/CNS (left ventricle); **Species:** Mice; **Pump:** 2004; **Duration:** 28 days;

ALZET Comments: "Dose: (1 ug/day); (0.9% NaCl), vehicle used; Controls received mp w/ vehicle; animal info: male C57Bl6/j mice (8–10 weeks) behavioral testing: RotaRod test, Grip strength; Open field test; Elevated o maze test; Cerebral Dopamine Neurotrophic Factor aka (CDNF); ALZET brain infusion kit 3 used; Brain coordinates (contralateral motor cortex (0.5 mm rostral and 2.5 mm lateral to the bregma); neurodegenerative (stroke); ischemia (cerebral); "

Q9868: W. Zhang, *et al.* Inhibition of NADPH oxidase within midbrain periaqueductal gray decreases pain sensitivity in Parkinson's disease via GABAergic signaling pathway. *Physiological Research* 2020;

Agents: 6-hydroxydopamine **Vehicle:** CSF, Artificial; **Route:** CSF/CNS; **Species:** Rat; **Pump:** 1003D; **Duration:** 3 days;

ALZET Comments: Dose (6 ul/min); Controls received mp w/ vehicle; animal info (Male, Sprague Dawley, 200-250 g); behavioral testing (Rotation Behavior Test); 6-hydroxydopamine aka 6-OHDA ; Brain coordinates (3.3 mm rostral to the interaural line, 1.4 mm left of the midline, and 6.5 and 6.8 mm ventral to the dural surface); neurodegenerative (Parkinson's Disease);

Q8597: T. Kasamatsu, *et al.* Ocular dominance plasticity: Molecular mechanisms revisited. *J Comp Neurol* 2020;528(17):3039-3074

Agents: Dopamine, hydroxy-6; **Route:** CSF/CNS (visual cortex); **Species:** Cat;

ALZET Comments: Controls received mp w/ vehicle; animal info (young kittens); 6-hydroxydopamine aka 6-OHDA; dependence;

Q8762: F. Han, *et al.* Dopamine D2 receptor modulates Wnt expression and control of cell proliferation. *Scientific Reports* 2019;9(1):16861

Agents: RNA, small interfering (Dopamine D2 Receptor) **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice; **Duration:** 28 days;

ALZET Comments: Dose (3 ug/day); animal info (C57BL/6, Male, 20 g, 8-10 weeks old); ischemia (Renal);

Q6442: C. Laloux, *et al.* Continuous cerebroventricular administration of dopamine: A new treatment for severe dyskinesia in Parkinson's disease? *Neurobiol Dis* 2017;103(24-31

Agents: Dopamine, anaerobia **Vehicle:** Saline; **Route:** CSF/CNS; **Species:** Mice; **Pump:** 2001; **Duration:** 7 days;

ALZET Comments: Controls received mp w/ vehicle; animal info (5 month old C57Bl/6 J mice); neurodegenerative (Parkinson's disease);

Q6038: P. Dubovy, *et al.* Local chemical sympathectomy of rat bone marrow and its effect on marrow cell composition. *Autonomic Neuroscience: Basic and Clinical* 2017;206(19-27

Agents: Guanethidine, 6-hydroxydopamine hydrochloride **Vehicle:** Saline, Ascorbic acid; **Route:** SC; **Species:** Rat; **Pump:** 2002; **Duration:** 2 weeks;

ALZET Comments: Controls received mp w/ vehicle; animal info (240-250g); Good alzet diagram ;

Q3720: J. Wedel, *et al.* Simultaneous subcutaneous implantation of two osmotic minipumps connected to a jugular vein catheter in the rat. *Laboratory Animals* 2014;48(338-341

Agents: Dopamine, N-octanoyl **Vehicle:** Tween 80; saline; **Route:** IV (jugular); **Species:** Rat; **Pump:** 2ML4; **Duration:** 14 days;

ALZET Comments: animal info (male, Brown Norway, 230-270 g, female, Wistar, 280-310 g); good methods; "Our data show that double pump implantation is a feasible alternative to changing pumps or the use of extracorporeal pump systems connected via a long wire to partly restrained animals." pg 338; N-octanoyl-dopamine also known as NOD; multiple pumps (2) used; two pumps connected to Y connector, in-house made Y-tube; "we showed that the simultaneous implantation of two slow-flow rate osmotic pumps connected to a jugular vein catheter is feasible and is not linked to additional signs of discomfort compared with single pump-implanted rats." pg 341



Q0098: A. Leblois, *et al.* Striatal Dopamine Modulates Basal Ganglia Output and Regulates Social Context-Dependent Behavioral Variability through D₁ Receptors. *Journal of Neuroscience* 2010;30(16):5730-5743

Agents: Dopamine; SCH23390 **Vehicle:** Saline; **Route:** CSF/CNS (area X); **Species:** Bird (zebra finch); **Pump:** 1002;
ALZET Comments: Controls received mp w/ vehicle; good methods (pg 5731); ALZET brain infusion kit used; animal info (adult, male); Y-connector used; pump externalized with a backpack; pump placed inside microcentrifuge tube; cannula placement verified by histological examination

R0352: A. A. Boulton. *Animal Models of Dementia.* Springer Protocols 2010;48(1-721

Agents: Amphetamine sulfate; Dopamine **Vehicle:** Propylene Glycol; **Route:** SC; CSF/CNS (nucleus accumbens); **Species:** Rat; **Pump:** 2ML2; **Duration:** 14 days;

ALZET Comments: comparison of injections and sylastic pellet vs mp; pulsed delivery; PE tubing contained drug and a dye in short sections interspersed with a substance immiscible with drug, to allow 12 hour infusions of drug and 12-hour infusions of the inert substance (perfluorodecalin) throughout a 14 day infusion period.; pumps primed in a physiological saline solution at 37°C for 4 hours.

P8735: K. Nishikawa, *et al.* Effect of dopamine on the healing of acetic acid-induced gastric ulcers in rats. *Inflammopharmacology* 2007;15(5):209-213

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

ALZET Comments: Controls received mp w/ vehicle; comparison of SC injections vs. mp; animal info (male, Sprague-Dawley, 230-260g, gastric ulceration)

P8719: S. Hoeger, *et al.* Dopamine treatment in brain-dead rats mediates anti-inflammatory effects: the role of hemodynamic stabilization and D-receptor stimulation. *Transplant International* 2007;20(9):790-799

Agents: Dopamine **Vehicle:** Not Stated; **Route:** IV (femoral); **Species:** Rat; **Pump:** 2ML1; **Duration:** 24 hours;

ALZET Comments: Functionality of mp verified by blood pressure; animal info (male, Fisher, 200-250g)

P7802: R. Oberbeck, *et al.* Dopamine affects cellular immune functions during polymicrobial sepsis. *Intensive Care Medicine* 2006;32(5):731-739

Agents: Dopamine **Vehicle:** Not Stated; **Route:** IP; **Species:** Mice; **Pump:** Not Stated; **Duration:** 48 hours;

ALZET Comments: Controls received mp w/ saline; functionality of mp verified by dopamine plasma concentration; animal info (male, NMRI, 8-9 wk old, 30-34-g.); laparotomy or polymicrobial sepsis induced by cecal ligation and puncture

P8290: P. T. Brinkkoetter, *et al.* Hypothermia-induced loss of endothelial barrier function is restored after dopamine pretreatment: Role of p42/p44 activation. *Transplantation* 2006;82(4):534-542

Agents: Dopamine **Vehicle:** Not Stated; **Route:** IV (femoral); **Species:** Rat; **Pump:** 2ML1; **Duration:** 24 hours;

ALZET Comments: Controls received mp w/ isotonic saline; ischemia; reperfusion injury; animal info (male, Lewis, 220-250 g)

P7469: U. Gottmann, *et al.* Influence of donor pretreatment with dopamine on allogeneic kidney transplantation after prolonged cold storage in rats. *Transplantation* 2005;79(10):1344-1350

Agents: Dopamine **Vehicle:** Saline; **Route:** IV (femoral); **Species:** Rat; **Pump:** 2ML1; **Duration:** 24 hours;

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

P6552: R. Oberbeck, *et al.* Dopexamine and cellular immune functions during systemic inflammation. *Immunobiology* 2004;208(5):429-438

Agents: Dopexamine; dopamine **Vehicle:** Not Stated; **Route:** IP; **Species:** Mice; **Pump:** Not Stated; **Duration:** 48 hours;

ALZET Comments: Controls received saline & sham operation; immunology; polymicrobial sepsis induced cecal ligation & puncture (CLP)

P6447: R. Ozono, *et al.* Dopamine D₂ receptor modulates sodium handling via local production of dopamine in the kidney. *Journal of Cardiovascular Pharmacology* 2003;42(S75-S79

Agents: Dopamine **Vehicle:** Saline; **Route:** SC; **Species:** Mice (knockout); **Pump:** 2002; **Duration:** 3 days;

ALZET Comments: cardiovascular



P5642: L. Carr, *et al.* In vivo administration of L-dopa or dopamine decreases the number of splenic IFN-gamma-producing cells. *Journal of Neuroimmunology* 2003;137(1-2):87-93

Agents: Dopamine **Vehicle:** HCL; saline; Ascorbic acid; **Route:** SC; **Species:** Mice; **Pump:** 1007D; **Duration:** 5 days;

ALZET Comments: Controls received mp w/ vehicle (without HCL); Incorrectly states the pump's release rate was 0.25 ul/hr, (correct rate is 0.5 ul/hr).

P6218: P. J. Blanchet. The fluctuating parkinsonian patient - Clinical and pathophysiological aspects. *Canadian Journal of Neurological Sciences* 2003;30(S19-S26)

Agents: Dopamine, agonists **Vehicle:** Not Stated; **Route:** SC; **Species:** Monkey; **Pump:** Not Stated; **Duration:** Not Stated;

ALZET Comments: Pump model and duration not listed; neurodegenerative (Parkinson's disease)

Q7478: A. Galvan, *et al.* Intrapallidal dopamine restores motor deficits induced by 6-hydroxydopamine in the rat. *J Neural Transm (Vienna)* 2001;108(2):153-66

Agents: dopamine **Vehicle:** saline, ascorbic acid buffered; **Route:** CSF/CNS (globus pallidus); **Species:** Rat; **Pump:** 1007D; **Duration:** 6 days;

ALZET Comments: "Dose (75 ng/min); saline with 0.1% ascorbic acid used; Controls received mp w/ vehicle; animal info (male, Wistar, 120-150g); behavioral testing (modified staircase test); Brain coordinates (0.4mm posterior and 3.5mm lateral to bregma and 4.2 mm ventral from dura); neurodegenerative (Parkinson's); dental acrylic was used to secure cannula; The coordinates were the same as those used for microinjections except that the cannula was lowered 5.7 mm, to position it at the center of the GP [globus pallidus]."" p.155; Therapeutic indication ("The improvement in motor performance shown by the dopamine-treated group persisted after ending the dopamine infusion suggesting that intra-pallidal dopamine initiates a process that might go on for some days in its absence, disappearing a few days after ending the administration."" p.163); "

P4754: H. Maeda, *et al.* Roles of renal dopamine and Kallikrein-Kinin systems in antihypertensive mechanisms of exercise in rats. *Hypertens Res* 2000;23(5):511-519

Agents: Dopamine **Vehicle:** Water, distilled; Sodium metabisulfate; **Route:** SC; **Species:** Rat; **Pump:** 2ML4; **Duration:** 2 weeks;

ALZET Comments: Antihypertensive; vehicle was water w/ 0.1% sodium metabisulfate

P4216: Z.-J. Yang, *et al.* Bilateral hypothalamic dopamine infusion in male Zucker rat suppresses feeding due to reduced meal size. *Pharmacol. Biochem. Behav* 1997;58(3):631-635

Agents: Dopamine HCl **Vehicle:** Sodium metabisulfite; **Route:** CSF/CNS (hypothalamus); **Species:** Rat; **Pump:** 2002; **Duration:** 13 days;

ALZET Comments: controls received mp w/vehicle; stability verified by HPLC after 13 days; two pumps implanted per animal; bilateral cannula used; bilateral infusion;

P3932: T. Kasamatsu, *et al.* Continuous and direct infusion of drug solutions in the brain of awake animals: implementation, strengths and pitfalls. *Brain Research Bulletin* 1997;1(57-69)

Agents: Forskolin; Dopamine, 6-hydroxy- **Vehicle:** Ascorbate; Saline; DMSO; **Route:** CSF/CNS (visual cortex); **Species:** Cat; **Pump:** 2001; **Duration:** 7 days;

ALZET Comments: No stress (see pg. 64); stability verified by HPLC assays; good methods (extremely detailed for all CSF/CNS aspects and protocols)

R0223: M. J. During, *et al.* Targets for Gene Therapy of Parkinson's Disease: Growth Factors, Signal Transduction, and Promoters. *Experimental Neurology* 1997;144(74-81)

Agents: Dopamine, hydroxy-6 **Vehicle:** Not Stated; **Route:** CSF/CNS (striatum); **Duration:** 4 days;

ALZET Comments: ALZET pumps mentioned on pg. 76; neurodegenerative (Parkinson's disease)

P3514: B. E. Jones, *et al.* A continuous striatal infusion of 6-hydroxydopamine produces a terminal axotomy and delayed behavioral effects. *Brain Research* 1996;709(275-284)

Agents: Dopamine, 6-hydroxy- **Vehicle:** Ascorbate; Saline; **Route:** CSF/CNS (striatum); **Species:** Rat; **Pump:** 2001; **Duration:** 7 days;

ALZET Comments: controls received vehicle infusion; dose-response (figure 2); comparison of acute infusion vs. mp; stability verified by bioassay of pump effluent



P3277: F. M. McCorkle, *et al.* Continuous administration of dopamine alters cellular immunity in chickens. *Comparative Biochemistry and Physiology Part C: Toxicology & Pharmacology* 1994;109C(3):289-293

Agents: Dopamine **Vehicle:** Saline, acidified; **Route:** SC; **Species:** Bird (chicken); **Pump:** 2001; **Duration:** 24,48,72 hours; **ALZET Comments:** Controls received mp w/saline; immunology

P2562: C. A. Altar, *et al.* Efficacy of brain-derived neurotrophic factor and neurotrophin-3 on neurochemical and behavioral deficits associated with partial nigrostriatal dopamine lesions. *J. Neurochem* 1994;63(1021-1032)

Agents: Brain-derived neurotrophic factor; NT-3; Dopamine, 6-hydroxy- **Vehicle:** PBS; **Route:** CSF/CNS (substantia nigra); CSF/CNS (central caudate putamen); **Species:** Rat; **Pump:** 2002; **Duration:** 2 weeks;

ALZET Comments: controls received mp w/ vehicle; stability verified by DRG bioassay; 77-85% biological activity of BDNF & NT-3 remained after 14 days; 6-hydroxydopamine stable for 8 days; peptides; after 6 days, concomitant infusion of BDNF, NT-3 or vehicle with 6-OHDA; recomb. human BDNF used

P2366: M. Takeshi, *et al.* Effects of dopamine on renal receptors for arginine vasopressin. *Res. Commun. Chem. Pathol. Pharmacol* 1992;76(2):131-141

Agents: Dopamine HCl **Vehicle:** Not Stated; **Route:** SC; **Species:** Rat; **Pump:** Not Stated; **Duration:** 2 weeks; **ALZET Comments:** controls received mp with saline

P2584: N. Mataga, *et al.* 6R-tetrahydrobiopterin perfusion enhances dopamine, serotonin, and glutamate outputs in dialysate from rat striatum and frontal cortex. *Brain Research* 1991;551(64-71)

Agents: Dopamine, 6-hydroxy- **Vehicle:** Saline; Ascorbate; **Route:** CSF/CNS (striatum); **Species:** Rat; **Pump:** 2001; **Duration:** 1 week;

ALZET Comments: microdialysis probes implanted after pumps taken out

P1733: J. S. Kroin, *et al.* Dopamine distribution and behavioral alterations resulting from dopamine infusion into the brain of the lesioned rat. *Journal of Neurosurgery* 1991;74(105-111)

Agents: Dopamine HCl **Vehicle:** Sodium metabisulfite; **Route:** CSF/CNS; CSF/CNS (striatum); **Species:** Rat; **Pump:** 2002; **Duration:** Not Stated;

ALZET Comments: Stability verified in vehicle for 10 days at 37 degrees celsius by HPLC

P1782: E. Katayama, *et al.* Characteristics of rat kidney dopamine receptors and the effects of renal denervation and dopamine infusion on these receptors. *Nephron* 1989;53(358-363)

Agents: Dopamine **Vehicle:** Not Stated; **Route:** SC; **Species:** Rat; **Pump:** Not Stated; **Duration:** 1, 2 weeks;

ALZET Comments: controls received pumps with saline only

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

Agents: Dopamine, 6-hydroxy-; Haloperidol; Sulpiride **Vehicle:** Not Stated; **Route:** CSF/CNS; **Species:** Rat; **Duration:** 8 days;

ALZET Comments: Japanese, English abstract

P1446: J. Garcia de Yebenes, *et al.* Intracerebroventricular infusion of dopamine and its agonists in rodents and primates. *Arthritis Research & Therapy* 1988;34(951-957)

Agents: Dopamine; Lisuride; Pergolide; Hydroxynaphthoxacine, 4-propyl-9- **Vehicle:** HCl; Water; **Route:** CSF/CNS; **Species:** Rat; **Pump:** Not Stated; **Duration:** 1, 2 weeks;

ALZET Comments: PHNO is dopamine D-2 receptor agonist;



P1313: J. G. de Yebenes, *et al.* Continuous intracerebroventricular infusion of dopamine and dopamine agonists through a totally implanted drug delivery system in animal models of Parkinson's disease. *Journal of Neural Transmission Supplementum* 1988;27(141-160)

Agents: Deprenyl; Dopamine; Lisuride; Pargyline; Pergolide **Vehicle:** HCl; Sodium metabisulfite; Water; **Route:** CSF/CNS;

Species: Rat; **Pump:** 2001; **Duration:** 6, 7 days;

ALZET Comments: mp connected to cannula; stability of DA verified in several vehicles, p 146; concomitant DA infusion with pargyline; DA infusion with deprenyl; replacement therapy (dopamine deficiency); stability verified in vitro; antihypertensive; neurodegenerative (Parkinson's disease)

P1291: C. A. Altar, *et al.* Dopamine release and metabolism after chronic delivery of selective or nonselective dopamine autoreceptor agonists. *Molecular Pharmacology* 1988;33(690-695)

Agents: CGS-15855A; Apomorphine; Dopamine, antagonists **Vehicle:** Ascorbic acid; Saline; **Route:** SC; **Species:** Rat; **Pump:** 2ML2; **Duration:** 2, 14 days;

ALZET Comments: comparison of ip injections vs. mp infusion; functionality of mp verified by serum, brain levels; stability verified at 14 days by HPLC

R0077: N. Ray, *et al.* Implantable osmotically powered drug delivery systems. In 'Drug Delivery Systems: Fundamentals and Techniques,' P. Johnson and J. G. Lloyd-Jones (eds.), Ellis Horwood Ltd. , Chichester, England and VCH Verlagsgesellschaft mbH, Weinheim, Federal Republic of Germany 1987;Ch. 7):120-138

Agents: Antipyrine; bleomycin; dopamine HCl; melatonin; methotrexate, sodium; nicotine; prednisolone; radio-isotopes; valproic acid **Vehicle:** ¹⁴C tracer; ³H tracer; **Route:** IA; IP; SC; **Species:** Mice; Rabbit; Rat; **Pump:** Not Stated; **Duration:** Not Stated;

ALZET Comments: ALZA-authored; synoptic review of mp; post op. care (antibiotic); comparison of sc injections vs. mp infusion; pulsed delivery

P1033: R. Hargraves, *et al.* Chronic intrastriatal dopamine infusions in rats with unilateral lesions of the substantia nigra. *Life Sciences* 1987;40(959-966)

Agents: Dopamine **Vehicle:** 3H tracer; Ascorbate; Saline; Sodium metabisulfite; Water; **Route:** CSF/CNS (corpus striatum);

Species: Rat; **Pump:** 2002; **Duration:** 13 days;

ALZET Comments: controls rec'd mp w/veh.; mp connected to cann. in corpus striatum; some groups rec'd unilat. lesions of substantia nigra; mp inf. diff. amounts of agents to diff. groups; pumps primed o'night with saline

P2709: J. G. de Yebenes, *et al.* Continuous intracerebroventricular infusion of dopamine and dopamine agonists through a totally implanted drug delivery system in animal models of Parkinson's disease. *Movement Disorders* 1987;2(3):143-158

Agents: Dopamine; Pargyline; Deprenyl; Lisuride; Pergolide **Vehicle:** HCl; Sodium metabisulfate; **Route:** CSF/CNS; **Species:** Rat; **Pump:** 2001; **Duration:** 6,7 days;

ALZET Comments: controls received mp with vehicles; replacement therapy (lesion in dopamine pathway); stability verified for 1 week by measuring dopamine concentrations and its metabolites at varying time intervals with HPLC; concomitant dopamine infusion w/ pargyline and w/ deprenyl; antihypertensive; neurodegenerative (Parkinson's disease)

P0905: B. Costall, *et al.* Effects of the 5-HT₃ receptor antagonist, GR38032F, on raised dopaminergic activity in the mesolimbic system of the rat and marmoset brain. *British Journal of Pharmacology* 1987;92(881-894)

Agents: Dopamine **Vehicle:** Not Stated; **Route:** CSF/CNS (amygdala); CSF/CNS (nucleus accumbens); **Species:** Monkey; Rat;

Pump: Not Stated; **Duration:** 13 days;

ALZET Comments: Pump model not stated; controls rec'd mp w/ unspecif. vehicle; mp conn. to cannulae in amygdala/rat; mp conn. to cath. in nucleus accumbens/monkey; mp primed overnight; concomit. haloperidol admin.; tissue perf. (amygdala, nucleus accumbens)



P1135: N. J. G. Barnes, *et al.* Behavioural consequences of the infusion of dopamine into the nucleus accumbens of the common marmoset (*callithrix-jacchus*). *Neuropharmacology* 1987;26(9):1327-1335

Agents: Dopamine **Vehicle:** Sodium metabisulfate; **Route:** CSF/CNS (nucleus accumbens); **Species:** Monkey; **Pump:** Not Stated; **Duration:** 13 days;

ALZET Comments: Pump model not stated; controls received mp w/ vehicle; mp connected to cannulae in nucleus accumbens; mp primed overnight; multiple pumps per animal (2)

P0925: B. Ek, *et al.* Increased Beta -adrenoceptor density after 6-hydroxydopamine pretreatment in rat colon and lung. *Acta Physiologica Scandinavica* 1986;127(455-460)

Agents: Dopamine, 6-hydroxy- **Vehicle:** Ascorbic acid; Saline; **Route:** SC; **Species:** Rat; **Pump:** 2001; **Duration:** 3 days;

ALZET Comments: comparison of iv injection vs. mp infusion

P0856: A. J. Bradbury, *et al.* The neurotoxic actions of 6-hydroxydopamine infused into the rat substantia nigra. *Neuroscience* 1986;67(208-212)

Agents: Dopamine, 6-hydroxy- **Vehicle:** Not Stated; **Route:** CSF/CNS (substantia nigra); **Species:** Rat; **Pump:** 2002; **Duration:** 4, 10 days;

ALZET Comments: Controls rec'd mp w/vehicle; mp connected to steel guide cannula in SN; multiple pumps per animal (2); mps primed overnight

P0959: J. C. Barnes, *et al.* Modulation of dopamine function by glycine in the nucleus accumbens of the brain of the rat. *Neuropharmacology* 1986;25(12):1347-1351

Agents: Dopamine; Glycine; Strychnine **Vehicle:** Water; **Route:** CSF/CNS (nucleus accumbens); **Species:** Rat; **Pump:** 2001; **Duration:** 13 days;

ALZET Comments: controls received mp w/vehicle; mp connected to cannula in nucleus accumbens; mps primed overnight at 37C; agents infused sep. & simult.; stability

P0857: J. C. Barnes, *et al.* Lithium and bupropion antagonise the phasic changes in locomotor activity caused by dopamine infused into the rat nucleus accumbens. *Psychopharmacology* 1986;89(311-316)

Agents: Dopamine HCl; Lithium **Vehicle:** Sodium metabisulfite; **Route:** CSF/CNS (nucleus accumbens); IP; **Species:** Rat; **Pump:** 2002; **Duration:** 13 days;

ALZET Comments: controls rec'd mps w/vehicle; mp connected to cannula in NC; mps & injection units primed overnight; lithium admin. ip; agents admin. simult. in 1 group; comparison of ip inject. vs mp infusion

P0740: I. Stromberg, *et al.* Chronic implants of chromaffin tissue into the dopamine-denervated striatum. Effects of NGF on graft survival, fiber growth and rotational behavior. *Experimental Brain Research* 1985;60(2):335-349

Agents: Dopamine; L-DOPA; Nerve growth factor **Vehicle:** Saline; **Route:** CSF/CNS (corpus striatum); **Species:** Rat; **Pump:** 2002; **Duration:** 28 days;

ALZET Comments: comparison of injections vs. mp infusion; mp replaced after 14 days; mp connected to cannula in striatum mounted w/dialysis fiber; l-dopa & dopamine used only to test fiber; 6-OHDA lesions

P0592: S. L. Sendelbeck, *et al.* Spatial distribution of dopamine, methotrexate and antipyrine during continuous intracerebral microperfusion. *Brain Research* 1985;328(251-258)

Agents: Antipyrine; Dopamine HCl; Methotrexate, sodium; Radio-isotopes **Vehicle:** 14C tracer; 3H tracer; CSF, artificial; Sodium fluorescein; **Route:** CSF/CNS (diencephalon); **Species:** Rabbit; **Pump:** 2001; **Duration:** 6 days;

ALZET Comments: Comparison of agents effects; mp primed in saline 16 hr. prior to implant; stability of labelled & unlabelled Dop. & MTX tested by paper chromat. after 7 days at 37C; brain tissue distribution;

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

Agents: Dopamine HCl; Sulpiride **Vehicle:** Nitrogen; Sodium metabisulfite; **Route:** CSF/CNS (nucleus accumbens); IP; **Species:** Rat; **Pump:** Not Stated; **Duration:** 13 days;

ALZET Comments: mp model not stated; comparison of SULT ip injec vs. mp infusion; 2 mp/rat - bilateral infusion; mp primed overnight; vehicles listed used w/DOP; concomitant SULT admin. ip



P0753: A. J. Bradbury, *et al.* Laterality of dopamine function and neuroleptic action in the amygdala in the rat. *Neuropharmacology* 1985;24(12):1163-1170

Agents: Dopamine HCl **Vehicle:** Sodium metabisulfite; **Route:** CSF/CNS (amygdala); **Species:** Rat; **Pump:** 2002; **Duration:** 9 days;

ALZET Comments: mp connected to steel cannula in amygdala; no stress (see pg. 1164)

P0554: K. Nakai, *et al.* Accelerated regeneration of central catecholamine fibers in cat occipital cortex: effects of substance P. *Brain Research* 1984;323(374-379)

Agents: Dopamine HBr, 6-hydroxy-; Substance P **Vehicle:** Not Stated; **Route:** CSF/CNS (occipital cortex); **Species:** Cat (kitten); **Pump:** Not Stated; **Duration:** 1 week;

ALZET Comments: Comparison of agents effects; ALZET not mentioned but author cites previous mp papers as methods reference; cannot be positive substance P deliv. by mp; peptides

P0606: H. Kojima, *et al.* GM1 ganglioside enhances regrowth of noradrenaline nerve terminals in rat cerebral cortex lesioned by the neurotoxin 6-hydroxydopamine. *Neuroscience* 1984;13(4):1011-1022

Agents: Dopamine HCl, 6-hydroxy- **Vehicle:** Ascorbic acid; Saline; **Route:** CSF/CNS (cortex); **Species:** Rat; **Pump:** 2001; **Duration:** 3, 7 days;

ALZET Comments: Cited previous mp paper for 6-OHDA stability

P0495: D. A. Haycock, *et al.* The stability of 6-hydroxydopamine under minipump conditions. *Experimental Brain Research* 1984;56(183-186)

Agents: Dopamine HBr, 6-hydroxy- **Vehicle:** Ascorbic acid; Saline; **Route:** Not Stated; **Species:** Not Stated; **Pump:** Not Stated; **Duration:** Not Stated;

ALZET Comments: Stability of 6-OHDA in 0.4% ascorbic acid at room temp, 20-38C for at least 1 week verified by HPLC-ECD & biologic activity; minipump itself not used in exp

P0439: B. Costall, *et al.* Locomotor hyperactivity caused by dopamine infusion into the nucleus accumbens of rat brain: specificity of action. *Psychopharmacology* 1984;82(174-180)

Agents: Acetylcholine HCl; Aminobutyric acid, Y-; Serotonin bimaleinate; Dopamine HCl; Norepinephrine bitartrate **Vehicle:** Nitrogen; Sodium metabisulfite; **Route:** CSF/CNS (nucleus accumbens); **Species:** Rat; **Pump:** 2002; **Duration:** 13 days;

ALZET Comments: Cholinergic agent; comparison of agents effects; no stress p. 175; stability of substances remaining in pump after 13 days was verified

P0444: B. Costall, *et al.* Long-term consequences of antagonism by neuroleptics of behavioural events occurring during mesolimbic dopamine infusion. *Neuropharmacology* 1984;23(3):287-293

Agents: Dopamine HCl **Vehicle:** Nitrogen; Sodium metabisulfite; **Route:** CSF/CNS (nucleus accumbens); **Species:** Rat; **Pump:** 2002; **Duration:** 13 days;

ALZET Comments: no stress p. 288; pumps primed overnight, bilateral pump implantation; bilateral infusion;

P0391: G. Aguilera, *et al.* Dopaminergic modulation of aldosterone secretion in the rat. *Endocrinology* 1984;114(1):176-181

Agents: Angiotensin II; Dopamine; Metoclopramide **Vehicle:** Not Stated; **Route:** IP; IV; **Species:** Rat; **Pump:** Not Stated; **Duration:** 2 days;

ALZET Comments: simultaneous administration of MCP (iv) w/ All (ip), and MCP (iv) w/ DOP (iv); MCP and All also infused alone, all by mp; peptides

P1255: M. A. Paradiso, *et al.* Effects of intracortical infusion of 6-Hydroxydopamine on the response of kitten visual cortex to monocular deprivation. *Experimental Brain Research* 1983;51(3):413-422

Agents: Dopamine HBr, 6-hydroxy- **Vehicle:** Ascorbate; Saline; **Route:** CSF/CNS (visual cortex); **Species:** Cat (kitten); **Pump:** 2001; **Duration:** 1 week;

ALZET Comments: Multiple pumps per animal (2); 1st pump contained agent and infused into one hemisphere, 2nd pump contained the vehicle only and infused the other hemisphere



P0321: N. W. Daw, *et al.* Effects of 6-hydroxydopamine on visual deprivation in the kitten striate cortex. *Journal of Neuroscience* 1983;3(5):907-914

Agents: Dopamine, 6-hydroxy- **Vehicle:** Ascorbate; Saline; **Route:** CSF/CNS (occipital cortex); **Species:** Cat (kitten); **Pump:** 2001; **Duration:** 1 week;

ALZET Comments: no comment posted

P0378: B. Costall, *et al.* A comparison of the behavioural consequences of chronic stimulation of dopamine receptors in the nucleus accumbens of rat brain effected by a continuous infusion or by single daily injections. *Naunyn-Schmiedeberg's Archives of Pharmacology* 1983;324(27-33

Agents: Dopamine HCl **Vehicle:** Nitrogen; Sodium metabisulfite; **Route:** CSF/CNS (nucleus accumbens); **Species:** Rat; **Pump:** Not Stated; **Duration:** 13 days;

ALZET Comments: mp model not stated; comparison of injection vs. mp infusion; no stress - p. 28; multiple pumps per animal (2); pumps primed overnight before implantation

P0305: M. F. Bear, *et al.* Two methods of catecholamine depletion in kitten visual cortex yield different effects on plasticity. *Nature* 1983;302(245-247

Agents: Dopamine, 6-hydroxy- **Vehicle:** Ascorbate; Saline; **Route:** CSF/CNS (visual cortex); **Species:** Cat (kitten); **Pump:** Not Stated; **Duration:** 1 week;

ALZET Comments: Comparison of injection vs. infusion; multiple pumps per animal (2)

P0440: B. Costall, *et al.* Behavioral and biochemical consequences of persistent overstimulation of mesolimbic dopamine systems in the rat. *Neuropharmacology* 1982;21(327-335

Agents: Dopamine HCl **Vehicle:** Nitrogen; Sodium metabisulfite; **Route:** CSF/CNS (nucleus accumbens); **Species:** Rat; **Pump:** 2002; **Duration:** 13 days;

ALZET Comments: No stress p. 328, 333; 2 pumps implanted simultaneously, bilaterally; pumps primed overnight; post-infusion N-propylnorapomorphine challenge; bilateral infusion;

P0156: T. Kasamatsu, *et al.* Cortical recovery from effects of monocular deprivation: acceleration with norepinephrine and suppression with 6-hydroxydopamine. *Journal of Neurophysiology* 1981;45(2):254-266

Agents: Dopamine HBr, 6-hydroxy-; Norepinephrine HCl, I- **Vehicle:** Saline; **Route:** CSF/CNS (visual cortex); **Species:** Cat (kitten); **Pump:** Not Stated; **Duration:** Not Stated;

ALZET Comments: no comment posted

P0138: T. Kasamatsu, *et al.* Intracortical spread of exogenous catecholamines: effective concentration for modifying cortical plasticity. *The Journal of Pharmacology and Experimental Therapeutics* 1981;217(3):841-850

Agents: Dopamine HBr, 6-hydroxy-; Norepinephrine HCl; Radio-isotopes **Vehicle:** 3H tracer; Ascorbate; Saline; **Route:** CSF/CNS (visual cortex); **Species:** Cat; Cat (kitten); **Pump:** 1701; **Duration:** 1, 3, 7 days;

ALZET Comments: no comment posted

P0033: T. Kasamatsu, *et al.* Restoration of visual cortical plasticity by local microperfusion of norepinephrine. *Journal of Comparative Neurology* 1979;185(1):163-181

Agents: Dopamine, 6-hydroxy-; Norepinephrine; Radio-isotopes **Vehicle:** 3H tracer; Ascorbate; Saline; **Route:** CSF/CNS (visual cortex); **Species:** Cat (kitten); **Pump:** Not Stated; **Duration:** Not Stated;

ALZET Comments: Pumps replaced after 1 week

P0007: J. D. Pettigrew, *et al.* Local perfusion of noradrenaline maintains visual cortical plasticity. *Nature* 1978;271(5647):761-763

Agents: Norepinephrine; Dopamine, 6-hydroxy- **Vehicle:** Saline; Ascorbate; **Route:** CSF/CNS (visual cortex); **Species:** Cat (kitten); **Pump:** 1701; **Duration:** 7 days;

ALZET Comments: Controls received mp with vehicle in other visual cortex; multiple pumps per animal (2); pump/cannula schematic P. 762, Fig. 1