

References on the Administration of Agents to Dogs Using the ALZET® Osmotic Pumps

- P7144 Miyauchi M, Qu ZL, Miyauchi Y, Zhou SM, Pak H, Mandel WJ et al. Chronic nicotine in hearts with healed ventricular myocardial infarction promotes atrial flutter that resembles typical human atrial flutter. *American Journal of Physiology-Heart and Circulatory Physiology* 2005; 288(6):H2878-H2886. >>> Nicotine; SC; Dog (mongrel); 2ML4; 28 days; Functionality of mp verified by nicotine plasma levels; MRI; multiple pumps per animal (2).
- P6756 Sasaki T, Kasuya H, Onda H, Sasahara A, Goto S, Hori T et al. Role of p38 mitogen-activated protein kinase on cerebral vasospasm after subarachnoid hemorrhage. *Stroke* 2004; 35(6):1466-1470. >>> FR167653; IV (jugular); Dog; 7 days; Controls received mp w/ physiological saline; functionality of mp verified by serum FR167653 levels; enzyme inhibitor (p38MAPKinase); cardiovascular; ischemia (cerebral).
- P6627 Doh-ura K, Ishikawa K, Murakami-Kubo I, Sasaki K, Mohri S, Race R et al. Treatment of transmissible spongiform encephalopathy by intraventricular drug infusion in animal models. *JOURNAL OF VIROLOGY* 2004; 78(10):4999-5006. >>> Quinacrine; chloroquine; amphotericin B; E-64d; pentosan polysulfate; PBS; water, distilled; DMSO; SC; CSF/CNS; Rat; mice; dog; 2 months; 4 weeks; Controls received mp w/ vehicle; dose-response (fig. 2); no stress (see pg. 5004); stress/adverse reaction: (see pg. 5002) PPS at highest dose (20mg/kg/day) showed hemorrhage in the SC area surrounding the mp; enzyme inhibitor (cysteine protease [E-64d]); 25% DMSO for E-64d.
- P6259 Yokota T, Honda K, Tsuruya Y, Nomiya M, Yamaguchi O, Gotanda K et al. Functional and anatomical effects of hormonally induced experimental prostate growth: A urodynamic model of benign prostatic hyperplasia (BPH) in the beagle. *PROSTATE* 2004; 58(2):156-163. >>> Dihydrotestosterone, 5 alpha-; estradiol, 17 beta; SC; Dog; 2ML4; 28 days;
- P7118 Gilberto DB, Motzel SL, Bone AN, Burns CL, Zeoli AH, Lodge KE et al. Use of three infusion pumps for postoperative administration of buprenorphine or morphine in dogs. *JAVMA* 2002; 220(11):1655-1660. >>> Buprenorphine; SC; Dog; 2ML1; 48 hours; Functionality of mp verified by residual volume and serum buprenorphine levels; comparison of infudisk, pegasus vs. ALZET vs. mp; multiple pumps per animal (3,4); mp primed overnight in sterile saline; paper provides list of most possible negative outcomes. Upon pump removal the incisions were closed with tissue glue; ALZET pump was the most cost affective method.
- P5417 Weckbecker G, Briner U, Lewis I, Bruns C. SOM230: A new somatostatin peptidomimetic with potent inhibitory effects on the growth hormone/insulin-like growth factor-I axis in rats, primates, and dogs. *Endocrinology* 2002; 143(10):4123-4130. >>> Octreotide; SOM230; Water, sterile; SC; Rat; monkey; dog; 2002; 2ML1; 2ML2; 7, 14, or 56 days; Controls received mp w/ vehicle; functionality of mp verified by IGF-I plasma levels; long-term study, pumps replaced every 2 weeks; peptides; Somatostatin analogs; 2002 pumps used in rats; 2ML2 used in monkeys; 2ML1 pumps used in dogs; octreotide also called SMS 201-995.
- P5145 Meshulam Y, Cohen G, Chapman S, Alkalai D, Levy A. Prophylaxis against organophosphate poisoning by sustained release of scopolamine and physostigmine. *J Appl Toxicol* 2001; 21:S75-S78. >>> Scopolamine; Physostigmine; Propylene glycol; Ethanol; Water; Acetic acid, glacial; SC; DOG; 2001; 24 or 48 hours; functionality of mp verified by plasma scopolamine & physostigmine levels; dose-response (table, p. S77); toxicology; vehicle was 10% ethanol, 20% PG, 70% water, 0.0035% AA; mentions benefits of infusion via pump (p. S77).
- P4992 Zhou SM, Cao JM, Tebb ZD, Ohara T, Huang HLA, Omichi C et al. Modulation of QT interval by cardiac sympathetic nerve sprouting and the mechanisms of ventricular arrhythmia in a canine model of sudden cardiac death. *J Cardiovasc Electrophysiol* 2001; 12:1068-1073. >>> Nerve growth factor; Saline; Albumin, bovine serum; CSF/CNS (stellate ganglion); dog; 2ML4; 5

weeks; controls received mp w/ vehicle; tissue perfusion (left and right stellate ganglion); cardiovascular; peptides; vehicle was saline with 0.1% bovine serum albumin.

P5557 Senzaki H, Paolocci N, Gluzband YA, Lindsey ML, Janicki JS, Crow MT et al. β -blockade prevents sustained metalloproteinase activation and diastolic stiffening induced by angiotensin II combined with evolving cardiac dysfunction. *Circ Res* 2000; 86:807-815. >>> Angiotensin II; Acetic acid; IV; Dog; 2ML1; 6-7 days; Cardiovascular; peptides.

P4763 Meier S, Wright PJ. The induction of parturition in the bitch using sodium cloprostenol. *Theriogenology* 2000; 54:457-465. >>> Cloprostenol, sodium; SC; dog (pregnant); 2001; Dose-response (graph p. 460); varying doses (0.875 - 4.5 μ g/kg - day); higher doses caused polydipsia.

R0210 Meythaler JM. Intrathecally delivered medications for spasticity and dystonia. *Spinal Drug Delivery* 1999;513-529. >>> Baclofen; SC; Dog; 28 days;

P4480 Ueda Y, Kitakaze M, Imakita M, Ishibashi-Ueda H, Minamino T, Asanuma H et al. Glycoprotein IIb/IIIa antagonist FK633 could not prevent neointimal thickening in stent implantation model of canine coronary artery. *Arterioscler Thromb Vasc Biol* 1999; 19:343-347. >>> FK-633; SC; dog; 2ML4; 3 months; controls received mp w/ vehicle; long-term study, pump replaced after 1 and 2 months; no stress (p. 344); cardiovascular.

P4590 Senzaki H, Gluzband YA, Pak PH, Crow MT, Janicki JS, Kass DA. Synergistic exacerbation of diastolic stiffness from short-term tachycardia-induced cardiodepression and angiotensin II. *Circ Res* 1998; 82:503-512. >>> Angiotensin II; Acetic acid; dog; 4-7 days; controls received mp w/angiotensin II only; functionality of mp verified by plasma levels; stability verified by HPLC; peptides, cardiovascular.

P4511 Fitzgerald SM, Stevenson KM, Evans RG, Anderson WP. Systemic hemodynamic responses to chronic angiotensin II infusion into the renal artery of dogs. *Am J Physiol (Regulatory Integrative Comp Physiol 42)* 1997; 273:R1980-R1989. >>> Angiotensin II; IV (inferior vena cava); dog; 2ML4; 28 days; peptides.

P3898 Mori T, Asano T, Nagata K, Ishida T, Abe T. An improved canine model of subarachnoid hemorrhage using intrathecal indwelling catheters. *J Vet Med Sci* 1997; 59(9):825-828. >>> Dye, toluidine blue; Saline; CSF/CNS (subarachnoid space, intrathecal); dog; 2ML1; 7 days; no stress (see pg. 826); controls received mp w/saline; comparison of injections vs. mp; brain tissue distribution.

P3779 Watts JR, Wright PJ. Calcium cloprostenol administered at a continuous low dosage induces luteolysis and abortion in bitches. *Theriogenology* 1997; 48:1313-1328. >>> Cloprostenol, calcium; Water, sterile; SC; dog; 2001; 7 days; controls received mp w/vehicle; dose-response; no stress (see pg. 1318); toxicology; "The miniosmotic pump was well tolerated..and its insertion and removal were easy." (pg. 1318).

P3740 Chen C, Hanson SR, Keefer LK, Saavedra JE, Davies KM, Hutsell TC et al. Boundary layer infusion of nitric oxide reduces early smooth muscle cell proliferation in the endarterectomized canine artery. *J Surg Res* 1997; 67:26-32. >>> Proline, I-; Proline, nitric oxide-; NaOH; IA (femoral); dog; 2ML2; 7 days; controls received mp w/ proline to contralateral vessel; stability verified by in vitro assay; half-life (pg. 27); cardiovascular; constructed local infusion device and attached to mp via catheter.

P4646 Chen C, Hughes JD, Mattar SG, Hanson SR, Lumsden AB. Transgraft infusion of heparin to prevent early thrombosis of expanded PTFE grafts in canine femoral veins. *Ann Vasc Surg* 1996; 10:147-155. >>> Heparin; PBS; IV (femoral); dog; 2ML2; 14 days; controls received mp w/

vehicle; functionality of mp verified by pump residual volume & reservoir tubing patency; infusion to a vascular graft.

P4428 Mattar SG, Hanson SRPGFCC, Hughes JD, Cook JE, Shen C, Noe BA et al. Local infusion of FGF-Saporin reduces intimal hyperplasia. *J Surg Res* 1996; 60:339-344. >>> Fibroblast growth factor; Saporin; Sodium citrate; NaCl; EDTA; IA (carotid); dog; 2002; 14 days; controls received mp w/vehicle; stability verified for 14 days by cellular assay; peptides; Saporin-FGF2 conjugate was infused; pump placed externally; Saporin is a potent ribosome-inactivating protein.

P3388 Sundquist K, Larson EK, Marks Jr SC. Altering tooth eruption by blocking bone resorption - the local delivery of bafilomycin A1. *Connective Tissue Res* 1995; 32(1-4):159-163. >>> Bafilomycin A1; DMSO; Saline; bone; dog; 2002; no duration posted; contralateral controls received mp w/vehicle; tissue perfusion (bone crypts of mandibular fourth molar).

P3359 Marks Jr SC, Sundquist KT. Bafilomycin A1 in bone resorption and tooth eruption in dogs. *Eur J Oral Sci* 1995; 103:231-235. >>> Bafilomycin A1; DMSO; Saline; bone; dog; 1, 3, 4 weeks; tissue perfusion (bone crypts of mandibular fourth molar); pumps replaced at 2 weeks.

P3232 Leal JA, Bush EB, Holst MR, Cybulski VA, Nguyen AT, Rhutasel NS et al. A-75998 and other GnRH antagonists suppress testosterone in male beagle dogs. A comparison of single injection, multiple injections and infusion administration. *Endocrine* 1994; 2:921-927. >>> A-75998; RS-26306; Propylene glycol; Saline; Sodium acetate buffer; SC; dog; 1003D; 3 days; comparison of single and 5x daily injections vs. mp; infusion dose was four-fold lower than daily injection for same results.

P3095 Willette RN, Zhang H, Mitchell MP, Sauermelch CF, Ohlstein EH, Sulpizio AC. Nonpeptide endothelin antagonist. Cerebrovascular characterization and effects on delayed cerebral vasospasm. *Stroke* 1994; 25(12):2450-2456. >>> SB-209670; CSF/CNS (cisterna); dog; 2ML1; 7 days; controls received mp with vehicle; +/- SB-209670 is a non-peptide endothelin antagonist.

P2976 Sundquist KT, Marks Jr SC. Bafilomycin A1 inhibits bone resorption and tooth eruption in vivo. *J Bone and Min Res* 1994; 9(10):1575-1582. >>> Bafilomycin A1; DMSO; Saline; bone; dog; no duration posted; controls received mp w/ vehicle or no treatment; tissue perfusion (bone crypts of mandibular fourth molar); stability verified in vitro for 2 weeks at 37 degrees C; enzyme inhibitor; dogs given prophylactic im penicillin for first postoperative week; local infusion used because systemic delivery may cause lethal side effects; bafilomycin A1 is a specific inhibitor of vacuolar H⁺-ATPases.

P2777 Wang W. Chronic administration of aldosterone depresses baroreceptor reflex function in the dog. *Hypertension* 1994; 24:571-575. >>> Aldosterone; Saline; SC; dog; 2ML2; 10 days; controls received mp w/ saline.

P3203 Johnson WT, Johnson GK, Todd GL, Fung YK. Effects of systemic and topical nicotine on pulpal blood flow in dogs. *Endod Dent Traumatol* 1993; 9:71-74. >>> Nicotine; SC; dog; 28 days; controls received mp with saline; comparison of topical nicotine vs. mp.

P3192 Himura Y, Felten SY, Kashiki M, Lewandowski TJ, Delahanty JM, Liang C-S. Cardiac noradrenergic nerve terminal abnormalities in dogs with experimental congestive heart failure. *Circulation* 1993; 88:1299-1309. >>> Norepinephrine; SC; dog; 2ML4; 8 weeks; controls received mp with saline; long-term study, pumps replaced after 3-4 weeks.

P3059 Yoshimura K, Horiuchi M, Konishi M, Yamamoto K. Physical dependence on morphine induced in dogs via the use of miniosmotic pumps. *J Pharm & Tox Meth* 1993; 30(2):85-95. >>>

Morphine HCl; Saline; SC; dog; 2ML1; 8 days; functionality of mp verified by plasma levels; comparison of injections vs. mp; dependence; infusion plasma levels were 1/5 the maximal concentration of injected animals, and were far more stable.

P2527 Miller SC, Marks SC. Local stimulation of new bone formation by prostaglandin E1: quantitative histomorphometry and comparison of delivery by minipumps and controlled-release pellets. *Bone* 1993; 14:143-151. >>> Prostaglandin E1; Emulphor; Ethanol; bone (mandible); dog; 3 weeks; controls received undiluted vehicle which was 1:1 mixture of Emulphor:80% ETOH; tissue perfusion (bone); comparison of pellets vs. mp; pumps replaced weekly; authors state that subperiosteal bone formation was greater for comparable doses when PGE1 was delivered by minipumps as compared to pellets.

S1414 Bush, E. N., Rhutasel, N. S., Diaz, G. J., Nguyen, A. T., Leal, J. A., Haviv, F., Fitzpatrick, T. D., Nichols, C. J., Swenson, R. E., Nellans, H. N., Dodge, P. W., Miller, J. D., and Greer, J. Pharmacokinetics and bioavailability of A-75998, a novel gonadotropin-releasing hormone antagonist, in rats, dogs and monkeys. *Pharmacologist* 1992; 34(3):50. >>> A-75998; SC; dog; 3 days; dose-response; LHRH antagonist.

S1211 Hempel, D. M., Kiuchi, K., Graham, R. M., Vatner, S. F., and Vatner, D. E. α 1-adrenergic vascular desensitization. *FASEB Journal* 1992; 6(4):3064. >>> Amidephrine; SC; dog; no duration posted; α 1 agonist.

S1206 Kiuchi, K., Uemura, N., Vatner, D. E., Graham, R. M., and Vatner, S. F. Role of neural mechanisms in α 1-adrenergic vascular desensitization in conscious dogs. *FASEB Journal* 1992; 6(4):1290. >>> Amidephrine; SC; dog; 3-4 weeks; α 1 agonist.

P3311 Marks Jr SC, Larson EK, Bowman BM, Miller SC. Local induction of alveolar bone in adult dogs by infusion of prostaglandin E1. *Biological Mechanisms of Tooth Movement and Craniofacial Adaptation* 1992;137-143. >>> Prostaglandin E1; Emulphor; Ethanol; bone (mandible); dog; 3 weeks; controls received mp w/vehicle; tissue perfusion (bone); comparison of pellets vs. mp; pumps replaced weekly; "...we estimated that PGE delivered by minipump produces 25 to 30% more bone than the same amount of starting material delivered by pellet." (p.139).

P3071 Nichols AJ, Koster PF, Brooks DP, Ruffolo Jr RR. Effect of fenoldopam on the acute and subacute nephrotoxicity produced by amphotericin B in the dog. *J Pharmacol Exp Ther* 1992; 260(1):269-274. >>> Fenoldopam mesylate; Water, distilled; Citric acid; Propylene glycol; Sodium metabisulfate; IV (jugular); dog; 2ML2; no duration posted; controls received mp with vehicle; multiple pumps per animal (2).

P2342 Kiuchi K, Vatner DE, Uemura N, Bigaud M, Hasebe N, Hempel DM et al. Mechanisms of alpha-adrenergic vascular desensitization in conscious dogs. *Circ Res* 1992; 71(5):1185-1199. >>> Amidephrine mesylate; Saline; SC; dog; 3,4 weeks; pumps replaced weekly; multiple pumps per animal (2 or 3) to elevate AMD levels (pg.1186).

P2110 Yonezawa A, Kawamura S, Ando R, Tadano T, Kisara K, Kimura Y. Chronic clonidine treatment and its termination: effects on penile erection and ejaculation in the dog. *Life Sci* 1992; 51:1999-2007. >>> Clonidine HCl; Saline; SC; dog; 2ML4; 4 weeks; tolerance; antihypertensive.

P2035 Stewart JM, Patel MB, Wang J, Ochoa M, Gewitz M, Loud AV et al. Chronic elevation of norepinephrine in conscious dogs produces hypertrophy with no loss of LV reserve. *Am J Physiol* 1992; 262(31):H331-H339. >>> Norepinephrine; SC; dog; 2ML4; 28 days; an additional pump was implanted sc on day 10 to maintain plasma levels of norepinephrine p. 332.

- S1331 Kiuchi, K., Uemura, N., Vatner, D. E., Bigaud, M., Graham, R. M., and Vatner, S. F. Effects of chronic α 1-adrenergic receptor stimulation in conscious dogs. *FASEB Journal* 1991; 5(4):7995. >>> Amidephrine; SC; dog; 3-4 weeks; α 1 adrenergic agonist.
- P2409 Patel MB, Stewart JM, Loud AV, Anversa P, Wang J, Fiegel L et al. Altered function and structure of the heart in dogs with chronic elevation in plasma norepinephrine. *Circulation* 1991; 84(5):2091-2100. >>> Norepinephrine; SC; dog; 2ML4; 28 days; no comment posted.
- P1940 Kobayashi H, Hayashi M, Kobayashi S, Kabuto M, Handa Y, Kawano H et al. Cerebral vasospasm and vasoconstriction caused by endothelin. *Neurosurgery* 1991; 28(5):673-679. >>> Endothelin-1; Water; CSF/CNS (spinal cord, intrathecal); dog; 2001; 7 days; controls received sham op or mp w/ water; peptides.
- P1853 Johnson GK, Todd GL, Fung YK, DuBois LM. Effects of topical and systemic nicotine on gingival blood flow in dogs. *J Dent Res* 1991; 70(5):906-909. >>> Nicotine sulfate; SC; dog; 28 days; no comment posted.
- P3140 Marks SC, Miller SC. Site-directed formation of new lamellar bone in adult dogs by infusion of prostaglandin E1. In ' Fundamentals of bone growth : methodology and applications', A D Dixon, B G Sarnat and D A N Hoyte (eds), CRC Press, Boca Raton 1990;(Chp. 37):375-381. >>> Prostaglandin E1; Emulphor; Ethanol; bone (mandible); dog; 5 weeks; control side of mandible received mp with vehicle; tissue perfusion (bone); long-term study, pumps replaced weekly; each dog served as its own control -- one mp with PGE1 to one side and one with vehicle to the other side of mandible; pump implanted in superficial neck tissues; dogs given penicillin orally (100,000 U/d) for first post-operative week.
- P1727 Albino-Teixeira A, Azevedo I, Branco D, Osswald W. Purine agonists prevent trophic changes caused by sympathetic denervation. *Eur J Pharmacol* 1990; 179:141-149. >>> Adenosine; Adenosine, N-ethylcarboxamido-; Inosine; Norepinephrine; IV (saphenous); dog; 2ML1; no duration posted; functionality of mp verified by inspecting catheter for clots, observing collapsed pump reservoir, and measuring residual drug solution.
- P1601 Doursout M, Chelly JE, Wouters P, Lawrence C, Liang Y, Buckley JP. Effect of gender on centrally induced angiotensin II hypertension in dogs. *Hypertension* 1990; 15(2):117-120. >>> Angiotensin II; CSF/CNS; dog; 2ML4; 4 weeks; peptides.
- S1304 Korte, D. W., Frost, D. F., Zaucha, G. M., Waring, P. P., Clifford, C. B., and Wheeler, C. R. 28-day toxicity in beagle dogs of physostigmine salicylate administered via subcutaneously implanted ALZET osmotic minipumps. *Proc.West.Pharmacol.Soc.* 1989; 32:159. >>> Physostigmine salicylate; SC; dog; 28 days; toxicology.
- S0879 Patel, M. B., Ochoa, M., and Hintze, T. H. Diastolic properties of the left ventricle in conscious dogs with chronically elevated plasma norepinephrine (NE) levels. *FASEB Journal* 1989; 3(3):A1172. >>> Norepinephrine; SC; dog; 28 days; no comment posted.
- P1476 Teixeira AA, Azevedo I, Branco D, Rodrigues-Pereira E, Osswald W. Sympathetic denervation caused by long-term noradrenaline infusions; prevention by desipramine and superoxide dismutase. *Br J Pharmacol* 1989; 97:95-102. >>> Desipramine HCl; Norepinephrine; Superoxide dismutase; EDTA; Heparin; Saline; IV (saphenous); dog; 2ML1; 5 days; dose-response; implanted sc above the knee; functionality of mp verified by visual inspection of sectioned pump and by serum levels; tissue perfusion.
- P1453 Fogh K, Hansen ES, Herlin T, Knudsen V, Henriksen TB, Ewaid H et al. 15-Hydroxy-eicosatetraenoic acid (15-HETE) inhibits carrageenan-induced experimental arthritis and

reduces synovial fluid leukotriene B4 (LTB4). Prostaglandins 1989; 37(2):213-228. >>> HETE, 15-; Saline; knee (articular cavity); dog; 2ML2; 2ML4; 10 days; tissue perfusion (knee joint).

S1001 Uemura, N., Nejima, J., Hintze, T. H., Vatner, D. E., Graham, R. M., Homcy, C. J., and Vatner, S. F. Desensitization to norepinephrine and isoproterenol in conscious dogs. The Physiologist 1988; 31(4):82. >>> Isoproterenol; Norepinephrine; SC; dog; 3-4 weeks; dose-response (table).

S0914 Granger, J. P., Stacy, D. L., Solhaug, M. J., and La Rock, M. Effects of long-term elevation of circulating levels of atrial natriuretic factor on arterial pressure regulation in angiotensin II hypertensive dogs. Presented at American Physiology Society/American Society for Pharmacology and Experimental Therapeutics joint meeting, Oct.9-13, Montreal, Canada 1988;125. >>> Angiotensin II; Atrial natriuretic factor; dog; 7, 14 days; dose-response; functionality of mp verified by plasma levels.

P3028 Marks Jr SC, Miller SC. Local infusion of prostaglandin E1 stimulates mandibular bone formation in vivo. J Oral Pathol 1988; 17:500-505. >>> Prostaglandin E1; Emulphor; Ethanol; bone (mandible); dog; 3 weeks; controls received mp with vehicle; tissue perfusion (bone); pumps replaced weekly; stability: 70% of original activity after 1 week at 37 degrees C; penicillin given for 1 week post-surgery.

P1415 Guilmette RA, Muggenburg BA. Reducing the radiation dose from inhaled americium-241 using continuously administered DTPA therapy. Int J Radiat Biol 1988; 53(2):261-271. >>> ZnDTPA; Saline; SC; dog; 2ML4; 64 days; comparison of iv injections vs. mp infusion; functionality of mp verified in vitro; pump replaced at day 28 and 50; ZnDTPA is a chelating agent.

S0736 Vatner, D. E., Hintze, T., Knight, D., Nejima, J., Manders, T., Thomas, J. X., Homcy, C. J., Graham, R. M., and Vatner, S. F. Effects of chronically elevated plasma levels of norepinephrine on cardiac beta-adrenergic receptors. The Physiologist 1987; 30(4):194. >>> Norepinephrine; dog; 3 weeks; dose-response (text).

S0735 Nejima, J., Manders, W. T., Hitze, T. H., Thomas, J. X., Knight, D. R., Vatner, D. E., and Vatner, S. F. Cardiac nerves prevent functional desensitization to norepinephrine in the intact, conscious dog. The Physiologist 1987; 30(4):194. >>> Norepinephrine; SC; dog; no duration posted; Pump not stated; study included intact and cardiac denervated dogs.

S0734 Manders, W. T., Nejima, J., Hintze, T. H., Vatner, D. E., Knight, D. R., Thomas, J. X., and Vatner, S. F. Functional desensitization to isoproterenol challenge, but not norepinephrine, in conscious dogs with chronically elevated plasma levels of norepinephrine. The Physiologist 1987; 30(4):194. >>> Norepinephrine; dog; 2-3 days; Pump model not stated; concomitant infusion of NE and ISO; comparison of acute infusion vs. mp infusion.

S0732 Tamrat, M. R. and Cothran, L. N. Left ventricular function in chronic angiotensin hypertension. The Physiologist 1987; 30(4):185. >>> Angiotensin II; IV (jugular); dog; 28 days; Pump model not stated; mp connected to jugular vein; peptides.

S0724 Stone, J. D., Caldwell, R. W., and Tuttle, R. R. Metabolic conditioning effects of KM-13, a novel sympathomimetic amine, in dogs. The Pharmacologist 1987; 29(3):134. >>> KM-13; SC; dog; 2 weeks; mp model not stated.

S0698 Patel, M. B., King, B. D., and Hintze, T. H. Norepinephrine induces myocardial hypertrophy independent of altered hemodynamics in mongrel dogs. Fed.Proc. 1987; 46(4):1255. >>> Norepinephrine; SC; dog; 28 days; no comment posted.

P1056 King BD, Sack D, Kichuk MR, Hintze TH. Absence of hypertension despite chronic marked elevations in plasma norepinephrine in conscious dogs. *Hypertension* 1987; 9:582-590. >>> Norepinephrine; SC; dog; 2ML4; 28 days; dose-response; functionality of mp verified.

P1027 Ader M, Agajanian T, Finegood DT, Bergman RN. Recombinant deoxyribonucleic acid-derived 22K- and 20K-human growth hormone generate equivalent diabetogenic effects during chronic infusion in dogs. *Endocrinology* 1987; 120(2):725-731. >>> Growth hormone, human; SC; dog; 2ML2; 12 days; pumps primed in sterile water overnight before implantation; functionality of mp verified upon removal.

P0994 Malluche HH, Faugere M-C, Friedler RM, Matthews C, Fanti P. Calcitriol, parathyroid hormone, and accumulation of aluminum in bone in dogs with renal failure. *J Clin Invest* 1987; 79:754-761. >>> Parathyroid hormone, bovine 1-34; Albumin; HCl; Saline; SC; dog; 2001; 8 months; controls received mp w/vehicle; pumps replaced every 12 days; replacement therapy (thyroparathyroidectomy); no stress (see pg. 755); long-term study.

S0589 Sandow, J., Seidel, H. R., von Rechenberg, W., and Brunk, R. Suppression of testosterone secretion in dogs by a long-acting formulation of the LHRH agonist buserelin. *Acta Endocrinologica* 1986; 111(274):77. >>> Buserelin; SC; dog; 2-4 weeks; unclear how mp was used; long-acting formulation of buserelin made from a biodegradable polymer; peptides.

P0866 Malluche HH, Matthews C, Faugere M, Fanti P, Endres DB, Friedler RM. 1,25-Dihydroxyvitamin D maintains bone cell activity, and parathyroid hormone modulates bone cell number in dogs. *Endocrinology* 1986; 119(3):1298-1304. >>> Parathyroid hormone, bovine 1-34; Albumin; HCl; Saline; SC; dog; 2002; 8 months; controls rec'd mp w/vehicle; pumps replaced every 12 days; mp infusion of PTH in comb. with vit. D treatment; replacement therapy (thyroparathyroidectomy); no stress or infection (see p.1299); long-term study; peptides.

S0466 Sun, Y. S., Brunnicardi, F. C., Druck, P., Walfisch, S., Berlin, S. A., Chance, R. E., Gingerich, R. L., Elahi, D., and Anderson, D. K. Reversal of abnormal glucose metabolism in chronic pancreatitis by pancreatic polypeptide (PP) administration. Presented at the 1985 Digestive Disease Meeting, May 12-15, New York, NY 1985;A-196. >>> Pancreatic polypeptide; SC; dog; 2002; 2 weeks; mp use verified, though ALZET not mentioned in abstract; peptides.

R0059 Fara JW. Physiological limitations: gastric emptying and transit of dosage forms. In 'Rate Control in Drug Therapy,' L F Prescott and W S Nimmo (eds), Churchill Livingstone, New York 1985;144-150. >>> PO; dog; no duration posted; ALZA-authored; pump swallowed empty; gastric transit comparison of objects varying in size, swallowed w/ or w/o a meal.

P3090 Wright TP, Sugerman HJ, Tatum JL, Hirsch JI, Sharp SE, Qureshi GD. Comparison of indium 111-labeled platelets v leukocytes in a pyogenic abscess. *Arch Surg* 1985; 120:137-141. >>> Morphine sulfate; SC; dog; 2ML1; no duration posted; Immunology; multiple pumps per animal (2).

P0759 Beck A, Grasmugg B, Singer E, Bacher S, Raberger G. Angiotensin-induced hypertension in conscious dogs: biochemical parameters and baroreceptor reflex. *Cardiovasc Res* 1985; 19(11):721-726. >>> Angiotensin II; Isoproterenol; Ascorbic acid; Water; IV (jugular); dog; 2ML4; 28 days; mp connected to tygon catheter in jugular vein; mp implanted sc; dose-response data (plasma levels and blood pressure); agents infused simultaneously; hypertension; peptides.

P0752 McRae GI, Roberts BB, Worden AC, Bajka A, Vickery BH. Long-term reversible suppression of oestrus in bitches with nafarelin acetate, a potent LHRH agonist. *J Reprod Fertil* 1985; 74(2):389-397. >>> Nafarelin acetate; Propylene glycol; Water; SC; dog; 2002; 2ML4; 18

months; comparison of injection vs. infusion; pump replaced after 2 or 4 weeks; long-term study; dose-response data; contraception in dogs; peptides.

P0717 Kempainen RJ, Thompson FN, Lorenz MD, Brown J. Effects of continuous a(1-24)ACTH infusion in the dog. *Horm Metab Res* 1985; 17:58-62. >>> ACTH(1-24), a-; IV (jugular); dog; 2ML1; 2 weeks; mp replaced on day 7; dose-response data; controls received empty mp; mp attached to silastic rubber catheter in jugular vein; peptides.

P0674 Liu T, Sutherland DER, Chinn PL, Najarian JS. Effect of a cyclic hexapeptide analog (L363,586) of somatostatin on the function of pancreas grafts in dogs. *J Surg Res* 1985; 39(1):39-45. >>> L-363586; Saline; SC; dog; 2ML1; 1 week; exocrine inhibition promotes transplant acceptance; comparison of timing of drug delivery and grafting; L-363586 is a cyclic hexapeptide somatostatin analog; transplantation; half-life in dogs is 40 min. and in human is 1 hour.

S0396 Beck, A., Grasmugg, B., Bacher, S., and Raberger, G. Attenuation of baroreceptorreflex-sensitivity in conscious, hypertensive dogs. *IUPHAR 9th International Congress of Pharmacology Abstracts*, London, Macmillan Press Ltd. 1984;1264P. >>> Angiotensin II; Isoproterenol; IV (jugular); dog; 2ML4; 4 weeks; peptides.

S0363 Fujimaki, M., Eguchi, T., and Bravo, E. L. Neurohumoral and metabolic responses to chronic intracerebroventricular angiotensin II (IVT All) infusion in trained, conscious dogs. 7th International Congress of Endocrinology Abstracts, July 1-7, Quebec City, Canada, Excerpta Medica, Princeton 1984;553. >>> Angiotensin II; Saline; CSF/CNS; dog; 1 week; peptides.

P0545 Holtz J, Sommer O, Bassenge E. Development of specific tolerance to nicotine infusions in dogs on chronic nicotine treatment. *Klin Wochenschr* 1984; 62(2):51-57. >>> Nicotine salicylate; Saline; Sodium salicylate; SC; dog; 5-8 weeks; comparison of acute iv infusion/ injec vs. chronic mp infusion; pump replaced every week; long-term study; no stress p. 53; pumping rate verified at 38C; infection at implant site in 1 dog.

P0524 Levy M, Wexler MJ. Subacute endotoxemia in dogs with experimental cirrhosis and ascites: effects on kidney function. *Can J Physiol Pharmacol* 1984; 32(6):673-677. >>> Endotoxin, E. coli; Saline; IV (jugular); dog; 2001; 2ML1; 1 week; used diff. pumps in same animal to deliv. variable dosage; solubility of endotoxin in mp max. of 12-15 mg/ml; mp functionality verified.

P0501 Chvapil M, Weinstein PR, Misiorowski RL, Telles D, Rankin L. Development of topical BAPN delivery system for acute spinal cord injury in dogs. *J Biomed Mater Res* 1984; 18:757-769. >>> Aminopropionitrile fumarate, B-; CSF/CNS (spinal cord, intrathecal); dog; 2ML2; no duration posted; Author states use of 2ML2 pump w/ delivery rate of 10ul/h - this is an error; delivery rate verified - possibly a 2ML1 mp was used; advantages of mp p. 768.

P0455 Oshima T, McCluskey ER, Honda A, Needleman P. Pharmacological manipulation of canine cyclooxygenase and thromboxane synthetase in vivo: differential renal and platelet recovery rates. *J Pharmacol Exp Ther* 1984; 229(2):598-602. >>> Acetylsalicylic acid; DMSO; Saline; IV (superficial cervical vein); dog; 2ML1; 3 days; pumps primed for 4 hrs. before implant; used prefilled catheter in vein; greater solubility of ASA in DMSO allowed greater concentration in smaller total volume.

P0400 Stevenson RW, Parsons JA, Podbesek RD, Reeve J. Changes in plasma calcium and in radiocalcium kinetics after termination of 5-week infusions of synthetic parathyroid peptide in dogs. *Acta Endocrinol* 1983; 104:462-467. >>> Parathyroid hormone, human 1-34; Caproic acid, E-amino-; SC; dog; 4 weeks; pump replaced every week; mp used to avoid infection associated with 4 wk. iv cannula; no stress (infection) see p. 463; peptides.

P0325 Podbesek R, Edouard C, Meunier PJ, Parsons JA, Reeve J, Stevenson RW et al. Effects of two treatment regimes with synthetic human parathyroid hormone fragment on bone formation and the tissue balance of trabecular bone in greyhounds. *Endocrinology* 1983; 112(3):1000-1006. >>> Parathyroid hormone, human 1-34; SC; dog; 5-6 months; comparison of pulsatile injec. vs. mp infusion; pump replaced weekly; comparison of human clinical data vs. animal; long-term study; peptides.

S0143 Stevenson, R. W. and Parsons, J. A. Chemical induction of diabetes in the dog and restoration of fasting normoglycaemia by insulin minipump implanted subcutaneously. *Diabetologia* 1981; 20(6):675. >>> Insulin; SC; dog; 1 week; peptides.

P0179 Podbesek RD, Stevenson R, Zanelli GD, Edouard C, Meunier PJ, Reeve J et al. Treatment with human parathyroid hormone fragment (hPTH 1-34) stimulates bone formation and intestinal calcium absorption in the greyhound: comparison with data from the osteoporosis trial. 7th Int'l Conf on Calcium Regulating Hormones, Estes Park, Colorado, Sept 5-9, 1980 In 'Hormonal Control of Calcium Metabolism,' D V Cohn and R V Talmage (eds), Excerpta Medica, Amsterdam 1981;118-123. >>> Parathyroid hormone, human 1-34; SC; dog; 6-8 months; pumps replaced; long-term study; comparison of intermittent injections vs. infusion; peptides.

S0106 Brown, C. J, Thrasher, T. N., Keil, L. C., and Ramsay, D. J. Chronic cerebroventricular infusions of angiotensin II stimulate excessive drinking but not salt appetite in dogs. *Society for Neuroscience Abstracts*, 10th Annual Meeting, Nov.9-14, Cincinnati, OH 1980; 6:529. >>> Angiotensin II; CSF/CNS; dog; 1 week; peptides.

P0089 Vickery BH, McRae GI, Kent JS, Tomlinson RV. Manipulation of duration of action of a synthetic prostaglandin analogue (TPT) assessed in the pregnant beagle bitch. *Prostaglandins Med* 1980; 5(2):93-100. >>> Prostaglandin analog (TPT); Ethanol; Sodium phosphate; SC; dog; 1-2 days; comparison of injections sc vs. infusion.

S0052 Yates, F. E., Gold, M. N., and Cohen, R. R. Oscillations of plasma glucose: dependence on periodicity of insulin secretion. Presented at the 61st Annual Meeting of the Endocrine Society, June 13-15, Anaheim, CA 1979;0. >>> Insulin; SC; dog; no duration posted; ALZA-authored.

S0041 Ramsay, D. J. and Reid, I. A. Salt appetite in dogs. *Fed.Proc.* 1979; 38(3):971. >>> Angiotensin II; IV; dog; 4 hours; peptides.