



References on the Administration of Neuropeptide Y Using ALZET® Osmotic Pumps

Q4685: R. Zhang, *et al.* Long-Term Administration of Neuropeptide Y in the Subcutaneous Infusion Results in Cardiac Dysfunction and Hypertrophy in Rats. *CELLULAR PHYSIOLOGY AND BIOCHEMISTRY* 2015;37(94-104

ALZET Comments: Neuropeptide Y; PBS; SC; Rat; 2004; 30 days; Controls received mp w/ vehicle; animal info (male, Wistar, 250-300g); functionality of mp verified by plasma levels; cardiovascular; peptides; pumps primed in 37C saline for 40 hours;

Q4622: C. Trivedi, *et al.* Tachykinin-1 in the Central Nervous System Regulates Adiposity in Rodents. *ENDOCRINOLOGY* 2015;156(1714-1723

ALZET Comments: Ghrelin; neuropeptide K; Saline; CSF/CNS (fourth ventricle); CSF/CNS; Rat; mice; 1002;1007D; 7 days; Controls received mp w/ vehicle; animal info (rat male, Wistar, 260-290g; mice male, C57Bl6, 12-16 weeks old); ALZET brain infusion kit used; dose-response (pg 1718); post op. care (analgesics); behavioral testing (locomotor activity); neuropeptide K aka NPK;.

Q1862: F. Xie, *et al.* Long-term Neuropeptide Y Administration in the Periphery Induces Abnormal Baroreflex Sensitivity and Obesity in Rats. *CELLULAR PHYSIOLOGY AND BIOCHEMISTRY* 2012;29(1-2):111-120

ALZET Comments: Neuropeptide Y; PBS; SC; Rat; 2004; 4 months; Controls received mp w/ vehicle; animal info (Wistar, male, 230-270 g, 3-4 mo old); long-term study; pumps replaced monthly.

Q1861: F. Xie, *et al.* Neuropeptide Y Reverses Chronic Stress-induced Baroreflex Hypersensitivity in Rats. *CELLULAR PHYSIOLOGY AND BIOCHEMISTRY* 2012;29(3-4):463-474

ALZET Comments: Neuropeptide Y; SC; Rat; 2004; 3 months; Controls received mp w/ PBS; animal info (Wistar, male, adult, 230-250 g); long-term study; pumps replaced monthly.

Q2311: J. C. Morales-Medina, *et al.* The selective neuropeptide Y Y(5) agonist [cPP(1-7),NPY(19-23),Ala(31),Aib(32),Gln(34)]hPP differently modulates emotional processes and body weight in the rat. *Behavioural Brain Research* 2012;233(2):298-304

ALZET Comments: Neuropeptide Y Y5 agonist; Saline; CSF/CNS; Rat; 2002; 12, 14 days; Control animals received mp w/ saline; animal info (Sprague Dawley, Wistar, male, 150-170 g, olfactory bulbectomized); neuropeptide Y Y5 agonist also known as [cPP1-7,NPY19-23,Ala31,Aib32,Gln34]hPP.

Q3005: R. Matyal, *et al.* Neuropeptide Y improves myocardial perfusion and function in a swine model of hypercholesterolemia and chronic myocardial ischemia. *Journal of Molecular and Cellular Cardiology* 2012;53(6):891-898

ALZET Comments: Neuropeptide Y; Heparin; BSA; IA; Swine; 2ML4; 5 weeks; Animal info (swine model of metabolic syndrome with chronic myocardial ischemia, six-week-old, male; Yorkshire miniswine); ischemia (arterial).

Q1285: E. Preston, *et al.* Central neuropeptide Y infusion and melanocortin 4 receptor antagonism inhibit thyrotropic function by divergent pathways. *Neuropeptides* 2011;45(6):407-415

ALZET Comments: Neuropeptide Y; HS014; NaCl; CSF/CNS; Rat; 2001; 6 days; Controls received mp w/ vehicle; animal info (male, Wistar, 25-280 g); peptides; HS014 is a melanocortin 4 receptor antagonist.

Q1246: J. D. Mul, *et al.* Chronic Loss of Melanin-Concentrating Hormone Affects Motivational Aspects of Feeding in the Rat. *PLoS One* 2011;6(5):U304-U316

ALZET Comments: Neuropeptide-EI; CSF, artificial; CSF/CNS (third ventricle); Rat; 2002; 26 days; Controls received mp w/ vehicle; animal info (pmch +/-, pmch -/-, male, Wistar); peptides; pumps replaced after 13 days; ALZET brain infusion kit 1 used.

Q1605: M. P. Robich, *et al.* Effects of neuropeptide Y on collateral development in a swine model of chronic myocardial ischemia. *Journal of Molecular and Cellular Cardiology* 2010;49(6):1022-1030



ALZET Comments: Neuropeptide Y (3-36); Heparin; BSA; PBS; Intramyocardial; Pig (miniswine); 4 weeks; Controls received mp w/ placebo; animal info (Intact, adult, male, Yorkshire, miniswine); 2ML sized pump used; tissue perfusion (myocardium).

Q0659: Y. J. Tsai, *et al.* Neuropeptide Y Modulates c-Fos Protein Expression in the Cuneate Nucleus and Contributes to Mechanical Hypersensitivity following Rat Median Nerve Injury. *Journal of Neurotrauma* 2009;26(9):1609-1621

ALZET Comments: Neuropeptide Y, neuropeptide y antagonist; CSF/CNS; Rat; 2004; 28 days; Controls received mp w/ vehicle; animal info (male, Sprague-Dawley, 180-250 g); functionality of mp verified by residual volume; peptides.

P9660: J. B. Rose, *et al.* Neuropeptide Y Fragments Derived from Neprilysin Processing Are Neuroprotective in a Transgenic Model of Alzheimer's Disease. *Journal of Neuroscience* 2009;29(4):1115-1125

ALZET Comments: Neuropeptide Y, c-terminal fragments amidated; Neuropeptide Y, c-terminal fragments non-amidated; DMSO; NaCl; CSF/CNS; Mice (transgenic); 2004; 28 days; Controls received mp w/vehicle; animal info (NEP, APP, doubt tg. 6mo); 10% DMSO used; peptides.

P9847: R. Moriya, *et al.* Comparison of independent and combined chronic anti-obese effects of NPY Y2 receptor agonist, PYY(3-36), and NPY Y5 receptor antagonist in diet-induced obese mice. *Peptides* 2009;30(7):1318-1322

ALZET Comments: Neuropeptide Y, D-Trp34; peptide YY (3-36); Saline; BSA; CSF/CNS; Mice; 2001; 2002; 7, 14 days; Controls received mp w/ vehicle; pumps replaced after 2 weeks; peptides; animal info (C57BL/6, 12-18 wks old); PBS/BSA in 2002 pump was replaced with NPP in 2001 after 2 week recovery period; obesity.

P8515: T. Ishii, *et al.* Chronic intracerebroventricular administration of anti-neuropeptide Y antibody stimulates starvation-induced feeding via compensatory responses in the hypothalamus. *Brain Research* 2007;1144(91-100)

ALZET Comments: Antibody, rabbit, anti-neuropeptide Y; Saline; CSF/CNS; Mice; 2002; 13 days; Controls received mp w/ vehicle; comparison of ICV injections vs. mp; ALZET brain infusion kit 3 used; animal info (male, ddy, 7 weeks old, 35-40 g); peptides.

P8684: T. Fuezesi, *et al.* Contribution of noradrenergic and adrenergic cell groups of the Brainstem and agouti-related protein-synthesizing neurons of the arcuate nucleus to neuropeptide-y innervation of corticotropin-releasing hormone neurons in hypothalamic Paraventricular nucleus of the rat. *Endocrinology* 2007;148(11):5442-5450

ALZET Comments: Neuropeptide Y; CSF, artificial; CSF/CNS; Rat; 1003D; 3 days; Controls received mp w/ vehicle; peptides; post op. care (bacitracin ointment over skull); animal info (Sprague-Dawley, male, 280-320g); 22-gauge stainless steel guide cannula, Plastics One.

P8089: C. Gebhard, *et al.* Role of renal nerves and salt intake on erythropoietin secretion in rats following carbon monoxide exposure. *Journal of Pharmacology and Experimental Therapeutics* 2006;319(1):111-116

ALZET Comments: Isoproterenol; neuropeptide Y, [Leu31, Pro34]-; neuropeptide Y1 receptor antagonist; IV (jugular); Rat; 1003D; 16 hours; Controls received mp w/ vehicle; half-life (p.115) "short" for isoproterenol; peptides; animal info (male, Sprague-Dawley, 250-320g.).

P7215: M. Michalkiewicz, *et al.* Central neuropeptide Y signaling ameliorates N omega-nitro-L-arginine methyl ester hypertension in the rat through a Y1 receptor mechanism. *Hypertension* 2005;45(4):780-785

ALZET Comments: Neuropeptide Y, synthetic rat; BIBP3226; Saline; CSF/CNS; Rat; 2002; 14 days; Controls received mp w/ vehicle; cardiovascular; antihypertensive; peptides; cannula placement confirmed by methylene blue staining; "This approach (mp) allowed us to assess the role of endogenous NPY in long-term control of BP under experimental conditions that excluded complications associated with anesthesia, restraint, and short-term drug administration." (p. 782); neuropeptide Y, Y1 receptor antagonist.

P6952: M. Henry, *et al.* Energy metabolic profile of mice after chronic activation of central NPY Y1, Y2, or Y5 receptors. *Obesity Research* 2005;13(1):36-47



ALZET Comments: Neuropeptide Y; Y1 agonist; Y5 agonist; Saline; water; Ascorbic acid; CSF/CNS; Mice; 2001; 6 days; Controls received mp w/ vehicle; peptides; mice received a two week recovery period; guide cannula used and secured with tissue adhesive; animal info (6 week old, C57BL/6, 25-30 grams).

P6495: P. D. Raposinho, *et al.* Chronic neuropeptide Y infusion into the lateral ventricle induces sustained feeding and obesity in mice lacking either Npy1r or Npy5r expression. *Endocrinology* 2004;145(1):304-310

ALZET Comments: Neuropeptide Y, porcine; Phosphate buffer; sodium chloride; Ascorbic acid; BSA; CSF/CNS; Mice; 2001; 7 days; Controls received mp w/ vehicle; stress/adverse reaction: (see pg.305) initial weight loss from surgery/anesthesia; ALZET brain infusion kit 2 used; peptides; cyanoacrylate adhesive (Loctite 454).

P6110: K. Takahashi, *et al.* Adiposity elevates plasma MCP-1 levels leading to the increased CD11b-positive monocytes in mice. *Journal of Biological Chemistry* 2003;278(47):46654-46660

ALZET Comments: Neuropeptide Y; monocyte chemoattractant protein-1; PBS; BSA; CSF/CNS; Mice; 2002; 2 weeks; Controls received mp w/ vehicle; mcp-1 plasma levels taken; ALZET brain infusion kit used; peptides; obesity; 7-14 day recovery period after surgery; pumps filled with PBS during recovery; monocyte chemoattractant protein-1 is also known as MCP-1.

P6233: L. P. Shearman, *et al.* Chronic MCH-1 receptor modulation alters appetite, body weight and adiposity in rats. *European Journal of Pharmacology* 2003;475(1-3):37-47

ALZET Comments: Neuropeptide Y, rat; melanin-concentrating hormone-1, receptor agonist; melanin-concentrating hormone-1, receptor antagonist; Saline; CSF/CNS; Rat; 2002; 14 days; Controls received mp w/ vehicle; dose-response (fig. 5); peptides; post op. care (antisedan); pump model incorrectly given as 2001 (p. 39); based on flow rate (.5 ul/hr) and duration (14 days) is actually model 2002 (p. 39).

P5852: P. D. Raposinho, *et al.* The melanocortin agonist Melanotan-II reduces the orexigenic and adipogenic effects of neuropeptide Y (NPY) but does not affect the NPY-driven suppressive effects on the gonadotropic and somatotrophic axes in the male rat. *Journal of Neuroendocrinology* 2003;15(2):173-181

ALZET Comments: Melanotan-II; Neuropeptide Y; PBS; Ascorbic acid; BSA; CSF/CNS; Rat; 7 days; Peptides; Melanotan II or MTII (a melanocortin receptor agonist) & neuropeptide were dissolved in PBS, 0.01% ascorbic acid, 0.1% bovine serum albumin adjusted to pH 7.4; pump model not listed.

P6156: M. S. Mondal, *et al.* A role for neuropeptide W in the regulation of feeding behavior. *Endocrinology* 2003;144(11):4729-4733

ALZET Comments: Neuropeptide W; Saline; CSF/CNS; Rat; 2001; 5 days; Controls received mp w/ vehicle; peptides; cannula placement verified by dye; obesity; NPW is a novel hypothalamic peptide.

P7706: S. Mashiko, *et al.* Characterization of neuropeptide Y (NPY) Y5 receptor-mediated obesity in mice: chronic intracerebroventricular infusion of D-Trp³⁴NPY. *Endocrinology* 2003;144(5):1793-1801

ALZET Comments: Neuropeptide Y, D-Trp³⁴; PBS; BSA; CSF/CNS; Mice; 2001; 2002; 13-21 days; Controls received mp w/ vehicle; dose-response (fig. 1); pumps replaced after 7-14 days; ALZET Brain Infusion kit used; peptides; post op. care (cefamedin); animal info (C57BL/6J, 9-12 weeks old, male); cannula placement confirmed by Evans blue dye injection.

P5254: D. J. Toufexis, *et al.* Y1 receptor activation is involved in the effect of exogenous neuropeptide Y on pup growth and the early termination of lactational diestrus in the postpartum rat. *J Neuroendocrinol* 2002;14(5):354-360

ALZET Comments: Neuropeptide Y; 1229U91; Neuropeptide Y, receptor agonist; Ascorbic acid; Phosphate buffer; NaCl; BSA; CSF/CNS; Rat; 2001; 7 days; Controls received mp w/ vehicle; peptides; cannula placement verified manually by locating the tip postmortem; 1229U91 is a mixed Y1 antagonist/Y4 agonist.

P5583: C. Fekete, *et al.* Agouti-related protein (AGRP) has a central inhibitory action on the hypothalamic-pituitary-thyroid (HPT) axis; Comparisons between the effect of AGRP and neuropeptide Y on energy homeostasis and the HPT axis. *Endocrinology* 2002;143(10):3846-3853



ALZET Comments: Neuropeptide Y; Agouti-related protein; CSF, artificial; CSF/CNS; Rat; 1003D; 3 days; peptides; cannula was implanted then occluded with a dummy cannula for one week prior to infusion to allow for recovery; AGRP is an appetite stimulant.

P6193: C. Fekete, *et al.* Neuropeptide Y1 and Y5 receptors mediate the effects of neuropeptide Y on the hypothalamic-pituitary-thyroid axis. *Endocrinology* 2002;143(12):4513-4519

ALZET Comments: Neuropeptide Y; neuropeptide Y, receptor agonist; CSF, artificial; CSF/CNS; Rat; 1003D; 3 days; Controls received mp w/ vehicle; peptides; endocrinology.

P5234: M. L. Correia, *et al.* Hemodynamic consequences of neuropeptide Y-induced obesity. *Am. J Hypertens* 2002;15(2 Pt 1):137-142

ALZET Comments: Neuropeptide Y; Saline; CSF/CNS (third ventricle); Rat; 2004; 2 weeks; Controls received mp w/ vehicle; Peptides: cannula placement verified by methylene blue staining; one-week recovery period.

P4898: J. G. Mateos-Verchere, *et al.* The octadecaneuropeptide [diazepam-binding inhibitor (33-50)] exerts potent anorexigenic effects in rodents. *European Journal of Pharmacology* 2001;414(225-231)

ALZET Comments: Octadecaneuropeptide; Saline; CSF/CNS; Rat; 2002; 15 days; controls received mp w/ vehicle; good methods (priming, cannula patency p. 226); ALZET brain infusion kit used; Octadecaneuropeptide (diazepam-binding inhibitor (33-50)) exerts anorexigenic effect on rodents.

P5015: A. Kramer, *et al.* Regulation of daily locomotor activity and sleep by hypothalamic EGF receptor signaling. *Science* 2001;294(5551):2511-2515

ALZET Comments: Transforming growth factor- α ; Brain-derived neurotrophic factor; Vasoactive intestinal polypeptide; Peptide, histidine-isoleucine; Gastrin releasing peptide; Substance P; Neuromedin-C; Neurokinin A; Neuropeptide K; Neuropeptide Y; Somatostatin; Antrin; Cholecystokinin; Thyrotropin-releasing hormone; Neurotensin; Neuromedin N;; CSF, artificial; CSF/CNS (third ventricle); hamster; 2002; 18-22 days; peptides.

Q6828: C. FEKETE, *et al.* Neuropeptide Y Has a Central Inhibitory Action on the Hypothalamic-Pituitary-Thyroid Axis. *Endocrinology* 2001;142(6):

ALZET Comments: Neuropeptide Y; CSF, artificial; CSF/CNS (left lateral ventricle); Rat; 2001; 3 days; Dose (10 g/24 hours); Controls received mp w/ vehicle; animal info (adult male Sprague Dawley rats, weighing 230–260 g); Brain coordinates (AP 20.8; Lat 1.2; d-Vent3.2); cyanoacrylate adhesive;

P4311: D. D. Pierroz, *et al.* Many LH peaks are needed to physiologically stimulate testosterone secretion: modulation by fasting and NPY. *Am. J. Physiol. (Endocrinol. Metab. 39)* 1999;276(E603-E610)

ALZET Comments: Neuropeptide Y;; Saline; Ascorbic acid; BSA;; CSF/CNS;; Rat;; 2001;; 1 week;; controls received no treatment; peptides; vehicle was filter sterilized;

P4132: J. E. McMinn, *et al.* NPY-induced overfeeding suppresses hypothalamic NPY mRNA expression: potential roles of plasma insulin and leptin. *Regul. Pept* 1998;75-76(425-431)

ALZET Comments: Neuropeptide Y, human; CSF, artificial;; CSF/CNS (third ventricle); Rat; 2002; no duration posted; controls received mp w/vehicle; cannula placement verified one week after placement by icv injection of angiotensin II; pumps implanted 3 weeks after cannula placement; peptides.

P3830: D. White. Intrathecal neuropeptide Y exacerbates nerve injury-induced mechanical hyperalgesia. *Brain Research* 1997;750(141-146)

ALZET Comments: Neuropeptide Y; Trinositol, a-; Saline; Heparin; CSF/CNS (intrathecal); Rat; 14 days; peptides.

P4124: A. Al-Arabi, *et al.* Synergistic action by neuropeptide y (NPY) and norepinephrine (NE) on food intake, metabolic rate, and brown adipose tissue (bat) causes remarkable weight loss in the obese (fa/fa) Zucker rat. *Biomed. Sci. Instrum* 1997;33(216-225)



ALZET Comments: Neuropeptide Y; Norepinephrine; SC; Rat; 2002; 14 days; controls received mp w/vehicle; agents infused alone or in combination; peptides.

P3462: D. M. White, *et al.* Vasoactive intestinal polypeptide and neuropeptide Y act indirectly to increase neurite outgrowth of dissociated dorsal root ganglion cells. *Neuroscience* 1996;73(3):881-887

ALZET Comments: Vasoactive intestinal peptide; Neuropeptide Y; VIP antagonist; Trinositol, a-; Heparin; Saline; CSF/CNS (intrathecal); Rat; 2002; 2 weeks; Peptides; 10 U/ml of heparin.

P4109: D. D. Pierroz, *et al.* Chronic administration of neuropeptide Y into the lateral ventricle inhibits both the pituitary-testicular axis and growth hormone and insulin-like growth factor I secretion in intact adult male rats. *Endocrinology* 1996;137(1):3-12

ALZET Comments: Neuropeptide Y, synthetic porcine; Neuropeptide Y-(13-36); CSF/CNS; Rat; 2001; 7 days; controls received sham surgery; dose-response (6, 18, 36 ug/d); peptides.

P2624: R. Zelis, *et al.* Neuropeptide Y infusion decreases plasma renin activity in postmyocardial infarction rats. *J. Cardiovasc. Pharmacol* 1994;24(6):896-899

ALZET Comments: Neuropeptide Y; Sodium chloride; IV (jugular); Rat; 1 week; controls received mp w/ vehicle; peptides.

P2710: M. G. Dube, *et al.* Evidence that neuropeptide Y is a physiological signal for normal food intake. *Brain Research* 1994;646(341-344)

ALZET Comments: Antibody, neuropeptide Y; Immunoglobulin, anti-neuropeptide Y; Serum, normal rabbit; CSF, artificial; Saline; Immunoglobulin, normal rabbit serum; CSF/CNS (third ventricle); Rat; 2001D; 24 hours; controls received mp w/ rabbit serum; peptides.

P3078: N. Zarjevski, *et al.* Chronic intracerebroventricular neuropeptide-Y administration to normal rats mimics hormonal and metabolic changes of obesity. *Endocrinology* 1993;133(4):1753-1758

ALZET Comments: Neuropeptide Y, porcine; PBS; Albumin, bovine serum; Ascorbic acid; CSF/CNS; Rat; 2001; 7 days; controls received mp with vehicle; peptides; stylet maintained cannula patency for 1 week after placement.

P3087: B. Xu, *et al.* Role of neuropeptide-Y in episodic luteinizing hormone release in ovariectomized rats: an excitatory component and opioid involvement. *Endocrinology* 1993;133(2):747-754

ALZET Comments: Antibody, neuropeptide Y; Serum, normal rabbit; CSF, artificial;; CSF/CNS (third ventricle); Rat; 2001D; no duration posted; controls received mp with vehicle; peptides.

P2731: N. M. Gruaz, *et al.* Evidence that neuropeptide Y could represent a neuroendocrine inhibitor of sexual maturation in unfavorable metabolic conditions in the rat. *Endocrinology* 1993;133(4):1891-1894

ALZET Comments: Neuropeptide Y, synthetic porcine; Sodium chloride; Ascorbic acid; Albumin, bovine serum; PBS; CSF/CNS; Rat; 2001; 7 days; controls were food-restricted and received mp w/ vehicle or were fed ad libitium; peptides.

P2158: C. Catzeflis, *et al.* Neuropeptide Y administered chronically into the lateral ventricle profoundly inhibits both the gonadotropic and the somatotrophic axis in intact adult female rats. *Endocrinology* 1993;132(1):224-234

ALZET Comments: Neuropeptide Y, porcine; Ascorbic acid; Albumin, bovine serum; PBS; CSF/CNS; Rat; 2001; 7 days; controls received mp with vehicle; dose-response (graph p. 227); peptides.

P1983: B. Beck, *et al.* Chronic and continuous intracerebroventricular infusion of neuropeptide Y in Long-Evans rats mimics the feeding behaviour of obese Zucker rats. *Int. J. Obes* 1992;16(295-302)

ALZET Comments: Neuropeptide Y; CSF, artificial; CSF/CNS; Rat; 2002; no duration posted; functionality of mp verified by measurement of residual volume; stress/adverse reaction: small weight loss in animals with vehicle-containing pumps p298; stability verified in vitro at 37 C for 14 days; peptides.

P1716: B. Waeber, *et al.* Prevention of renal hypertension in the rat by neuropeptide Y. *J. Hypertens* 1990;8(21-25)

ALZET Comments: Neuropeptide Y; Saline; IV (jugular); Rat; 1702; 8-9 days; peptides.



P1961: B. Beck, *et al.* Chronic and continuous ICV infusion of neuropeptide Y disrupts the nycthemeral feeding patterns in rats. *Ann. N. Y. Acad. Sci* 1990;611(491-494)

ALZET Comments: Neuropeptide Y; CSF, artificial; Rat; 2002; 2 weeks; peptides.