References on the Administration of Thyroxine Using ALZET® Osmotic Pumps

Q9129: J. Zhou, *et al.* Thyroid Hormone Status Regulates Skeletal Muscle Response to Chronic Motor Nerve Stimulation. Frontiers in Physiology 2019;10(1363
Agents: Thyroxine **Vehicle:** NaCl, Sterile; **Route:** SC; **Species:** Rabbit; **Pump:** Not Stated; **Duration:** 14 days;
ALZET Comments: Dose (50 ug/kg/day); animal info (Adult New Zealand white rabbits); dependence;

Q10907: J. Zhou, *et al.* Thyroid Hormone Status Regulates Skeletal Muscle Response to Chronic Motor Nerve Stimulation. Frontiers in Physiology 2019;10(1363
Agents: Thyroxine **Vehicle:** Saline, sterile; **Route:** SC; **Species:** Rabbit; **Pump:** Not Stated; **Duration:** 14 days;
ALZET Comments: Dose: (50 mg/kg/day)Controls received mp w/ vehicle; animal info: Adult New Zealand white rabbits;

Q7224: F. S. Lucia, *et al.* Transient Hypothyroidism During Lactation Arrests Myelination in the Anterior Commissure of Rats. A Magnetic Resonance Image and Electron Microscope Study. Front Neuroanat 2018;12(31
Agents: Thyroxine. L- **Vehicle:** Not Stated; **Route:** SC; **Species:** Rat; **Pump:** 2001; **Duration:** 7 days;
ALZET Comments: Dose (1 uL/hr/day); animal info (Wistar, adult, female, 250-300 g); dependence;

Q7179: Y. Henning, *et al.* Retinal S-opsin dominance in Ansell's mole-rats (Fukomys anselli) is a consequence of naturally low serum thyroxine. Sci Rep 2018;8(1):4337
Agents: Thyroxine, 3,5,3′-triiodothyronine **Vehicle:** NaOH, propylene glycol, PBS; **Route:** SC; **Species:** Rat (mole); **Pump:** 2006; **Duration:** 12 weeks;
ALZET Comments: Dose (90 ng/g of T4, 2 ng/g of T3); 15 mM NaOH, 50% propylene glycol and PBS containing 5% BSA used; Controls received mp w/ vehicle; animal info (Ansell's mole rats, mean age 2.6 ± 0.92 years); post op. care (Carprofen, 5 mg/kg for at least 3 days; animals were isolated for 24–48 h for recovery then housed as family group); pumps replaced every 6 weeks; long-term study; "Osmotic pumps deliver the test agents with a constant flow rate, thus being well-suited for long-term hormone treatments" pg. 9 ;

Q6523: G. Vazquez-Anaya, *et al.* Exogenous thyroxine improves glucose intolerance in insulin-resistant rats. J Endocrinol 2017;232(3):501-511
Agents: Thyroxine **Vehicle:** Saline; Propylene glycol; **Route:** SC; **Species:** Rat; **Pump:** 2006; **Duration:** Not Stated;
ALZET Comments: 50% propylene glycol used; animal info (9 week old male lean (265 ± 7 g), strain-control Long Evans Tokushima Otsuka rats and obese (356 ± 4 g) Otsuka Long Evans Tokushima Fatty rats); Therapeutic indication (glucose intolerance);

Q5829: N. Martinez-Sanchez, *et al.* Thyroid hormones induce browning of white fat. J Endocrinol 2017;232(2):351-362
Agents: Thyroxin, L-, Adenovirus vector; Gene, green fluorescent protein; Gene, AMP-activated protein kinase **Vehicle:** Saline; **Route:** CSF/CNS (hypothalamus); **Species:** Rat; **Pump:** 1007D; **Duration:** 7, 21 days;
ALZET Comments: bilateral cannula used; animal info (200-250g); gene therapy; Therapeutic indication (Browning, thyroid hormones);

Q1097: C. Grijota-Martinez, *et al.* Lack of Action of Exogenously Administered T3 on the Fetal Rat Brain Despite Expression of the Monocarboxylate Transporter 8. Endocrinology 2011;152(4):1713-1721
Agents: Triiodothyronine ; Thyroxine **Vehicle:** Propylene glycol; **Route:** SC; **Species:** Rat (pregnant); **Pump:** 2ML2;
ALZET Comments: Controls received mp w/ vehicle and sham surgery; animal info (250-300 g, female, Wistar); "(T3, T4 doses) were not corrected for increasing weight" pg 1714; "Instead of administering the hormones directly to the hypothyroid fetuses, they were given via subcutaneous infusion to pregnant dams." pg 1715

Q0136: L. Zhang, *et al.* Vasopressinergic Network Abnormalities Potentiate Conditioned Anxious State of Rats Subjected to Maternal Hyperthyroidism. Neuroscience 2010;168(2):416-428
Agents: Thyroxine, L- **Vehicle:** Not Stated; **Route:** SC; **Species:** Rat (pregnant); **Pump:** 2ML4; **Duration:** Not Stated;
ALZET Comments: Controls received mp w/ vehicle; animal info (Wistar, P90)

Q9016: L. Sui, *et al.* Administration of thyroid hormone increases reelin and brain-derived neurotrophic factor expression in rat hippocampus in vivo. Brain Research 2010;1313(9-24
Agents: Triiodothyronine; Thyroxine **Vehicle:** Ethanol; Saline; **Route:** CSF/CNS (hippocampus); **Species:** Rat; **Duration:** 24 hrs
ALZET Comments: Dose (50 pmol/ul); 0.9% NaCl and 0.05% Ethanol used; Controls received mp w/ vehicle; animal info (Young adult male Sprague–Dawley rats weighting 180–200 g); Triiodothyronine aka T3, Thyroxine aka T4; Brain coordinates (bregma − 3.5 mm, lateral ± 2 mm, and depth − 2.0 mm); replacement therapy (Thyroid Hormones);

Q0003: P. Berbel, *et al.* Role of Late Maternal Thyroid Hormones in Cerebral Cortex Development: An Experimental Model for Human Prematurity. Cerebral Cortex 2010;20(6):1462-1475
Agents: Parathyroid hormone, rat (1-84); Calcitonin, rat; Thyroxine **Vehicle:** Acetate buffer; **Route:** SC; **Species:** Rat (pregnant); **Pump:** 2001; **Duration:** 4,8 days;
ALZET Comments: Teratology; peptides; animal info (Female, Wistar, 250-300 g); replacement therapy (parathyroidectomy)

Q1607: A. Baysal, *et al.* Comparisons of the effects of systemic administration of L-thyroxine and doxycycline on orthodontically induced root resorption in rats. European Journal of Orthodontics 2010;32(5):496-504
Agents: Thyroxine, L-; doxycycline **Vehicle:** Not Stated; **Route:** SC; **Species:** Rat; **Pump:** 1002; **Duration:** 14 days;
ALZET Comments: Controls received mp w/ physiological serum; animal info (Wistar, male, 50-60 days old, 132 g);

Q0434: L. P. Klieverik, *et al.* Thyroid Hormone Effects on Whole-Body Energy Homeostasis and Tissue-Specific Fatty Acid Uptake in Vivo. Endocrinology 2009;150(12):5639-5648
Agents: Thyroxine **Vehicle:** NaOH; Propylene glycol; **Route:** SC; **Species:** Rat; **Pump:** 2ML2; **Duration:** Not Stated;
ALZET Comments: Controls received mp w/ vehicle; animal info (male, Wistar, 320-360 g); endocrinology

P8764: L. P. Klieverik, *et al.* Effects of thyrotoxicosis and selective hepatic autonomic denervation on hepatic glucose metabolism in rats. American Journal of Physiology Endocrinology and Metabolism 2008;294(3):E513-E520
Agents: Thyroxine, L- **Vehicle:** Propylene glycol; NaOH; **Route:** SC; **Species:** Rat; **Pump:** 2ML2; **Duration:** 10 days;
ALZET Comments: Functionality of mp verified by T4 plasma concentrations; dose-response (Fig. 1); no stress (see pg. E515); post op. care (Temgesic); animal info (male, Wistar, 325-375g.); hepatic sympathetic or parasympathetic denervation

P7879: H. Lu, *et al.* Tissue distribution and thyroid hormone regulation of Pept1 and Pept2 mRNA in rodents. Peptides 2006;27(4):850-857
Agents: Triiodothyromine; thyroxine, L- **Vehicle:** Saline; NaOH; **Route:** SC; **Species:** Rat; **Pump:** 2002; **Duration:** 14 days;
ALZET Comments: Controls received mp w/ vehicle, or no treatment; replacement therapy (thyroidectomy); animal info (Sprague-Dawley, 5 wk old, male)

P7160: P. Cettour-Rose, *et al.* Hypothyroidism in rats decreases peripheral glucose utilisation, a defect partially corrected by central leptin infusion. Diabetologia 2005;48(4):624-633
Agents: Thyroxine; Leptin, human analog; Triiodothyronine, reverse **Vehicle:** Saline, isotonic; **Route:** SC; **Species:** Rat; **Pump:** 2001; **Duration:** 3, 6 days;
ALZET Comments: Controls received mp w/ vehicle, functionality of mp verified by plasma levels, replacement therapy (hypothyroidism), enzyme inhibitor (deiodinase), peptides, multiple pumps per animal (2), agents are also known as T3 and T4

P5986: T. Yoshimura, *et al.* Light-induced hormone conversion of T(4) to T(3) regulates photoperiodic response of gonads in birds. Nature 2003;426(6963):178-181
Agents: Thyroxine; Iopanoic Acid; Triiodothyronine **Vehicle:** NACL; NAOH (sodium hydroxide); HCL; **Route:** CSF/CNS; **Species:** Bird (quail); **Pump:** 2002; **Duration:** 2 weeks;
ALZET Comments: ALZET brain infusion kit used; placement & patency of canula verified by injecting evans blue dye

P5142: I. S. Kim, *et al.* Changes in the testis interstitium of Brown Norway rats with aging and effects of luteinizing and thyroid hormones on the aged testes in enhancing the steroidogenic potential. Biology of Reproduction 2002;66(1359-1366
Agents: Luteinizing hormone; Thyroxine **Vehicle:** Saline; **Route:** SC; **Species:** Rat; **Pump:** 2ML4; **Duration:** 4 weeks;
ALZET Comments: controls received mp w/ saline; functionality of mp verified by residual volume and plasma levels of LH & T4 via radioimmunoassay; dose-response (table, p. 1364); multiple pumps per animal (1-2): one for T4 and one for LH

P5155: V. Haberkorn, *et al.* Vitamin A modulates the effects of thyroid hormone on UDP-glucuronosyl transferase expression and activity in rat liver. Molecular and Cellular Endocrinology 2002;190(167-175
Agents: Thyroxine; Triiodothyronine **Vehicle:** Saline; NaOH; **Route:** SC; **Species:** Rat; **Pump:** 2002; **Duration:** 15 days;
ALZET Comments: controls received mp w/ vehicle; replacement therapy (thyroidectomy, p. 168); functionality of mp verified by thyroxine plasma levels

P6657: E. F. Gevers, *et al.* Localization and regulation of the growth hormone receptor and growth hormone-binding protein in the rat growth plate. Journal of Bone and Mineral Research 2002;17(8):1408-1419
Agents: Growth hormone, recomb. human; thyroxine; triiodothyronine; **Route:** SC; **Species:** Rat; **Duration:** 2 weeks;
ALZET Comments: Controls received teflon rods; replacement therapy (hypophysectomy)

P6209: I. M. Evans, *et al.* Influence of maternal hyperthyroidism in the rat on the expression of neuronal and astrocytic cytoskeletal proteins in fetal brain. Journal of Endocrinology 2002;175(3):597-604
Agents: Thyroxine **Vehicle:** PBS; BSA; NaOH; **Route:** SC; **Species:** Rat (pregnant); **Pump:** 2004; **Duration:** 23 days;
ALZET Comments: Controls received mp w/ vehicle; functionality of mp verified by tail bleed for TH levels; replacement therapy (thyroidectomy); teratology

P5553: P. Cettour-Rose, *et al.* Central stimulatory effect of leptin on T-3 production is mediated by brown adipose tissue type II deiodinase. American Journal of Physiology Endocrinology and Metabolism 2002;283(5):E980-E987
Agents: Leptin; thyroxine; triiodothyronine **Vehicle:** Saline; **Route:** SC; CSF/CNS; **Species:** Rat; **Pump:** 2001; **Duration:** 6 days;
ALZET Comments: Controls received mp w/ vehicle; peptides

Q7552: N. Lameloise, *et al.* Differences between the effects of thyroxine and tetraiodothyroacetic acid on TSH suppression and cardiac hypertrophy. European Journal of Endocrinology 2001;144(2):145-54
Agents: Thyroxine; tetraiodothyroacetic acid, 3,5,3',5'- **Vehicle:** BSA, NaOH buffered; **Route:** IP; **Species:** Rat; **Pump:** 2002;
Duration: 13 days;
ALZET Comments: Dose ((T4 0.5, 1.5, 4.5, 13.5 nmol/day/100g BW), (Tetrac 0, 1.5, 4.5, 13.5, 40.5 nmol /day/100g BW)); 0.05 M NaOH, 2% bovine serum albumin, 100,000 c.p.m. [125I]T4 or [125I]Tetrac used; Controls received mp w/ vehicle; animal info (male, SIVZ); enzyme inhibitor (monodeiodinase type 2); replacement therapy (); Therapeutic indication (inhibiting serum TSH concentrations); Resultant plasma level ((T4 43.1+/-2.8, 77.1+/-9.4, 129.7+/-9.5, 353.4+/-31.7 pmol/ml), (Tetrac 168+/-16, 332+/-19, 458+/-27, 406+/-57 pmol/ml)); 3,5,3',5'-tetraiodothyroacetic acid (Tetrac) is a thyroxine (T4) analogue;

P5104: H. Kobori, *et al.* Local Renin-angiotensin system contributes to hyperthyroidism-induced cardiac hypertrophy. Journal of Endocrinology 1999;160(43-47
Agents: Angiotensin II; Thyroxine **Vehicle:** Saline; **Route:** SC; **Species:** Rat; **Pump:** 2004; **Duration:** 28 days;
ALZET Comments: controls received mp w/ vehicle; cardiovascular; peptides; one group received Ang II and T4 in same pump; functionality of mp verified by plasma Ang II levels

P3936: A. G. Schuur, *et al.* Modulating effects of thyroid state on the induction of biotransformation enzymes by 2,3,7,8-tetrachlorodibenzo-p-dioxin. Environmental Toxicology and Pharmacology 1998;5(7-16
Agents: Triiodothyronine, 3,3',5'-; Thyroxine **Vehicle:** NaOH; Saline; **Route:** IP; **Species:** Rat; **Pump:** 2002; **Duration:** 10 days;
ALZET Comments: controls received mp w/vehicle or no surgery; replacement therapy (thyroidectomy); toxicology

P3633: A. G. Schuur, *et al.* Extrathyroidal effects of 2,3,7,8-tetrachlorodibenzo-p-dioxin on thyroid hormone turnover in male Sprague-Dawley rats. Endocrinology 1997;138(9):3727-3734
Agents: Thyroxine; Triiodothyronine **Vehicle:** NaOH; saline; **Route:** IP; **Species:** Rat; **Pump:** 2002; **Duration:** 10 days;
ALZET Comments: Triiodothyronine (T3) & thyroxine (T4) were dissolved in 0.1M NaOH & 0.9% NaCL

P3689: M. Rudling, *et al.* Regulation of rat hepatic low density lipoprotein receptors. J. Clin. Invest 1996;97(2):292-299
Agents: Growth hormone, recomb. human; Insulin-like growth factor I; Dexamethasone; Thyroxine, L- **Species:** Rat; **Pump:** 2001; 2ML2; **Duration:** 6 days;
ALZET Comments: controls received sham operation; replacement therapy (hypophysectomy); agent infusion rates given in ug/h;

P3963: N. A. Pampori, *et al.* Feminization of hepatic cytochrome P450s by nominal levels of growth hormone in the feminine plasma profile. Mol. Pharmacol 1996;50(1148-1156
Agents: Growth hormone, rat; Thyroxine **Vehicle:** Not Stated; **Route:** SC; IP; **Species:** Rat; **Pump:** Not Stated; **Duration:** 6 days;
ALZET Comments: functionality of mp verified by residual volume; replacement therapy (hypophysectomy); peptides; multiple pumps per animal (2) (1 with each agent)

P3088: S.-Y. Wu, *et al.* Sulfation pathway of thyroid hormone metabolism in selenium-deficient male rats. American Journal of Physiology Endocrinology and Metabolism 1995;31(E572-E579
Agents: Thyroxine sulfate; Triiodothyronine sulfate, 3,3',5'-; Triiodothyronine sulfate, reverse **Vehicle:** NaOH; PBS; Serum, rat;
Route: SC; **Species:** Rat; **Pump:** 2001; **Duration:** 48, 96 hours;
ALZET Comments: Controls received mp with saline; functionality of mp verified by serum levels

P4140: W. R. Christenson, *et al.* Extrathyroidally mediated changes in circulating thyroid hormone concentrations in the male rat following administration of an experimental oxyacetamide (FOE 5043). Toxicol. Appl. Pharmacol 1995;132(253-262
Agents: Thyroxine; Triiodothyronine **Vehicle:** Saline; Serum, rat; NaOH; **Route:** SC; **Species:** Rat; **Pump:** 2ML4; **Duration:** 28 days;
ALZET Comments: controls received sham surgery; functionality of mp verified by serum hormone levels; replacement therapy (thyroidectomy); toxicology

P2688: F. Chapa, *et al.* Adult-onset hypothyroidism and the cerebral metabolism of (1,2-13C2) acetate as detected by 13C nuclear magnetic resonance. Endocrinology 1995;136(1):296-305
Agents: Thyroxine **Vehicle:** Not Stated; **Route:** SC; **Species:** Rat; **Pump:** Not Stated; **Duration:** 7, 13 days;
ALZET Comments: controls received mp w/ saline; replacement therapy (thyroidectomy)

P3063: Y.-M. Yen, *et al.* Direct measurement of whole body thyroid hormone pool sizes and interconversion rates in fasted rats: hormone regulation implications. Endocrinology 1994;134(4):1700-1709
Agents: Thyroxine; Triiodothyronine **Vehicle:** ^{125}I tracer; Radio-isotopes; Albumin, bovine serum; NaOH; Sodium carbonate;
Route: SC; **Species:** Rat; **Pump:** 2001; **Duration:** 7 days;
ALZET Comments: functionality of mp verified in pilot studies; topical and im antibiotics used

P3138: T. T. Nguyen, *et al.* Steady state organ distribution and metabolism of thyroxine and 3,5,3'-triiodothyronine in intestines, liver, kidneys, blood, and residual carcass of the rat in vivo. Endocrinology 1993;133(6):2973-2983
Agents: Triiodothyronine; Thyroxine **Vehicle:** 125I tracer; Radio-isotopes; Albumin, bovine serum; **Route:** SC; **Species:** Rat;
Pump: 2001; **Duration:** 7 days;
ALZET Comments: functionality of mp verified in pilot studies

P2524: H. Liang, *et al.* Effect of the antioxidant TK 12627 (Irganox) on monodeiodination and on the levels of messenger ribonucleic acid of 5'-deiodinase type I and spot 14. European Journal of Endocrinology 1993;128(451-458
Agents: Thyroxine; Triiodothyronine **Vehicle:** 125I tracer; 131I tracer; Radio-isotopes; Albumin, bovine serum; Saline; Sodium hydroxide; **Route:** IP; **Species:** Rat; **Pump:** 1003D; 2002; **Duration:** 1 week; 24 hours;
ALZET Comments: replacement therapy (MMI-perchlorate induced hypothyroidism)

P2335: H. L. Katzeff, *et al.* Impaired peripheral thyroid hormone metabolism in genetic obesity. Endocrinology 1993;132(3):989-995
Agents: Thyroxine **Vehicle:** Not Stated; **Route:** SC; **Species:** Rat; **Pump:** 2002; **Duration:** 21, 24 days;
ALZET Comments: Replacement therapy (thyroidectomy)

P2928: M. Rudling, *et al.* Importance of growth hormone for the induction of hepatic low density lipoprotein receptors. Proc. Natl. Acad. Sci. USA 1992;89(6983-6987
Agents: Growth hormone, human; Dexamethasone; Thyroxine, l- **Vehicle:** Not Stated; **Route:** SC; **Species:** Rat; **Pump:** 2001;
Duration: 5 days;
ALZET Comments: replacement therapy (hypophysectomy); peptides; GH given solely, or GH/Dex, GH/Dex/T4, or Dex/T4

P2679: R. Calvo, *et al.* The rat placenta and the transfer of thyroid hormones from the mother to the fetus. Effects of maternal thyroid status. Endocrinology 1992;131(1):357-365
Agents: Thyroxine; Triiodothyronine **Vehicle:** PBS; Serum, rat; Sodium hydroxide; **Route:** Not Stated; **Species:** Rat (pregnant); **Pump:** 2ML2; **Duration:** Not Stated;
ALZET Comments: controls received mp w/ saline; functionality of mp verified by plasma levels; dose-response

P2176: R. A. Barter, *et al.* UDP-glucuronosyltransferase inducers reduce thyroid hormone levels in rats by an extrathyroidal mechanism. Toxicol. Appl. Pharmacol 1992;113(36-42
Agents: Thyroxine; Triiodothyronine **Vehicle:** Saline; Sodium hydroxide; **Route:** SC; **Species:** Rat; **Pump:** 2002; **Duration:** 10 days;
ALZET Comments: functionality of mp verified by serum levels (p. 38); replacement therapy (thyroidectomy); good methods

P3097: H. G. Wilcox, *et al.* Effects of thyroid status and fasting on hepatic metabolism of apolipoprotein A-1. J. Lipid Res 1991;32(395-405
Agents: Triiodothyronine; Thyroxine, l- **Vehicle:** Butanol, n-; Propylene glycol; **Route:** IP; **Species:** Rat; **Pump:** 2001; 2002; **Duration:** 7,14 days;
ALZET Comments: controls received no treatment or mp with vehicle; functionality of mp verified by plasma levels; replacement therapy (thyroparathyroidectomy); comparison of SC T3 injections vs. mp

P2693: J. M. Connors, *et al.* Thyroid vascular conductance: differential effects of elevated plasma thyrotropin (TSH) induced by treatment with thioamides or TSH-releasing hormone. Endocrinology 1991;129(1):117-125
Agents: Triiodothyronine; Thyroxine; Thyrotropin-rel. factor **Vehicle:** Saline; Sodium hydroxide; Serum, rat; **Route:** SC; **Species:** Rat; **Pump:** Not Stated; **Duration:** 6 days;
ALZET Comments: controls received saline via injections or did not have drug-induced hypothyroidism; replacement therapy (propylthiouracil and methimazole-induced hypothyroidism); comparison of ip, iv & sc injections vs. mp; multiple pumps per animal (2) were used concurrently

P1839: G. Morreale de Escobar, *et al.* Contribution of maternal thyroxine to fetal thyroxine pools in normal rats near term. Endocrinology 1990;126(5):2765-2767
Agents: Thyroxine **Vehicle:** 125I tracer; Potassium iodide; Radio-isotopes; **Route:** Not Stated; **Species:** Rat (pregnant); **Pump:** Not Stated; **Duration:** Not Stated;
ALZET Comments: no comment posted

P1778: H. L. Katzeff. Increasing age impairs the thyroid hormone response to overfeeding. Experimental Biology and Medicine 1990;194(198-203
Agents: Thyroxine; Triiodothyronine **Vehicle:** Albumin, bovine serum; Radio-isotopes; Saline; **Route:** SC; **Species:** Rat; **Pump:** 2001; **Duration:** 7 days;
ALZET Comments: functionality of mp verified by serum hormone levels, measuring residual radioactivity

P1468: C. H. Emerson, *et al.* Serum thyrotropin concentrations are more highly correlated with serum triiodothyronine concentrations than with serum thyroxine concentrations in thyroid hormone-infused thyroidectomized rats. Endocrinology 1989;124(2415-2418
Agents: Thyroxine; Triiodothyronine **Vehicle:** Serum, rat; Sodium hydroxide; Water; **Route:** SC; **Species:** Rat; **Pump:** Not Stated; **Duration:** 14 days;
ALZET Comments: dose-response; functionality of mp verified by serum levels; replacement therapy (thyroidectomy)

P1262: C. A. Kaiser, *et al.* Increased plasma clearance rate of thyroxine despite decreased 5'-monodeiodination: study with a peroxisome proliferator in the rat. Endocrinology 1988;122(3):1087-1093
Agents: Radio-isotopes; Thyroxine **Vehicle:** 125I tracer; 131I tracer; **Route:** IP; **Species:** Rat; **Pump:** 2001; **Duration:** 7 days;
ALZET Comments: 4 exp., only 1 used mp; nafenopin pellets administered concomitantly in food; 2 doses of agent infused with different radio-isotopes

P1173: J. R. Goldberg, *et al.* Altered triiodothyronine metabolism in zucker fatty rats. Endocrinology 1988;122(2):689-693
Agents: Radio-isotopes; Thyroxine; Triiodothyronine **Vehicle:** 125I tracer; **Route:** SC; **Species:** Rat; **Pump:** 2001; **Duration:** 7 days;
ALZET Comments: no comment posted

P1331: L. A. Gavin, *et al.* Carbohydrate feeding increases total body and specific tissue 3,5,3'-triiodothyronine neogenesis in the rat. Endocrinology 1988;123(2):1075-1081
Agents: Radio-isotopes; Thyroxine; Triiodothyronine **Vehicle:** 125I tracer; Albumin, human serum; Sodium hydroxide; Water; **Route:** SC; **Species:** Rat; **Pump:** 2001; **Duration:** 14 days;
ALZET Comments: dose-response (table); half-life; second and third pumps implanted at 7 days; third pump contained labelled T-4 to measure the MCR; functionality of mp verified by serum levels; pump replaced weekly; replacement therapy (thyroidectomy); stability determined

P1306: J. M. Dubuis, *et al.* Human recombinant interleukin-1B decreases plasma thyroid hormone and thyroid stimulating hormone levels in rats. Endocrinology 1988;123(5):2175-2181
Agents: Radio-isotopes; Thyroxine **Vehicle:** 125I tracer; **Route:** IP; **Species:** Rat; **Pump:** 2002; **Duration:** 7, 14 days;
ALZET Comments: measured plasma clearance of T4; functionality of mp verified by serum levels; stability verified at 14 days

P1304: J. J. DiStefano, *et al.* Rat enterohepatic circulation and intestinal distribution of enterally infused thyroid hormones. Endocrinology 1988;123(5):2526-2539
Agents: Radio-isotopes; Thyroxine; Triiodothyronine **Vehicle:** 125I tracer; Bile; Glycerol; Propanol; Propylene glycol; **Route:** Intestine (duodenum); **Species:** Rat; **Pump:** 2001; **Duration:** 7 days;
ALZET Comments: Catheter to duodenum; dose-response (text); functionality of mp verified by plasma levels

P1223: J. M. Conners, *et al.* Effects of thyrotropin on the vascular conductance of the thyroid gland. Endocrinology 1988;122(3):921-929
Agents: Thyroid-stimulating hormone, bovine; Thyrotropin-rel. factor; Thyroxine; Triiodothyronine **Vehicle:** Sodium hydroxide; Saline; **Route:** IV (jugular); SC; **Species:** Rat; **Pump:** Not Stated; **Duration:** 2, 6 days;
ALZET Comments: pump model not stated; mp connected to catheter; dose-response; separate and simultaneous infusion of T3 and T4; NaOH is vehicle for TRH, T3, and T4; replacement therapy (hypophysectomy); peptides

P1013: S. Smeds, *et al.* Naturally occurring clones of cells with high intrinsic proliferation potential within the follicular epithelium of mouse thyroids. Cancer Research 1987;47(1646-1651
Agents: Thyroxine **Vehicle:** 3H tracer; **Route:** IP; **Species:** Mice; **Pump:** 2001; **Duration:** 22 days;
ALZET Comments: Pumps replaced; replacement therapy (hemithyroidectomy); cancer

P1002: M. O. Goumaz, *et al.* Brain cortex reverse triiodothyronine (rT3) and triiodothyronine concentrations under steady state infusions of thyroxine and rT3. Endocrinology 1987;120(1590-1596
Agents: Thyroxine; Triiodothyronine, reverse **Vehicle:** 125I tracer; Sodium hydroxide; Saline; Serum, rat; Sodium carbonate; **Route:** IP; **Species:** Rat; **Pump:** 2001; **Duration:** 3, 7 days;
ALZET Comments: Pumps primed overnight in saline; T4 of low & high specific activity (SA) infused sep; T4 of low (SA) obtained by add. of unlabeled T4; replacement ther. (thyroidectomy)

P1009: W. J. DeVito, *et al.* The pituitary TSH response to TRH is inversely related to the plasma TSH concentration and directly related to the pituitary TSH content during hypothyroidism in the rat. European Journal of Endocrinology 1987;114(27-36
Agents: Thyroxine; Triiodothyronine **Vehicle:** Sodium hydroxide; Saline; Serum, rat; **Route:** SC; **Species:** Rat; **Pump:** 2002; **Duration:** 7, 14 days;
ALZET Comments: pumps replaced after 7 days; dose-response; intact euthyroid control rats were left untreated; replacement therapy (thyroparathyroidectomy)

P0862: C. A. Kaiser*, et al.* In vivo inhibition of the 5'-deiodinase type II in brain cortex and pituitary by reverse triiodothyronine. Endocrinology 1986;119(2):762-770
Agents: Thyroxine; Triiodothyronine, reverse **Vehicle:** Sodium hydroxide; Saline; Serum, hypothyroid rat; Sodium carbonate; **Route:** IP; **Species:** Rat; **Pump:** 2001; **Duration:** 7 days;
ALZET Comments: controls received mp w/vehicle; dose response data; pumps primed overnight in buffer; various doses of agents infused; functionality of mp verified by labelling agent (extensive serum level data); replacement therapy (thyroidectomy)

P0638: S. M. Simasko*, et al.* Treatment of rats with the TRH analog MK-771. Neuropharmacology 1985;24(2):157-165
Agents: MK-771; Thyroxine **Vehicle:** Sodium hydroxide; Saline; **Route:** CSF/CNS; SC; **Species:** Rat; **Pump:** Not Stated; **Duration:** 1 week;
ALZET Comments: 1 week; comparison of once daily each icv & ip injec vs. mp infusion vs. icv injec every 2 hr; T4 in saline & NaOH given sc, MK-771 in saline only given by icv route; stability of MK-771 verified; comparison of agent's effects; MK-771 is a TRH analog

P0559: Y. Shenker*, et al.* a-Melanocyte-stimulating hormone stimulation of aldosterone secretion in hypophysectomized rats. Endocrinology 1985;116(1):138-141
Agents: ACTH (1-24); Dexamethasone disodium phosphate; Melanocyte-stimulating hormone, a-; Thyroxine, l- **Vehicle:** Not Stated; **Route:** SC; **Species:** Rat; **Pump:** Not Stated; **Duration:** 6 days;
ALZET Comments: comparison of agents effects; replacement therapy (hypophysectomy); peptides

P0531: A. S. Jennings. Regulation of hepatic triiodothyronine production in the streptozotocin-induced diabetic rat. American Journal of Physiology Endocrinology and Metabolism 1984;247(E526-E533
Agents: Thyroxine **Vehicle:** Sodium hydroxide; **Route:** SC; **Species:** Rat; **Pump:** Not Stated; **Duration:** 1 week;
ALZET Comments: comparison of sc injec vs. mp infusion

P0448: A. R. Glass*, et al.* Low serum thyroxine and high serum triiodothyronine in nephrotic rats: etiology and implications for bioavailability of protein-bound hormone. Endocrinology 1984;114(5):1745-1753
Agents: Thyroxine; Triiodothyronine **Vehicle:** Sodium hydroxide; Serum, rat; **Route:** SC; **Species:** Rat; **Pump:** 2002; **Duration:** 12 days;
ALZET Comments: Replacement therapy (thyroidectomy)

P0392: R. R. Cavalieri*, et al.* Effects of dexamethasone on kinetics and distribution of triiodothyronine in the rat. Endocrinology 1984;114(1):215-221
Agents: Dexamethasone; Radio-isotopes; Thyroxine, l-; Triiodothyronine **Vehicle:** 125I tracer; Albumin, human serum; Sodium hydroxide; Saline; **Route:** IP; SC; **Species:** Rat; **Pump:** 2001; 2002; **Duration:** 5, 6, 12 days;
ALZET Comments: Comparison of agents effects; replacement therapy (thyroidectomy); no stress - see p. 220; T3 and T4 used w/ and w/o 125I tracer; T4 used in 2002 pump sc, T3 in 2001 sc, Dex. in 2001 ip or sc; 3 pumps/animal

P0312: S. E. Taylor. Additional evidence against universal modulation of B-adrenoceptor responses by excessive thyroxine. British Journal of Pharmacology 1983;78(639-644
Agents: Thyroxine **Vehicle:** DMSO; **Route:** SC; **Species:** Guinea pig; **Pump:** 2002; **Duration:** 13 days;
ALZET Comments: no comment posted

P0358: L. A. Gavin*, et al.* Glucagon does not modulate the alterations in T3 metabolism consequent to dietary manipulation and diabetes. Diabetes 1983;32(798-803
Agents: Glucagon; Somatostatin; Thyroxine **Vehicle:** Not Stated; **Route:** SC; **Species:** Rat; **Pump:** 2001; **Duration:** 2, 3 days;
ALZET Comments: Separate pumps delivering glucagon and somatostatin were implanted simultaneously in same rat; peptides

P0214: O. Senga, *et al.* Comparison of peripheral thyroid hormone metabolism in normal rats and in rats receiving prolonged glucagon infusion. Endocrinology 1982;110(6):2011-2017
Agents: Glucagon; Radio-isotopes; Thyroxine; Triiodothyronine **Vehicle:** 125I tracer; Sodium hydroxide; Saline; **Route:** IP; IV (jugular); **Species:** Rat; **Pump:** Not Stated; **Duration:** 7, 9 days;
ALZET Comments: Glucagon ip simultaneous infusion w/T3 & T4 in vehicles iv; 2 pumps/animal

P0213: L. Luciani, *et al.* Metabolic effects of 3,5-dimethyl-3'-isopropyl-L-thyronine (DIMIT) in constant infusion by osmotic minipump to hypothyroid rat. Comptes Rendus Biologies 1982;294(3):361-364
Agents: Triiodothyronine analog (DIMIT); Thyroxine; Triiodothyronine **Vehicle:** Not Stated; **Route:** SC; **Species:** Rat; **Pump:** Not Stated; **Duration:** 8 days;
ALZET Comments: comparison of daily sc injection vs. infusion; organ replacement therapy (thyroidectomy)

P1240: P. R. Waggoner, *et al.* Method for long term delivery of soluble agents to the chick chorioallantoic membrane. Cellular and Molecular Life Sciences 1981;37(3):321-322
Agents: Thyroxine, l- **Vehicle:** Not Stated; **Route:** In vitro (egg); chorioallantoic membrane; **Species:** Bird (chicken embryo); **Pump:** 2001; **Duration:** 7 days;
ALZET Comments: mp placed in small test tube filled w/ water and then sealed w/ parafilm; mp connected to catheter that bathed the chorioallantoic membrane

P0150: L. A. Gavin, *et al.* Carbohydrate in contrast to protein feeding increases the hepatic content of active thyroxine-5'-deiodinase in the rat. Endocrinology 1981;109(2):530-536
Agents: Thyroxine **Vehicle:** Sodium hydroxide; **Route:** SC; **Species:** Rat; **Pump:** Not Stated; **Duration:** 3 days;
ALZET Comments: no comment posted

P0154: L. A. Gavin, *et al.* The mechanism of impaired T3 production from T4 in diabetes. Diabetes 1981;30(694-699
Agents: Insulin; Thyroxine **Vehicle:** Sodium hydroxide; **Route:** SC; **Species:** Rat; **Pump:** 2001; **Duration:** 2, 4 days;
ALZET Comments: NaOH in T4 only; peptides

P0135: M. M. El-Zaheri, *et al.* Maternal thyroid function is the major determinant of amniotic fluid 3,3',5'-triiodothyronine in the rat. Journal of Clinical Investigation 1981;67(1126-1133
Agents: Triiodothyronine, 3,3',5'-; Thyroxine **Vehicle:** Not Stated; **Route:** SC; **Species:** Rat; **Pump:** Not Stated; **Duration:** Not Stated;
ALZET Comments: 2 days T4, 5 days rT3; comparison of injections vs. infusion

P0130: J. M. Connors, *et al.* Effect of continuous thyroxine administration on thyrotropin secretion in thyroidectomized rats. Endocrinology 1981;108(6):2098-2102
Agents: Thyroxine; Triiodothyronine **Vehicle:** Sodium hydroxide; Propanediol, 1,2-; Serum, rat; **Route:** SC; **Species:** Rat; **Pump:** Not Stated; **Duration:** 4, 6 days;
ALZET Comments: Organ replacement therapy (thyroidectomy)

P0108: J. M. Connors, *et al.* Feedback regulation of thyrotropin by thyroxine under physiological conditions. American Journal of Physiology Endocrinology and Metabolism 1981;240(3):E308-E313
Agents: Thyroxine **Vehicle:** Sodium hydroxide; Propanediol, 1,2-; **Route:** IP; SC; **Species:** Rat; **Pump:** Not Stated; **Duration:** 2 days;
ALZET Comments: Comparison of oral admin. vs. infusion; organ replacement therapy (thyroidectomy)

P0051: J.-P. Clot, *et al.* Rat thyroxine metabolism studied by osmotic minipump infusion. C. R. Acad. Sc. Paris (French, English abstract) 1980;290(3):235-237
Agents: Radio-isotopes; Thyroxine **Vehicle:** 125I tracer; Saline; **Route:** SC; **Species:** Rat; **Pump:** 1701; **Duration:** Not Stated;
ALZET Comments: organ replacement therapy (thyroidectomy)