



### References on the Administration of Triiodothyronine Using ALZET® Osmotic Pumps

**R0460:** L. B. Kerrigan, *et al.* Drug delivery systems for thyroid disease treatment: A mini review on current therapies and alternative approaches. *Journal of Drug Delivery Science and Technology* 2023;87(

**Agents:** Triiodothyronine **Vehicle:** Not Stated; **Route:** SC; **Species:** Not Stated; **Strain:** Not Stated; **Pump:** Not Stated; **Duration:** Not Stated;

**ALZET Comments:** comparison of implantable pellets vs mp

**Q8939:** L. Sabatino, *et al.* Modification of cardiac thyroid hormone deiodinases expression in an ischemia/reperfusion rat model after T3 infusion. *Molecular and Cellular Biochemistry* 2020;475(1-2):205-214

**Agents:** Triiodothyronine **Vehicle:** Saline; **Route:** SC; **Species:** Rat; **Pump:** 2002; **Duration:** Not Stated;

**ALZET Comments:** Dose (6 ug/kg/day); Controls received mp w/ vehicle; animal info (Male, Wistar, 12-15 weeks old, 353 g); Triiodothyronine aka T3 ; ischemia (Myocardial);

**Q7872:** P. Seoane-Collazo, *et al.* Analyzing AMPK Function in the Hypothalamus. *Methods Mol Biol* 2018;1732(433-448

**Agents:** Triiodothyronine **Vehicle:** Saline; NaOH; **Route:** CNS/CSF (Arcuate Nucleus of Hypothalamus; Lateral Hypothalamic Area; Ventromedial Nucleus of the Hypothalamus ); **Species:** Rat; **Pump:** 2001; 1007D; 1004D; **Duration:** Not stated;

**ALZET Comments:** Dose (4ng/day T3); 1mM NaOH used; Controls received mp w/ vehicle; Triiodothyronine aka T3; Brain coordinates (VMH, 2.8 mm posterior to bregma, 0.6 mm lateral to midline, and 10.1 mm ventral; for ARC, 2.8 mm posterior to bregma, 0.3 mm lateral to midline, and 10.2 mm ventral; and for LHA, 2.9 mm posterior to bregma, 2 mm lateral to midline, and 8.1 mm ventral); cyanoacrylate adhesive;

**Q7862:** L. Sabatino, *et al.* Modification of gene expression profiling related to renin-angiotensin system in an ischemia/reperfusion rat model after T3 infusion. *Mol Cell Biochem* 2018;449(1-2):277-283

**Agents:** Triiodothyronine **Vehicle:** Saline; **Route:** SC; **Species:** Rat; **Pump:** 2002; **Duration:** 3 days;

**ALZET Comments:** Dose (6 µg/kg/day); Controls received sham surgery and mp w/ vehicle; animal info (12-15 weeks, male, Wistar, 353+/-11g); post op. care (hydrated with physiological saline and given buprenorphin 0.05 mg/kg s.c.); ischemia (myocardial ischemia/reperfusion); cardiovascular; Therapeutic indication (T3 stimulates the expression of protective genes related to renin-angiotensin system such as AT2R/MAS1-ACE2 mainly in BZ);

**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, propylenglycol, 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% propylenglycol 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 ;

**Q6764:** L. Sabatino, *et al.* T3 enhances Ang2 in rat aorta in myocardial I/R: comparison with left ventricle. *J Mol Endocrinol* 2016;57(3):139-49

**Agents:** Triiodothyronine **Vehicle:** Saline; **Route:** SC; **Species:** Rat; **Pump:** 2ML4; **Duration:** 48 hours;

**ALZET Comments:** Dose (6 µg/kg/day); Controls received mp w/ vehicle; animal info (adult male Wistar rats 12-15 weeks old and weighing about 300 g); tri-iodothyronine aka T3; cardiovascular;

**Q6632:** G. Nicolini, *et al.* Early and Short-term Triiodothyronine Supplementation Prevents Adverse Postischemic Cardiac Remodeling: Role of Transforming Growth Factor-beta1 and Antifibrotic miRNA Signaling. *Mol Med* 2016;21(1):900-911

**Agents:** Triiodothyronine **Vehicle:** Saline; **Route:** SC; **Species:** Rat; **Pump:** 2002; **Duration:** 48 hours;

**ALZET Comments:** Dose (6 mg/kg/day); Controls received mp w/ vehicle; animal info (adult male Wistar rats weighing 385 ± 9 g); Triiodothyronine aka T3; cardiovascular;



**Q5167:** G. Nicolini, *et al.* Early and short-term triiodothyronine supplementation prevents adverse post-ischemic cardiac remodeling: role of transforming growth factor-beta1 and anti-fibrotic miRNA signaling. *Mol Med* 2015;

**Agents:** Triiodothyronine **Vehicle:** Saline; **Route:** SC; **Species:** Rat; **Pump:** 2002; **Duration:** 3 days;

**ALZET Comments:** Controls received mp w/ vehicle; animal info (male, Wistar, adult, 385+/- 9 g); functionality of mp verified by serum levels; cardiovascular; pumps removed after 3 days; Dose (6 ug/kg/day);

**Q4156:** S. Walrand, *et al.* Altered regulation of energy homeostasis in older rats in response to thyroid hormone administration. *FASEB Journal* 2014;28(1499-1510)

**Agents:** Triiodothyronine **Vehicle:** Saline; **Route:** SC; **Species:** Rat; **Pump:** Not Stated; **Duration:** 14 days;

**ALZET Comments:** Controls received mp w/ vehicle; animal info (male, Fischer 344 Brown Norway F1 hybrid, 7 and 27 months old); functionality of mp verified by blood levels; triiodothyronine aka T3;

**Q4076:** A. Saba, *et al.* Quantification of Thyroxine and 3,5,3'-Triiodo-Thyronine in Human and Animal Hearts by a Novel Liquid Chromatography-Tandem Mass Spectrometry Method. *Hormone and Metabolic Research* 2014;46(628-634)

**Agents:** Triiodothyronine **Vehicle:** Not Stated; **Route:** SC; **Species:** Rat; **Pump:** 2002; **Duration:** 3 days;

**ALZET Comments:** Controls received mp w/ saline; animal info (Wistar, 280-300g); functionality of mp verified by serum levels; cardiovascular;

**Q3722:** H. Nagao, *et al.* Effects of triiodothyronine on turnover rate and metabolizing enzymes for thyroxine in thyroidectomized rats. *LIFE SCIENCES* 2014;116(74-82)

**Agents:** Triiodothyronine **Vehicle:** NaOH; saline; **Route:** SC; **Species:** Rat; **Pump:** 2ML4; **Duration:** 14 days;

**ALZET Comments:** Control animals received mp w/ vehicle; animal info (7 wks old, male, Sprague Dawley)

**Q3881:** F. Forini, *et al.* Triiodothyronine Prevents Cardiac Ischemia/Reperfusion Mitochondrial Impairment and Cell Loss by Regulating miR30a/p53 Axis. *Endocrinology* 2014;155(4581-4590)

**Agents:** Triiodothyronine **Vehicle:** Saline; **Route:** SC; **Species:** Rat; **Pump:** 2ML4; **Duration:** 48 hours;

**ALZET Comments:** Controls received mp w/ vehicle; animal info (male, Wistar, 12-15 weeks old, 310g); ischemia (cardiac); cardiovascular;

**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;

**Duration:** Not Stated;

**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

**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; **Pump:** Not Stated; **Duration:** 24 hours;

**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);

**Q0392:** K. K. Henderson, *et al.* Physiological Replacement of T3 Improves Left Ventricular Function in an Animal Model of Myocardial Infarction-Induced Congestive Heart Failure. *Circulation: Heart Failure* 2009;2(3):243-U122

**Agents:** Triiodothyronine **Vehicle:** Saline; **Route:** SC; **Species:** Rat; **Pump:** 2004; **Duration:** 9 weeks;

**ALZET Comments:** Controls received mp w/ vehicle; animal info (adult, male, Sprague Dawley); pumps replaced at the 4th week; long-term study; myocardial infarction



**P9482:** V. A. Galton, *et al.* Life without Thyroxine to 3,5,3'-Triiodothyronine Conversion: Studies in Mice Devoid of the 5'-Deiodinases. *Endocrinology* 2009;150(6):2957-2963

**Agents:** Triiodothyronine, 3, 5, 3'- **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice; **Pump:** 1002; **Duration:** 14 days;

**ALZET Comments:** Controls received mp w/ vehicle; no stress (see pg. 2958); animal info (10 wks old, wr, D1/D2KO); "none of the animals suffered any ill effects of the implants, either generally or in the area of the pumps." (pg. 2958)

**Q0446:** P. Flandin, *et al.* Uncoupling protein-3 as a molecular determinant of the action of 3,5,3'-triiodothyronine on energy metabolism. *Endocrine* 2009;36(2):246-254

**Agents:** Triiodothyronine **Vehicle:** NaCl; **Route:** SC; **Species:** Mice; **Pump:** 2001; **Duration:** 3 days;

**ALZET Comments:** Controls received mp w/ vehicle; animal info (WT, UCP3KO, 2 mo old, female); functionality of mp verified by "increase in T3 during the treatment"

**P9559:** E. E. Cable, *et al.* Reduction of Hepatic Steatosis in Rats and Mice After Treatment with a Liver-Targeted Thyroid Hormone Receptor Agonist. *Hepatology* 2009;49(2):407-417

**Agents:** MB07344; GC-1; triiodothyroacetic acid, 3,5,3'; triiodothyronine **Vehicle:** Saline; BSA; **Route:** SC; **Species:** Rat; **Pump:** 2ML1; **Duration:** 7 days;

**ALZET Comments:** Controls received mp w/vehicle; animal info (male, Sprague Dawley, 300g, 10 wks old); MB07344, GC-1 are TR-beta-selective antagonists

**P9394:** M. S. Byerly, *et al.* Effects of BDNF, T<sub>3</sub>, and corticosterone on expression of the hypothalamic obesity gene network in vivo and in vitro. *American Journal of Physiology Regulatory, Integrative, and Comparable Physiology* 2009;296(4):R1180-R1189

**Agents:** Corticosterone; Triiodothyronine **Vehicle:** DMSO; Propylene glycol; **Route:** SC; **Species:** Bird (chicken); **Pump:** 2001; **Duration:** 72 hours;

**ALZET Comments:** Controls received mp w/ vehicle; animal info (male, 29 days old); 50% DMSO used; 50% propylene glycol

**P8314:** K. R. Short, *et al.* Effect of T3-induced hyperthyroidism on mitochondrial and cytoplasmic protein synthesis rates in oxidative and glycolytic tissues in rats. *American Journal of Physiology Endocrinology and Metabolism* 2007;292(2):E642-E647

**Agents:** Triiodothyronine **Vehicle:** Saline; Na<sub>2</sub>CO<sub>3</sub>; NaOH; BSA; **Route:** SC; **Species:** Rat; **Pump:** Not Stated; **Duration:** 14 days;

**ALZET Comments:** Controls received mp w/ vehicle; functionality of mp verified by serum T3 levels; animal info (male, Sprague-Dawley, 325-350g.); endocrinology

**P8585:** G. Fava, *et al.* Thyroid hormone inhibits biliary growth in bile duct-ligated rats by PLC/IP<sub>3</sub>/Ca<sup>2+</sup>-dependent downregulation of SRC/ERK1/2. *American Journal of Physiology Cell Physiology* 2007;292(4):C1467-C1475

**Agents:** Triiodothyronine, 2,3',5 L- **Vehicle:** NaOH; BSA; **Route:** IP; **Species:** Rat; **Pump:** Not Stated; **Duration:** 1 week;

**ALZET Comments:** Controls received mp w/ vehicle; functionality of mp verified by serum T3 levels; animal info (male, Fisher 344, 150-175g, bile duct ligation)

**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)

**P7595:** S. Danzi, *et al.* Effect of serum triiodothyronine on regulation of cardiac gene expression: role of histone acetylation. *American Journal of Physiology Heart and Circulatory Physiology* 2005;289(4):H1506-H1511

**Agents:** Triiodothyronine **Vehicle:** NaOH; Saline; **Route:** SC; **Species:** Rat; **Pump:** 1002; **Duration:** 3, 12 days;

**ALZET Comments:** Controls received mp w/ vehicle or euthyroid; functionality of mp verified by serum T3 levels; replacement therapy (thyroidectomy); dose-response (fig. 1); comparison of IM injections vs. mp; half-life (pg. H1506, H1508) 7 hours in vivo in rat; cardiovascular; animal info (male, Sprague-Dawley 200 g); mp primed 24 hrs in 37 C saline; "constant infusions leads to stable serum levels by 72 h." (p. H1508; "Bolus injection was not sufficient to normalize serum T3" (p. H1510)



**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

**P6569:** S. Lutz, *et al.* Plasma membrane-associated nucleoside diphosphate kinase (nm23) in the heart is regulated by beta-adrenergic signaling. *British Journal of Pharmacology* 2003;140(6):1019-1026

**Agents:** Isoproterenol; triiodothyronine; propranolol **Vehicle:** Not Stated; **Route:** SC; **Species:** Rat **Pump:** 2ML2 **Duration:** 14 d

**ALZET Comments:** Controls received mp w/ saline; cardiovascular

**P5898:** J. A. Levine, *et al.* Effect of hyperthyroidism on spontaneous physical activity and energy expenditure in rats. *Journal of Applied Physiology* 2003;94(1):165-170

**Agents:** Triiodothyronine **Vehicle:** BSA; NaOH (sodium hydroxide); sodium bicarbonate; **Route:** SC; **Species:** Rat;

**Pump:** Not Stated; **Duration:** 14 days;

**ALZET Comments:** Controls received mp w/ vehicle; pump model not stated

**P5951:** L. A. Comeau, *et al.* Modifying thyroidal status in Atlantic cod by osmotic pump delivery of thyroid and antithyroid agents. *TRANSACTIONS OF THE AMERICAN FISHERIES SOCIETY* 2003;132(5):1021-1026

**Agents:** Triiodothyronine; iodide, potassium; methimazole; Estradiol, 17B-; testosterone; thiourea **Vehicle:** Saline; **Route:** IP; **Species:** Fish (cod); **Pump:** 2ML1; **Duration:** 17 days;

**ALZET Comments:** Controls received mp w/ vehicle; functionality of mp verified by residual volume; drug plasma levels taken; potassium iodide, methimazole and thiourea are thyroid inhibitors; sex hormones were in a separate study where the ALZET pump model was not listed; "this study demonstrates the value of osmotic pumps as effective delivery vehicles for drugs in wild demersal fish." p. 1024

**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; Sodium hydroxide; **Route:** SC; **Species:** Rat; **Pump:** 2002; **Duration:** 15 d

**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 **Vehicle:** Not Stated; **Route:** SC; **Species:** Rat;

**Pump:** Not Stated; **Duration:** 2 weeks;

**ALZET Comments:** Controls received teflon rods; replacement therapy (hypophysectomy)

**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



**P5761:** K. R. Short, *et al.* T(3) increases mitochondrial ATP production in oxidative muscle despite increased expression of UCP2 and -3. *American Journal of Physiology Endocrinology and Metabolism* 2001;280(5):E761-E769

**Agents:** Triiodothyronine **Vehicle:** Saline; BSA; Sodium Hydroxide (NaOH); Sodium Carbonate; **Route:** SC; **Species:** Rat; **Pump:** Not Stated; **Duration:** 14 days;

**ALZET Comments:** Controls received mp w/ vehicle; 5% BSA used

**P4799:** A. D. Chapital, *et al.* The effects of triiodothyronine augmentation on antithrombin III levels in sepsis. *American Surgeon* 2001;67(253-256)

**Agents:** Triiodothyronine **Vehicle:** Saline; **Route:** SC; **Species:** Rat; **Pump:** Not Stated; **Duration:** 24 hours;

**ALZET Comments:** Controls received sham surgery; functionality of mp verified by T3 plasma levels by direct chemoluminescence assay; dose-response (graph p. 254); immunology

**P4701:** K. Ojamaa, *et al.* Thyroid hormone regulation of phospholamban phosphorylation in the rat heart. *Endocrinology* 2000;141(6):2139-2144

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

**ALZET Comments:** Functionality of mp verified by T<sub>3</sub> plasma levels via chemiluminescent assay; cardiovascular

**P4766:** H. Minami, *et al.* Enhancement of retrovirus-mediated gene transfer to rat liver in vivo by infusion of hepatocyte growth factor and triiodothyronine. *Journal of Hepatology* 2000;33(183-188)

**Agents:** Hepatocyte growth factor; Triiodothyronine **Vehicle:** Saline; Heparin, sodium; **Route:** IV (portal vein); **Species:** Rat; **Pump:** Not Stated; **Duration:** 24 hours;

**ALZET Comments:** Comparison of portal vein injections vs. mp; cancer; immunology; peptides;

**P9022:** G. Medina-Gomez, *et al.* Thermogenic effect of triiodothyroacetic acid at low doses in rat adipose tissue without adverse side effects in the thyroid axis. *American Journal of Physiology Endocrinology and Metabolism* 1999;67(4):E688-E697

**Agents:** Triiodothyronine; Triiodothyroacetic acid **Vehicle:** NaOH; Saline; BSA; **Route:** SC; **Species:** Rat; **Pump:** 2ML2;

**Duration:** 12 days;

**ALZET Comments:** Controls received mp w/ placebo; animal info (female, Sprague Dawley)

**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

**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 d

**ALZET Comments:** controls received sham surgery; functionality of mp verified by serum hormone levels; replacement therapy (thyroidectomy); toxicology



**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:** <sup>125</sup>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

**P3008:** B. Freyschuss, *et al.* The hormonal regulation of the oestrogen receptor in rat liver: an interplay involving growth hormone, thyroid hormones and glucocorticoids. *J. Endocrinol* 1994;142(285-298

**Agents:** Growth hormone, human; Triiodothyronine, L-; Prolactin, ovine; Dexamethasone **Vehicle:** Not Stated; **Route:** SC;  
**Species:** Rat; **Pump:** Not Stated; **Duration:** 7 days;

**ALZET Comments:** controls received hypophysectomy only w/ no mp; functionality of mp verified by checking pumps after usage; replacement therapy (hypophysectomy); comparison of single sc injections of GH & T3 vs. mp; agents given alone or in combination; growth hormone via mp partly restores liver estrogen receptor concentration while same dose in 2 single injections daily has no effect

**P3019:** H. Vidal, *et al.* Effect of growth hormone deficiency on hormonal control of hepatic glycogenolysis in hypophysectomized rat. *Metabolism* 1993;42(5):631-637

**Agents:** Triiodothyronine; Corticotropin **Vehicle:** NaOH; **Route:** IP; **Species:** Rat; **Pump:** 2002; **Duration:** 8,10 days;

**ALZET Comments:** Peptides

**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:** <sup>125</sup>I 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:** <sup>125</sup>I tracer; <sup>131</sup>I 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)

**P2241:** J. J. DiStefano, *et al.* Enterohepatic regulation and metabolism of 3,5,3'-triiodothyronine in hypothyroid rats. *Endocrinology* 1993;132(4):1665-1670

**Agents:** Triiodothyronine **Vehicle:** <sup>125</sup>I tracer; Sodium carbonate; Sodium hydroxide; Radio-isotopes; Serum, rat; **Route:** SC;  
**Species:** Rat; **Pump:** 2001; **Duration:** 7 days;

**ALZET Comments:** replacement therapy (thyroidectomy)

**R0102:** R. M. Lechan, *et al.* Feedback regulation of thyrotropin-releasing hormone gene expression by thyroid hormone in the hypothalamic paraventricular nucleus. In "Functional Anatomy of the Neuroendocrine Hypothalamus," Wiley, Chichester (Ciba Foundation Symposium 168) 1992;144-164

**Agents:** Triiodothyronine **Vehicle:** Not Stated; **Route:** IP; **Species:** Not Stated; **Pump:** Not Stated; **Duration:** 7 days;

**ALZET Comments:** replacement therapy (hypothyroidism); functionality of mp verified by measuring plasma levels of TSH

**P2570:** I. Kakucska, *et al.* Thyrotropin-releasing hormone gene expression in the hypothalamic paraventricular nucleus is dependent upon feedback regulation by both triiodothyronine and thyroxine. *Endocrinology* 1992;130(5):2845-2850

**Agents:** Triiodothyronine **Vehicle:** Sodium hydroxide; Saline; Serum, rat; **Route:** IP; **Species:** Rat; **Pump:** 2ML2; **Duration:** 7 d

**ALZET Comments:** controls received mp w/ vehicle; functionality of mp verified by plasma levels; replacement therapy (methimazole-induced hypothyroidism)



- P2310:** J. H. Hays, *et al.* Sodium ipodate increases triiodothyronine action in vivo. *J. Endocrinol. Invest* 1992;15(507-512  
**Agents:** Triiodothyronine, L- **Vehicle:** Sodium hydroxide; Serum, rat; **Route:** SC; **Species:** Rat; **Pump:** 2002; **Duration:** 14 days;  
**ALZET Comments:** controls received thyroidectomy but no agent treatment; functionality of mp verified by in vitro testing; replacement therapy (thyroidectomy)
- P2383:** M. B. Elam, *et al.* In vivo growth hormone treatment stimulates secretion of very low density lipoprotein by the isolated perfused rat liver. *Endocrinology* 1992;131(6):2717-2722  
**Agents:** Hydrocortisone; Triiodothyronine; Growth hormone **Vehicle:** PEG; Sodium hydroxide; Saline; **Route:** SC; **Species:** Rat; **Pump:** Not Stated; **Duration:** Not Stated;  
**ALZET Comments:** Peptides
- P2243:** S. A. Dulchavsky, *et al.* Triiodothyronine treatment maintains surfactant synthesis during sepsis. *Surgery* 1992;112(475-479  
**Agents:** Triiodothyronine **Vehicle:** Saline; **Route:** SC; **Species:** Rat; **Pump:** Not Stated; **Duration:** Not Stated;  
**ALZET Comments:** Controls received mp w/saline; functionality of mp verified seven levels
- 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 d  
**ALZET Comments:** functionality of mp verified by serum levels (p. 38); replacement therapy (thyroidectomy); good methods
- P1855:** H. G. Wilcox, *et al.* Effects of hyperthyroidism on synthesis, secretion and metabolism of the VLDL apoproteins by the perfused rat liver. *Biochimica et Biophysica Acta (BBA) - Lipids and Lipid Metabolism* 1991;1081(246-252  
**Agents:** Triiodothyronine **Vehicle:** Not Stated; **Route:** IP; **Species:** Rat; **Pump:** Not Stated; **Duration:** 7, 28 days;  
**ALZET Comments:** no comment posted
- 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, I- **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
- P1708:** S. Y. Wu, *et al.* Two pathways for thyroxine 5'-monodeiodination in brown adipose tissue in fetal sheep: ontogenesis and divergent responses to hypothyroidism and 3,5,3'-triiodothyronine replacement. *Endocrinology* 1990;126(4):1950-1958  
**Agents:** Triiodothyronine **Vehicle:** Not Stated; **Route:** Not Stated; **Species:** Sheep (fetus); **Pump:** Not Stated; **Duration:** 8 days;  
**ALZET Comments:** Functionality of mp verified by serum levels; replacement therapy (thyroidectomy)



**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

**P1609:** K. H. Hupart, *et al.* Differential response to L-triiodothyronine of anterior pituitary growth hormone messenger ribonucleic acid (mRNA) and B-thyrotropin mRNA in a hypothyroid Walker 256 carcinoma-bearing rat model of nonthyroidal disease. *Endocrinology* 1990;126(1):616-621

**Agents:** Radio-isotopes; Triiodothyronine **Vehicle:** 125I tracer; Sodium hydroxide; Serum, rat; **Route:** SC; **Species:** Rat; **Pump:** 2001; **Duration:** 3 days;

**ALZET Comments:** comparison of IP injections vs. mp infusion; cancer/immunology

**P1599:** B. Comte, *et al.* Influence of thyroid hormones on gluconeogenesis from glycerol in rat hepatocytes: a dose-response study. *Metabolism* 1990;39(3):259-263

**Agents:** Triiodothyronine **Vehicle:** Not Stated; **Route:** IP; **Species:** Rat; **Pump:** Not Stated; **Duration:** 7 days;

**ALZET Comments:** replacement therapy (thyroidectomy)

**P1590:** Z. W. Lin, *et al.* Individual rabbit cardiac myocytes have different thresholds for alpha myosin heavy chain regulation by thyroid hormone. *American Journal of Anatomy* 1989;185(455-461

**Agents:** Triiodothyronine, L- **Vehicle:** Not Stated; **Route:** SC; **Species:** Rabbit; **Pump:** Not Stated; **Duration:** 5 days;

**ALZET Comments:** Functionality of mp verified by daily blood LT3 levels using RIA; replacement therapy (propylthiouracil diet-induced hypothyroid); various LT3 doses infused

**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)

**P1323:** H. G. Wilcox, *et al.* Stimulation of intestinal secretion of apolipoprotein AI by triiodothyronine. *Biochemical and Biophysical Research Communications* 1988;153(2):606-611

**Agents:** Triiodothyronine **Vehicle:** Butanol, n-; PEG; **Route:** IP; **Species:** Rat; **Pump:** 2001; **Duration:** 7 days;

**ALZET Comments:** no comment posted

**P1440:** H. L. Katzeff, *et al.* Exercise regulation of triiodothyronine metabolism. *American Journal of Physiology Endocrinology and Metabolism* 1988;255(E824-E828

**Agents:** Radio-isotopes; Triiodothyronine **Vehicle:** 125I tracer; Albumin, bovine serum; Saline; **Route:** SC; **Species:** Mice;

**Pump:** 2001; **Duration:** 7 days;

**ALZET Comments:** Dose-response; functionality of mp verified by serum levels

**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 d

**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);



**P1269:** M. B. Elam, *et al.* Stimulation of in vitro triglyceride synthesis in the rat hepatocyte by growth hormone treatment in vivo. *Endocrinology* 1988;122(4):1397-1402

**Agents:** Cortisol; Growth hormone, human; Triiodothyronine **Vehicle:** Sodium hydroxide; Saline; **Route:** SC; **Species:** Rat; **Pump:** Not Stated; **Duration:** 7, 14 days;

**ALZET Comments:** pump model not stated; male rats infused for 7 days, females for 14; agents infused separately; replacement therapy (hypophysectomy); peptides

**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; 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

**P1324:** A. Anagnostou, *et al.* Effects of triiodothyronine replacement on the anemia of chronic renal failure. *Experimental Hematology* 1988;16(159-162)

**Agents:** Triiodothyronine **Vehicle:** Sodium hydroxide; Serum, rat; Water; **Route:** IP; **Species:** Rat; **Pump:** 2002; **Duration:** 14 d

**ALZET Comments:** dose-response (table); comparison of sc injections vs. mp infusion; functionality of mp verified

**P1049:** B. Lacour, *et al.* Chronic triiodothyronine supplementation does not improve the lipoprotein disorders of mildly uremic rats. *Nephron* 1987;45(129-134)

**Agents:** Triiodothyronine **Vehicle:** Not Stated; **Route:** IP; **Species:** Rat; **Pump:** 2002; **Duration:** 35 days;

**ALZET Comments:** pumps replaced twice; some animals received contralateral nephrectomy; long-term study

**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)

**P1127:** L. A. Gavin, *et al.* Brain lipoprotein lipase is responsive to nutritional and hormonal modulation. *Metabolism* 1987;36(10):919-924

**Agents:** Insulin; Triiodothyronine **Vehicle:** Not Stated; **Route:** SC; **Species:** Rat; **Pump:** 2001; **Duration:** 4, 7 days;

**ALZET Comments:** dose-response; replacement therapy (streptozotocin induced diabetes, thyroidectomy); peptides

**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:** NaOH; NaCl; Serum, rat; **Route:** SC; **Species:** Rat; **Pump:** 2002; **Duration:** 7, 14 d

**ALZET Comments:** pumps replaced after 7 days; dose-response; intact euthyroid control rats were left untreated; replacement therapy (thyroparathyroidectomy)

**P1063:** G. Abraham, *et al.* The effects of a constant T3 level and thermoneutrality in diet-induced hyperphagia. *Hormone and Metabolic Research* 1987;19(96-100)

**Agents:** Triiodothyronine **Vehicle:** Saline; **Route:** SC; **Species:** Rat; **Pump:** 2002; **Duration:** Not Stated;

**ALZET Comments:** controls received sham operation w/placebo mp; replacement therapy (thyroidectomy) pumps replaced at day 14 and day 28; long-term study



**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)

**P0714:** J. O. Olubadewo, *et al.* Differential effects of alanine on ketogenesis and triacylglycerol formation by isolated perfused livers from euthyroid and hyperthyroid rats. *Metabolism* 1985;34(12):1139-1145

**Agents:** Triiodothyronine **Vehicle:** Butanol, n-; Propylene glycol; **Route:** IP; **Species:** Rat; **Pump:** Not Stated; **Duration:** 7 days;

**ALZET Comments:** control group received mp w/ vehicle; mp infusion of T3 to induce hyperthyroidism in rats

**P0727:** L. A. Gavin, *et al.* Modulation of adipose lipoprotein lipase by thyroid hormone and diabetes. *Diabetes* 1985;34(12):1266-1271

**Agents:** Insulin; Triiodothyronine **Vehicle:** Not Stated; **Route:** SC; **Species:** Rat; **Pump:** 2001; **Duration:** 72 hours;

**ALZET Comments:** replacement therapy (thyroidectomy, streptozocin induced diabetes); peptides

**P0539:** J. M. Tibaldi, *et al.* Response of hepatic mitochondrial a-glycerophosphate dehydrogenase and malic enzyme to constant infusions of L-triiodothyronine in rats bearing the Walker 256 carcinoma. *Journal of Clinical Investigation* 1984;74(3):705-714

**Agents:** Triiodothyronine **Vehicle:** Sodium hydroxide; Serum, rat; **Route:** SC; **Species:** Rat; **Pump:** **Duration:** 3 days;

**ALZET Comments:** 1.2 and 4.5 ug T3/100g body weight/day; dose-response data; cancer

**P0436:** A. H. Klein, *et al.* Thyroid hormones augment catecholamine-stimulated brown adipose tissue thermogenesis in the ovine fetus. *Endocrinology* 1984;114(4):1065-1069

**Agents:** Triiodothyronine **Vehicle:** Not Stated; **Route:** SC; **Species:** Sheep (fetus); **Pump:** Not Stated; **Duration:** 8 days;

**ALZET Comments:** Replacement therapy (thyroidectomy); 25 ug/h and 50 ug/h infusions of T3

**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:** NaOH; 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, I-; 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

**P0355:** A. H. Klein, *et al.* Effect of changes in thyroid status on tissue respiration in fetal and newborn sheep. *American Journal of Physiology Endocrinology and Metabolism* 1983;244(6):E603-E606

**Agents:** Triiodothyronine **Vehicle:** Not Stated **Route:** SC **Species:** Sheep (fetus); Sheep (lamb); **Pump:** Not Stated **Duration:** 8d

**ALZET Comments:** Replacement therapy (thyroidectomy)

**P0350:** J. G. Brown, *et al.* Dose response of protein turnover in rat skeletal muscle to triiodothyronine treatment. *Biochimica et Biophysica Acta (BBA) - General Subjects* 1983;757(1):182-190

**Agents:** Triiodothyronine, 3,5,3'- **Vehicle:** PEG 300; Water; **Route:** IP; **Species:** Rat; **Pump:** 2001; **Duration:** 1 week;

**ALZET Comments:** Replacement therapy (thyroidectomy)



**P0367:** P. L. Ballard, *et al.* Thyroid hormones and plasma corticosteroid binding globulin capacity in fetal and newborn lambs. *Endocrinology* 1983;113(4):1197-1200

**Agents:** Triiodothyronine **Vehicle:** Not Stated; **Route:** Not Stated; **Species:** Sheep (fetus); Sheep (lamb); **Pump:** Not Stated; **Duration:** 8 days;

**ALZET Comments:** Replacement therapy (thyroidectomy); doses of T3 were 8 ug/h, 25 ug/h, 50 ug/h

**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)

**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)

**P0069:** R. H. W. Lorijn, *et al.* Induced fetal hyperthyroidism: cardiac output and oxygen consumption. *American Journal of Physiology Gastrointestinal and Liver Physiology* 1980;239(3):H302-H307

**Agents:** Triiodothyronine **Vehicle:** PEG; **Route:** SC; **Species:** Sheep (fetus); **Pump:** Not Stated; **Duration:** 5 days;

**ALZET Comments:** no comment posted

**P0045:** R. H. W. Lorijn, *et al.* Clinical and physiologic implications of increased fetal oxygen consumption. *American Journal of Obstetrics & Gynecology* 1980;136(4):451-457

**Agents:** Triiodothyronine **Vehicle:** PEG; **Route:** SC; **Species:** Sheep (fetus); **Pump:** Not Stated; **Duration:** 4, 5 days;

**ALZET Comments:** Harvard pump used to infuse NE during control period of 30-60 mins.

**P0059:** J. M. Connors, *et al.* Feedback effectiveness of periodic versus constant triiodothyronine replacement. *Endocrinology* 1980;106(3):911-917

**Agents:** Triiodothyronine **Vehicle:** Sodium hydroxide; Propanediol, 1,2-; **Route:** SC; **Species:** Rat; **Pump:** Not Stated; **Duration:** Not Stated;

**ALZET Comments:** Intermittent injections vs. infusion; organ replacement therapy (thyroidectomy)