



Recent References (2008-Present) on the Administration of Insulin-Like Growth Factors
Using ALZET® Osmotic Pumps

Q11088: A. Lozano-Urena, *et al.* IGF2 interacts with the imprinted gene Cdkn1c to promote terminal differentiation of neural stem cells. *Development* 2023;150(1):

Agents: Insulin-like growth factor 2 **Vehicle:** PBS; **Route:** CSF/CNS (lateral ventricle); **Species:** Mice; **Strain:** C57BL/6; **Pump:** 1007D; **Duration:** 7 days;

ALZET Comments: Controls received mp w/ vehicle; animal info (Male; 2-4 months old); Brain coordinates (Anteroposterior -0.1 mm; Mediolateral -0.8 mm from bregma; Dorsoventral -3 mm from skull surface);

R0451: I. Chaves-Coira, *et al.* Cognitive Deficits in Aging Related to Changes in Basal Forebrain Neuronal Activity. *Cells* 2023;12(11):

Agents: Insulin-like growth factor 1 **Vehicle:** Not Stated; **Route:** CNS/CSF; **Species:** Not Stated; **Strain:** Not Stated;

Pump: Not Stated; **Duration:** 28 days;

ALZET Comments: neurodegenerative; aging

Q5699: A. Heinen, *et al.* IGF1 Treatment Improves Cardiac Remodeling after Infarction by Targeting Myeloid Cells. *Mol Ther* 2019;27(1):46-58

Agents: Insulin-like growth factor-I **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice (knockout); **Pump:** 1003D; **Duration:** 3 days;

ALZET Comments: Dose (1 µg/g/day); Controls received mp w/ vehicle; animal info (IGF1RKO mice); post op. care (buprenorphine (0.05–0.1 mg/kg body weight, s.c.) for 5 days); cardiovascular;

Q4964: S. Bake, *et al.* Insulin-like Growth Factor (IGF)-1 treatment stabilizes the microvascular cytoskeleton under ischemic conditions. *Experimental Neurology* 2019;311(162-172)

Agents: Insulin-like growth factor-I, recomb. Human; JB-1 **Vehicle:** CSF, artificial; **Route:** CSF/CNS (right lateral ventricle);

Species: Rat; **Pump:** 1003D; 1007D; **Duration:** 1 day; 5 days;

ALZET Comments: Dose (100 µg/ml rhIGF-1; 20 µg/ml JB-1); Controls received mp w/ vehicle; animal info (Female Sprague Dawley rats; 10–12 months; weight range 325–350 g); JB-1 is an IGFR inhibitor; Brain coordinates (– 1.0mm posterior to bregma, –1.4mm medial lateral, –3.5mm from dural surface); cyanoacrylate adhesive; ischemia (cerebral);

Q7295: A. Santi, *et al.* Circulating insulin-like growth factor I modulates mood and is a biomarker of vulnerability to stress: from mouse to man. *Transl Psychiatry* 2018;8(1):142

Agents: Insulin-like growth factor-1 **Vehicle:** Saline; **Route:** CSF/CNS (lateral ventricle), SC; **Species:** Mice; **Pump:** 1002, 1004;

Duration: 10 days, 25 days;

ALZET Comments: Dose (1 µg/day CF/CNS, 50 µg/kg/day SC); Controls received mp w/ vehicle; animal info (male, C56BL/6JolaHsd, 28–35 g); (male, LID,; 27–38 g); behavioral testing (predator exposure, open field, elevated plus maze); ALZET brain infusion kit 3 used; Brain coordinates (–0.6 mm from bregma, 1.4 mm lateral, 2 mm of depth);

Q7207: S. Maruyama, *et al.* Relaxin Family Member Insulin-Like Peptide 6 Ameliorates Cardiac Fibrosis and Prevents Cardiac Remodeling in Murine Heart Failure Models. *J Am Heart Assoc* 2018;7(12):

Agents: Angiotensin II, Insulin-like peptide 6 **Vehicle:** Saline, ammonium bicarbonate; **Route:** SC; **Species:** Mice; **Pump:** 1002, 2002; **Duration:** 14 days;

ALZET Comments: Dose (Ang II 2 mg/kg per day, INSL6 protein 50–70 nmol/kg per day); 8.5 pH ammonium bicarbonate used; Controls received mp w/ vehicle; cardiovascular;

Q7102: D. Cabrera, *et al.* Somatotrophic Axis Dysfunction in Non-Alcoholic Fatty Liver Disease: Beneficial Hepatic and Systemic Effects of Hormone Supplementation. *Int J Mol Sci* 2018;19(5):

Agents: Insulin-like growth factor-1, growth hormone **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice; **Pump:** Not Stated;

Duration: 4 weeks;

ALZET Comments: Dose (9 µg/g/day GH, 0.02 µg/g/day IGF-1); animal info (C57BL/6 mice);



Q7775: D. Aguado-Llera, *et al.* The Protective Effects of IGF-I against beta-Amyloid-related Downregulation of Hippocampal Somatostatinergic System Involve Activation of Akt and Protein Kinase A. *Neuroscience* 2018;374(104-118)

Agents: Insulin-like growth factor-I **Vehicle:** Saline; **Route:** CSF/CNS (right cerebral ventricle); **Species:** Rat; **Pump:** 2002; **Duration:** 14 days;

ALZET Comments: Dose (50 ug/kg/day); Controls received mp w/ vehicle; animal info (Male, Wistar, 230-250 g); Insulin-like growth factor-I aka IGF-I; Brain coordinates (-0.3 mm anteroposterior, 1.1 mm lateral); bilateral cannula used; neurodegenerative (Alzheimer's Disease);

Q6519: A. Trueba-Saiz, *et al.* Circulating Insulin-Like Growth Factor I Regulates Its Receptor in the Brain of Male Mice. *Endocrinology* 2017;158(2):349-355

Agents: Insulin-like growth factor 1, human **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice; **Pump:** Not Stated; **Duration:** Not Stated;

ALZET Comments: Dose (50 ug/kg/d); animal info (8-9 week old male C57BL/6J mice weighing 25–30 g);

Q6627: J. Mysoet, *et al.* Reorganization of motor cortex and impairment of motor performance induced by hindlimb unloading are partially reversed by cortical IGF-1 administration. *Behavioural Brain Research* 2017;317(434-443)

Agents: Insulin-like Growth Factor I **Vehicle:** CSF, artificial; **Route:** CSF/CNS (motor cortex); **Species:** Rat; **Pump:** 2002; **Duration:** 2 weeks;

ALZET Comments: Dose (50 µg/mL); animal info (Male wistar rats weighing 280–320 g); Brain coordinates (coordinates from Bregma: 3.5 mm posterior and 3 mm lateral));

Q6698: S. Mir, *et al.* IGF-1 mediated Neurogenesis Involves a Novel RIT1/Akt/Sox2 Cascade. *Sci Rep* 2017;7(1):3283

Agents: Insulin-like Growth Factor-1 **Vehicle:** Saline; **Route:** SC; **Species:** Mice (knockout); **Pump:** Not Stated; **Duration:** 1 w **ALZET Comments:** Dose (500ng/day); Controls received mp w/ vehicle; animal info (WT and 12 week old RIT1-/- mice);

Q6438: A. H. Leko, *et al.* Insulin-like growth factor I and its binding protein-3 are regulators of lactation and maternal responsiveness. *Sci Rep* 2017;7(1):3396

Agents: NBI-31772; Insulin-like growth factor I **Vehicle:** CSF, artificial; DMSO; **Route:** CSF/CNS; **Species:** Rat; **Pump:** 2002; **Duration:** 14 days;

ALZET Comments: Dose (48 µg IGF-I/day; 19,92 µg NBI-31772/day); 1% DMSO used; Controls received mp w/ vehicle; animal info (85 female Wistar rats weighing 250–300 g); post op. care (Tardomyocel® comp. III antibiotics (0.1 ml/kg body weight) was given s.c. to the animals for 5 days); enzyme inhibitor (brain IGFBP-3); ALZET brain infusion kit 2 used; Brain coordinates (antero-posterior, -0.5; lateral, 1.4; ventral, 3.6 mm);

Q6431: M. Hlavica, *et al.* Intrathecal insulin-like growth factor 1 but not insulin enhances myelin repair in young and aged rats. *Neurosci Lett* 2017;648(41-46)

Agents: Insulin-like Growth Factor 1, insulin **Vehicle:** Acetic acid, Saline, Tween; **Route:** CSF/CNS (intrathecal); **Species:** Rat; **Pump:** 2ML2; **Duration:** 21 days;

ALZET Comments: Dose (100 µg/day); 0.1% Tween used; Controls received mp w/ vehicle; animal info (12–14 weeks-old and 12 months-old female Long Evans rats); Insulin-like Growth Factor 1 aka IGF-1;

Q6244: S. C. Hewitt, *et al.* Role of ERalpha in Mediating Female Uterine Transcriptional Responses to IGF1. *Endocrinology* 2017;158(8):2427-2435

Agents: Insulin-like growth factor 1 **Vehicle:** Acetic acid **Route:** Not Stated **Species:** Mice KO **Pump:** 1003D **Duration:** 24 hrs

ALZET Comments: Dose (0.5 mg IGF1/mL); 0.1N acetic acid used; animal info (Eight weeks or older female Ex3aERKO or ERaUtkKO mice); replacement therapy (ooverectomy);

Q4783: Shameena Bake, *et al.* Insulin-Like Growth Factor (IGF)-I Modulates Endothelial Blood-Brain Barrier Function in Ischemic Middle-Aged Female Rats. *Endocrinology* 2016;157(1):61-69

Agents: Insulin-like growth factor-I, human recomb **Vehicle:** aCSF **Route:** SC; **Species:** Rat; **Pump:** 1003D; **Duration:** 48hrs

ALZET Comments: Controls received mp w/ vehicle; animal info (female, Sprague Dawley, 9-11 months old); animal info (female, Sprague Dawley, 9-11 months old); animal info (female, Sprague Dawley, 9-11 months old); immunology; cyanoacrylate adhesive; pumps primed overnight;



Q6633: H. Nishizawa, *et al.* IGF-I induces senescence of hepatic stellate cells and limits fibrosis in a p53-dependent manner. *Sci Rep* 2016;6(34605)

Agents: Insulin-like Growth Factor 1, recomb.; Growth Hormone, human **Vehicle:** Saline; **Route:** SC; **Species:** Rat; Mice; **Pump:** 2004; **Duration:** 4 weeks; 6 weeks;

ALZET Comments: Dose (10 mg/mL); Controls received mp w/ vehicle; animal info (Eight-week-old male ICR mice, Sprague-Dawley (SD) rats; db/db mice with a C57BL/6 background); Insulin-like Growth Factor aka IGF-I;

Q6611: T. D. Luo, *et al.* Effects of age and insulin-like growth factor-1 on rat neurotrophin receptor expression after nerve injury. *Muscle Nerve* 2016;54(4):769-75

Agents: Insulin-like Growth Factor 1, recomb. human **Vehicle:** Saline; **Route:** Bone (tibia); **Species:** Rat; **Pump:** 1002;

ALZET Comments: Controls received mp w/ vehicle; animal info (Male Fischer 3443Brown-Norway hybrid rats); post op. care (buprenorphine);

Q4807: Jayne C. Charnock, *et al.* The impact of a human IGF-II analog ([Leu27]IGF-II) on fetal growth in a mouse model of fetal growth restriction. *American Journal of Physiology Endocrinology and Metabolism* 2016;310):E24-E31

Agents: Insulin-like growth factor 2, Leu27 **Vehicle:** HCl; **Route:** SC; **Species:** Not Stated; **Pump:** **Duration:** 5 days;

ALZET Comments: Controls received mp w/ vehicle; animal info (female, eNOS -/-, E12.5); teratology; Dose (1 mg/kg/day); noted using "100ul miniosmotic pump (200D)" pgE25;

Q4624: L. Van Landeghem, *et al.* IGF1 stimulates crypt expansion via differential activation of 2 intestinal stem cell populations. *FASEB JOURNAL* 2015;29(2828-2842)

Agents: Insulin-like growth factor, recombinant human **Vehicle:** NaCl; **Route:** SC; **Species:** Mice; **Duration:** 5 days;

ALZET Comments: Controls received mp w/ vehicle; animal info (Sox9-EGFP);

Q4119: S. Sukhanov, *et al.* Insulin-like growth factor I reduces lipid oxidation and foam cell formation via downregulation of 12/15-lipoxygenase. *Atherosclerosis* 2015;238(313-320)

Agents: Insulin-like growth factor-1, human recombinant **Species:** Mice; **Duration:** 4 weeks;

ALZET Comments: Controls received mp w/ saline; animal info (Apoe -/-, 8 weeks old); cardiovascular; immunology;

Q4592: P. Standen, *et al.* Maternal insulin-like growth factor 1 and 2 differentially affect the renin-angiotensin system during pregnancy in the guinea pig. *GROWTH HORMONE & IGF RESEARCH* 2015;25(141-147)

Agents: Insulin-like growth factor-1; insulin-like growth factor 2 **Vehicle:** Acetic acid; **Route:** SC; **Species:** Guinea pig; **Pump:** 2002; **Duration:** 18 days;

ALZET Comments: Controls received mp w/ vehicle; animal info (GD20); teratology; cardiovascular;

Q4260: A. J. Simmons, *et al.* Cytometry-based single-cell analysis of intact epithelial signaling reveals MAPK activation divergent from TNF-alpha-induced apoptosis in vivo. *Molecular Systems Biology* 2015;11(U60-U73)

Agents: Insulin-like growth factor-1, human, recomb. **Vehicle:** Water; **Route:** Not Stated; **Species:** Mice; **Pump:** Not Stated; **Duration:** Not Stated;

ALZET Comments: animal info (female, C57BL/6)

Q4541: J. Mysoet, *et al.* role of IGF-1 in cortical plasticity and functional deficit induced by sensorimotor restriction. *Behavioural Brain Research* 2015;290(117-123)

Agents: Insulin-like growth factor-1 **Vehicle:** CSF, artificial; **Route:** CSF/CNS; **Species:** Rat; **Pump:** 2002; **Duration:** 14 days;

ALZET Comments: Controls received mp w/ vehicle; animal info (male, Wistar, 280-320g); behavioral testing (mechanical withdrawal); pumps primed overnight;

Q5021: M. Ikemoto-Uezumi, *et al.* Pro-Insulin-Like Growth Factor-II Ameliorates Age-Related Inefficient Regenerative Response by Orchestrating Self-Reinforcement Mechanism of Muscle Regeneration. *Stem Cells* 2015;33(8):2456-68

Agents: Insulin-like growth factor II, pro **Vehicle:** PBS; **Route:** SC; **Species:** Mice; **Pump:** 1003D; 2001; **Duration:** 3 days; 7 days;

ALZET Comments: Controls received mp w/ vehicle; animal info (C57BL6, 2 months or 24-27 months old); Dose (0.5 ug/hr);



Q4120: K. Sundstroem, *et al.* Combined Treatment With GH and IGF-I: Additive Effect on Cortical Bone Mass But Not on Linear Bone Growth in Female Rats. *Endocrinology* 2014;155(4798-4807)

Agents: Insulin-like growth factor-1 **Vehicle:** NaCl; acetic acid; water, sterile, sodium acetate trihydrate; polysorbate 20; sodium citrate; citric acid monohydrate; phenol; **Route:** SC; **Species:** Rat; **Pump:** 1007D; 2001; **Duration:** 4 weeks;

ALZET Comments: Animal info (female, Wistar, 23 days old); functionality of mp verified by ELISA of serum; pumps replaced every week; stress/adverse reaction: (see pg. 4799 seroma); post op. care (bupivacaine 1 mg/kg, carprofen 5 mg/kg); "Problems with drug absorption could also have affected the results because many animals developed a seroma at the site of pump implantation, being most pronounced in animals treated with combination therapy. The seromas did not resolve and were first noted after 2 weeks of therapy. These could theoretically have affected the uptake of the drug into the circulation. However, when evaluating the growth rates of animals with seromas with group mates without seromas, no differences were observed." pg 4805-4806;

Q3662: Y. Sumino, *et al.* Therapeutic Effects of IGF-1 on Stress Urinary Incontinence in Rats with Simulated Childbirth Trauma. *Journal of Urology* 2014;191(2):529-538

Agents: Insulin-like growth factor-1, human recombinant **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Pump:** 2001; **Duration:** 4 days; 7 days;

ALZET Comments: Controls received mp w/ vehicle; animal info (female, Sprague Dawley, vaginal distension); functionality of mp verified by ELISA of blood serum;

Q4017: G. Neal-Perry, *et al.* Insulin-Like Growth Factor-I Regulates LH Release by Modulation of Kisspeptin and NMDA-Mediated Neurotransmission in Young and Middle-Aged Female Rats. *Endocrinology* 2014;155(1827-1837)

Agents: JB-1; insulin-like growth factor-1; **Vehicle:** CSF, artificial; **Route:** CSF/CNS (third ventricle); **Species:** Rat; **Pump:** 2002; **Duration:** Not Stated;

ALZET Comments: Controls received mp w/ vehicle; animal info (female, Sprague Dawley, 3-4 months or 9-11 months old, ovariectomized); peptides; cannula placement verified via dye infusion; used Plastics One cannula; JB-1 is a selective antagonist of IGF-Ir;

Q3564: T. J. Mellott, *et al.* IGF2 Ameliorates Amyloidosis, Increases Cholinergic Marker Expression and Raises BMP9 and Neurotrophin Levels in the Hippocampus of the APP^{swePS1dE9} Alzheimer's Disease Model Mice. *PLoS One* 2014;9(U264-U275)

Agents: Insulin-like growth factor, human recombinant **Vehicle:** Not Stated; **Route:** CSF/CNS; **Species:** Mice; **Pump:** 1002; **Duration:** 7 days;

ALZET Comments: Controls received mp w/ vehicle; animal info (APP.PS1, 6 months old); neurodegenerative (Alzheimer's); post op. care (ampicillin 35 mg/kg SC; 1 ml of sterile saline SC; heating pad; buprenex 0.04 mg/kg SC); cyanoacrylate adhesive; used Loctite and dental cement;

Q3931: B. Johannesson, *et al.* Insulin-like growth factor-1 induces regulatory T cell-mediated suppression of allergic contact dermatitis in mice. *Disease Models & Mechanisms* 2014;7(977-985)

Agents: Insulin-like growth factor-1, recombinant human **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice; **Pump:** 2004; **Duration:** Not Stated;

ALZET Comments: Controls received sham surgery; animal info (C57BL6J, 8-10 weeks old); immunology; peptides;

Q3419: C. D. Blackstock, *et al.* Insulin-like Growth Factor-1 Increases Synthesis of Collagen Type I via Induction of the mRNA-binding Protein LARP6 Expression and Binding to the 5' Stem-loop of COL1a1 and COL1a2 mRNA. *Journal of Biological Chemistry* 2014;289(7264-7274)

Agents: Insulin-like growth factor-1, human recombinant **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice; **Pump:** Not Stated; **Duration:** 5 days;

ALZET Comments: Controls received mp w/ saline; animal info (ApoE -/-); functionality of mp verified by serum plasma levels; cardiovascular;



Q3412: S. Bake, *et al.* Blood Brain Barrier and Neuroinflammation Are Critical Targets of IGF-1-Mediated Neuroprotection in Stroke for Middle-Aged Female Rats. PLoS One 2014;9(3):U897-U907

Agents: Insulin-like growth factor, human recombinant **Vehicle:** CSF, artificial; **Route:** CSF/CNS; **Species:** Rat; **Pump:** 1003D; **Duration:** 24 hours;

ALZET Comments: Controls received mp w/ vehicle; animal info (Female, Sprague Dawley, 9-11 months, 325-350g); ischemia (Cerebral); immunology; cyanoacrylate adhesive; "Previous studies have shown that IGF-1 is stable in Alzet minipumps for up to 7 days and the dose of IGF-1 was found to be effective" pg e91427; Pump and cannula primed overnight; cannula implanted one week prior to MCAO and pump implantation;

Q2675: M. Secco, *et al.* Systemic Delivery of Human Mesenchymal Stromal Cells Combined with IGF-1 Enhances Muscle Functional Recovery in LAMA2 (dy2j) Dystrophic Mice. Stem Cell Reviews and Reports 2013;9(1):93-109

Agents: Insulin-like growth factor-1, R3, long **Vehicle:** Acetic acid; **Route:** SC; **Species:** Mice; **Pump:** 1002; **Duration:** 8 weeks;

ALZET Comments: Control animals received mp w/ vehicle; animal info (1 mo old, B6.WK-Lama2 dy2J); pumps replaced every 2 weeks

Q2957: J. K. Sabo, *et al.* Investigation of Sequential Growth Factor Delivery during Cuprizone Challenge in Mice Aimed to Enhance Oligodendroglioneogenesis and Myelin Repair. PLoS One 2013;8(5):U1142-U1152

Agents: Bone morphogenic protein-4, recombinant human; mouse Noggin; insulin-like growth factor-1 **Vehicle:** CSF, artificial; **Route:** CSF/CNS; **Species:** Mice; **Pump:** 1002; **Duration:** 14 days;

ALZET Comments: Animal info (C57BL/6); pumps replaced every 7 days; mp were used to sequentially deliver BMP4, Noggin, and IGF-1 during a cuprizone challenge; Bone morphogenic protein-4 aka BMP4

Q2855: K. J. B. Martins, *et al.* Intramuscular administration of PEGylated IGF-I improves skeletal muscle regeneration after myotoxic injury. GROWTH HORMONE & IGF RESEARCH 2013;23(4):128-133

Agents: Insulin-like growth factor-I, recomb. human **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice; **Pump:** 1002; **Duration:** 7, 14 days;

ALZET Comments: Animal info (C57BL/6, male, 8 wks old); comparison of IM injections vs SC mp

Q3236: L. M. Lashinger, *et al.* Dietary Energy Balance Modulation of Kras- and Ink4a/ Arf(+/-)-Driven Pancreatic Cancer: The Role of Insulin-like Growth Factor-I. Cancer Prevention Research 2013;6(10):1046-1055

Agents: Insulin-like growth factor I, recomb. human **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice; **Pump:** 2004; **Duration:** 28 days;

ALZET Comments: Controls received mp w/ vehicle; animal info (LID, WT FVB/N, 6-9 weeks old); functionality of mp verified by serum IGF-I levels; cancer (pancreatic); post op. care (Carprofen); Increlex IGF-1; incision closed using wound clips

Q3102: A. Kurabayashi, *et al.* Conditional VHL Gene Deletion Causes Hypoglycemic Death Associated with Disproportionately Increased Glucose Uptake by Hepatocytes through an Upregulated IGF-I Receptor. PLoS One 2013;8(7):U1405-U1415

Agents: L-NAME; Insulin-like growth factor 1 receptor **Vehicle:** Saline; acetic acid; **Route:** SC; **Species:** Mice; **Pump:** Not Stated; **Duration:** 14 days;

ALZET Comments: Controls received mp w/ vehicle; animal info (VHL-KO); 25% acetic acid used; immunology

Q2981: J. Knapp, *et al.* Effects of intracerebroventricular application of insulin-like growth factor 1 and its N-terminal tripeptide on cerebral recovery following cardiac arrest in rats. RESUSCITATION 2013;84(5):684-689

Agents: Insulin-like growth factor-1 **Vehicle:** Not Stated; **Route:** SC; **Species:** Rat; **Pump:** Not Stated; **Duration:** 7 days;

ALZET Comments: Peptides; functionality of mp verified by counting Nissl-positive neurons and TUNEL positive cells; half-life (12 min); ischemia (cerebral ischemia); neurodegenerative (cerebral); mp were used to infuse IGF-1 to study its neuroprotective role on cerebral recovery following cardiac arrest;

Q2963: B. King, *et al.* Weight control, endocrine hormones and cancer prevention. Experimental Biology and Medicine 2013;238(5):502-508

Agents: Insulin-like growth factor-1; leptin; **Route:** SC; **Species:** Mice;; **Duration:** 20 weeks;

ALZET Comments: Animal Info (SENCAR mice); cancer (colon); cancer



Q1988: L. L. Xian, *et al.* Matrix IGF-1 maintains bone mass by activation of mTOR in mesenchymal stem cells. *Nature Medicine* 2012;18(7):1095-U126

Agents: Insulin-like growth factor I; insulin-like growth factor binding protein **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice; **Pump:** Not Stated; **Duration:** 4 weeks;

ALZET Comments: Controls received mp w/ vehicle; animal info (4 wks old, male, LID)

Q2050: H. Nishizawa, *et al.* GH-independent IGF-I action is essential to prevent the development of nonalcoholic steatohepatitis in a GH-deficient rat model. *Biochemical and Biophysical Research Communications* 2012;423(2):295-300

Agents: Growth hormone; insulin-like growth factor I, recomb. human **Vehicle:** Saline; **Route:** SC; **Species:** Rat; **Pump:** 2004; **Duration:** 4 weeks;

ALZET Comments: Controls received mp w/ vehicle; animal info (SDR, GH-def, male, 16 wks old)

R0296: M. Iikubo, *et al.* Morphological and Histopathological Changes in Orofacial Structures of Experimentally Developed Acromegaly-Like Rats: An Overview. *INTERNATIONAL JOURNAL OF ENDOCRINOLOGY* 2012;(;):U1-U11

Agents: Insulin-like growth factor-1, human, recomb. **Vehicle:** Saline; **Route:** SC; **Species:** Rat; **Pump:** 1002; **Duration:** 4 weeks;

ALZET Comments: Animal info (male, Wistar, 10 wks old)

Q2623: C. Franco, *et al.* Frataxin deficiency unveils cell-context dependent actions of insulin-like growth factor I on neurons. *Molecular Neurodegeneration* 2012;7(;):U1-U10

Agents: Insulin-like growth factor-1 **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice; **Pump:** Not Stated; **Duration:** 1 month;

ALZET Comments: Animal info (YG8R, wt, 4-6 mo old)

Q1521: Y. Sun, *et al.* Differential Effects of Hypothalamic IGF-I on Gonadotropin Releasing Hormone Neuronal Activation During Steroid-Induced LH Surges in Young and Middle-Aged Female Rats. *Endocrinology* 2011;152(11):4276-4287

Agents: JB-1; insulin-like growth factor-1 **Vehicle:** CSF, artificial; **Route:** CSF/CNS (third ventricle); **Species:** Rat; **Pump:** 2002; **Duration:** 7 days;

ALZET Comments: animal info (young, 3-4 mo old, middle-aged, retired breeders, 9-11 mo old, female Sprague Dawley, ovariectomized); guide cannula used; cannula placement verified by tracking the cannula path in brain sections; artificial CSF recipe; peptides;

Q1506: S. Sukhanov, *et al.* Differential requirement for nitric oxide in IGF-1-induced anti-apoptotic, anti-oxidant and anti-atherosclerotic effects. *FEBS Letters* 2011;585(19):3065-3072

Agents: Insulin-like growth factor-1, recomb. human **Vehicle:** Not Stated; **Route:** Not Stated; **Species:** Mice; **Pump:** Not Stated; **Duration:** 4, 8, 12 weeks;

ALZET Comments: Controls received mp w/ saline; animal info (ApoE -/-, C57BL/6, 8 wks old); long-term study

Q1502: A. I. Duarte, *et al.* IGF-1 protects against diabetic features in an in vivo model of Huntington's disease. *Experimental Neurology* 2011;231(2):314-319

Agents: Insulin-like growth factor-1, recomb. human **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Pump:** 1002; **Duration:** 14 days;

ALZET Comments: Controls received mp w/ vehicle; animal info (R6/2, wt, male, 9 wks old); neurodegenerative (Huntington's disease)

Q0683: A. R. Demonbreun, *et al.* Impaired muscle growth and response to insulin-like growth factor 1 in dysferlin-mediated muscular dystrophy. *Human Molecular Genetics* 2011;20(4):779-789

Agents: Insulin-like growth factor-I **Vehicle:** Not Stated; **Route:** Not Stated; **Species:** Not Stated; **Pump:** Not Stated; **Duration:** 28 days;

ALZET Comments: Controls received mp w/ PBS; animal info (Dysferlin null, wt)



Q0078: B. J. Todd, *et al.* Hypothalamic Insulin-Like Growth Factor-I Receptors Are Necessary for Hormone-Dependent Luteinizing Hormone Surges: Implications for Female Reproductive Aging. *Endocrinology* 2010;151(3):1356-1366

Agents: JB-1; Insulin-like growth factor-1 **Vehicle:** CSF, artificial; **Route:** CSF/CNS (third ventricle); **Species:** Rat; **Pump:** 2002; **Duration:** Not Stated;

ALZET Comments: Controls received mp w/ vehicle; animal info (young, 3-4 months old, middle aged, 9-11 months old, adult, female, Sprague Dawley, ovariectomy); Plastics One cannula used; cannula placement verified post mortem by injecting dye into the cannula

Q0057: A. Selvamani, *et al.* The Neurotoxic Effects of Estrogen on Ischemic Stroke in Older Female Rats Is Associated with Age-Dependent Loss of Insulin-Like Growth Factor-1. *Journal of Neuroscience* 2010;30(20):6852-6861

Agents: Insulin-like growth factor-1; JB-1 **Vehicle:** CSF, artificial; **Route:** CSF/CNS; **Species:** Rat (pregnant); **Pump:** 1007D; **Duration:** 7 days;

ALZET Comments: Controls received mp w/ vehicle; ALZET brain infusion kit 2 used; cyanoacrylate adhesive; animal info (virgin, 3-4 months old, pregnant, 5-6 months old, retired, 9-11 months old); MCAO

Q1255: M. Perez-Martin, *et al.* IGF-I stimulates neurogenesis in the hypothalamus of adult rats. *European Journal of Neuroscience* 2010;31(9):1533-1548

Agents: Insulin-like growth factor-1; thymidine, H3 **Vehicle:** Not Stated; **Route:** CSF/CNS; **Species:** Rat; **Pump:** 2001; **Duration:** 7 days;

ALZET Comments: Controls received mp w/ saline; animal info (adult, male, Wistar, albino, male, female, 2 mo old); ALZET brain infusion kit used

Q0153: M. L. Moreau, *et al.* Brain insulin growth factor-I induces diuresis increase through the inhibition of arginin-vasopressin release in aged rats. *Neurobiology of Aging* 2010;31(3):532-536

Agents: Insulin-like growth factor-1, recomb. rat **Vehicle:** CSF, artificial; **Route:** CSF/CNS (third ventricle); **Species:** Rat; **Pump:** 2ML4; **Duration:** 28 days;

ALZET Comments: Animal info (male, Wistar, 3 months old, 645 g.); guide cannula used; aCSF recipe

Q1232: P. J. Menagh, *et al.* Growth Hormone Regulates the Balance Between Bone Formation and Bone Marrow Adiposity. *Journal of Bone and Mineral Research* 2010;25(4):757-768

Agents: Insulin-like growth factor 1, recomb. human **Vehicle:** Not Stated; **Route:** SC; **Species:** Rat; **Pump:** 2001; **Duration:** 5 days;

ALZET Comments: Animal info (female, Sprague-Dawley, HYPOX, 3 mo old)

Q0345: G. Marino, *et al.* Insulin-like growth factor 1 treatment extends longevity in a mouse model of human premature aging by restoring somatotroph axis function. *Proceedings of the National Academy of Sciences of the United States of America* 2010;107(37):16268-16273

Agents: Insulin-like growth factor-1, human, recomb. **Vehicle:** HCl; saline, isotonic, sterile; **Route:** SC; **Species:** Mice (transgenic); **Pump:** 1004; **Duration:** 56 days;

ALZET Comments: Animal info (transgenic, Zmpste24 metalloproteinase deficient); pumps replaced after 28 days

Q0120: S. C. Hewitt, *et al.* Estrogen-mediated Regulation of Igf1 Transcription and Uterine Growth Involves Direct Binding of Estrogen Receptor-alpha to Estrogen-responsive Elements. *Journal of Biological Chemistry* 2010;285(4):2676-2685

Agents: Insulin-like growth factor-1, synthetic long R3 **Vehicle:** Acetic acid; saline; **Route:** IP; **Species:** Mice; **Pump:** Not Stated; **Duration:** 18, 24 hours;

ALZET Comments: Animal info (female, ERaKO KIKO, wt, 10 weeks old); peptides; replacement therapy (ovariectomy)

Q1087: E. R. Giasper, *et al.* Blockade of Insulin-Like Growth Factor-I Has Complex Effects on Structural Plasticity in the Hippocampus. *Hippocampus* 2010;20(6):706-712

Agents: Antibody, anti insulin-like growth factor-1 **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Pump:** 1002; **Duration:** 2 weeks;

ALZET Comments: Controls received mp w/ nonimmune NRS in saline; animal info (C57/BL6, adult, male, 3 mo old); behavioral testing (treadmill)