



**Recent References (2008-2019) on the Administration of Insulin-Like Growth Factors  
Using ALZET® Osmotic Pumps**

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

**ALZET Comments:** Insulin-like growth factor-I; SC; Mice (knockout); 1003D; 3 days; 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. *Exp Neurol* 2019;311(162-172)

**ALZET Comments:** Insulin-like growth factor-I, recomb. Human; JB-1; CSF, artificial; CSF/CNS (right lateral ventricle); Rat; 1003D; 1007D; 1 day; 5 days; 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);.

**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):

**ALZET Comments:** Angiotensin II, Insulin-like peptide 6; Saline, ammonium bicarbonate; SC; Mice; 1002, 2002; 14 days; 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):

**ALZET Comments:** Insulin-like growth factor-1, growth hormone; SC; Mice; 4 weeks; Dose (9 µg/g/day GH, 0.02 µg/g/day IGF-1); animal info (C57BL/6 mice);.

**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

**ALZET Comments:** Insulin-like growth factor 1, human; SC; Mice; Dose (50 µg/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. *Behav Brain Res* 2017;317(434-443)

**ALZET Comments:** Insulin-like Growth Factor I; CSF, artificial; CSF/CNS (motor cortex); Rat; 2002; 2 weeks; 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

**ALZET Comments:** Insulin-like Growth Factor-1; Saline; SC; Mice (knockout); 1 week; Dose (500ng/day); Controls received mp w/ vehicle; animal info (WT and 12 week old RIT1<sup>-/-</sup> 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

**ALZET Comments:** NBI-31772; Insulin-like growth factor I; CSF, artificial; DMSO; CSF/CNS; Rat; 2002; 14 days; 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)

**ALZET Comments:** Insulin-like Growth Factor 1, insulin; Acetic acid, Saline, Tween; CSF/CNS (intrathecal); Rat; 2ML2; 21 days; 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

**ALZET Comments:** Insulin-like growth factor 1; Acetic acid; Mice (knockout); 1003D; 24 hours; Dose (0.5 mg IGF1/mL); 0.1N acetic acid used; animal info (Eight weeks or older female Ex3aERKO or ERaUtckO 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;157:61-69

**ALZET Comments:** Insulin-like growth factor-I, human recombinant; CSF, artificial; SC; Rat; 1003D; 48 hours; 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)

**ALZET Comments:** Insulin-like Growth Factor 1, recomb.; Growth Hormone, human; Saline; SC; Rat; Mice; 2004; 4 weeks; 6 weeks; 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 backgrounddb); 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

**ALZET Comments:** Insulin-like Growth Factor 1, recomb. human; Saline; Bone (tibia); Rat; 1002; 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. *Am J Physiol Endocrinol Metab* 2016;310:E24-E31

**ALZET Comments:** Insulin-like growth factor 2, Leu27; HCl; SC; 5 days; 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)

**ALZET Comments:** Insulin-like growth factor, recombinant human; NaCl; SC; Mice; 5 days; 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)

**ALZET Comments:** Insulin-like growth factor-1, human recombinant; Mice; 4 weeks; 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)

**ALZET Comments:** Insulin-like growth factor-1; insulin-like growth factor 2; Acetic acid; SC; Guinea pig; 2002; 18 days; 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)



**ALZET Comments:** Insulin-like growth factor-1, human, recomb.; Water; Mice; 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

**ALZET Comments:** Insulin-like growth factor-1; CSF, artificial; CSF/CNS; Rat; 2002; 14 days; 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

**ALZET Comments:** Insulin-like growth factor II, pro; PBS; SC; Mice; 1003D; 2001; 3 days; 7 days; 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

**ALZET Comments:** Insulin-like growth factor-1; NaCl; acetic acid; water, sterile, sodium acetate trihydrate; polysorbate 20; sodium citrate; citric acid monohydrate; phenol; SC; Rat; 1007D; 2001; 4 weeks; 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

**ALZET Comments:** Insulin-like growth factor-1, human recombinant; Saline; SC; Mice; 2001; 4 days; 7 days; 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

**ALZET Comments:** JB-1; insulin-like growth factor-1;; CSF, artificial; CSF/CNS (third ventricle); Rat; 2002; 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 APPswePS1dE9 Alzheimer's Disease Model Mice. PLoS One 2014;9(U264-U275

**ALZET Comments:** Insulin-like growth factor, human recombinant; CSF/CNS; Mice; 1002; 7 days; Controls received mp w/ vehicle; animal info (APP.PS1, 6 months old); neurodegenerative (Alzheimers); 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

**ALZET Comments:** Insulin-like growth factor-1, recombinant human; SC; Mice; 2004; 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

**ALZET Comments:** Insulin-like growth factor-1, human recombinant; SC; Mice; 5 days; 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

**ALZET Comments:** Insulin-like growth factor, human recombinant; CSF, artificial; CSF/CNS; Rat; 1003D; 24 hours; 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 upto 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 (dy/2j) Dystrophic Mice. Stem Cell Reviews and Reports 2013;9(1):93-109

**ALZET Comments:** Insulin-like growth factor-1, R3, long; Acetic acid; SC; Mice; 1002; 8 weeks; Control animals received mp w/ vehicle; animal info (1 mo old, B6.WK-Lama2 dy/2J); 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

**ALZET Comments:** Bone morphogenetic protein-4, recombinant human; mouse Noggin; insulin-like growth factor-1; CSF, artificial; CSF/CNS; Mice; 1002; 14 days; 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 morphogenetic 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

**ALZET Comments:** Insulin-like growth factor-I, recomb. human; SC; Mice; 1002; 7, 14 days; 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

**ALZET Comments:** Insulin-like growth factor I, recomb. human; SC; Mice; 2004; 28 days; 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

**ALZET Comments:** L-NAME; Insulin-like growth factor 1 receptor; Saline; acetic acid; SC; Mice; 14 days; 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

**ALZET Comments:** Insulin-like growth factor-1; SC; Rat; 7 days; 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

**ALZET Comments:** Insulin-like growth factor-1; leptin; SC; Mice; 20 weeks; 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

**ALZET Comments:** Insulin-like growth factor I; insulin-like growth factor binding protein; SC; Mice; 4 weeks; 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

**ALZET Comments:** Growth hormone; insulin-like growth factor I, recomb. human; Saline; SC; Rat; 2004; 4 weeks; 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

**ALZET Comments:** Insulin-like growth factor-1, human, recomb.; Saline; SC; Rat; 1002; 4 weeks; 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

**ALZET Comments:** Insulin-like growth factor-1; SC; Mice; 1 month; 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

**ALZET Comments:** JB-1; insulin-like growth factor-1; CSF, artificial; CSF/CNS (third ventricle); Rat; 2002; 7 days; 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

**ALZET Comments:** Insulin-like growth factor-1, recomb. human; Mice; 4, 8, 12 weeks; 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

**ALZET Comments:** Insulin-like growth factor-1, recomb. human; Saline; SC; Mice; 1002; 14 days; 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

**ALZET Comments:** Insulin-like growth factor-I; 28 days; 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

**ALZET Comments:** JB-1; insulin-like growth factor-1; CSF, artificial; CSF/CNS (third ventricle); Rat; 2002; 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

**ALZET Comments:** Insulin-like growth factor-1; JB-1; CSF, artificial; CSF/CNS; Rat (pregnant); 1007D; 7 days; 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

**ALZET Comments:** Insulin-like growth factor-1; thymidine, H3; CSF/CNS; Rat; 2001; 7 days; 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  
**ALZET Comments:** Insulin-like growth factor-1, recomb. rat; CSF, artificial; CSF/CNS (third ventricle); Rat; 2ML4; 28 days; 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  
**ALZET Comments:** Insulin-like growth factor 1, recomb. human; SC; Rat; 2001; 5 days; 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  
**ALZET Comments:** Insulin-like growth factor-1, human, recomb.; HCl; saline, isotonic, sterile; SC; Mice (transgenic); 1004; 56 days; 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  
**ALZET Comments:** Insulin-like growth factor-1, synthetic long R3; Acetic acid; saline; IP; Mice; 18, 24 hours; Animal info (female, ERaKO KIKO, wt, 10 weeks old); peptides; replacement therapy (ovariectomy).
- Q1087:** E. R. Glasper, *et al.* Blockade of Insulin-Like Growth Factor-I Has Complex Effects on Structural Plasticity in the Hippocampus. *Hippocampus* 2010;20(6):706-712  
**ALZET Comments:** Antibody, anti insulin-like growth factor-1; Saline; SC; Mice; 1002; 2 weeks; Controls received mp w/ nonimmune NRS in saline; animal info (C57/BL6, adult, male, 3 mo old); behavioral testing (treadmill).
- Q0154:** P. J. Apel, *et al.* EFFECT OF LOCALLY DELIVERED IGF-1 ON NERVE REGENERATION DURING AGING: AN EXPERIMENTAL STUDY IN RATS. *Muscle & Nerve* 2010;41(3):335-341  
**ALZET Comments:** Insulin-like growth factor-I, recomb. human; CSF/CNS (tibial nerve); Rat; 2004; 12 weeks; Controls received mp w/ saline; long-term study; pumps replaced after 6 weeks; animal info (Fischer 344 x Brown Norway, Sprague Dawley; 8 months old, 24 months old); diagram of pump with custom-made T-tube.
- P9922:** T. Van Mieghem, *et al.* Insulin-like growth factor-II regulates maternal hemodynamic adaptation to pregnancy in rats. *American Journal of Physiology-Regulatory Integrative and Comparative Physiology* 2009;297(5):R1615-R1621  
**ALZET Comments:** Insulin-like growth factor II, human, recomb.; Saline; SC; Rat (pregnant); 2001; 7 days; Animal info (4 wks old, female, Sprague Dawley).
- Q0767:** M. L. Traub, *et al.* Oestradiol and Insulin-Like Growth Factor-1 Reduce Cell Loss after Global Ischaemia in Middle-Aged Female Rats. *Journal of Neuroendocrinology* 2009;21(12):1038-1044  
**ALZET Comments:** Insulin-like growth factor-I; Saline, sterile; CSF/CNS; Rat; 2004; 28 days; Controls received mp w/ vehicle; animal info (female, Sprague-Dawley, 9-11 mo old, adult, 300-500 g); functionality of mp verified by residual volume; ALZET brain infusion kit used; cannula placement verified by inspection of cryostat sectioning; neuroprotection.
- Q0576:** P. Serbedzija, *et al.* Insulin and IGF-I prevent brain atrophy and DNA loss in diabetes. *Brain Research* 2009;1303(1):179-194  
**ALZET Comments:** Insulin; insulin-like growth factor-I; CSF/CNS; Rat; 12 weeks; Controls received mp w/ aCSF; animal info (Wistar, 275-300 g adult, 9 wks old, male, STZ-induced diabetes); long-term study; pumps replaced at two week intervals; ALZET brain infusion kit used; post op. care (Buprenorphine); cannula placement verified by injecting 20 ul dye through the catheter at time of assay.
- P9605:** Y. Fan, *et al.* Liver-specific Deletion of the Growth Hormone Receptor Reveals Essential Role of Growth Hormone Signaling in Hepatic Lipid Metabolism. *Journal of Biological Chemistry* 2009;284(30):19937-19944



**ALZET Comments:** Insulin-like growth factor I, recomb. human; SC; Mice; 2 weeks; Controls received mp/placebo; animal info (16 wks old, male, GHRLD).

**P9701:** C. H. Duman, *et al.* Peripheral insulin-like growth factor-I produces antidepressant-like behavior and contributes to the effect of exercise. *Behavioural Brain Research* 2009;198(2):366-371

**ALZET Comments:** Insulin-like growth factor I, recomb. human; antibody, anti-IGF-I, polyclonal; Saline; SC; Mice; 1002; 2004; 14, 28 days; Controls received mp w/vehicle; animal info (male, C57BL/6, 10 wks old); behavioral testing (running wheel test, forced swim test).

**P9927:** B. M. Cleveland, *et al.* Insulin-like growth factor-I and genetic effects on indexes of protein degradation in response to feed deprivation in rainbow trout (*Oncorhynchus mykiss*). *American Journal of Physiology-Regulatory Integrative and Comparative Physiology* 2009;297(5):R1332-R1342

**ALZET Comments:** Insulin-like growth factor-1, recomb. human; IP; Fish; 1003D; Post op.care (triple antibiotic ointment); animal info (rainbow trout.1 year old); wound clips used.

**Q0466:** A. Cittadini, *et al.* Insulin-like growth factor-1 protects from vascular stenosis and accelerates re-endothelialization in a rat model of carotid artery injury. *JOURNAL OF THROMBOSIS AND HAEMOSTASIS* 2009;7(11):1920-1928

**ALZET Comments:** Insulin-like growth factor-1; SC; Rat; Controls received mp w/saline; animal info (Sprague-Dawley, male, 210-250 g, balloon injury); 2.0 ul/h rate of infusion.

**P8827:** K. W. Sinkevicius, *et al.* An estrogen receptor-alpha; knock-in mutation provides evidence of ligand-independent signaling and allows modulation of ligand-induced pathways in vivo. *Endocrinology* 2008;149(6):2970-2979

**ALZET Comments:** Insulin-like growth factor I, R3-; Acetic acid; IP; Mice; 1003D; 16-24 hours; Controls received IP vehicle or E2 injections; replacement therapy (ovariectomy); peptides; animal info (female, C57/BL6 wt, ENERKI, 12 wks old); endocrinology.

**P8871:** A. N. Sferruzzi-Perri, *et al.* Maternal insulin-like growth factor-II promotes placental functional development via the type 2 IGF receptor in the guinea pig. *PLACENTA* 2008;29(4):347-355

**ALZET Comments:** Insulin-like growth factor II; Acetic acid; SC; Guinea pig; 2002; 18 days; Controls received mp w/ vehicle; animal info (pregnant, female, 500g., 3-4 months old).

**P9251:** A. H. Rosendahl, *et al.* Systemic IGF-I administration stimulates the in vivo growth of early, but not advanced, renal cell carcinoma. *International Journal of Cancer* 2008;123(6):1286-1291

**ALZET Comments:** Insulin-like growth factor I, recomb. human; Saline, sterile; albumin, mouse serum; SC; Mice (SCID); 1007D; 14 days; Controls received mp w/ vehicle; cancer (renal carcinoma); peptides; animal info (female, SCID CoB-17, 8-12 wks old, 20 g.).

**P8932:** S. Oya, *et al.* Region-specific proliferative response of neural progenitors to exogenous stimulation by growth factors following ischemia. *NeuroReport* 2008;19(8):805-810

**ALZET Comments:** Epidermal growth factor, recomb. human; fibroblast growth factor-2, recomb. human; insulin-like growth factor I, recomb. human; erythropoietin, recomb. rat; brain-derived neurotrophic factor, recomb. human; DDL4, recomb. mouse; CSF/CNS; Rat; 1003D; 3 days; Ischemia; animal info (male, Wistar, 8wks old, 280-300 g.); bilateral infusion.

**P9063:** M. Iikubo, *et al.* Excessive lateral dental arch expansion in experimentally developed acromegaly-like rats. *Archives of Oral Biology* 2008;53(10):924-927

**ALZET Comments:** Insulin-like growth factor I, recomb. human; Saline; SC; Rat; 2002; 4 weeks; Controls received mp w/ vehicle; peptides; animal info (10 wks old, male, Wistar, 200-236 g.).

**P9784:** S. M. Gehrig, *et al.* Insulin-like growth factor-I analogue protects muscles of dystrophic mdx mice from contraction-mediated damage. *Experimental Physiology* 2008;93(11):1190-1198

**ALZET Comments:** Insulin-like growth factor I, LR-; Saline; HCl; SC; Mice; 1004; 4 weeks; Controls received mp w/ vehicle; functionality of mp verified by residual volume; animal info (male, BL/10, mdx, dystrophic, 8-10 wks old).



**P9112:** Y. W. Chu, *et al.* Exogenous insulin-like growth factor 1 enhances thymopoiesis predominantly through thymic epithelial cell expansion. *Blood* 2008;112(7):2836-2846

**ALZET Comments:** Insulin-like growth factor I; Sucrose; serum, mouse, PBS; SC; Mice; 4 weeks, 14 days; Pumps replaced after 2 weeks; peptides; animal info (C57BL/6, 8-12 wks old, thymectomized, PSGL-1KO).