



**Recent References on the Administration of AIDS or HIV Treatments Using  
Using ALZET® Osmotic Pumps**

(Note: Please see CYTO bibliography for additional cytokines)

**Aprotinin**

**Q0374:** P. J. Azurmendi, *et al.* Gonadectomy Influences Blood Pressure through the Kallikrein-Kinin System. KIDNEY & BLOOD PRESSURE RESEARCH 2009;32(5):342-348

**Agents:** Aprotinin; HOE-140 **Vehicle:** Not Stated; **Route:** SC; **Species:** Rat; **Pump:** Not Stated; **Duration:** 3 days;

**ALZET Comments:** Animal info (Wistar, male, female, 150 days old)

**P5676:** H. Ito, *et al.* Bradykinin inhibits development of myocardial infarction through B-2 receptor signalling by increment of regional blood flow around the ischaemic lesions in rats. British Journal of Pharmacology 2003;138(1):225-233

**Agents:** FR-190997; aprotinin; SBTI **Vehicle:** Saline; water; HCl; **Route:** IV (vena cava, cervical vein); **Species:** Rat; **Pump:** 2001D; **Duration:** 24 hours;

**ALZET Comments:** Controls received mp w/ vehicle; cardiovascular; FR-190997 (a nonpeptide mimic of bradykinin beta 2 agonist) was infused into the vena cava; aprotinin infused into the cervical vein; SBTI & aprotinin are plasma kallikrein inhibitors from soybeans

**P4270:** S. A. Frautschy, *et al.* Protease inhibitor coinfusion with amyloid beta-protein results in enhanced deposition and toxicity in rat brain. Journal of Neuroscience 1998;18(20):8311-8321

**Agents:** Amyloid protein, beta; Aprotinin; Leupeptin; **Vehicle:** HEPES;; **Route:** CSF/CNS;; **Species:** Rat; **Pump:** 2004;; **Duration:** 4 weeks;

**ALZET Comments:** controls received mp w/ vehicle; peptides; ALZET brain infusion kit used; beta-amyloid protein infused alone, or concomitantly with aprotinin or leupeptin; enzyme inhibitors

**P3324:** I. V. Yosipiv, *et al.* Developmental regulation of ACE gene expression by endogenous kinins and angiotensin II. American Journal of Physiology Renal Physiology 1995;269(F172-F179)

**Agents:** Aprotinin; Hoe 140; Losartan **Vehicle:** Not Stated; **Route:** SC; **Species:** Rat; **Pump:** Not Stated; **Duration:** 5,7 days;

**ALZET Comments:** controls received mp w/saline

**P3035:** N. J. Morin, *et al.* Potentiation of gentamicin nephrotoxicity in the rat by infusion of aprotinin. Experimental and Molecular Pathology 1994;60(197-213)

**Agents:** Aprotinin **Vehicle:** Not Stated; **Route:** IV; **Species:** Rat; **Pump:** 2ML1; **Duration:** 8 days;

**ALZET Comments:** controls received mp with saline; immunology; toxicology

**P3268:** M. Majima, *et al.* High sensitivity to salt in kininogen-deficient brown Norway Katholiek rats. Hypertension 1993;22(705-714)

**Agents:** Kininogen, bovine; Hoe 140; Aprotinin **Vehicle:** Saline; **Route:** SC; **Species:** Rat; **Pump:** 2001; **Duration:** 7 days;

**ALZET Comments:** controls received mp w/saline

**P1987:** G. O. Ivy. Protease inhibitors as a model for NCL disease, with special emphasis on the infantile and adult forms. American Journal of Medical Genetics Part A 1992;42(555-560)

**Agents:** E-64C; Aprotinin; Chloroquine; Leupeptin **Vehicle:** Not Stated; **Route:** CSF/CNS; **Species:** Rat; **Pump:** 2002; **Duration:** 2 weeks;

**ALZET Comments:** no comment posted

**P1964:** M. Majima, *et al.* Suppression of rat deoxycorticosterone-salt hypertension by kallikrein-kinin system. Hypertension 1991;17(6):806-813

**Agents:** Aprotinin **Vehicle:** Saline; **Route:** SC; **Species:** Rat; **Pump:** 2001; **Duration:** 7 days;

**ALZET Comments:** no comment posted



**P1673:** R. Pakzad. Influence of the trypsin inhibitors aprotinin (Trasylo) and TLCK, administered locally by osmotic minipumps, on the gelatinolytic activity of acrosin and the transport of spermatozoa in the female reproductive tract of rabbits. *Z. Mikrosk. -Anat. Forsch* 1989;103(6):957-966

**Agents:** Lysine chloromethyl ketone, N-a-tosyl-L-; **Route:** Intrauterine; **Species:** Rabbit; **Duration:** 6 days;

**ALZET Comments:** German with English summary (p. 957); trypsin inhibitors; tissue perfusion (uterus)

### Azidothymidine

**P2211:** A. F. Tarantal, *et al.* Pre and postnatal treatment of the rhesus macaque (*Macaca mulatta*) with azidothymidine: I. fetal studies. *Pediatr. Aids HIV Infection: Fetus to Adolescent* 1994;5(1):10-19

**Agents:** Azidothymidine **Vehicle:** Sodium hydroxide; **Route:** SC; **Species:** Monkey (pregnant); **Pump:** 2ML4; **Duration:** 28 days;

**ALZET Comments:** Controls received mp w/vehicle; functionality of mp verified by plasma levels of AZT; teratology; AZT is azidothymidine, also known as zidovudine; multiple pumps per animal (3-4); "Circulating levels of AZT remained constant during the course of treatment and were achieved by the first (24 hr.) sample (p. 11); antiretroviral drug

**P2093:** M. Sinet, *et al.* Efficacy of continuous zidovudine infusion at early stages of retroviral infection in mice. *J. Acquir. Immune Defic. Syndr* 1992;5(5):577-582

**Agents:** Azidothymidine **Vehicle:** Propylene glycol; Water; **Route:** SC; **Species:** Mice; **Pump:** 2001; **Duration:** 5 days;

**ALZET Comments:** Functionality of mp verified by plasma AZT levels; comparison of b.i.d. s.c. injections vs. mp; good methods; also called zidovudine; pK; half-life (p.577); continuous infusion significantly more effective than bolus injection; antiretroviral drug

**P1928:** J. A. Bilello, *et al.* Use of a neonatal murine retrovirus model to evaluate the long-term efficacy and toxicity of antiviral agents. *Annals of the New York Academy of Sciences* 1990;616(238-251

**Agents:** Azidothymidine **Vehicle:** Not Stated; **Route:** Not Stated; **Species:** Mice (pregnant); **Pump:** 2001; **Duration:** 21 days;

**ALZET Comments:** Pumps replaced after each week to achieve 3 weeks duration; immunology; teratology; oral delivery of AZT resulted in highly variable plasma levels; antiretroviral drug

**P1644:** J. M. Gallo, *et al.* Pump delivery of azidothymidine: potential for constant concentrations and improved brain delivery. *J. Controlled Release* 1989;9(249-253

**Agents:** Azidothymidine **Vehicle:** Not Stated; **Route:** IA (carotid); **Species:** Rat; **Pump:** 2001; **Duration:** 3, 7 days;

**ALZET Comments:** Dose-response; blood levels; comparison of IV injections vs. mp;; alkaline pH of 11 inc solubility, stability

### Clindamycin

**Q3927:** N. Ito, *et al.* Organic Cation Transporter/Solute Carrier Family 22a is Involved in Drug Transfer into Milk in Mice. *Journal of Pharmaceutical Sciences* 2014;103(3342-3348

**Agents:** Acyclovir; cimetidine; clindamycin; metformin; terbutaline; verapamil; **Route:** IP; **Species:** Mice; **Pump:** 1003D;

**Duration:** 72 hours;

**ALZET Comments:** Animal info (female, lactating, Bcrp KO or WT FVB); functionality of mp verified by plasma and milk concentrations; no stress "All mice survived the surgical procedure and appeared to be lactating normally, and all pups thrived throughout the course of the experiment." (see pg. 3343);

**Q5063:** N. Ito, *et al.* Contribution of protein binding, lipid partitioning, and asymmetrical transport to drug transfer into milk in mouse versus human. *Pharm Res* 2013;30(9):2410-22

**Agents:** acetaminophen, cephalothin sodium salt, clindamycin hydrochloride, disopyramide phosphate salt, labetalol hydrochloride, nitrofurantoin +-propranolol hydrochloride, terbutaline hemisulfate salt, verapamil hydrochloride, Acyclovir, alprazolam, atenolol, anhydrous caffeine, cefotaxime sodium salt, cephapirin sodium salt, diltiazem hydrochloride, metronidazole, nitrazepam, prednisolone, 6-propyl-2-thiouracil, trazadone hydrochloride, chloramphenicol, cimetidine, theophylline, fluconazole, metoprolol, mirtazapine, praziquantel, quetiapine fumarate, triprolidine hydrochloride, metformin, moclobemide. **Vehicle:** DMSO; water; **Route:** IP; **Species:** Mice; **Pump:** 1003D; **Duration:** Not Stated;

**ALZET Comments:** animal info: lactating mice, postnatal age of 14 days; functionality of mp verified by measurement of drug concentration in milk and plasma; mp were used to infuse study lactational drug transfer.



**P1074:** C. L. Astry, *et al.* Interactions of clindamycin with antibacterial defenses of the lung. American Review of Respiratory Disease 1987;135(10):15-1019

**Agents:** Clindamycin HCl; Penicillin G **Vehicle:** Sodium hydroxide; Water; **Route:** SC; **Species:** Mice; **Pump:** Not Stated; **Duration:** 72 hours;

**ALZET Comments:** Pump model not stated; controls received mp w/water; dose-response; mp primed overnight in PSB; 2 doses of agent infused; agent infused separately; antibiotic

**P0953:** S. J. Hollenbach, *et al.* Early administration of methylprednisolone promotes survival in rats with intra-abdominal sepsis. Circ. Shock 1986;20(2):161-168

**Agents:** Clindamycin; Methylprednisolone; Gentamicin; Naloxone **Vehicle:** Saline; **Route:** SC; **Species:** Rat; **Pump:** 2001; **Duration:** 7 days;

**ALZET Comments:** controls received mp w/saline; toxicology; multiple pumps per animal (3); comparison of bolus injections vs. mp infusion; antibiotic

### Interferons (2010-Present)

**Q9444:** E. H. Sanchez-Mendoza, *et al.* Compromised Hippocampal Neuroplasticity in the Interferon-alpha and Toll-like Receptor-3 Activation-Induced Mouse Depression Model. Molecular Neurobiology 2020;57(7):3171-3182

**Agents:** Interferon, alpha **Vehicle:** PBS; **Route:** CSF/CNS (left ventricle); **Species:** Mice; **Pump:** 1002; **Duration:** 14 days;

**ALZET Comments:** Dose (250 IU/day); Controls received mp w/ vehicle; animal info (male 8–12-week-old mice); post op. care (buprenorphine); Interferon, alpha aka IFN- $\alpha$ ; ALZET brain infusion kit 3 used; Brain coordinates (0.2 mm anterior and 0.9 mm lateral to bregma); dependence;

**Q8912:** C. Nocito, *et al.* Centrally Acting Angiotensin-Converting Enzyme Inhibitor Suppresses Type I Interferon Responses and Decreases Inflammation in the Periphery and the CNS in Lupus-Prone Mice. Frontiers in Immunology 2020;11(573677)

**Agents:** Interferon, alpha **Vehicle:** PBS; **Route:** SC; **Species:** Mice; **Pump:** Not Stated; **Duration:** 14 days;

**ALZET Comments:** Dose (0.25  $\mu$ l/h); Controls received mp w/ vehicle; animal info (NZB/W F1 female mice, 20 weeks old); behavioral testing (Forced Swim Test, Rotarod Test, Locomotor Activity Monitoring Test, Elevated Plus Maze Test); Interferon, alpha aka IFN $\alpha$ ; immunology;

**Q8658:** B. A. McLendon, *et al.* Pig conceptuses secrete interferon gamma to recruit T cells to the endometrium during the peri-implantation period. Biology of Reproduction 2020;103(5):1018-1029

**Agents:** Interferon, gamma; Albumin, porcine serum **Vehicle:** Not stated; **Route:** Intrauterine (uterine horn); **Species:** Pig; **Pump:** 2ML1; **Duration:** 5 days;

**ALZET Comments:** Dose (240  $\mu$ l/day); animal info (Sexually mature gilts); Interferon, gamma aka IFNG; Porcine serum albumin aka PSA; dependence;

**Q7344:** R. Gutierrez Jauregui, *et al.* IL-1beta Promotes Staphylococcus aureus Biofilms on Implants in vivo. Front Immunol 2019;10(1082)

**Agents:** Interleukin-1 beta; Interleukin-6; Interleukin-10; Interleukin-12; Interleukin-17; Interleukin-23; Interferon, gamma; Tumor Necrosis Factor, alpha; Interleukin-1 beta, anti; Transforming Growth Factor-B1, anti **Vehicle:** PBS; **Route:** SC; **Species:** Mice; **Pump:** 1007D; **Duration:** 10 Days;

**ALZET Comments:** Dose (IL-1b (83 $\mu$ g/ml); IL-6 (83 $\mu$ g/ml); IL-10 (166 $\mu$ g/ml); IL-12 (83 $\mu$ g/ml); IL-17 (125 $\mu$ g/ml); IL-23 (166 $\mu$ g/ml); IFNg (83 $\mu$ g/ml); TNFa (166 $\mu$ g/ml); anti-TGF-b1 (166 $\mu$ g/ml); anti-IL-1b (150 $\mu$ g/ml)); Controls received mp w/ vehicle; animal info (Eight- to twelve-week-old female C57BL/6 mice); Immunology (“evaluate the suitability of osmotic pumps as a model for biofilms in implant associated infections, we implanted osmotic pumps pre-colonized with bioluminescent Staphylococcus aureus”);

**Q7192:** A. Kimura, *et al.* Protective Roles of Interferon-gamma in Cardiac Hypertrophy Induced by Sustained Pressure Overload. J Am Heart Assoc 2018;7(6):

**Agents:** Interferon, gamma **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice; **Pump:** 1007D; **Duration:** 7 days;

**ALZET Comments:** Dose (15  $\mu$ M/d); animal info (8-10 week old, male, BALB/c); cardiovascular;



**Q4560:** L. Pereira, *et al.* IFN gamma regulates proliferation and neuronal differentiation by STAT1 in adult SVZ niche. *Frontiers in Cellular Neuroscience* 2015;9(U1-U10)

**Agents:** Interferon, gamma **Vehicle:** Saline; **Route:** CSF/CNS (third ventricle); **Species:** Mice; **Pump:** 1007D; **Duration:** 7 days; **ALZET Comments:** Controls received mp w/ vehicle; animal info (male, STAT2 KO or 129S6/SvEv); immunology;

**Q5030:** C. Hoyo-Becerra, *et al.* Rapid Regulation of Depression-Associated Genes in a New Mouse Model Mimicking Interferon-alpha-Related Depression in Hepatitis C Virus Infection. *Mol Neurobiol* 2015;52(1):318-29

**Agents:** Interferon-a, murine; polyinosinic/polycytidylic acid **Vehicle:** PBS; **Route:** CSF/CNS; **Species:** Mice; **Pump:** 1002; **Duration:** 14 days;

**ALZET Comments:** Controls received mp w/ vehicle; animal info (C57BL6J); behavioral testing (open field test; tail suspension test; forced swimming test); polyinosinic/polycytidylic acid is a toll-like receptor-3 agonist; Dose (mIFN-a 250 IU/day; poly(I:C) 1 ug/day);

**Q3963:** J. Lee, *et al.* Intrauterine Coadministration of ERK1/2 Inhibitor U0126 Inhibits Interferon TAU Action in the Endometrium and Restores Luteolytic PGF(2alpha) Pulses in Sheep. *Biology of Reproduction* 2014;91(U177-U185)

**Agents:** U0126; serum protein, ovine; interferon tau, recombinant ovine **Vehicle:** DMSO; **Route:** Intrauterine (uterine horn); **Species:** Sheep (ewe); **Pump:** 2ML1; **Duration:** 6 days;

**ALZET Comments:** Controls received mp w/ vehicle; animal info (female, Suffolk Ovis aries); 3% DMSO used; tissue perfusion (uterine horn); cyanoacrylate adhesive; used cyanoacrylate glue to anchor pump; interferon tau aka IFNT;

**Q3523:** T. S. Johnson, *et al.* Etoposide Selectively Ablates Activated T Cells To Control the Immunoregulatory Disorder Hemophagocytic Lymphohistiocytosis. *Journal of Immunology* 2014;192(1):84-91

**Agents:** Interferon, gamma **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Pump:** Not Stated; **Duration:** 7 days;

**ALZET Comments:** Controls received mp w/ vehicle; animal info (prf +/- or WT, lymphocytic choriomeningitis virus infected); functionality of mp verified by serum levels; immunology; murine model of hemophagocytic lymphohistiocytosis;

**Q2583:** P. Dorniak, *et al.* Cortisol and Interferon Tau Regulation of Endometrial Function and Conceptus Development in Female Sheep. *Endocrinology* 2013;154(2):931-941

**Agents:** Cortisol; PF915275; meloxicam; interferon, tau, recomb. ovine **Vehicle:** Ethanol; **Route:** Intrauterine (uterine horn); **Species:** Sheep (ewe); **Pump:** 2ML1; **Duration:** Not Stated;

**ALZET Comments:** Control animals received mp w/ vehicle; animal info (mature, rambouillet, female, ewe); 2% ethanol used; vinyl catheter used (0007760); "Our previous studies found that infusion of that amount of IFNT in the uterine lumen each day mimics effects of the conceptus on endometrial expression of hormone receptors and IFNT-stimulated genes during early pregnancy in ewes" pg 932

**Q4759:** A. Q. Antoniazzi. Endocrine Delivery of Interferon Tau Protects the Corpus Luteum from Prostaglandin F2 Alpha-Induced Luteolysis in Ewes. *Biology of Reproduction* 2013;88(6):1-12

**Agents:** interferon-tau, recombinant ovine **Vehicle:** BSA; **Route:** IV (jugular, intrauterine); **Species:** ewe; **Pump:** 2001D, 1003D; **Duration:** 1 day, 3 day;

**ALZET Comments:** controls received mp w/ vehicle; functionality of mp verified by serum antiviral activity; pumps were anchored in the s.c. space with cyanoacrylate glue; 200 ug/day (uterine vein); 200 ug/day (jugular vein)

**Q1983:** Y. Yuan, *et al.* Role of microRNA-15a in autoantibody production in interferon-augmented murine model of lupus. *MOLECULAR IMMUNOLOGY* 2012;52(2):61-70

**Agents:** Interferon, alpha; interferon, gamma **Vehicle:** PBS; BSA; **Route:** SC; **Species:** Mice; **Pump:** 2006; **Duration:** 16 weeks;

**ALZET Comments:** Animal info (13 wks old, female, B/W); pumps replaced after 8 weeks; long-term study; stability verified after 8 weeks; "residue IFNs from the pumps at the end of treatment were tested on IFN and IFN responsive cell lines and demonstrated that the in vivo conditions in the pump did not affect bioactivity of both IFNs (data not shown)" pg 63

**Q2040:** T. X. Li, *et al.* Preproendothelin-1 expression is negatively regulated by IFNgamma during hepatic stellate cell activation. *American Journal of Physiology Gastrointestinal and Liver Physiology* 2012;302(9):G948-G957

**Agents:** Interferon, gamma **Vehicle:** PBS; BSA; **Route:** Not Stated; **Species:** Rat; **Pump:** 1002; **Duration:** 2 weeks;

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



**Q2394:** A. Kimura, *et al.* Interferon-gamma is protective in cisplatin-induced renal injury by enhancing autophagic flux. *Kidney International* 2012;82(10):1093-1104

**Agents:** Interferon, gamma, recomb. mouse **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice; **Pump:** 1007D; **Duration:** 7 days;  
**ALZET Comments:** Animal info (BALB/c, male, 8-10 wks old)

**Q2056:** P. Dorniak, *et al.* Endometrial HSD11B1 and Cortisol Regeneration in the Ovine Uterus: Effects of Pregnancy, Interferon Tau, and Prostaglandins. *Biology of Reproduction* 2012;86(4):U106-U115

**Agents:** Interferon, tau, recomb. ovine; meloxicam; PGE2, ovine serum; PGF2a, ovine serum; PGI2, ovine serum **Vehicle:** Ethanol; saline; **Route:** Intrauterine (uterine horn); **Species:** Sheep (ewe); **Pump:** 2ML1; **Duration:** 7 days;  
**ALZET Comments:** Controls received mp w/ vehicle; animal info (Mature Rambouillet); good methods (pg 2); vinyl tubing used (0007760); 2% ethanol used; enzyme inhibitor (prostaglandin synthase two); tissue perfusion (intrauterine)

**Q2057:** P. Dorniak, *et al.* Conceptus-Derived Prostaglandins Regulate Endometrial Function in Sheep. *Biology of Reproduction* 2012;87(1):U80-U86

**Agents:** Interferon, tau, recomb. ovine; meloxicam; PGE2, ovine serum; PGF2a, ovine serum; PGI2, ovine serum **Vehicle:** Ethanol; saline; **Route:** Intrauterine (uterine horn); **Species:** Sheep (ewe); **Pump:** 2ML1; **Duration:** 5 days;  
**ALZET Comments:** Controls received mp w/ vehicle; animal info (Mature Rambouillet); tissue perfusion (intrauterine); multiple pumps used (2); enzyme inhibitor (prostaglandin synthase two)

**Q1724:** S. P. Tu, *et al.* IFN-gamma Inhibits Gastric Carcinogenesis by Inducing Epithelial Cell Autophagy and T-Cell Apoptosis. *Cancer Research* 2011;71(12):4247-4259

**Agents:** Interferon-gamma **Vehicle:** PBS; BSA; **Route:** Not Stated; **Species:** Mice (transgenic); **Pump:** Not Stated; **Duration:** 4 weeks;  
**ALZET Comments:** Controls received mp w/ vehicle; animal info (wt B6, IFN-gamma transgenic, 2 mo old)

**Q1327:** J. A. B. Strickertsson, *et al.* Interferon-gamma inhibits ghrelin expression and secretion via a somatostatin-mediated mechanism. *WORLD JOURNAL OF GASTROENTEROLOGY* 2011;17(26):3117-3125

**Agents:** Interferon, gamma **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice; **Pump:** 2001; **Duration:** 7 days;  
**ALZET Comments:** Animal info (C57BL6/J)

**Q1040:** P. Dorniak, *et al.* Prostaglandins Regulate Conceptus Elongation and Mediate Effects of Interferon Tau on the Ovine Uterine Endometrium. *Biology of Reproduction* 2011;84(6):1119-1127

**Agents:** Meloxicam; interferon, recomb. ovina, tau **Vehicle:** Ethanol; Saline; **Route:** Intrauterine (uterine horn); **Species:** Sheep (ewe); **Pump:** 2ML1; **Duration:** 7 days;  
**ALZET Comments:** Controls received mp w/ vehicle; animal info (ewe, mature, Rambouillet); cyanoacrylate adhesive; enzyme inhibitor (prostaglandin synthase (PTGS)); vinyl catheter used (0007760); "The Alzet pump was then affixed to the mesometrial ligament between the uterine horn and oviduct by using cyanoacrylate glue... and then secured by sewing the oviduct to the perimetrium of the uterine horn, using 0 coated polyglactin suture." pg 1120; 2% ethanol used; photo of pump and catheter placement, fig. 1; "Intrauterine infusion of that amount of IFNT mimics effects of the conceptus on endometrial expression of hormone receptors and IFNT-stimulated genes during early pregnancy in ewes." pg 1120

**Q1352:** Y. Tang, *et al.* The role of the Th1 transcription factor T-bet in a mouse model of immune-mediated bone-marrow failure. *Blood* 2010;115(3):541-548

**Agents:** Interferon, gamma **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice; **Pump:** Not Stated; **Duration:** 12 days;  
**ALZET Comments:** Animal info (F1, Tbet -/-)

**Q0408:** H. J. Ryu, *et al.* THE PROTECTIVE EFFECTS OF INTERLEUKIN-18 AND INTERFERON-gamma ON NEURONAL DAMAGES IN THE RAT HIPPOCAMPUS FOLLOWING STATUS EPILEPTICUS. *Neuroscience* 2010;170(3):711-721

**Agents:** Antibody, anti IL-18; IL-18, recomb. rat; interferon, gamma, recomb. rat; antibody, anti interferon, gamma; IL-18 receptor antagonist; interferon, gamma, receptor antagonist **Vehicle:** Saline; **Route:** CSF/CNS; **Species:** Rat; **Pump:** 1007D; **Duration:** 1 week;  
**ALZET Comments:** Controls received mp w/ vehicle; animal info (Sprague Dawley, 7 wks old); ALZET brain infusion kit 1 used





### Interleukin-2 (2001-Present)

**Q10373:** E. Deer, *et al.* Low Dose of IL-2 Normalizes Hypertension and Mitochondrial Function in the RUPP Rat Model of Placental Ischemia. *Cells* 2021;10(10):

**Agents:** Interleukin-2, recombinant **Vehicle:** Not Stated; **Route:** IP; **Species:** Rat; **Pump:** 2002; **Duration:** Not Stated;  
**ALZET Comments:** Dose (0.05 ng/ml); animal info (Pregnant; 12 week old rats; Female; Treated with low dose of recombinant IL-2); Blood pressure measured via pressure transducer; ischemia (Placental); cardiovascular;

**Q9200:** M. W. Cunningham, Jr., *et al.* Investigation of interleukin-2-mediated changes in blood pressure, fetal growth restriction, and innate immune activation in normal pregnant rats and in a preclinical rat model of preeclampsia. *Biology of Sex Differences* 2021;12(1):4

**Agents:** Interleukin-2 **Vehicle:** Not Stated; **Route:** IP; **Species:** Rat; **Pump:** 2002; **Duration:** 5 days;  
**ALZET Comments:** Dose (0.05, 0.10, or 0.20 ng/ml); dose-response (p. 3); animal info (Timed-pregnant Sprague Dawley rats); 98 mmHg - 111 mmHg; Interleukin-2 aka IL-2; dependence;

**Q10183:** S. Hirose, *et al.* Type 2 Innate Lymphoid Cells Induce CNS Demyelination in an HSV-IL-2 Mouse Model of Multiple Sclerosis. *iScience* 2020;23(10):101549

**Agents:** Interleukin-2 **Vehicle:** Not Stated; **Route:** CSF/CNS; **Species:** Mice; **Pump:** Not Stated; **Duration:** Not Stated;  
**ALZET Comments:** animal info: wild-type (WT) HSV-1 Interleukin -2 aka (IL-2) peptides; immunology;

**Q7344:** R. Gutierrez Jauregui, *et al.* IL-1beta Promotes Staphylococcus aureus Biofilms on Implants in vivo. *Front Immunol* 2019;10(1082)

**Agents:** Interleukin-1 beta; Interleukin-6; Interleukin-10; Interleukin-12; Interleukin-17; Interleukin-23; Interferon, gamma; Tumor Necrosis Factor, alpha; Interleukin-1 beta, anti; Transforming Growth Factor-B1, anti **Vehicle:** PBS; **Route:** SC; **Species:** Mice; **Pump:** 1007D; **Duration:** 10 Days;

**ALZET Comments:** Dose (IL-1b (83µg/ml); IL-6 (83µg/ml); IL-10 (166µg/ml); IL-12 (83µg/ml); IL-17 (125µg/ml); IL-23 (166µg/ml); IFNγ (83µg/ml); TNFα (166µg/ml); anti-TGF-b1 (166µg/ml); anti-IL-1b (150µg/ml)); Controls received mp w/ vehicle; animal info (8-12 wk female C57BL/6 mice); ("evaluate suitability of osmotic pumps as a model for biofilms in implant associated infections, implanted osmotic pumps pre-colonized with bioluminescent *S. aureus*");

**Q4522:** P. T. Mantani, *et al.* IL-25 Inhibits Atherosclerosis Development in Apolipoprotein E Deficient Mice. *PLoS One* 2015;10(U1274-U1291)

**Agents:** Interleukin-25, recombinant mouse **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice; **Pump:** 1004; **Duration:** 4 weeks;  
**ALZET Comments:** Controls received mp w/ control medium; animal info (ApoE -/-, 9-10 or 21 weeks old); cardiovascular; brain tissue distribution; pumps removed after 4 weeks in young mice;

**Q4140:** A. Y. Tilahun, *et al.* Systemic Inflammatory Response Elicited by Superantigen Destabilizes T Regulatory Cells, Rendering Them Ineffective during Toxic Shock Syndrome. *Journal of Immunology* 2014;193(2919-2930)

**Agents:** Interleukin-2, murine; antibody, anti-interleukin-2 **Vehicle:** PBS; **Route:** SC; **Species:** Mice (transgenic); **Duration:** 10 days;

**ALZET Comments:** Controls received mp w/ vehicle; animal info (HLA-DR3); comparison of injection vs mp; immunology;

**Q5597:** K. R. Mott, *et al.* Role of interleukin-2 and herpes simplex virus 1 in central nervous system demyelination in mice. *J Virol* 2013;87(22):12102-9

**Agents:** Interleukin-2 **Vehicle:** PBS; **Route:** CSF/CNS; SC; **Species:** Mice; **Pump:** Not Stated; **Duration:** 2 weeks;  
**ALZET Comments:** Controls received mp w/ Interleukin 2 without HSV-1 infection; animal info (6 weeks) ; ALZET brain infusion kit 1 used; (demyelination); Therapeutic indication (CNS demyelination; Herpes simplex virus 1; HSV); Dose (1 ug/24 h);

**Q2613:** S. C. Katz, *et al.* Anti-KIT designer T cells for the treatment of gastrointestinal stromal tumor. *Journal of Translational Medicine* 2013;11(1):U1-U10

**Agents:** Interleukin-2, human **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice (nude); **Pump:** Not Stated; **Duration:** Not Stated;  
**ALZET Comments:** Animal info (6 wks old, male, Nu/J); 7-day pumps used



**Q1289:** J. Quiel, *et al.* Antigen-stimulated CD4 T-cell expansion is inversely and log-linearly related to precursor number. Proceedings of the National Academy of Sciences of the United States of America 2011;108(8):3312-3317

**Agents:** Interleukin-2; Interleukin-7; Interleukin-15 **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice; **Pump:** 2001; **Duration:** 7 days;

**ALZET Comments:** Controls received mp w/ PBS; animal info (6-12 wks old, gender, age matched); immunology

**Q1189:** A. S. Y. Lo, *et al.* Anti-GD3 Chimeric sFv-CD28/T-Cell Receptor zeta Designer T Cells for Treatment of Metastatic Melanoma and Other Neuroectodermal Tumors. Clinical Cancer Research 2010;16(10):2769-2780

**Agents:** Interleukin-2, recomb. **Vehicle:** PBS; Albumin, human; **Route:** SC; **Species:** Mice (nude); **Pump:** Not Stated; **Duration:** 7 days;

**ALZET Comments:** Controls received mp w/ vehicle; animal info (8 wks old, female, Balb/C, nu/nu); cancer (melanoma); "These pumps are easily loaded and then placed s.c., minimizing discomfort and handling of the mice as needed for repeated IL2 administration by injection." pg 2777

**P9309:** E. L. Lane, *et al.* Neuroinflammation in the generation of post-transplantation dyskinesia in Parkinson's disease. Neurobiology of Disease 2008;32(2):220-228

**Agents:** Interleukin-2 **Vehicle:** Saline; **Route:** CSF/CNS (striatum); **Species:** Rat; **Pump:** 2002; **Duration:** 12 days;

**ALZET Comments:** Controls received mp w/ vehicle; animal info (female, Sprague Dawley); neurodegenerative (Parkinson's Disease); behavioral testing (rotational behavior and locomotor; axial, limb, and orolingual movements)

**P8528:** Z. C. Neal, *et al.* Flt3-L gene therapy enhances immunocytokine-mediated antitumor effects and induces long-term memory. Cancer Immunology, Immunotherapy 2007;56(11):1765-1774

**Agents:** Interleukin-2, recomb. human **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice; **Pump:** 2001; **Duration:** 4 days;

**ALZET Comments:** Controls received mp w/ no treatment; cancer (neuroblastoma); peptides; animal info (female, A/J, ICR, 6-8 weeks old); gene therapy

**P7460:** S. Roychowdhury, *et al.* IL-15 but not IL-2 rapidly induces lethal xenogeneic graft-versus-host disease. Blood 2005;106(7):2433-2435

**Agents:** Interleukin-15, recomb. human; interleukin-2, recomb. human **Vehicle:** PBS; albumin, human; **Route:** SC; **Species:** Mice (SCID); **Pump:** 1007D; **Duration:** 10 days;

**ALZET Comments:** Controls received mp w/ vehicle; immunology; animal info (female, CB17, hu-PBL-SCID, 8-12 weeks old)

**P6765:** Z. C. Neal, *et al.* Enhanced activity of Hu14.18-IL2 immunocytokine against murine NXS2 neuroblastoma when combined with interleukin 2 therapy. Clinical Cancer Research 2004;10(14):4839-4847

**Agents:** Interleukin-2, recomb. human **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice; **Pump:** 2001; **Duration:** 7 days;

**ALZET Comments:** Controls received mp w/ PBS; no stress (see pg.4841); cancer (neuroblastoma); peptides

**P6450:** W. C. Jean, *et al.* Effects of combined granulocyte-macrophage colony-stimulating factor (GM-CSF), interleukin-2, and interleukin-12 based immunotherapy against intracranial glioma in the rat. Journal of Neuro-oncology 2004;66(1-2):39-49

**Agents:** Colony-stimulating factor, GM; interleukin-2; interleukin-12 **Vehicle:** Not Stated; **Route:** SC; **Species:** Rat; **Pump:** 2004; **Duration:** 4 weeks;

**ALZET Comments:** Cancer (gliosarcoma); GM-CSF was infused alone or with cytokines

**R0190:** H. Anisman, *et al.* Further evidence for the depressive effects of cytokines: Anhedonia and neurochemical changes. Brain, Behavior, and Immunity 2002;16(5):544-556

**Agents:** Interleukin-2 **Vehicle:** Not Stated; **Route:** Not Stated; **Species:** Mice; **Pump:** Not Stated; **Duration:** 7 days;

**ALZET Comments:** Controls received mp w/ saline; peptides; examined anhedonic effects of IL-2

**P4872:** J. A. Margenthaler, *et al.* Immunogenicity of Ld+ transgenic mouse hearts. Surgery 2001;130(217-224

**Agents:** Interleukin-2 **Vehicle:** Not Stated; **Route:** Not Stated; **Species:** mice; **Pump:** 1007D; **Duration:** 7 days;

**ALZET Comments:** controls received no IL-2 treatment; immunology; peptides



### **Muramyl Dipeptide**

**P8238:** I. du Plessis, D. Mitchell, H. P. Laburn and T. Cartmell. Fever and lethargy induced by subcutaneous pyrogen infusion in unrestrained rats. *Canadian Journal of Physiology and Pharmacology* 2005;83(11):1007-1014

**ALZET Comments:** Endotoxin, LPS; muramyl dipeptide; Saline, sterile; SC; Rat; 2001; 7 days; Controls received mp w/ vehicle; functionality of mp verified by weight; peptides; animal info (male, Sprague-Dawley, 250-350 grams).

**P0040:** F. Kierszenbaum and R. W. Ferraresi. Enhancement of host resistance against *Trypanosoma cruzi* infection by the immunoregulatory agent muramyl dipeptide. *Infect. Immun* 1979;25(1):273-278

**ALZET Comments:** Muramyl dipeptide; Saline; SC; mice; 7 days; comparison of ip injec. vs sc infusion; immunotherapy; peptides.

### **PMEA**

**P1963:** J. S. Lee, S. Mullaney, R. Bronson, A. H. Sharpe, R. Jaenisch, J. Balzarini, E. De Clercq and R. M. Ruprecht. Transplacental antiretroviral therapy with 9-(2-phosphonylmethoxyethyl)adenine is embryotoxic in transgenic mice. *J. Acquir. Immune Defic. Syndr* 1991;4(8):833-838

**ALZET Comments:** PMEA; Mice; no duration posted; comparison of ip injections vs. mp; teratology; antiviral agent.

### **R-95288**

**P3720:** T. Agatsuma, K. Abe, H. Furukawa, R. Koga, M. Koizumi, H. Hotoda and M. Kaneko. Protection of hu-PBL-SCID/beige mice from HIV-1 infection by a 6-mer modified oligonucleotide, R-95288. *Antiviral Res* 1997;34(1):121-130

**ALZET Comments:** R-95288; Saline; IP; SC; mice (SCID); 2002; no duration posted; controls received mp w/saline; antisense; mice were transplanted w/human peripheral blood leukocytes; R-95288 protects human chimeric mice against HIV-1 infection; AIDS.

### **SID 791**

**P3587:** R. Datema, L. Rabin, M. Hincenbergs, M. B. Moreno, S. Warren, V. Linquist, B. Rosenwirth, E. Seifert and J. M. McCune. Antiviral efficacy in vivo of the anti-human immunodeficiency virus bicyclam SDZ SID 791 (JM 3100), an inhibitor of infectious cell entry. *Antimicrob. Agents Chemother* 1996;40(3):750-754

**ALZET Comments:** SID 791; Saline, sterile; SC; Mice (SCID); mice; 2002; no duration posted; functionality of mp verified by plasma levels; dose-response; comparison of sc injections vs. mp; immunology; SID 791 is a bicyclam which inhibits HIV replication in vivo; human fetal liver & thymus transplanted into SCID mice.