



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

(Note: Please see CYTO bibliography for additional cytokines)

1. Aprotinin

Q0374: P. J. Azurmendi, E. M. Oddo, L. F. Obika, N. L. Corbera, R. S. Martin, F. R. Ibarra and E. E. Arrizurieta. Gonadectomy Influences Blood Pressure through the Kallikrein-Kinin System. *KIDNEY & BLOOD PRESSURE RESEARCH* 2009;32(5):342-348
ALZET Comments: Aprotinin; HOE-140; SC; Rat; 3 days; Animal info (Wistar, male, female, 150 days old).

P5676: H. Ito, I. Hayashi, T. Izumi and M. Majima. 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

ALZET Comments: FR-190997; aprotinin; SBTI; Saline; water; HCl; IV (vena cava, cervical vein); Rat; 2001D; 24 hours; 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, D. L. Horn, J. J. Sigel, M. E. Harris-White, J. J. Mendoza, F. Yang, T. C. Saido and G. M. Cole. Protease inhibitor coinfusion with amyloid beta-protein results in enhanced deposition and toxicity in rat brain. *Journal of Neuroscience* 1998;18(20):8311-8321

ALZET Comments: Amyloid protein, beta; Aprotinin; Leupeptin;; HEPES;; CSF/CNS;; Rat; 2004;; 4 weeks; 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 and S. S. El-Dahr. Developmental regulation of ACE gene expression by endogenous kinins and angiotensin II. *Am. J. Physiol. (Renal Fluid Electrolyte Physiol. 38)* 1995;269(F172-F179)

ALZET Comments: Aprotinin; Hoe 140; Losartan; SC; Rat; 5,7 days; controls received mp w/saline.

P3035: N. J. Morin, A. Frau, D. Nonclercq, G. Toubreau, J. Zanen, J.-A. Heuson-Stiennon, M. G. Bergeron, D. Beauchamp and G. Laurent. Potentiation of gentamicin nephrotoxicity in the rat by infusion of aprotinin. *Exp. Molecular Path* 1994;60(197-213)

ALZET Comments: Aprotinin; IV; Rat; 2ML1; 8 days; controls received mp with saline; immunology; toxicology.

P3268: M. Majima, O. Yoshida, H. Mihara, T. Muto, S. Mizogami, Y. Kuribayashi, M. Katorim and S. Oh-ishi. High sensitivity to salt in kininogen-deficient brown Norway Katholiek rats. *Hypertension* 1993;22(705-714)

ALZET Comments: Kininogen, bovine; Hoe 140; Aprotinin; Saline; SC; Rat; 2001; 7 days; 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. *Am. J. Med. Genet* 1992;42(555-560)

ALZET Comments: E-64C; Aprotinin; Chloroquine; Leupeptin; CSF/CNS; Rat; 2002; 2 weeks; no comment posted.

P1964: M. Majima, M. Katori, M. Hanazuka, S. Mizogami, T. Nakano, Y. Nakao, R. Mikami, H. Uryu, R. Okamura, S. S. J. Mohsin and S. Oh-ishi. Suppression of rat deoxycorticosterone-salt hypertension by kallikrein-kinin system. *Hypertension* 1991;17(6):806-813

ALZET Comments: Aprotinin; Saline; SC; Rat; 2001; 7 days; no comment posted.

P1673: R. Pakzad. Influence of the trypsin inhibitors aprotinin (Trasylol) 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

ALZET Comments: Lysine chloromethyl ketone, N-a-tosyl-L-; Aprotinin; intrauterine; rabbit; 6 days; German with English summary (p. 957); trypsin inhibitors; tissue perfusion (uterus).

2. Azidothymidine



P2211: A. F. Tarantal, R. J. Spanggord and A. G. Hendrickx. 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
ALZET Comments: Azidothymidine; Sodium hydroxide; SC; monkey (pregnant); 2ML4; 28 days; 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, L. Harcouet, B. Desforages, J. N. Colin, R. Farinotti and J. J. Pocardalo. Efficacy of continuous zidovudine infusion at early stages of retroviral infection in mice. *J. Acquir. Immune Defic. Syndr* 1992;5(577-582)
ALZET Comments: Azidothymidine; Propylene glycol; Water; SC; mice; 2001; 5 days; 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, C. MacAuley, T. N. Fredrickson, M. M. Bell, C. McKissick, S. G. Shapiro, R. Personette and J. L. Eiseman. Use of a neonatal murine retrovirus model to evaluate the long-term efficacy and toxicity of antiviral agents. *Ann. N. Y. Acad. Sci* 1990;616(238-251)
ALZET Comments: Azidothymidine; mice (pregnant); 2001; 21 days; 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, L. N. Clark and J. T. Rubino. Pump delivery of azidothymidine: potential for constant concentrations and improved brain delivery. *J. Controlled Release* 1989;9(249-253)
ALZET Comments: Azidothymidine; IA (carotid); Rat; 2001; 3-7 days; Dose-response; blood levels; comparison of IV injections vs. mp; good methods; antiviral; alkaline pH of 11 increased solubility and stability of AZT; antiretroviral drug.

3. Clindamycin

Q3927: N. Ito, K. Ito, Y. Ikebuchi, T. Kito, H. Miyata, Y. Toyoda, T. Takada, A. Hisaka, M. Honma, A. Oka, H. Kusahara, H. Suzuki and K. Ito. Organic Cation Transporter/Solute Carrier Family 22a is Involved in Drug Transfer into Milk in Mice. *Journal of Pharmaceutical Sciences* 2014;103(3342-3348)
ALZET Comments: Acyclovir; cimetidine; clindamycin; metformin; terbutaline; verapamil;; IP; Mice; 1003D; 72 hours; 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, K. Ito, H. Koshimichi, A. Hisaka, M. Honma, T. Igarashi and H. Suzuki. 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
ALZET Comments: 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.; DMSO; water; IP; mice; 1003D; 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, S. Nelson, G. H. Karam and W. R. Summer. Interactions of clindamycin with antibacterial defenses of the lung. *Am. Rev. Respir. Dis* 1987;135(1015-1019)
ALZET Comments: Clindamycin HCl; Penicillin G; Sodium hydroxide; Water; SC; mice; 72 hours; 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, L. R. DeGuzman and R. F. Bellamy. Early administration of methylprednisolone promotes survival in rats with intra-abdominal sepsis. *Circ. Shock* 1986;20(2):161-168

ALZET Comments: Clindamycin; Methylprednisolone; Gentamicin; Naloxone; Saline; SC; Rat; 2001; 7 days; controls received mp w/saline; toxicology; multiple pumps per animal (3); comparison of bolus injections vs. mp infusion; antibiotic.

4. Interferons

Q7192: A. Kimura, Y. Ishida, M. Furuta, M. Nosaka, Y. Kuninaka, A. Taruya, N. Mukaida and T. Kondo. Protective Roles of Interferon-gamma in Cardiac Hypertrophy Induced by Sustained Pressure Overload. *J Am Heart Assoc* 2018;7(6):

ALZET Comments: Interferon, gamma; SC; Mice; 1007D; 7 days; Dose (15 uM/d); animal info (8-10 week old, male, BALB/c); cardiovascular;.

Q4560: L. Pereira, R. Medina, M. Baena, A. M. Planas, E. Pozas and E. Pozas. IFN gamma regulates proliferation and neuronal differentiation by STAT1 in adult SVZ niche. *Frontiers in Cellular Neuroscience* 2015;9(U1-U10)

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

Q5030: C. Hoyo-Becerra, Z. Liu, J. Yao, B. Kaltwasser, G. Gerken, D. M. Hermann and J. F. Schlaak. 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

ALZET Comments: Interferon-a, murine; polyinosinic/polycytidylic acid; PBS; CSF/CNS; Mice; 1002; 14 days; 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, J. A. Stanley, J. A. McCracken, S. K. Banu, J. A. Arosh and J. A. Arosh. 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)

ALZET Comments: U0126; serum protein, ovine; interferon tau, recombinant ovine; DMSO; Intrauterine (uterine horn); Sheep (ewe); 2ML1; 6 days; 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, C. E. Terrell, S. H. Millen, J. D. Katz, D. A. Hildeman and M. B. Jordan. Etoposide Selectively Ablates Activated T Cells To Control the Immunoregulatory Disorder Hemophagocytic Lymphohistiocytosis. *Journal of Immunology* 2014;192(1):84-91

ALZET Comments: Interferon, gamma; Saline; SC; Mice; 7 days; 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, T. J. Welsh, F. W. Bazer and T. E. Spencer. Cortisol and Interferon Tau Regulation of Endometrial Function and Conceptus Development in Female Sheep. *Endocrinology* 2013;154(2):931-941

ALZET Comments: Cortisol; PF915275; meloxicam; interferon, tau, recomb. ovine; Ethanol; Intrauterine (uterine horn); Sheep (ewe); 2ML1; 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

ALZET Comments: interferon-tau, recombinant ovine; BSA; IV (jugular, intrauterine); ewe; 2001D, 1003D; 1 day, 3 day; 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, S. Kasar, C. Underbayev, D. Vollenweider, E. Salerno, S. V. Kotenko and E. Raveche. Role of microRNA-15a in autoantibody production in interferon-augmented murine model of lupus. *MOLECULAR IMMUNOLOGY* 2012;52(2):61-70

ALZET Comments: Interferon, alpha; interferon, gamma; PBS; BSA; SC; Mice; 2006; 16 weeks; 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, Z. D. Shi and D. C. Rockey. Preendothelin-1 expression is negatively regulated by IFN γ during hepatic stellate cell activation. *American Journal of Physiology-Gastrointestinal and Liver Physiology* 2012;302(9):G948-G957

ALZET Comments: Interferon, gamma; PBS; BSA; Rat; 1002; 2 weeks; Controls received mp w/ vehicle; animal info (Sprague Dawley).

Q2394: A. Kimura, Y. Ishida, M. Inagaki, Y. Nakamura, T. Sanke, N. Mukaida and T. Kondo. Interferon-gamma is protective in cisplatin-induced renal injury by enhancing autophagic flux. *Kidney International* 2012;82(10):1093-1104

ALZET Comments: Interferon, gamma, recomb. mouse; SC; Mice; 1007D; 7 days; Animal info (BALB/c, male, 8-10 wks old).

Q2056: P. Dorniak, T. J. Welsh, F. W. Bazer and T. E. Spencer. Endometrial HSD11B1 and Cortisol Regeneration in the Ovine Uterus: Effects of Pregnancy, Interferon Tau, and Prostaglandins. *Biology of Reproduction* 2012;86(4):U106-U115

ALZET Comments: Interferon, tau, recomb. ovine; meloxicam; PGE2, ovine serum; PGF2a, ovine serum; PGI2, ovine serum; Ethanol; saline; Intrauterine (uterine horn); Sheep (ewe); 2ML1; 7 days; 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, F. W. Bazer, G. Y. Wu and T. E. Spencer. Conceptus-Derived Prostaglandins Regulate Endometrial Function in Sheep. *Biology of Reproduction* 2012;87(1):U80-U86

ALZET Comments: Interferon, tau, recomb. ovine; meloxicam; PGE2, ovine serum; PGF2a, ovine serum; PGI2, ovine serum; Ethanol; saline; Intrauterine (uterine horn); Sheep (ewe); 2ML1; 5 days; 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, M. Quante, G. Bhagat, S. Takaishi, G. L. Cui, X. D. Yang, S. Muthuplani, W. Shibata, J. G. Fox, D. M. Pritchard and T. C. Wang. IFN-gamma Inhibits Gastric Carcinogenesis by Inducing Epithelial Cell Autophagy and T-Cell Apoptosis. *Cancer Research* 2011;71(12):4247-4259

ALZET Comments: Interferon-gamma; PBS; BSA; Mice (transgenic); 4 weeks; Controls received mp w/ vehicle; animal info (wt B6, IFN-gamma transgenic, 2 mo old).

Q1327: J. A. B. Strickertsson, K. B. V. Dossing, A. J. M. Aabakke, H. O. Nilsson, T. V. O. Hansen, U. Knigge, A. Kjaer, T. Wadstroem and L. Friis-Hansen. Interferon-gamma inhibits ghrelin expression and secretion via a somatostatin-mediated mechanism. *WORLD JOURNAL OF GASTROENTEROLOGY* 2011;17(26):3117-3125

ALZET Comments: Interferon, gamma; SC; Mice; 2001; 7 days; Animal info (C57BL6/J).

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

ALZET Comments: Meloxicam; interferon, recomb. ovina, tau; Ethanol; saline; Intrauterine (uterine horn); Sheep (ewe); 2ML1; 7 days; 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, M. J. Desierto, J. C. Chen and N. S. Young. 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

ALZET Comments: Interferon, gamma; SC; Mice; 12 days; Animal info (F1, Tbet -/-).

Q0408: H. J. Ryu, J. E. Kim, M. J. Kim, H. J. Kwon, S. W. Suh, H. K. Song and T. C. Kang. 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

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

P9920: R. C. Bott, R. L. Ashley, L. E. Henkes, A. Q. Antoniazzi, J. E. Bruemmer, G. D. Niswender, F. W. Bazer, T. E. Spencer, N. P. Smirnova, R. V. Anthony and T. R. Hansen. Uterine Vein Infusion of Interferon Tau (IFNT) Extends Luteal Life Span in Ewes. *Biology of Reproduction* 2010;82(4):725-735

ALZET Comments: Interferon-tau, recomb, ovine; IV (uterine vein); Sheep (ewe); 2001D; 2ML1; 7 days; 24 hours; Controls received mp w/BSA or sham surgeries; animal info (white-faced, western range ewe); cyanoacrylate adhesive.

P9580: S. Tzima, P. Victoratos, K. Kranidioti, M. Alexiou and G. Kollias. Myeloid heme oxygenase-1 regulates innate immunity and autoimmunity by modulating IFN-beta production. *Journal of Experimental Medicine* 2009;206(5):1167-1179

ALZET Comments: Interferon-beta, recomb. human; Mice; 2002; 14 days; Animal info (Hmox1 KO).

P9300: A. Shinohara, S. Koyanagi, A. M. Hamdan, N. Matsunaga, H. Aramaki and S. Ohdo. Dosing schedule-dependent change in the disruptive effects of interferon-alpha on the circadian clock function. *LIFE SCIENCES* 2008;83(15-16):574-580

ALZET Comments: Interferon-alpha, recomb. human; Saline; SC; Mice; 2001; 6 days; Controls received mp w/ vehicle; comparison of SC injections vs. mp; half-life (p. 579) "relatively short"; peptides; animal info (male, ICR, 5 wks old); behavioral testing (locomotor activity).

P8835: A. B. Rogers, E. J. Theve, Y. Feng, R. C. Fry, K. Taghizadeh, K. M. Clapp, C. Boussahmain, K. S. Cormier and J. G. Fox. Hepatocellular carcinoma associated with liver-gender disruption in male mice. *Cancer Research* 2007;67(24):11536-11546

ALZET Comments: Interferon-gamma, recomb. murine; SC; Mice; 7 days; Controls received mp w/ vehicle; cancer (tumorigenic hepatitis, liver); peptides; animal info (male, female, A/JCr).

P8739: X. T. Qiao, J. W. Ziel, W. Mckimpson, B. B. Madison, A. Todisco, J. L. Merchant, L. C. Samuelson and D. L. Gumucio. Prospective identification of a multilineage progenitor in murine stomach epithelium. *Gastroenterology* 2007;133(6):1989-1998

ALZET Comments: Interferon-gamma; PBS; BSA; IP; Mice (transgenic); 2, 8, 12 weeks; Controls received mp w/ vehicle; comparison of IP injections vs. mp; peptides; animal info (12.4 KViI-EGFP tg; C57BL/6J; 4 months old); long-term study.

5. Interleukin-2

Q4522: P. T. Mantani, P. Duner, E. Bengtsson, R. Alm, I. Ljungcrantz, I. Soederberg, L. Sundius, F. To, J. Nilsson, H. Bjoerkbacka, G. N. Fredrikson and G. N. Fredrikson. IL-25 Inhibits Atherosclerosis Development in Apolipoprotein E Deficient Mice. *PLoS One* 2015;10(U1274-U1291)

ALZET Comments: Interleukin-25, recombinant mouse; SC; Mice; 1004; 4 weeks; 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, V. R. Chowdhary, C. S. David, G. Rajagopalan and G. Rajagopalan. Systemic Inflammatory Response Elicited by Superantigen Destabilizes T Regulatory Cells, Rendering Them Ineffective during Toxic Shock Syndrome. *Journal of Immunology* 2014;193(2919-2930)

ALZET Comments: Interleukin-2, murine; antibody, anti-interleukin-2; PBS; SC; Mice (transgenic); 10 days; Controls received mp w/ vehicle; animal info (HLA-DR3); comparison of injection vs mp; immunology;.



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

ALZET Comments: Interleukin-2; PBS; CSF/CNS; SC; Mice; 2 weeks; Controls received mp w/ Interleukin 2 without HSV-1 infection; animal info (6 weeks) ; ALZET brain infusion kit 1 used; neurodegenerative (demyelination); Therapeutic indication (CNS demyelination; Herpes simplex virus 1; HSV); Dose (1 ug/24 h);.

Q2613: S. C. Katz, R. A. Burga, S. Naheed, L. A. Licata, M. Thorn, D. Osgood, C. T. Nguyen, N. J. Espat, J. A. Fletcher and R. P. Junghans. Anti-KIT designer T cells for the treatment of gastrointestinal stromal tumor. *Journal of Translational Medicine* 2013;11(;):U1-U10

ALZET Comments: Interleukin-2, human; SC; Mice (nude); Animal info (6 wks old, male, Nu/J); 7-day pumps used.

Q1289: J. Quiel, S. Caucheteux, A. Laurence, N. J. Singh, G. Bocharov, S. Z. Ben-Sasson, Z. Grossman and W. E. Paul. 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

ALZET Comments: Interleukin-2; interleukin-7; interleukin-15; SC; Mice; 2001; 7 days; Controls received mp w/ PBS; animal info (6-12 wks old, gender, age matched); immunology.

Q1189: A. S. Y. Lo, Q. Z. Ma, D. L. Liu and R. P. Junghans. 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

ALZET Comments: Interleukin-2, recomb.; PBS; albumin, human; SC; Mice (nude); 7 days; 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, D. Soulet, L. Vercaemmen, M. A. Cenci and P. Brundin. Neuroinflammation in the generation of post-transplantation dyskinesia in Parkinson's disease. *NEUROBIOLOGY OF DISEASE* 2008;32(2):220-228

ALZET Comments: Interleukin-2; Saline; CSF/CNS (striatum); Rat; 2002; 12 days; 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, P. M. Sondel, M. K. Bates, S. D. Gillies and H. Herweijer. Flt3-L gene therapy enhances immunocytokine-mediated antitumor effects and induces long-term memory. *CANCER IMMUNOLOGY IMMUNOTHERAPY* 2007;56(11):1765-1774

ALZET Comments: Interleukin-2, recomb. human; SC; Mice; 2001; 4 days; Controls received mp w/ no treatment; cancer (neuroblastoma); peptides; animal info (female, A/J, ICR, 6-8 weeks old); gene therapy.

P7460: S. Roychowdhury, B. W. Blaser, A. G. Freud, K. Katz, D. Bhatt, A. K. Ferketich, V. Bergdall, D. Kusewitt, R. A. Baiocchi and M. A. Caligiuri. IL-15 but not IL-2 rapidly induces lethal xenogeneic graft-versus-host disease. *Blood* 2005;106(7):2433-2435

ALZET Comments: Interleukin-15, recomb. human; interleukin-2, recomb. human; PBS; albumin, human; SC; Mice (SCID); 1007D; 10 days; Controls received mp w/ vehicle; immunology; animal info (female, CB17, hu-PBL-SCID, 8-12 weeks old).

P6765: Z. C. Neal, J. C. Yang, A. L. Rakhmievich, I. N. Buhtoiarov, H. E. Lum, M. Imboden, J. A. Hank, H. N. Lode, R. A. Reisfeld, S. D. Gillies and P. M. Sondel. 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

ALZET Comments: Interleukin-2, recomb. human; SC; Mice; 2001; 7 days; Controls received mp w/ PBS; no stress (see pg.4841); cancer (neuroblastoma); peptides.

P6450: W. C. Jean, S. R. Spellman, M. A. Wallenfriedman, C. T. Flores, B. P. Kurtz, W. A. Hall and W. C. Low. 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



ALZET Comments: Colony-stimulating factor, GM; interleukin-2; interleukin-12; SC; Rat; 2004; 4 weeks; Cancer (gliosarcoma); GM-CSF was infused alone or with cytokines.

R0190: H. Anisman, L. Kokkinidis and Z. Merali. Further evidence for the depressive effects of cytokines: Anhedonia and neurochemical changes. *BRAIN BEHAVIOR AND IMMUNITY* 2002;16(5):544-556

ALZET Comments: Interleukin-2; Mice; 7 days; Controls received mp w/ saline; peptides; examined anhedonic effects of IL-2.

P4872: J. A. Margenthaler, F. Tu, N. Otomo, Y. Shimizu, S. Yu and M. W. Flye. Immunogenicity of Ld+ transgenic mouse hearts. *Surgery* 2001;130(217-224

ALZET Comments: Interleukin-2; mice; 1007D; 7 days; controls received no IL-2 treatment; immunology; peptides.

P4815: S. Hautmann, E. Huland, A. Wullbrand, M. Friedrich and H. Huland. Treatment of metastatic hormone-refractory prostate adenocarcinoma (MatLyLu) in Copenhagen rats with micro-osmotic interleukin-2 pumps. *Anticancer Research* 2000;20(4495-4498

ALZET Comments: Interleukin-2;; Albumin, human;; SC; Peritumoral (orthotopic); Rat;; 2002;; Controls received mp w/ vehicle; functionality of mp verified by in vitro assay; no stress (see p. 4496); good methods pumps weighed p. 4496; cancer (prostate); immunology; peptides; rats had a prostatic adenocarcinoma tumor implanted; Albumin vehicle was 20% concentration; SC & peritumoral orthotopic implantation; Note: these pumps were left in for 28 days;.

P4630: M. Ueno. Lymphokine-activated killer cells induced in vivo in mice showing IL-2 toxicity have cytoplasmic granules containing perforin and its hemolytic activity. *Immunopharmacology* 1998;39(75-82

ALZET Comments: Interleukin-2;; SC;; mice;; 2001;; 8 days;; immunology; peptides; recomb. human IL-2 was used.

P4557: V. Schirmmacher, S. Mürköster and V. Umansky. Antagonistic effects of systemic interleukin 2 on immune Tcell-mediated graft-versus-leukemia reactivity. *Clinical Cancer Research* 1998;4(2635-2645

ALZET Comments: Interleukin-2, recomb. human;; PEG;; mice;; 2002;; 12 days;; controls received mp w/vehicle; comparison of IP injections of PEG-IL-2 vs. IL-2 infusion via mp; cancer; immunology; peptides;.

P4089: S. Johansson, M. Landstrom, K. Hellstrand and R. Henriksson. The response of Dunning R3327 prostatic adenocarcinoma to IL-2, histamine and radiation. *Br. J. Cancer* 1998;77(8):1213-1219

ALZET Comments: Interleukin-2; SC; Rat; 2002; 6 weeks; pumps replaced every 2 weeks; cancer; immunology; peptides.

P4112: S. Hautmann, E. Huland, A. Wulbrand, M. Friedrich and H. Huland. Treatment of metastatic hormone refractory adenocarcinoma of the prostate (mat ly ly) with micro-osmotic interleukin-2 pump in male copenhagen rats. *Eur. Urol* 1998;34(265-266

ALZET Comments: Interleukin-2; Albumin; intratumoral; Rat; no duration posted; controls received mp w/albumin; tissue perfusion (intratumoral); cancer (prostate); immunology; peptides.

P3731: F. Galbiati, L. Rogge, J.-C. Guery, S. Smiroldo and L. Adorini. Regulation of the IL-12 receptor B2 subunit by soluble antigen and IL-12 in vivo. *Eur. J. Immunol* 1998;28(209-220

ALZET Comments: Interleukin-12; Interleukin-2; Lysozyme, hen egg white; Ovalbumin; Interferon-gamma; PBS; Albumin, mouse serum; SC; mice; 2001; 9 days; controls received mp w/ PBS; comparison of ip injections vs. mp; immunology; peptides; agents infused singly or in combination in the same pump; recomb. human IL-2 used; recomb. mouse IFN-gamma used.

6. 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.

7. 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.

8. 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.

9. 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.