



**References on the Intravenous Administration of Agents in Mice
Using ALZET® Osmotic Pumps**

Q6881: W. Deng, *et al.* Insulin ameliorates pulmonary edema through the upregulation of epithelial sodium channel via the PI3K/SGK1 pathway in mice with lipopolysaccharide-induced lung injury. *Mol Med Rep* 2019;

ALZET Comments: Insulin, human; PBS; IV (jugular); Mice; 24 hours; Dose (Human Insulin (.01 U/kg/day)); Controls received mp w/ vehicle; animal info (C3H/HeN mice, aged 7-9 weeks); ALZET internal jugular vein catheter used; cardiovascular;.

Q7161: X. Yu, *et al.* Zinc Metallochaperones Reactivate Mutant p53 Using an ON/OFF Switch Mechanism: A New Paradigm in Cancer Therapeutics. *Clin Cancer Res* 2018;24(18):4505-4517

ALZET Comments: Zinc metallochaperone 1; DMSO; IV (jugular); Mice (nude); 2001; 7, 17 days; Dose (1 mg/kg/d); Controls received mp w/ vehicle; animal info (8-12 week old mice); pumps replaced after 1 week; comparison of IV bolus injection vs continuous pump infusion; half-life: <30 min (p. 4505); cancer (therapeutics);.

Q5616: X. Yu, *et al.* Zinc Metallochaperones Reactivate Mutant p53 Using an ON/OFF Switch Mechanism: A New Paradigm in Cancer Therapeutics. *Clin Cancer Res* 2018;24(18):4505-4517

ALZET Comments: Zinc metallochaperone 1; IV (jugular); Mice (nude); 2001; 7 days; Dose (1 mg/kg/d); comparison of IV daily bolus injections vs continuous IV with mp; cancer (Pancreatic);.

Q6901: T. Vajen, *et al.* Blocking CCL5-CXCL4 heteromerization preserves heart function after myocardial infarction by attenuating leukocyte recruitment and NETosis. *Sci Rep* 2018;8(1):10647

ALZET Comments: MKEY; MKEY, scrambled; Formic acid; IV (jugular); Mice; 1007D; 7 days; Dose (1.3 mg/kg/day); animal info (C57BL/6 mice); cardiovascular;.

Q4901: M. Zengqiang Wang, *et al.* Infusion of esmolol attenuates lipopolysaccharide-induced myocardial dysfunction. *Journal of Surgical Research* 2016;200(283-289)

ALZET Comments: Esmolol; Saline; IV (jugular); Mice; 6 hours; Controls received mp w/ vehicle; animal info (male, C57BL/6J, 8-12 weeks old); cardiovascular; immunology; Dose (6.7 ug/kg/min);.

Q6527: H. Vogel, *et al.* GLP-1 and estrogen conjugate acts in the supramammillary nucleus to reduce food-reward and body weight. *Neuropharmacology* 2016;110(Pt A):396-406

ALZET Comments: IV; Mice; Jugular vein catheter; animal info (Adult Sprague-Dawley rats weighing 200-250 g); ALZET jugular catheter used with another product.

P5241: T. Nakamachi, *et al.* PACAP suppresses dry eye signs by stimulating tear secretion. *Nat Commun* 2016;7(12034)

ALZET Comments: Pituitary adenylate cyclase-activating polypeptide; PACAP38; BSA; saline; IV (jugular); Mice; 1007D; 4 days; Controls received mp w/ vehicle; animal info (8 – 12 weeks old, Adcyap1-/- mice, C57BL/6 background); functionality of mp verified by tear volume; 0.1% BSA used; PE10 polyethylene catheter used; Therapeutic indication (dry eye syndrome); Dose (PACAP38 32 pmol/ul, PACAP6-38 320 pmol/ul);.

Q6580: J. Kübler, *et al.* The HIV-derived protein Vpr52-96 has anti-glioma activity in vitro and in vivo. *ONCOTARGET* 2016;7(29):45500-45512

ALZET Comments: HIV Viral Protein R; Water; IV (jugular); Mice; 2001; 1 week; Dose (60 mg/kg/week); Therapeutic indication (HIV);.

Q5760: V. Caolo, *et al.* CXCL1 microspheres: a novel tool to stimulate arteriogenesis. *Drug Deliv* 2016;23(8):2919-2926

ALZET Comments: CXCL1; Saline; IP, Perivascular (femoral artery); Mice; 1004; 28 days; Controls received mp w/ vehicle; comparison of IM injection vs mp; ischemia (induced hind leg ischemia); Therapeutic indication (Drug delivery, arteriogenesis, peripheral artery disease);.

Q5320: M. Benlloch, *et al.* Pterostilbene Decreases the Antioxidant Defenses of Aggressive Cancer Cells In Vivo: A Physiological Glucocorticoids- and Nrf2-Dependent Mechanism. *Antioxid Redox Signal* 2016;24(17):974-90



ALZET Comments: Pterostilbene, Corticosterone; DMSO, Ethanol; PEG400; IV (jugular); mice; 35 days; Controls received mp w/ vehicle; animal info Female nu/nu nude mice (6–8 weeks); Vehicle solution DMSO and ethanol at 2:1 ratio; functionality of mp verified by plasma levels, pg 979; functionality of mp verified by plasma levels, pg 979; Pterostilbene is a natural dimethoxylated analog of resveratrol; Mice xenograft models; Dose (50 mg/ml Pter; 0.3 ug/hr corticosterone); Resultant plasma level (pg. 979);.

Q4549: T. Nojiri, *et al.* Atrial natriuretic peptide prevents cancer metastasis through vascular endothelial cells.

PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA 2015;112(4086-4091

ALZET Comments: Atrial natriuretic peptide; Saline; IV (jugular); Mice (nude); 1002; 2004; 4 days; Controls received mp w/ vehicle; animal info (BALB/c nu/nu, 6 weeks old); cancer (lung); cardiovascular; immunology; used mouse jugular catheter (#7702); bp measured using tail cuff;

Q4447: M. Hecker, *et al.* Immunomodulation by lipid emulsions in pulmonary inflammation: a randomized controlled trial. CRITICAL CARE 2015;19(U1-U13

ALZET Comments: Fish oil-based lipid emulsion; Soybean oil-based lipid emulsion; IV (jugular); Mice; 24 hours; Controls received mp w/ saline; animal info (ChemR23 -/- or WT Sv129/S1); 10% emulsion used; immunology;

Q4187: M. Xia, *et al.* Endothelial NLRP3 Inflammasome Activation and Enhanced Neointima Formation in Mice by Adipokine Visfatin. American Journal of Pathology 2014;184(1617-1628

ALZET Comments: Visfatin; IV (jugular); Mice; 2002; 14 days; Controls received mp w/ vehicle; animal info (male, C57BL6J or Asc -/-, 8 weeks old); cardiovascular; immunology; visfatin is an adipokine;

Q4021: C. Ning, *et al.* Excess adenosine A2B receptor signaling contributes to priapism through HIF-1alpha mediated reduction of PDE5 gene expression. FASEB Journal 2014;28(2725-2735

ALZET Comments: IV (jugular); Mice; catheter was heparinized 250 U/ml; jugular catheter only;

Q4004: K. Miyamoto, *et al.* PACAP38 Suppresses Cortical Damage in Mice with Traumatic Brain Injury by Enhancing Antioxidant Activity. Journal of Molecular Neuroscience 2014;54(370-379

ALZET Comments: PACAP38; Saline; BSA; IV (femoral); Mice; 24 hours; Controls received mp w/ vehicle; animal info (male, C57BL6J, 10-12 weeks old, 21-26g); 0.1% BSA used; ischemia (cerebral); cardiovascular; peptides; used PE-10;

Q5046: I. Ibrahim-Zada, *et al.* Inhibition of sepsis-induced inflammatory response by beta1-adrenergic antagonists. J Trauma Acute Care Surg 2014;76(2):320-7; discussion 327-8

ALZET Comments: Esmolol; saline; IV (jugular); mice; 1 week; Controls received mp w/ saline vehicle; animal info (Male C57BL/6J mice aged 8 weeks to 12 weeks); functionality of mp verified by monitoring of animal response using transthoracic echocardiography; dose-response (pg 321, 322 dose response curve); good methods (pg 321); post op. care (buprenorphine 0.025 mg in 1 mL of normal saline injected SC); observation of animals every 12 hours; Dose: esmolol 6.7 ug/kg/min (pg. 321) [10mg/mL];.

Q3503: M. Hecker, *et al.* Immunomodulation by fish-oil containing lipid emulsions in murine acute respiratory distress syndrome. CRITICAL CARE 2014;18(U648-U658)Triglycerides, long-chain; triglycerides, medium chain; fish oil

ALZET Comments: Triglycerides, long-chain; triglycerides, medium chain; fish oil; IV (jugular); Mice; 3 days; Controls received mp w/ saline; animal info (BALB/c, 13-15 weeks old, 22-24g); functionality of mp verified by plasma concentration; pumps replaced every 7 days; immunology; mice injected with low dose unfractionated heparin SC;

Q3039: N. Farhat, *et al.* Angiotensin-Like 2 Promotes Atherogenesis in Mice. JOURNAL OF THE AMERICAN HEART ASSOCIATION 2013;2(3):U137-U149

ALZET Comments: Angiotensin like -2; TBSE; IV; Mice (transgenic); 1004; 1 month; Control animals received mp w/ vehicle; animal info (3 mo old, ATX).

Q2907: M. J. C. Dane, *et al.* Glomerular Endothelial Surface Layer Acts as a Barrier against Albumin Filtration. American Journal of Pathology 2013;182(5):1532-1540



ALZET Comments: Bovine testicular Hyaluronidase; Saline; IV; Mice; 4 Days; Controls received mp w/ heat inactivated hyaluronidase; peptides; animal info. (C57B1/6, 14 weeks).

Q2387: C. Ning, *et al.* Excessive Penile Norepinephrine Level Underlies Impaired Erectile Function in Adenosine A1 Receptor Deficient Mice. *Journal of Sexual Medicine* 2012;9(10):2552-2561

ALZET Comments: IV (jugular); Mice; Animal info (Adora1 -/-, wt, 12 wks old); ALZET mouse jugular catheter used, inserted into the right corpus cavernosum.

Q2183: S. F. Knight, *et al.* Folate Receptor-Targeted Antioxidant Therapy Ameliorates Renal Ischemia-Reperfusion Injury. *Journal of the American Society of Nephrology* 2012;23(5):793-800

ALZET Comments: Tempol; Saline; folate; IV (jugular); Mice; 48 hours; Controls received mp w/ vehicle; animal info (male, C57BL/6, 11 wks old); ischemia (renal); 7-day pump used; post op. care (buprenorphine in saline).

Q1702: N. J. Willett, *et al.* Redox Signaling in an In Vivo Murine Model of Low Magnitude Oscillatory Wall Shear Stress. *ANTIOXIDANTS & REDOX SIGNALING* 2011;15(5):1369-1378

ALZET Comments: Tempol; ebselen; DMSO; saline; SC; IV (jugular); Mice; 2ML1; 1007D; 4 days; Animal info (male, 11-13 wks old, C57BL/6, P47 phox -/-); 50% DMSO used.

Q1389: A. N. Wansapura, *et al.* Mice expressing ouabain-sensitive alpha1-Na,K-ATPase have increased susceptibility to pressure overload-induced cardiac hypertrophy. *American Journal of Physiology-Heart and Circulatory Physiology* 2011;300(1):H347-H355

ALZET Comments: Digibind; IV (jugular); Mice; 2002; 2 weeks; Animal info (alpha1s/s alpha2s/s, alpha1r/r alpha2r/r).

Q1234: L. Mirandola, *et al.* Galectin-3C Inhibits Tumor Growth and Increases the Anticancer Activity of Bortezomib in a Murine Model of Human Multiple Myeloma. *PLoS One* 2011;6(7):U173-U186

ALZET Comments: Galectin-3C; PBS; IP; IV; Mice (NOD/SCID); 2002; 16 days; Controls received mp w/ vehicle; animal info (female, 6 wks old, NOD/SCID); cancer (multiple myeloma); half-life, 3 hours (p. e21811); "Our data suggest that sustained delivery may be preferable (over injections intramuscularly twice daily) for maximal response to treatment" pg e21811; galectin-3C is an N-terminally truncated form of galectin-3.

Q1457: J. Y. Li, *et al.* Therapeutic Angiogenesis of Human Early Endothelial Progenitor Cells Is Enhanced by Thrombomodulin. *ARTERIOSCLEROSIS THROMBOSIS AND VASCULAR BIOLOGY* 2011;31(11):2518-U403

ALZET Comments: TMD23; IV; Mice (nude); 2ML4; Controls received mp w/ PBS; animal info (BALB/c, female, athymic, nude, 18-22 g, 8 wks old); incorrectly listed Model 2ML4 for use in mice; TMD23 also known as thrombomodulin domains 2 and 3.

Q0728: T. Ebrahimiyan, *et al.* Mitogen-Activated Protein Kinase-Activated Protein Kinase 2 in Angiotensin II-Induced Inflammation and Hypertension Regulation of Oxidative Stress. *Hypertension* 2011;57(2):245-U220

ALZET Comments: Angiotensin II; IV; Mice; 14 days; Animal info (14-17 wks old, male, Mk2 KO); peptides; blood pressure measured via radiotelemetry (PAC-10, DSI).

Q1037: J. M. do Carmo, *et al.* Control of Blood Pressure, Appetite, and Glucose by Leptin in Mice Lacking Leptin Receptors in Proopiomelanocortin Neurons. *Hypertension* 2011;57(5):918-U125

ALZET Comments: Leptin; Saline; IV (jugular); Mice; 1007D; 7 days; Controls received mp w/ vehicle; animal info (LepRflox/flox/POMC-Cre, LepRflox/flox, POMC-Cre, wt); "At the end of the leptin infusion period, the catheter connecting the minipump to the jugular vein was severed and sealed, and the mice were followed for an additional 5-day posttreatment period." pg 920.

Q0100: S. Tateya, *et al.* An Increase in the Circulating Concentration of Monocyte Chemoattractant Protein-1 Elicits Systemic Insulin Resistance Irrespective of Adipose Tissue Inflammation in Mice. *Endocrinology* 2010;151(3):971-979

ALZET Comments: Monocyte Chemoattractant Protein-1, recomb. mouse; PBS; BSA; SC; IV (jugular); Mice; 1002; 14 days; Controls received mp w/ saline; peptides; animal info (C57BL/6, 11 wks old).



Q0925: V. Rudolph, *et al.* Myeloperoxidase acts as a profibrotic mediator of atrial fibrillation. *Nature Medicine* 2010;16(4):470-474

ALZET Comments: Angiotensin II; myeloperoxidase; Saline; SC; IV (jugular); Mice; 7, 14 days; Controls received mp w/ vehicle; animal info (male, C57BL/6J, Mpo -/-, 12-15 wks old); peptides.

Q1608: V. S. Nikam, *et al.* Treprostinil inhibits the recruitment of bone marrow-derived circulating fibrocytes in chronic hypoxic pulmonary hypertension. *European Respiratory Journal* 2010;36(6):1302-1314

ALZET Comments: Treprostinil; IV (jugular); Mice (transgenic); 2004; 4 weeks; Controls received mp w/ sterile saline; animal info (C57BL/6TgN Tg, hypoxic); post op. care (buprenorphin).

Q0770: M. C. Meuwese, *et al.* Endothelial Surface Layer Degradation by Chronic Hyaluronidase Infusion Induces Proteinuria in Apolipoprotein E-Deficient Mice. *PLoS One* 2010;5(11):U104-U110

ALZET Comments: Hyaluronidase, testicular; IV (jugular); Mice; 4 weeks; Controls received mp w/ heat-inactivated hyaluronidase; animal info (14 wks old, ApoE-/-,); ALZET mouse jugular catheter used; pump infused at 0.25 ul/hr; "it cannot be excluded that hyaluronidase remains stable in the subcutaneous Alzet minipump, which may have resulted in an underestimation of the effect of hyaluronidase during the 4 week course of the experiment." pg e14262.

Q0402: S. V. Kozin, *et al.* Recruitment of Myeloid but not Endothelial Precursor Cells Facilitates Tumor Regrowth after Local Irradiation. *Cancer Research* 2010;70(14):5679-5685

ALZET Comments: AMD 3100; IV; Mice (nude); 2 weeks; Animal info (mice athymic NCr/Sed nude (nu/nu) mice, female syngeneic FVB).

Q0589: T. Iwasa, *et al.* Marked anti-tumour activity of the combination of YM155, a novel survivin suppressant, and platinum-based drugs. *British Journal of Cancer* 2010;103(1):36-42

ALZET Comments: YM-155; cisplatin; carboplatin; DMSO; IV; Mice (nude); 1007D; 7 days; Controls received mp w/ vehicle; animal info (male, nude, BALB/cAnNCrj-nu/nu, 5 weeks old); 0.1% DMSO used; cancer.

Q0123: J. Hunt, *et al.* Cyclosporin A Has Direct Effects on Adult Neural Precursor Cells. *Journal of Neuroscience* 2010;30(8):2888-2896

ALZET Comments: Cyclosporin A; IV; SC; Mice; 2002; 14 days; Controls received mp w/ saline; animal info (male, CD1, 6-8 weeks old, 25-30 g).

Q1020: C. D. Cox, *et al.* Discovery of Allosteric Inhibitors of Kinesin Spindle Protein (KSP) for the Treatment of Taxane-Refractory Cancer: MK-0731 and Analogs. *Anti-Cancer Agents in Medicinal Chemistry* 2010;10(9):697-712

ALZET Comments: MK-0731; IV; Mice (nude); 24 hours; Animal info (naive); dose-response, Fig 12 ; half-life 4-10 hours (p. 710); MK-0731 is a KSP inhibitor (kinesin spindle protein); maximum tolerated dose (MTD) is 12 mg/kg.

P9964: M. H. Bi, *et al.* INDUCTION OF LYMPHOCYTE APOPTOSIS IN A MURINE MODEL OF ACUTE LUNG INJURY-MODULATION BY LIPID EMULSIONS. *SHOCK* 2010;33(2):179-188

ALZET Comments: Soybean oil emulsion; olive oil emulsion; IV (jugular); Mice; Controls received mp w/ saline; animal info (male, BALB/c, 10-16 wks old, 22-25 g); external pump application.

P9819: R. Savai, *et al.* Evaluation of Angiogenesis Using Micro-Computed Tomography in a Xenograft Mouse Model of Lung Cancer. *NEOPLASIA* 2009;11(1):48-56

ALZET Comments: Bevacizumab; IV (jugular); Mice (nude); 2002; 14 days; Controls received mp w/ distilled water; animal info (female, C57BL/6, 5-7 wks old, BALB/c, nu/nu, 7-8 wks old); pump implanted IP; bevacizumab is a anti-VEGF antibody; "This delivery (using ALZET pumps) mimics local delivery of antivascular agents and can be used effectively alone or in combination with cytotoxic chemotherapy for site-specific drug delivery for lung cancer treatment. As expected, continuous infusion of bevacizumab decreased lung tumor volume and tumor perfusion, with an added survival advantage compared to the untreated group." pg 55; cancer (lung); antibody.



Q0602: P. Beauparlant, *et al.* Preclinical development of the nicotinamide phosphoribosyl transferase inhibitor prodrug GMX1777. *Anti-cancer Drugs* 2009;20(5):346-354

ALZET Comments: GMX1777; NaCl; IV (jugular); Mice (nude; SCID); 2001D; 24 hours; Controls received mp w/ vehicle; animal info (BalbC nude, CB17, SCID/SCID, female); comparison of 72 h infusion pump vs 24 h mp; cancer (refractory solid tumors and lymphomas); "The 24 h infusion was the most effective administration schedule identified in mouse xenograft models" pg 352-353; cancer; chemotherapeutic.

P9202: M. Tejada, *et al.* Continuous Administration of the Somatostatin Structural Derivative /TT-232/ by Subcutaneously Implanted Osmotic Pump Improves the Efficacy and Potency of Antitumor Therapy in Different Mouse and Human Tumor Models. *Anticancer Research* 2008;28(5A):2769-2774

ALZET Comments: TT-232; Water, distilled; acetic acid; sodium acetate; mannitol; SC; IV (jugular); Mice; 2001; 2002; 7; 14; 28 days; Comparison of IP and SC injections vs. SC and IV mp; pumps replaced after 2 weeks; PE-10 tubing used; "The frequent and long-lasting repetition of TT-232 injection enhanced its therapeutic efficacy; however, serial injection causes significant stress to animals and adequate precautions are required. To this end, an ALZET osmotic minipump inserted s.c. and i.v. was used." pg 2773; "The results obtained from this study suggest that TT-232 is a good candidate for delivery by continuous (infusion) therapy; cancer.

P9825: J. A. Rodriguez-Feo, *et al.* Caveolin-1 Influences Vascular Protease Activity and Is a Potential Stabilizing Factor in Human Atherosclerotic Disease. *PLoS One* 2008;3(7):U567-U579

ALZET Comments: Caveolin-1; caveolin-1, scrambled; DMSO; saline; IV (jugular); Mice; 2002; Peptides; animal info (BALB/C, Cav-1 null, wt); 30% DMSO used.

P8479: E. J. Whalen, *et al.* Regulation of beta-adrenergic receptor signaling by S-nitrosylation of G-protein-coupled receptor kinase 2. *Cell* 2007;129(3):511-522

ALZET Comments: Isoproterenol; GSNO; PBS; IV (jugular); Mice; Cardiovascular; agent is also known as nitrosoglutathione.

P8224: J. Menon, *et al.* Angiotensin-(1-7) inhibits growth of human lung adenocarcinoma xenografts in nude mice through a reduction in cyclooxygenase-2. *Cancer Research* 2007;67(6):2809-2815

ALZET Comments: Angiotensin (1-7); Saline; heparin; IV (jugular); Mice (nude); 2004; 28 days; Controls received mp w/ vehicle; no stress (see pg. 2810); cancer (lung); peptides; animal info (male, athymic, 2-4 weeks old, 15-20 grams); "During the infusion period, the animals maintained their body weight as well as food and water consumption and showed no evidence of reduced motor function. Additionally, no gross pathological abnormalities were observed in major organs..indicating a lack of toxic side effects." (p. 2810).

P8338: M. B. Schaefer, *et al.* Immunomodulation by n-3- versus n-6-rich lipid emulsions in murine acute lung injury - Role of platelet-activating factor receptor. *Critical Care Medicine* 2006;35(2):544-554

ALZET Comments: Saline, physiological; lipoven; omegaven; IV (jugular); Mice; 10 days; Controls received mp w/ saline, physiological; pumps replaced after 7 days of saline infusion; animal info (BALB/C wt, 8-12 weeks old, 18-21 grams, LPS induced acute lung injury and IP inflammation); external pump application; lipoven 10% (soybean oil); omegaven 10% (fish oil); lipid emulsion.

P7871: H. Ohtaki, *et al.* Pituitary adenylate cyclase-activating polypeptide (PACAP) decreases ischemic neuronal cell death in association with IL-6. *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA* 2006;103(19):7488-7493

ALZET Comments: Pituitary adenylate cyclase-activating polypeptide, 6-38; pituitary adenylate cyclase-activating polypeptide 38; pituitary adenylate cyclase-activating polypeptide; Saline; BSA; IV (jugular); Mice; 4, 8 hours; Controls received mp w/ vehicle; peptides; ischemia (cerebral); animal info (BALB/C, IL-6 -/-, +/-, wt); partial or total middle cerebral artery occlusion.

P6894: M. Tejada, *et al.* Growth Inhibitory Effect of the Somatostatin Structural Derivative (TT-232) on Leukemia Models. *Anticancer Research* 2005;25(325-330)



ALZET Comments: TT-232; Acetic acid; sodium acetate; water; mannitol; IV; SC; Mice; 2002; 14, 28 days; Dose-response (p. 328, fig 1); comparison of IP/SC injections vs. SC/IV mp; pumps replaced at day 14 for 28 day group; stability verified, 37 degrees Celsius for over 3 weeks; cancer (leukemia); TT-232 is a novel somatostatin analog; "The IV infusion for 28 days resulted in 82% growth inhibition." (p. 328); "The infusion of TT-232 by ALZET osmotic minipump resulted in 70-80% tumor growth inhibition and 20% tumor free survival." (p. 329); "...serial injections represent significant stress to the animals..." "To reduce and eliminate the above mentioned problem [stress] we used an ALZET osmotic minipump..." "Infusion from inserted ALZET minipumps maintains a constant drug level, resulting in a well defined, consistent pattern of drug exposure throughout the period of drug administration." "These studies suggest that TT-232 is a potent inhibitor of leukemia tumor in vitro and in vivo and suggest infusion treatment as a beneficial application in clinical practice." (p. 330); oligopeptide; enzyme inhibitor (tyrosine kinase); animal info (CBA/ca, immunosuppressed, female).

P7135: M. Benloch, *et al.* Acceleration of glutathione efflux and inhibition of gamma-glutamyltranspeptidase sensitize metastatic B16 melanoma cells to endothelium-induced cytotoxicity. *Journal of Biological Chemistry* 2005;280(8):6950-6959
ALZET Comments: Acivicin; verapamil; IV; Mice; 2001D; 7 hours; Controls received mp w/ physiological saline; cancer (melanoma).

P7052: M. C. Alley, *et al.* SJG-136 (NSC 694501), a novel rationally designed DNA minor groove interstrand cross-linking agent with potent and broad spectrum antitumor activity. Part 2: Efficacy evaluations. *Cancer Research* 2004;64(18):6700-6706

ALZET Comments: SJG-136; DMSO; PEG; IV (jugular); Mice (nude); 2001; 5 days; Controls received mp w/ vehicle; comparison of IV injections vs. mp; no stress (see pg. 6706); cancer (melanoma); agent also known as NSC 694501; 50% DMSO; "It is noteworthy that 5-day continuous infusions are highly effective in the LOX IMVI tumor model...continuous infusions were highly active and the lower peak plasma concentrations afforded by them may render infusion a useful mode for SJG-136 delivery in man." (pg. 6704-5).

P6131: M. Tejada, *et al.* The antitumor effect of the somatostatin analogue TT-232 depends on the treatment regimen. *Cancer Detection and Prevention* 2003;27(2):155-162

ALZET Comments: TT-232; Acetic acid; sodium acetate; mannitol; SC; IV (jugular); Mice; 2001; 2002; 1,2,4 weeks; Comparison of SC + IV injections vs. mp; 2002 pumps replaced after 14 days; cancer (sarcoma colon, breast lymphoma); somatostatin analog; PE-10 tubing used for IV group; "The infusion treatment with ALZET Osmotic Pumps proved to be superior to both twice daily injections or intravenous injections." (p. 155).

P5949: B. Szende, *et al.* TT-232: a somatostatin structural derivative as a potent antitumor drug candidate. *Anti-cancer Drugs* 2003;14(8):585-588

ALZET Comments: TT-232; SC; IV; Mice (SCID); 2002; 14 days; Comparison of SC injections vs. mp; cancer (sarcoma, lymphoid, colon, breast); peptides; TT-232 is a somatostatin analog; "the infusion treatment using implanted ALZET-type osmotic mini-pumps proved to be superior to both S.C. and I.V. infusion applied twice a day for 2 weeks." (p. 586).

P6035: B. T. Ameredes, *et al.* Low-dose carbon monoxide reduces airway hyperresponsiveness in mice. *AMERICAN JOURNAL OF PHYSIOLOGY-LUNG CELLULAR AND MOLECULAR PHYSIOLOGY* 2003;285(6):L1270-L1276

ALZET Comments: Rp-8-BrcGMP; Saline; IV (jugular); Mice; 10 days; Rp-8-BrcGMP is an inhibitor of cGMP production; pump model not listed.

P5314: H. X. Sheng, *et al.* Effects of metalloporphyrin catalytic antioxidants in experimental brain ischemia. *Free Radical Biology and Medicine* 2002;33(7):947-961

ALZET Comments: AEOL 10150; PBS; IV (jugular); Mice; 1003D; 3 days; Controls received mp w/ vehicle; plasma levels of AEOL 10150 determined by HPLC; ischemia (cerebral); MCAO.

P5554: R. P. Bowler, *et al.* A catalytic antioxidant (AEOL 10150) attenuates expression of inflammatory genes in stroke. *Free Radical Biology and Medicine* 2002;33(8):1141-1152

ALZET Comments: AEOL 10150; PBS; IV (jugular); Mice; 1003D; 6 hours; Controls received mp w/ vehicle; AEOL 10150 is a catalytic antioxidant metalloporphyrin; ischemia (cerebral); MCAO.



P6973: W. Arap, *et al.* Targeting the prostate for destruction through a vascular address. PNAS 2002;99(3):1527-1531

ALZET Comments: SMSIARL, phage; IV; Mice; Comparison of pellets vs. mp; peptides; cancer.

P4485: M. Tejada, *et al.* Influence of various administration routes on the antitumor efficacy of TT-232, a novel somatostatin analog. Anticancer Res 2000;20(1023-1028)

ALZET Comments: TT-232; Acetic acid; Water, distilled; Sodium acetate; Marmite;; SC; IV; Mice; 2001; 2002; 1, 2 weeks; comparison of IV + SC injections vs. mp infusion; cancer; peptides; "continuous infusion using an implantable minipump proved to be the most effective route of treatment in both SC or IV administration against S-180 sarcoma." (P. 1026).

P5249: E. M. Sharkey, *et al.* Pharmacokinetics and antitumor properties in tumor-bearing mice of an enediol analogue inhibitor of glyoxalase I. Cancer Chemother. Pharmacol 2000;46(2):156-166

ALZET Comments: Glutathione, S-(N-p-chlorophenyl-N-hydroxycarbamoyl); Cyclodextrin, B-; IV (jugular); Mice; 2002; 14 days; Comparison of IV injections vs. mp; enzyme inhibitor; 20% hydroxypropyl-beta-cyclodextrin used; CHG (Et)₂ is an enediol analog inhibitor of glyoxalase in its ester prodrug form; colon adenocarcinoma and prostate cancer.

P8575: P. A. Pavco, *et al.* Antitumor and antimetastatic activity of ribozymes targeting the messenger RNA of vascular endothelial growth factor receptors. Clin Cancer Res 2000;6(5):2094-2103

ALZET Comments: Ribozyme, anti-Flt-1; ribozyme, anti-KDR; ribozyme, attenuated; Saline; IV (jugular); SC; Mice; mice (nude); 2002; 14,28 days; Controls received mp w/ vehicle or attenuated control; dose-response (fig. 2); pumps replaced after 18 days; stress/adverse reaction (see pg. 2096); <10% of animals removed from study due to catheter failure or animal not surviving pump implantation; half-life (p. 2100) IV and SC similar; cancer (lung carcinoma, colorectal carcinoma, liver metastasis); animal info (female, C57BL/6, 6-8 weeks old, male, nude, 6-8 weeks old); antiangiogenic, 80% bioavailable after SC administration; targets VEGF receptor mRNA; anti-Flt-1 ribozyme also known as angiolyse; good methods.

P5566: R. Dono, *et al.* Impaired cerebral cortex development and blood pressure regulation in FGF-2-deficient mice. EMBO J 1998;17(15):4213-4225

ALZET Comments: Angiotensin II; IV (jugular); Mice; 1007D; 6 days; Cardiovascular; peptides.

P3363: Y. Tu, *et al.* The synergistic effects of cyclosporine, sirolimus, and brequinar on heart allograft survival in mice.

Transplantation 1995;59(2):177-183

ALZET Comments: Cyclosporin A; Rapamycin; Cremophor; Dimethylacetamide; Tween 80; PEG 400; IV (jugular); mice; 1007D; 7, 14 days; pumps replaced after 7 days; immunology; CSA and rapamycin given singly and via same pump.

P2048: S. M. Stepkowski, *et al.* Blocking of heart allograft rejection by intercellular adhesion molecule-1 antisense oligonucleotides alone or in combination with other immunosuppressive modalities. J. Immunol 1994;153(5336-5346)

ALZET Comments: Oligodeoxynucleotide, phosphorothioate antisense; Cyclosporin A; Rapamycin; Oligodeoxynucleotide, scrambled; Cremophor; Tween 80; Dimethylacetamide; PEG 400; IV (jugular); mice; 7,14 days; oligo of interest was IP-3082; controls received no treatment, unrelated oligo IP-1082, or scrambled oligo IP-4189; immunology; "...this study reports the first example of pharmacologic activity of an antisense PS-oligo by i.v. systemic administration in a model of a complex inflammatory process".

P2096: S. M. Redwood, *et al.* Abrogation of the invasion of human bladder tumor cells by using protease inhibitor(s). Cancer 1992;69(5):1212-1219

ALZET Comments: E-64; PBS; IV (jugular); Mice (nude); no duration posted; cancer; immunology; enzyme inhibitor (cysteine protease).

P1464: T. Nesbitt, *et al.* Abnormal adenosine 3'.5'-monophosphate stimulation of renal 1,25-dihydroxyvitamin D production in Hyp mice: evidence that 25-hydroxyvitamin d-1a-hydroxylase dysfunction results from aberrant intracellular function. Endocrinology 1989;124(1184-1189)

ALZET Comments: Cyclic AMP, N-6-monobutyryl; Water; IV (jugular); mice; 2001; 24 hours; no comment posted.



P1160: K. Naito, *et al.* Effect of continuous administration of interleukin 2 on active specific chemoimmunotherapy with extracted tumor-specific transplantation antigen and cyclophosphamide. *Cancer Res* 1988;48(101-108)

ALZET Comments: Interleukin-2; IP; IV; mice; 1702; 2001; 2002; 2ML2; 10 days; mp connected to catheter; half-life; 2 doses infused; IL-2 infused to potentiate effects of TSTA/CY inject.; comparison of bolus inject. vs. inject. vs. mp infusion; tissue perfusion (spleen); cancer/immunology; peptides; human IL-2 used.

P0963: K. Ishida, *et al.* Eosinophil responses of permissive and nonpermissive hosts to the young adult worms of *Angiostrongylus cantonensis*. *Z. Parasitenkd* 1986;72(661-671)

ALZET Comments: Worm extract -*A.cantonensis*; Worm secretions -*A.cantonensis*; IP; IV (jugular); Guinea pig; mice; Rat; 2001; 7 days; mice implanted w/mp ip other animals infused iv; host-parasite response; eosinophilia determination; comparison of iv injections vs. mp infusion.