



References on the Intra-Arterial Administration of Agents Using ALZET® Osmotic Pumps

Q6251: Y. Guan, *et al.* microRNA-352 regulates collateral vessel growth induced by elevated fluid shear stress in the rat hind limb. *Sci Rep* 2017;7(1):6643

ALZET Comments: Antagomir-352; IA (femoral artery); Rat; 1007; 1 week; Dose (500 nmol/kg); animal info (Adult Sprague-Dawley rats weighing 250–300 g); cardiovascular;.

Q6575: J. Y. Kim, *et al.* Activation of Protein Kinase G (PKG) Reduces Neointimal Hyperplasia, Inhibits Platelet Aggregation, and Facilitates Re-endothelialization. *Sci Rep* 2016;6(36979)

ALZET Comments: Exisulind; DMSO; IA (carotid); Rat; 2 weeks; Dose (0.5 mg/kg/day); Controls received mp w/ vehicle; animal info (12 week old female Sprague-Dawley rats weighing 280–310 g); Therapeutic indication (neointimal hyperplasia);.

Q4153: M. H. M. Vries, *et al.* CXCL1 promotes arteriogenesis through enhanced monocyte recruitment into the peri-collateral space. *ANGIOGENESIS* 2015;18(163-171)

ALZET Comments: SB225002; CXCL1; IA (femoral); Rat; 2ML1; 1 day; 3 days; 7 days; 10 days; 14 days; animal info (male, Sprague-Dawley, 300–350g); functionality of mp verified by staining for CXCL1; immunology; cardiovascular; Controls received mp w/ PBS;.

Q5257: L. Rigassi, *et al.* 2-Methoxyestradiol blocks the RhoA/ROCK1 pathway in human aortic smooth muscle cells. *Am J Physiol Endocrinol Metab* 2015;309(12):E995-1007

ALZET Comments: Estradiol, 2-methoxy; DMSO; IA (carotid artery); Rat; 8 days, 14 days; Controls received mp w/ vehicle; animal info (male Wistar Kyoto rats, 350 to 400 g); dose-response (E999); 0.1% DMSO; cardiovascular; cardiovascular; Balloon injury-induced neointima formation; Dose (350 ug/kg/day);.

Q3638: Y. Zhao, *et al.* Complement anaphylatoxin C4a inhibits C5a-induced neointima formation following arterial injury. *Molecular Medicine Reports* 2014;10(45-52)

ALZET Comments: C5a, recombinant; C4a, recombinant; PBS; BSA; IA (femoral); Mice; 2 weeks; Animal info (C57BL/6N, 16 week old); cardiovascular; immunology; arterial injury;.

Q4992: X. F. Lei, *et al.* Identification of Hic-5 as a novel scaffold for the MKK4/p54 JNK pathway in the development of abdominal aortic aneurysms. *J Am Heart Assoc* 2014;3(3):e000747

ALZET Comments: Angiotensin II; saline; IA (aorta); mice; 2004; 4 weeks; Controls: tamoxifen-injected Apoe^{-/-} mice; mp w/ saline; Controls: tamoxifen-injected Apoe^{-/-} mice; mp w/ saline; cardiovascular, aorta; Dose: 1000ng/kg; Industry authored (American Heart Association);.

R0361: J. T. Schnider, *et al.* Site-Specific Immunosuppression in Vascularized Composite Allotransplantation: Prospects and Potential. *Clinical and Developmental Immunology* 2013;2013(1-7)

ALZET Comments: Prednisolone; IA (renal artery); Rat; Dose (4 mg/kg/day); “Local application was superior to systemic application at a dosage of 4mg/kg body weight per day, whereas i.p. or i.v. administration was ineffective at this dose.” pg. 3;.

Q2982: X. B. Liu, *et al.* Targeted Delivery of Carbaprostacylin to Ischemic Hindlimbs Enhances Adaptive Remodeling of the Microvascular Network. *Hypertension* 2013;61(5):1036-U290

ALZET Comments: Carbaprostacylin, cPGI2; IA (femoral); Mice; 3, 7, 14 days; 24 hours; Controls received mp w/vehicle, or saline; animal info (C57 black mice (C57BL/6J), 8–12 wks old, acute ischemia model); multiple pumps per animal (2); two pumps with saline or cPGI2 for 24 hours); PE50 catheter.

Q2155: J. Zhou, *et al.* Force-specific activation of Smad1/5 regulates vascular endothelial cell cycle progression in response to disturbed flow. *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA* 2012;109(20):7770-7775



ALZET Comments: Noggin; IA (abdominal aorta); Mice; 2 weeks; Controls received mp w/ saline; animal info (ApoE -/-, C57BL/6).

Q3005: R. Matyal, *et al.* Neuropeptide Y improves myocardial perfusion and function in a swine model of hypercholesterolemia and chronic myocardial ischemia. *Journal of Molecular and Cellular Cardiology* 2012;53(6):891-898

ALZET Comments: Neuropeptide Y; Heparin; BSA; IA; Swine; 2ML4; 5 weeks; Animal info (swine model of metabolic syndrome with chronic myocardial ischemia, six-week-old, male; Yorkshire miniswine); ischemia (arterial).

Q2047: I. De Meyer, *et al.* Toll-like receptor 7 stimulation by imiquimod induces macrophage autophagy and inflammation in atherosclerotic plaques. *Basic Research In Cardiology* 2012;107(3):U36-U48

ALZET Comments: Dexamethasone; imiquimod; IA (carotid); Rabbit; 2ML1; 3, 7 days; Animal info (male, New Zealand, white, 2.5-4.0 kg); one group contained mixture of dexamethasone and imiquimod.

Q1319: W. Schierling, *et al.* Cerebral Arteriogenesis is Enhanced by Pharmacological as Well as Fluid-Shear-Stress Activation of the Trpv4 Calcium Channel. *EUROPEAN JOURNAL OF VASCULAR AND ENDOVASCULAR SURGERY* 2011;41(5):589-596

ALZET Comments: PDD, 4 alpha; IA (carotid); Rat; 2001; 7 days; Animal info (male, Sprague Dawley, 250-300 g); post op. care (buprenorphine); figure 4a, schematic diagram of the osmotic pump.

Q1741: M. J. Frontini, *et al.* Fibroblast growth factor 9 delivery during angiogenesis produces durable, vasoresponsive microvessels wrapped by smooth muscle cells. *NATURE BIOTECHNOLOGY* 2011;29(5):421-U232

ALZET Comments: Fibroblast growth factor-9; PBS; IA (femoral); Mice; 1007D; Controls received mp w/ vehicle; animal info (male, C57BL/6J, 9-10 mo old); polyethylene tubing used; ischemia (hind limb).

Q1446: M. C. Chan, *et al.* The Amiloride Derivative Phenamil Attenuates Pulmonary Vascular Remodeling by Activating NFAT and the Bone Morphogenetic Protein Signaling Pathway. *MOLECULAR AND CELLULAR BIOLOGY* 2011;31(3):517-530

ALZET Comments: Phenamil; Saline; DMSO; IA (carotid); Rat; 2004; 21 days; Controls received mp w/ vehicle; animal info (male, Sprague-Dawley, 6-7 wks old, 250-300 g); 50% DMSO used; hypobaric hypoxia; phenamil is an amiloride analog.

Q1366: K. Troidl, *et al.* Effects of Endogenous Nitric Oxide and of DETA NONOate in Arteriogenesis. *Journal of Cardiovascular Pharmacology* 2010;55(2):153-160

ALZET Comments: Diethylenetriamine NONOate; Alkaline solution; IA; Rabbit; Animal info (white, New Zealand); "DETA NONOate in alkaline solution (pH 8) is stable but releases NO when in contact with blood during a continuous infusion from an implanted osmotic minipump connected to a catheter indwelling the proximal or distal stump of the occluded artery." pg 159.

Q0190: C. Troidl, *et al.* Calcium-dependent signalling is essential during collateral growth in the pig hind limb-ischemia model. *Journal of Molecular and Cellular Cardiology* 2010;49(1):142-151

ALZET Comments: Phorbol didecanoate, 4-alpha-; IA (femoral); Pig; 2ML1; 7 days; Controls received mp w/ saline or sham operation; cardiovascular; animal info (male, juvenile, crossbred, 38kg, femoral artery occlusion); post op. care (cefquinome, fentanyl); ischemia (hind limb); excellent color photograph of multiple mp placement (Fig. 1); multiple pumps per animal (2).

Q1546: D. H. Damon, *et al.* Eph/ephrin interactions modulate vascular sympathetic innervation. *Autonomic Neuroscience-Basic & Clinical* 2010;158(1-2):65-70

ALZET Comments: Ephrin-A4-Fc, ligand; PBS; Evans blue; IA (femoral); Rat; 1002; Controls received mp w/ IgG-Fc; animal info (adult, male, 250-300 g, adult, post partum, females, neonatal, Sprague-Dawley).

Q0378: C. Troidl, *et al.* Trpv4 induces collateral vessel growth during regeneration of the arterial circulation. *JOURNAL OF CELLULAR AND MOLECULAR MEDICINE* 2009;13(8B):2613-2621

ALZET Comments: PDD, 4 alpha; ruthenium red; Ethanol; NaCl; IA (femoral); Rabbit; Rat; 7 days; Controls received mp w/vehicle or sham operated; animal info (New Zealand White, 3.0 kg, Sprague Dawley, 275 g); post op. care



(buprenorphine); 4-alpha PDD also known as Phorbol-12,13-didecanoate; Fig 1, schematic of femoral artery ligation with ALZET pump.

P9814: G. Santulli, *et al.* In vivo properties of the proangiogenic peptide QK. *Journal of Translational Medicine* 2009;7(;):U1-U10

ALZET Comments: Vascular endothelial growth factor-15; vascular endothelial growth factor-165; QK; IA (femoral); Rat; 2002; 14 days; Peptides; animal info (12 wks old, WKY, normosensitive); QK is a de novo engineered VEGF mimicking peptide.

Q1101: S. Grundmann, *et al.* Endothelial glycocalyx dimensions are reduced in growing collateral arteries and modulate leucocyte adhesion in arteriogenesis. *JOURNAL OF CELLULAR AND MOLECULAR MEDICINE* 2009;13(9B):3463-3474

ALZET Comments: Hyaluronidase, active; hyaluronidase, inactive; IA (femoral); Rabbit; Animal info (New Zealand, white, 3 kg).

P9738: V. Croons, *et al.* The Protein Synthesis Inhibitor Anisomycin Induces Macrophage Apoptosis in Rabbit Atherosclerotic Plaques through p38 Mitogen-Activated Protein Kinase. *Journal of Pharmacology and Experimental Therapeutics* 2009;329(3):856-864

ALZET Comments: Anisomycin; IA (carotid); Rabbit; 2ML1; 3 days; Controls received mp w/saline; animal info (male, New Zealand, White, 3.3-3.9 kg).

P9229: M. Jiang, *et al.* Ang II-stimulated migration of vascular smooth muscle cells is dependent on LR11 in mice. *Journal of Clinical Investigation* 2008;118(8):2733-2746

ALZET Comments: Angiotensin II; candesartan; Saline; IA (femoral); Mice; 4 weeks; Controls received mp w/ vehicle; cardiovascular; peptides; animal info (male, C57BL/6, 20 wks old, Lr11 -/-, wt).

P8836: T. C. Nichols, *et al.* Protease-resistant insulin-like growth factor (IGF)-Binding protein-4 inhibits IGF-I actions and neointimal expansion in a porcine model of neointimal hyperplasia. *Endocrinology* 2007;148(10):5002-5010

ALZET Comments: Insulin-like growth factor-binding protein-4; Insulin-like growth factor-binding protein-4, mutated; Insulin-like growth factor-1, recomb. human; PBS; IA (carotid); IA (femoral); Pig; 21 days; Controls received mp w/ vehicle; cardiovascular; peptides; animal info (male, female, spotted Poland/China, 12 months old); protease resistant mutant form of IGFBP-4.

P8728: G. Gradl, *et al.* Continuous intra-arterial application of substance P induces signs and symptoms of experimental complex regional pain syndrome (CRPS) such as edema, inflammation and mechanical pain but no thermal pain. *Neuroscience* 2007;148(3):757-765

ALZET Comments: Substance P; Saline; heparin; IA (femoral); Rat; 2001D; 24 hours; Controls received mp w/ vehicle; good methods (p. 758); animal info (male, Sprague-Dawley, 225-250g); pain.

P8299: C. A. Cruze, *et al.* The Y₂ receptor mediates increases in collateral-dependent blood flow in a model of peripheral arterial insufficiency. *Peptides* 2007;28(2):269-280

ALZET Comments: Peptide YY, recomb. human; peptide YY (3-36), recomb. human; vascular endothelial growth factor 165; PBS; glycerol; sodium citrate; Tween 20; IA (iliac); Rat; 14 days; Controls received mp w/ vehicle; replacement therapy (femoral artery occlusion); dose-response (fig. 4); half-life (p. 276) <30 minutes; cardiovascular; peptides; ischemia (hindlimb); animal info (male, Sprague-Dawley, 325-350 grams).

P8353: V. Croons, *et al.* Selective clearance of macrophages in atherosclerotic plaques by the protein synthesis inhibitor cycloheximide. *Journal of Pharmacology and Experimental Therapeutics* 2007;320(3):986-993

ALZET Comments: Cycloheximide; IA (carotid); Rabbit; 2ML1; 3 days; Controls received mp w/ saline; cardiovascular; animal info (male, New Zealand white, 3.1-3.8 kg); mp connected to a collar around atherosclerotic carotid arteries.

P8461: E. C. Chan, *et al.* Adventitial application of the NADPH oxidase inhibitor apocynin in vivo reduces neointima formation and endothelial dysfunction in rabbits. *Cardiovascular Research* 2007;75(4):710-718



ALZET Comments: Apocynin; DMSO; IA (carotid); Rabbit; 2001; Controls received mp w/vehicle, or no treatment; enzyme inhibitor (NADPH oxidase); cardiovascular; animal info (male, New Zealand White, 3-4kg); 0.1% DMSO; mp attached to catheter to hollow, nonocclusive silastic collar around common carotid artery.

P7731: A. N. Carr, *et al.* Efficacy of systemic administration of SDF-1 in a model of vascular insufficiency: Support for an endothelium-dependent mechanism. *Cardiovascular Research* 2006;69(4):925-935

ALZET Comments: Vascular endothelial growth factor; stromal cell-derived factor-1a; PBS; glycerol; sodium acetate; sodium azide; IA (iliac); Rat; 2 weeks; Controls received mp w/ vehicle; dose-response (table 1); cardiovascular; peptides; animal info (adult); bilateral femoral artery ligation; occlusive cardiovascular disease.

P7937: M. A. Bartoli, *et al.* Localized administration of doxycycline suppresses aortic dilatation in an experimental mouse model of abdominal aortic aneurysm. *Annals of Vascular Surgery* 2006;20(2):228-236

ALZET Comments: Doxycycline hydrochloride; Saline; SC; IP; IA (aorta); Mice; 1002; 14 days; Controls received mp w/ vehicle; tissue perfusion (aorta); dose-response (table 1); comparison of oral vs. mp; half-life (p. 234), 26.5 hours; cardiovascular; animal info (C57BL/6J, male, 8-10 weeks old, 20-35 grams); catheter secured to a polyvinyl alcohol sponge positioned over the anterior surface of the aorta and secured to retroperitoneal tissues; (quote p. 233).

P7576: L. R. Zhao, *et al.* Synthetic fibronectin peptide exerts neuroprotective effects on transient focal brain ischemia in rats. *Brain Research* 2005;1054(1):1-8

ALZET Comments: Fibronectin-derived peptide, synthetic; PBS; IA (carotid); Rat; 24 hours; Controls received mp w/ vehicle or control peptide PRARI; peptides; ischemia (cerebral); animal info (male, Sprague-Dawley, 300-350 g); peptide: PRARIY; MCAO.

P7495: M. Burchardt, *et al.* Application of angiogenic factors for therapy of erectile dysfunction: protein and DNA transfer of VEGF 165 into the rat penis. *UROLOGY* 2005;66(3):665-670

ALZET Comments: Vascular endothelial growth factor, human 165; Saline, sterile; heparin; IA (renal); Rat; 2004; 28 days; Controls received mp w/ vehicle; functionality of mp verified by VEGF serum immunoassay; comparison of CDNA plasmid micro-injections vs. mp; gene therapy; peptides; animal info (male, Sprague-Dawley); urology; 2000 Units of heparin used.

P6394: M. Sudoh, *et al.* A new animal model of continuous catheterization for investigating mechanisms of arteritis associated with chemotherapy. *LIFE SCIENCES* 2004;74(24):3025-3032

ALZET Comments: Fluorouracil, 5-FU; peplomycin; Saline, heparinized; IA (abdominal aorta); Rat; 2ML1; 7 days; Controls received mp w/ vehicle; cancer; chemotherapeutic agents; PE-10 and 60 used; tubing attached using a moment binding agent (alon-alfa); catheter schematic p. 3027; pump placed IP.

P6784: S. H. Schirmer, *et al.* Differential effects of MCP-1 and leptin on collateral flow and arteriogenesis. *Cardiovascular Research* 2004;64(2):356-364

ALZET Comments: Monocyte chemoattractant protein-1, recomb. human; leptin, recomb. human; IA (femoral); Rabbit; 2ML1; 7 days; Controls received mp w/ PBS; no stress (see pg. 359); cardiovascular; peptides; right femoral artery occlusion.

P6370: P. S. Manoonkitiwongsa, *et al.* Neuroprotection of ischemic brain by vascular endothelial growth factor is critically dependent on proper dosage and may be compromised by angiogenesis. *Journal of Cerebral Blood Flow and Metabolism* 2004;24(6):693-702

ALZET Comments: Vascular endothelial growth factor; Saline; IA (carotid); Rat; 2001; 7 days; Controls received mp w/ vehicle; dose response (p. 697); stroke; ischemia (cerebral); biocompatible glue was used to secure catheter in artery.

P6616: T. Ziegelhoeffer, *et al.* Inhibition of collateral artery growth by mibefradil: Possible role of volume-regulated chloride channels. *ENDOTHELIUM-JOURNAL OF ENDOTHELIAL CELL RESEARCH* 2003;10(4-5):237-246

ALZET Comments: Mibefradil; PBS; IA (femoral); Mice; 1007D; 7 days; Controls received mp w/ vehicle; antihypertensive; mibefradil is a tetralol calcium channel blocking agent; PE-50 heat stretched to an O.D of 0.22 mm.



P5864: N. van Royen, *et al.* Effects of local MCP-1 protein therapy on the development of the collateral circulation and atherosclerosis in Watanabe hyperlipidemic rabbits. *Cardiovascular Research* 2003;57(1):178-185

ALZET Comments: Monocyte chemoattractant protein-1; PBS; IA (femoral); Rabbit; 2ML1; 1 week; Controls received mp w/ vehicle; functionality of mp verified by residual volume; dose-response (p. 181, 183); cardiovascular; peptides; MCP-1.

P7695: R. N. van, *et al.* Local monocyte chemoattractant protein-1 therapy increases collateral artery formation in apolipoprotein E-deficient mice but induces systemic monocytic CD11b expression, neointimal formation, and plaque progression. *Circ. Res* 2003;92(2):218-225

ALZET Comments: Monocyte chemotactic protein-1; IA (femoral); Mice; 1007D; 7 days; Controls received mp w/ PBS; cardiovascular.

P6009: S. Srivastava, *et al.* Basic fibroblast growth factor increases collateral blood flow in spontaneously hypertensive rats. *American Journal of Physiology-Heart and Circulatory Physiology* 2003;285(3):H1190-H1197

ALZET Comments: Fibroblast growth factor, basic; Sodium citrate; glycerol; PBS; IA (iliac); Rat; 2002; 14 days; Controls received mp w/ vehicle; functionality of mp verified by residual volume p. H1192; antihypertensive; post op. care (topical antibiotic powder); "The pump was housed in a tunnel under the skin in the left groin area; this placement did not hamper hindlimb movement while rats were walking on the treadmill." p. H1191; behavioral study; "There were no signs of ischemia or necrosis and no presence of infection or complications from the osmotic pumps..." p. H1192.

P6621: B. M. Prior, *et al.* Arteriogenesis: Role of nitric oxide. *ENDOTHELIUM-JOURNAL OF ENDOTHELIAL CELL RESEARCH* 2003;10(4-5):207-216

ALZET Comments: Fibroblast growth factor; heparinase I; IA (iliac); 2 weeks; Dose-response (p. 213); the heparinase I infusion group targeted the contralateral iliac vessel; pump or animal model not mentioned.

P5645: F. Pipp, *et al.* VEGFR-1-selective VEGF homologue PlGF is arteriogenic - Evidence for a monocyte-mediated mechanism. *Circulation Research* 2003;92(4):378-385

ALZET Comments: Vascular endothelial growth factor; Vascular endothelial growth factor-E; Monocyte chemoattractant protein-1; Placental growth factor; Phosphate buffer; albumin; IA (femoral); Mice; rabbit; 1 week; Controls received mp w/ vehicle; dose-response (p.381); peptides; placenta growth factor (PlGF) is a VEGF homologue; VEGF-E is a chimera containing the heparin-binding domain of VEGF; MCP-1.

P5682: C. Heeschen, *et al.* Nicotine promotes arteriogenesis. *Journal of the American College of Cardiology* 2003;41(3):489-496

ALZET Comments: Nicotine; fibroblast growth factor, basic; PBS; IA (iliac); Rabbit; 2ML2; 18 days; Controls received mp w/ vehicle.

P5787: E. Deindl, *et al.* Involvement of the fibroblast growth factor system in adaptive and chemokine-induced arteriogenesis. *Circulation Research* 2003;92(5):561-568

ALZET Comments: Polyanetholesulfonic Acid; Monocyte chemoattractant protein-1; IA (femoral); Rabbit; 1 week; Controls received mp w/ PBS; cardiovascular; MCP-1.

P6123: R. H. Cao, *et al.* Angiogenic synergism, vascular stability and improvement of hind-limb ischemia by a combination of PDGF-BB and FGF-2. *Nature Medicine* 2003;9(5):604-613

ALZET Comments: Fibroblast growth factor; platelet-derived growth factor; IA (femoral); Rabbit; 7 days; ischemia (hind-limb).

P5730: J. B. Buckwalter, *et al.* Endogenous vascular remodeling in ischemic skeletal muscle: a role for nitric oxide. *Journal of Applied Physiology* 2003;94(3):935-940

ALZET Comments: L-NAME; D-NAME; Phenylephrine; Saline; heparin; IA (femoral); Rabbit; 2ML2; 6 weeks; Controls received mp w/ phenylephrine or D-NAME; enzyme inhibitor (Nitric oxide synthase); cardiovascular; peptides; L-NAME & D-NAME (no synthase inhibitors) were dissolved in heparinized saline (100 U/ml).



P6033: K. Boengler, *et al.* Arteriogenesis is associated with an induction of the cardiac ankyrin repeat protein (carp). *Cardiovascular Research* 2003;59(3):573-581

ALZET Comments: Monocyte chemoattractant protein-1; doxorubicin; transforming growth factor-B1; IA (femoral); Rabbit; 2ML1; 24 hours; Cardiovascular.

P5729: K. Boengler, *et al.* The ankyrin repeat containing SOCS box protein 5: a novel protein associated with arteriogenesis. *Biochemical and Biophysical Research Communications* 2003;302(1):17-22

ALZET Comments: Monocyte chemoattractant protein-1; Transforming Growth Factor-B; Doxorubicin; IA (femoral); Rabbit; 2ML1; 24 hours; Cardiovascular; peptides; MCP-1 is monocyte chemoattractant protein 1.

P5722: M. Arras, *et al.* Monocyte activation in angiogenesis and collateral growth in the rabbit hindlimb. *J Clin. Invest* 2003;101(1):40-50

ALZET Comments: Uridine, bromodeoxy-; IA (carotid); Rabbit; 2ML2; 3,7 days; Study proliferation of collateral arteries and capillaries.

P6224: C. I. Seye, *et al.* Functional P2Y₂ nucleotide receptors mediate uridine 5'-triphosphate-induced intimal hyperplasia in collared rabbit carotid arteries. *Circulation* 2002;106(21):2720-2726

ALZET Comments: Uridine 5-triphosphate; IA (carotid); Rabbit; 2ML2; 3,14 days; Controls received mp w/ PBS; cardiovascular; post op. care (buprenorphine).

P5340: D. Scholz, *et al.* Contribution of arteriogenesis and angiogenesis to postocclusive Hindlimb perfusion in mice. *Journal of Molecular and Cellular Cardiology* 2002;34(7):775-787

ALZET Comments: Fibroblast growth factor 2; PBS; IA (femoral); Mice; 1007D; Controls received mp w/ vehicle; peptides.

R0188: C. Heilmann, *et al.* Collateral growth: cells arrive at the construction site. *CARDIOVASCULAR SURGERY* 2002;10(6):570-578

ALZET Comments: Monocyte chemotactic protein-1; IA; Rabbit; Cardiovascular; p. 574.

P5542: R. Fernandez-Botran, *et al.* Targeting of glycosaminoglycan-cytokine interactions as a novel therapeutic approach in allotransplantation. *Transplantation* 2002;74(5):623-629

ALZET Comments: MC-2; Saline; IA (profunda femoris artery); Rat; 2ML2; Controls received mp w/ vehicle; tissue perfusion (skin flap allograft); immunology; peptides; MC-2 is derived from mouse interferon gamma; transplant.

P4782: H. T. Yang, *et al.* VEGF₁₂₁- and bFGF-induced increase in collateral blood flow requires normal nitric oxide production. *American Journal of Physiology-Heart and Circulatory Physiology* 2001;280(H1097-H1104)

ALZET Comments: Vascular endothelial growth factor 121; Fibroblast growth factor, basic;; PBS; Sodium citrate; Glycerol;; IA (femoral);; Rat;; 2002;; 14 days;; Controls received mp w/ vehicle; cardiovascular; peptides; vehicle was PBS w/ 10% sodium citrate and 1.6% glycerol; sodium citrate used to prevent coagulation; glycerol used to enhance protein stability;.

P4988: K. M. Madsen, *et al.* Influence of ETB receptor antagonism on pregnancy outcome in rats. *JOURNAL OF THE SOCIETY FOR GYNECOLOGIC INVESTIGATION* 2001;8(239-244)

ALZET Comments: A-192621; Ethanol; Propylene glycol; Sodium hydroxide; IA (carotid); Rat (pregnant); 7 days; controls received mp w/ vehicle; functionality of mp verified by plasma A-192621 levels; dose-response (fig 3. p. 242); peptides; A-192621 is an Endothelin-B receptor antagonist which blocks vasoconstriction; vehicle was 20% ethanol, 40% propylene glycol, 0.4 M sodium hydroxide.

Q6820: R. H. J. Bruijns, *et al.* Effects of local cytochalasin D delivery on smooth muscle cell migration and on collar-induced intimal hyperplasia in the rabbit carotid artery. *British Journal of Pharmacology* 2001;134(473-483)

ALZET Comments: Cytochalasin D; IA (left carotid artery); Rabbit; 14 days; Dose (10-4 M, 10-5 M, 10-6 M, 10-7 M, 10-8 M); animal info (Male New Zealand white rabbits (2.5 ± 3.5 kg)); cardiovascular;.



P4491: H. T. Yang, *et al.* bFGF increases collateral blood flow in aged rats with femoral artery ligation. *Am. J. Physiol. (Heart Circ. Physiol)* 2000;278(H85-H93

ALZET Comments: Fibroblast growth factor, basic;; Sodium citrate; Glycerol; PBS;; IA (iliac);; Rat;; 2002;; 14 days;; controls received mp w/ vehicle; dose response; peptides, cardiovascular; recomb. human FGF used; sodium citrate used to maintain catheter patency; glycerol used to stabilize protein.

P5238: K. M. Stevenson, *et al.* Angiotensin II infused intrarenally causes preglomerular vascular changes and hypertension. *Hypertension* 2000;36(5):839-844

ALZET Comments: Angiotensin II; Saline; Heparin; IP; IA (renal artery); Rat; 2ML4; 14-25 days; Controls received mp w/ vehicle; cardiovascular; vehicle contained 10 IU/ml of heparin.

R0244: S. A. Gruber, *et al.* Local drug delivery to composite tissue allografts. *MICROSURGERY* 2000;20(8):407-411

ALZET Comments: Cyclosporin A; FK506; IA (brachial); Rabbit; 6 days; Dose-response; review, see pg. 409.

P4855: G. R. Y. De Meyer, *et al.* Periadventitial inducible nitric oxide synthase expression and intimal thickening. *ARTERIOSCLEROSIS THROMBOSIS AND VASCULAR BIOLOGY* 2000;20(1896-1902

ALZET Comments: Lysine, L-N6-(1-imino-ethyl)-; Saline; Polymyxin; IA (left carotid); rabbit; 2ML2; 14 days; controls received mp w/ vehicle; functionality of mp verified by immunostaining to verify iNOS activity; cardiovascular; enzyme inhibitor; Polymyxin B present in vehicle (2ug/ml) to bind all traces of lipopolysaccharides. L-NIL is a nitric oxide synthase inhibitor.

P5285: M. V. Shirbacheh, *et al.* Pharmacokinetics of intra-arterial delivery of tacrolimus to vascularly isolated rabbit forelimb. *J Pharmacol Exp. Ther* 1999;289(3):1196-1201

ALZET Comments: FK506; IA (brachial); Rabbit; 2ML1; 6 days; Functionality of mp verified by FK-506 blood levels via ELISA; dose-response (p.1198); FK506 also known as tacrolimus; continuous systemic vs. local administration; immunology; transplantation.

P4577: M. V. Shirbacheh, *et al.* Pharmacokinetic advantage of intra-arterial cyclosporin A delivery to vascularly isolated rabbit forelimb. II. Dose dependence. *The Journal of Pharmacology and Experimental Therapeutics* 1999;289(3):1191-1195

ALZET Comments: Cyclosporin A; Cremophor; sandimmune IV solution; IA (brachial); Rabbit; 2ML1; 6 days; Dose-response (p. 1192-1194); immunology; sandimmune (CSA) solution used; intramedic PE-60/PE-10 infusion catheter used; to achieve highest dose; two pumps were implanted and catheters were joined via a Y-connector;.

P5303: T. C. Nichols, *et al.* Reduction in atherosclerotic lesion size in pigs by alphaVbeta3 inhibitors is associated with inhibition of insulin-like growth factor- I-mediated signaling. *Circ. Res* 1999;85(11):1040-1045

ALZET Comments: SC-69000; SC-65811; IA (carotid, femoral); Pig; 2ML2; 14 days; Controls received mp w/ vehicle; cardiovascular; peptides; agents are aVb3 receptor inhibitors; diagram of pump placement on p.1041.

P4461: H. T. Yang, *et al.* Exercise training enhances basic fibroblast growth factor-induced collateral blood flow. *Am. J. Physiol. (Heart Circ. Physiol. 43)* 1998;274(H2053-H2061

ALZET Comments: Fibroblast growth factor, basic;; PBS; Sodium azide; Glycerol; Heparin;; IA (iliac);; Rat;; 2002;; 2 weeks;; controls received mp w/vehicle; functionality of mp verified by residual volume; peptides; human. recomb fibroblast growth factor used;.

P4128: S. P. Hopkins, *et al.* Controlled delivery of vascular endothelial growth factor promotes neovascularization and maintains limb function in a rabbit model of ischemia. *J. Vasc. Surg* 1998;27(5):886-895

ALZET Comments: Vascular endothelial growth factor; Nitroglycerin; Saline; Heparin; IA (iliac); rabbit; 2ML4; 28 days; pump diagram (p. 888); 22 g intravenous catheter was inserted into tygon tubing; "implantable osmotic pumps offer an alternative simple delivery method, providing a constant release of soluble agents in a steady-state fashion." (p. 892); controls received mp w/vehicle; good methods (pp. 887-888); cardiovascular; peptides; ischemia.



P4004: E. H. Garin, *et al.* Anti-interleukin 8 antibody abolishes effects of lipid nephrosis cytokine. *Pediatric Nephrology* 1998;12(381-385)

ALZET Comments: Cell culture supernatant factor; Antibody, anti-human interleukin 8; PBS, sterile; Albumin, bovine serum; IA (renal); Rat; 2ML1; 5 days; controls received mp w/vehicle; functionality of mp verified by residual volume; heat-stretched PE-10 tubing used; immunology.

P4637: K. E. Matthys, *et al.* Local application of LDL promotes intimal thickening in the collared carotid artery of the rabbit. *Arterioscler. Thromb. Vasc. Biol* 1997;17(2423-2429)

ALZET Comments: Lipoprotein, low density-; lipoprotein, oxidized low density-; PBS;; IA (carotid); rabbit; 14 days; controls received mp w/vehicle; pumps connected to silicone collars around carotid arteries; human LDL used.

P3729: W. D. Ito, *et al.* Monocyte chemotactic protein-1 increases collateral and peripheral conductance after femoral artery occlusion. *Circ. Res* 1997;80(829-837)

ALZET Comments: Uridine, bromodeoxy-; Monocyte chemoattractant protein-1; PBS; IA (femoral); Rabbit; 2ML2; no duration posted; controls received mp w/ PBS; functionality of mp verified by BrdU staining and residual volume; peptides; cardiovascular; MCP-1.

P3730: E. H. Garin, *et al.* Effect of interleukin-8 on glomerular sulfated compounds and albuminuria. *Pediatric Nephrology* 1997;11(274-279)

ALZET Comments: Interleukin-8; BSA; IA (renal); Rat; 2ML1; 5 days; controls received mp w/BSA; good methods (pg. 275); peptides; used PE-10 catheter stretched to further reduce its diameter.

P3740: C. Chen, *et al.* Boundary layer infusion of nitric oxide reduces early smooth muscle cell proliferation in the endarterectomized canine artery. *J. Surg. Res* 1997;67(26-32)

ALZET Comments: Proline, l-; Proline, nitric oxide-; NaOH; IA (femoral); dog; 2ML2; 7 days; controls received mp w/ proline to contralateral vessel; stability verified by in vitro assay; half-life (pg. 27); cardiovascular; constructed local infusion device and attached to mp via catheter.

P3975: M. C. Cha, *et al.* Zinc deficiency inhibits the direct growth effect of growth hormone on the tibia of hypophysectomized rats. *Biol. Trace. Elem. Res* 1997;59(99-111)

ALZET Comments: Growth hormone, recomb. human; IA (femoral); Rat; 2002; 13 days; controls received mp w/vehicle; replacement therapy (hypophysectomy); no stress (see pg. 103); stress/adverse reaction (p. 103); PE10, PE50 and PE60 tubing used; PE10 tubing was stretched to fit into the vessel; peptides;.

P4413: H. T. Yang, *et al.* Basic fibroblast growth factor increases collateral blood flow in rats with femoral arterial ligation. *Circulation Research* 1996;79(1):62-69

ALZET Comments: Fibroblast Growth Factor, basic; Heparin;; Saline; Glycerol; Sodium azide;; IA (Femoral);; Rat;; 2002;; 1,2,4 weeks;; controls received mp w/ heparin; functionality of mp verified by residual volume; long-term study, pumps replaced at day 14; no stress (p. 63); good methods (p.63); peptides; cardiovascular;.

P4428: S. G. Mattar, *et al.* Local infusion of FGF-Saporin reduces intimal hyperplasia. *Journal of Surgical Research* 1996;60(339-344)

ALZET Comments: Fibroblast growth factor; saporin;; Sodium citrate; NaCl; EDTA;; IA (carotid);; dog;; 2002;; 14 days;; controls received mp w/vehicle; stability verified for 14 days by cellular assay; peptides; Saporin- FGF2 conjugate was infused; pump placed externally; Saporin is a potent ribosome-inactivating protein.

P3530: L. E. Cardona-Sanclemente, *et al.* Increase by adrenaline or angiotensin II of the accumulation of low density lipoprotein and fibrinogen by aortic walls in unrestrained conscious rats. *Br. J. Pharmacol* 1996;117(1089-1094)

ALZET Comments: Epinephrine; Angiotensin II; Ascorbic acid; SC; IA (carotid); Rat; 2ML4; 1007D; 6 days; controls received saline infusion; functionality of mp verified by plasma levels; stability verified by analyzing residual solution.



P4096: A. E. Levy, *et al.* Administration of intragraft interleukin-4 prolongs cardiac allograft survival in rats treated with donor-specific transfusion/cyclosporine. *Transplantation* 1995;60(5):405-406

ALZET Comments: Interleukin-4; Interleukin-10; IA (brachiocephalic); Rat; 14 days; immunology; peptides; pump infused the brachiocephalic artery of a harvested heart, which was then implanted into a recipient; recomb. mouse IL-4 & IL-10 used.

P3381: T. C. Kirkham, *et al.* Meal pattern analysis in rats reveals partial agonist activity of the bombesin receptor antagonist BW2258U89. *Pharmacol. Biochem. Behav* 1995;52(1):101-106

ALZET Comments: BW2258U89; Saline; IA (celiac); Rat; 2001; 6 days; controls received laparotomy & subsequent anesthesia; catheter tips passed through gauze before placement in arteries; catheters were anchored w/polypropylene microsuture; gauze was sutured to arterial wall.

P4100: M. K. Hirko, *et al.* In vivo tissue distribution of fibroblast growth factor-1 after intraarterial delivery. *ASAIO Journal* 1995;41(M630-M633)

ALZET Comments: Fibroblast growth factor; Heparin; ¹²⁵I tracer; Radio-isotopes; IA (carotid); rabbit; 2001D; 24 hours; functionality of mp verified by residual radioactivity analysis; no stress (see pg. M631); good methods (p. M631); peptides; tissue distribution.

P3296: E. H. Garin. Effect of lipoid nephrosis cytokine on glomerular sulfated compounds and albuminuria. *Pediatric Nephrology* 1995;9(587-593)

ALZET Comments: Cell cultures, supernatant fraction of PBM; IA (renal); Rat; 2ML1; 5 days; controls received mp w/ BSA in Hank's solution; idiopathic minimal lesion nephrotic syndrome; patient mononuclear cells used; pumps sutured to abdominal wall; "...chronic infusion allowed us to avoid the sudden increase in intravascular volume observed during the acute infusion studies..." (p.590).

P2617: D. S. Baskin, *et al.* Development of a model for Parkinson's disease in sheep using unilateral intracarotid injection of MPTP via slow continuous infusion. *Life Sci* 1994;54(7):471-479

ALZET Comments: MPTP HCl; IA (carotid); sheep; 2ML1; 1-7 weeks; Neurodegenerative (Parkinson's disease); comparison of acute injections vs. mp; no stress (see pg. 474); catheter placed in proximal occipital artery (w/ distal end of artery occluded); "...slow continuous infusion may be a useful alternative to repeated dosing in animal studies using MPTP. . .".

P2220: M. H. Chiang, *et al.* Human placental lactogen directly inhibits rat cartilage growth processes in vivo and in vitro. *Acta Endocrinol* 1993;128(65-68)

ALZET Comments: Human placental lactogen; IA (iliac); Rat; 2001; 7 days; controls received mp w/vehicle; stability verified in vitro for 6 days; peptides.

P2526: E. T. Alarid, *et al.* Differential effects of an antiserum to epidermal growth factor on the development of transplanted rat embryos and fetal structures in vivo. *Growth Factors* 1993;8(235-243)

ALZET Comments: Antibody, anti-epidermal growth factor; Epidermal growth factor; Water; Glycerol; Sodium nitrate; Heparin; Albumin; IA (renal); Rat; 2002; 14 days; tissue perfusion (fetal tissue transplants); peptides.

P2154: G. L. Matejka, *et al.* Local infusion of IGF-I into the kidney of pituitary intact rats induces renal growth. *Acta Physiol. Scand* 1992;145(7-18)

ALZET Comments: Insulin-like growth factor I; Albumin, bovine serum; Saline; IA (suprarenal); Rat; 2ML1; 7 days; controls received mp with vehicle; tissue perfusion (kidney); dose-response; peptides; pumps infused into the artery and directly into renal parenchyma via a catheter sealed at the end and punctured along the sides; recomb. human IGF-1 used.

P2099: E. T. Alarid, *et al.* Evidence suggesting that insulin-like growth factor-I is necessary for the trophic effect of insulin on cartilage growth in vivo. *Endocrinology* 1992;139(4):2305-2309

ALZET Comments: Antibody, anti-IGF I; Insulin; ¹²⁵I tracer; Heparin; Radio-isotopes; Serum, rabbit; IA (iliac); Rat; 2001; 7 days; functionality of mp verified by RIA; dose-response; peptides.



R0084: M. J. A. P. Daemen, *et al.* Pharmacokinetic considerations in local drug delivery. *Adv. Drug Delivery Review* 1991;6(1-18

ALZET Comments: Hippuric acid; 125I tracer; Radio-isotopes; IA (suprarenal); Rat; no duration posted; tissue perfusion.

P2594: D. E. Andersen, *et al.* Metabolic effects associated with chronically elevated cortisol in rainbow trout (*Oncorhynchus mykiss*). *Can. J. Fish. Aquat. Sci* 1991;48(9):1811-1817

ALZET Comments: Cortisol; Cyclodextrin, B-; IA (dorsal aorta); fish (rainbow trout); 2001; 10-14 days; controls received mp w/ vehicle or sham operation; functionality of mp verified by RIA of plasma levels; stress from surgery caused hyperglycemia (p.816) for 22 hours; "Mini-osmotic pumps. . . were an effective method for chronically elevating cortisol titers in trout."; Molecusol HBP is a beta-cyclodextrin.

P1890: E. T. Alarid, *et al.* Evidence for an organ- and sex-specific role of basic fibroblast growth factor in the development of the fetal mammalian reproductive tract. *Endocrinology* 1991;129(4):2148-2154

ALZET Comments: Antibody, anti-fibroblast growth factor; Glycerol; Sodium azide; IA (suprarenal); Rat; 2002; 14 days; tissue perfusion (graft); peptides.

P1690: L. Liu, *et al.* Analysis of the role of basic fibroblast growth factor in growth and differentiation of transplanted fetal rat paws and intestines. *Endocrinology* 1990;126(3):1764-1770

ALZET Comments: Antibody, anti-fibroblast growth factor; Fibroblast growth factor; Glycerol; Heparin; Saline; Sodium azide; Sodium citrate; IA (renal); Rat; 2001; 2002; 6-11 days; tissue perfusion: tissue graft; good methods for FGF/pg. 1765; peptides; basic FGF used.

P3291: N. J., *et al.* Epidermal growth factor accelerates functional recovery from ischaemic acute tubular necrosis in the rat: role of the epidermal growth factor receptor. *Clin. Sci* 1990;78(445-450

ALZET Comments: Epidermal growth factor; Saline; IA (renal); Rat; 2001; 8 days; controls received mp w/saline; peptides; medical category: renal; skc.

P1651: E. M. Spencer, *et al.* Parathyroid hormone potentiates the effect of insulin-like growth factor-I on bone formation. *Acta Endocrinol* 1989;121(435-442

ALZET Comments: Insulin-like growth factor I; Parathyroid hormone; Glycerol; Heparin; Sodium azide; Tris buffer; IA (iliac); Rat; 2001; 7 days; functionality of mp verified by residual volume; peptides.

P1646: P. Ruiz, *et al.* Association of chronic thromboxane inhibition with reduced in situ cytotoxic T cell activity in rejecting rat renal allografts. *Transplantation* 1989;48(4):660-666

ALZET Comments: OKY-046; Saline; IA (renal); Rat; 4 days; tissue perfusion; OKY-046 is a thromboxane synthetase inhibitor.

P1480: G. B. Koelle, *et al.* Effect of glycyl-L-glutamine on the rate of regeneration of acetylcholinesterase in the rat gastrocnemius muscle after diisopropyl phosphorofluoridate administration. *Proc. Natl. Acad. Sci* 1989;86(11):4331-4333

ALZET Comments: Glutamine, glycyl-L-; Plasma, heat-inactivated cat; Water; IA (abdominal aorta); Rat; 2001; 2 days; controls received IA catheter, w/ no pump; tissue perfusion.

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

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.

P1431: T. M. Coffman, *et al.* Chronic thromboxane inhibition preserves function of rejecting rat renal allografts. *Kidney Int* 1989;35(24-30

ALZET Comments: OKY-046; Saline; IA (renal); Rat; 4 days; schematic of OP ligated to aortic cuff of allograft; tissue perfusion; cancer/immunology.



P1352: T. Riemenschneider, *et al.* Continuous or bolus chemotherapy with 5-fluoro-2-deoxyuridine in transplanted experimental liver tumors. *J. Cancer Res. Clin. Oncol* 1988;114(4):482-486

ALZET Comments: Uridine, fluorodeoxy-; Heparin; Saline; IA (hepatic); Rat; 2ML2; 7 days; regional chemotherapy; comparison of IA injections vs. mp infusion; cancer/immunology; tissue perfusion.

P1384: L. Liu, *et al.* Evidence for a role of basic fibroblast growth factor in rat embryonic growth and differentiation. *Endocrinology* 1988;123(4):2027-2031

ALZET Comments: Antibody, fibroblast growth factor; Serum, rabbit; Fibroblast growth factor; Glycerol; Heparin, porcine; Sodium azide; Sodium citrate; Water; IA (renal); Rat; 2001; 2002; 6, 10 days; antibody, transplanted embryo in kidney was perfused using renal artery; peptides; tissue perfusion; basic FGF used.

P1356: M. J. A. P. Daemen, *et al.* Pharmacokinetic considerations in target-organ directed drug delivery. *Trends Pharmacol. Sci* 1988;9(13):138-141

ALZET Comments: Acenocoumarol; Edetic acid; Hippuric acid; Propranolol; Radio-isotopes; 125I tracer; 51Cr tracer; IA (renal); Rat; no duration posted; targeted delivery; tissue perfusion; antihypertensive.

P0982: T. J. M. Ruers, *et al.* Local inhibition of major histocompatibility complex class II induction within the graft: An effective way to induce immunosuppression. *Transplant. Proc.* XIX 1987;19(1):246-248

ALZET Comments: Prednisolone; Saline; Water; IA (suprarenal); IP; Rat; 2ML2; 14 days; controls received mp w/saline; immunology; tissue perfusion.

P1451: T. J. M. Ruers, *et al.* Immunohistological observations in rat kidney allografts after local steroid administration. *J. Exp. Med* 1987;166(12):1205-1220

ALZET Comments: Prednisolone; Water; IA (suprarenal); Rat; 2ML2; 14 days; functionality of mp verified by serum levels; tissue perfusion (kidney).

R0077: N. Ray, *et al.* Implantable osmotically powered drug delivery systems. In 'Drug Delivery Systems: Fundamentals and Techniques,' P. Johnson and J. G. Lloyd-Jones (eds.), Ellis Horwood Ltd., Chichester, England and VCH Verlagsgesellschaft mbH, Weinheim, Federal Republic of Germany 1987;Ch. 7):120-138

ALZET Comments: Antipyrine; bleomycin; dopamine HCl; melatonin; methotrexate, sodium; nicotine; prednisolone; radio-isotopes; valproic acid; ¹⁴C tracer; ³H tracer; IA; IP; SC; Mice, rabbit, Rat; no duration posted; ALZA-authored; synoptic review of mp; post op. care (antibiotic); comparison of sc injections vs. mp infusion; pulsed delivery.

P0981: A. Nilsson, *et al.* Effects of unilateral arterial infusion of GH and IGF-I on tibial longitudinal bone growth in hypophysectomized rats. *Calcif. Tissue Int* 1987;40(2):91-96

ALZET Comments: Growth hormone, human; Insulin-like growth factor I; Prolactin, ovine; Saline, heparinized; IA (femoral); Rat; 2002; 14 days; controls were untreated; mp connected to catheter in femoral artery; replacement therapy (hypophysectomy); local IA infusion; peptides.

P1083: T. D. Hexum, *et al.* Plasma enkephalin-like peptide response to chronic nicotine infusion in guinea pig. *Brain Research* 1987;406(1/2):370-372

ALZET Comments: Nicotine; Saline; IA (carotid); Guinea pig; 2002; 10 days; mp connected to indwelling catheter in carotid artery.

P0707: J. F. Smits, *et al.* Lack of renal vasodilation during intrarenal infusion of synthetic Atriopeptin II in conscious intact SHR. *Life Sci* 1986;38(1):81-87

ALZET Comments: Saline; IA (renal); Rat; 2001; 2-3 days; mp attached to catheter in suprarenal artery; tissue perfusion.

P0912: T. J. M. Ruers, *et al.* The effect of intrarenal steroid infusion on rat renal allograft rejection. *Transplant. Proc.* XVIII 1986;18(5):1106-1107

ALZET Comments: Prednisolone; Water; IA (suprarenal); IP; Rat; no duration posted; immunology; tissue perfusion.



P0937: P. S. Cooke, *et al.* Insulin but not GH directly stimulates growth of transplanted fetal rat paws. *Am. J. Physiol* 1986;251(E624-E629)

ALZET Comments: Growth hormone; Insulin; Glutamic acid; Glycerin; HCl; Sodium hydroxide; Phenol; Saline; Water; IA (renal); Rat; 2001; 7 days; controls received mp w/saline; mp conn. to catheter in renal artery; comparison of sc inject. vs. mp infusion; repl. therapy (hypophysectomy); peptides; tissue perfusion.

P0682: L. M. L. LeNoble, *et al.* Selective efferent chemical sympathectomy of rat kidneys. *Am. J. Physiol* 1985;249(4):R496-R501

ALZET Comments: Saline; IA (renal); Rat; 2001; no duration posted; pump used only to flush catheter and keep it patent when not in use; tissue perfusion.

P0543: J. F. M. Smits, *et al.* Activation of afferent renal nerves by intrarenal bradykinin in conscious rats. *Am. J. Physiol* 1984;247(6):R1003-R1008

ALZET Comments: Saline; IA (renal); Rat; 3-5 days; mp used only to keep catheters open prior to second part of surgery & prior to drug infusion; tissue perfusion.

P0287: J. F. M. Smits, *et al.* Chronic local infusion into the renal artery of unrestrained rats. *Am. J. Physiol* 1983;244(H304-H307)

ALZET Comments: Saline; IA (renal); Rat; 2001; 2-14 days; pumps replaced after days 2 and 7; tissue perfusion.

P0496: J. C. S. Kleinjans, *et al.* Body fluid and salt homeostasis during hypertension caused by chronic intrarenal norepinephrine infusion in conscious rats. *J. Hypertens* 1983;1(2):207-209

ALZET Comments: Norepinephrine; Ascorbic acid; Saline; IA (renal); Rat; 5 days; dose-response data; tissue perfusion.