



Recent References on Wound Healing Studies  
Using ALZET® Osmotic Pumps

**Q10357:** M. D. C. de Arriba, *et al.* FPR2 DNA Aptamers for Targeted Therapy of Wound Repair. *Journal of Investigative Dermatology* 2022;142(8):2238-2248 e8

**Agents:** Aptamer, FPR2 **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice; **Pump:** 1007D; **Duration:** 6 days;  
**ALZET Comments:** Dose (10 µM); animal info (FPR2 aptamer-treated mice); stability of aptamer in pump verified by qPCR; FPR2 aptamer acting as FPR2 agonist; gene therapy

**Q10288:** A. Nolze, *et al.* Calcineurin (PPP3CB) regulates angiotensin II-dependent vascular remodelling by potentiating EGFR signalling in mice. *Acta Physiologica* 2021;233(3):e13715

**Agents:** Angiotensin II **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice; **Pump:** Not Stated; **Duration:** 28 days;  
**ALZET Comments:** Dose: (500 ng/kg/min); Controls received mp w/ vehicle; animal info: Wildtype (WT) and PPP3CB KO mice, 5-month-old male mice; Blood pressure measured via: tail-cuff; Angiotensin II aka (Ang II); Cardiovascular

**Q10317:** H. Huang, *et al.* Liraglutide via Activation of AMP-Activated Protein Kinase-Hypoxia Inducible Factor-1alpha-Heme Oxygenase-1 Signaling Promotes Wound Healing by Preventing Endothelial Dysfunction in Diabetic Mice. *Frontiers in Physiology* 2021;12(660263)

**Agents:** Liraglutide; Compound C; 2-methoxyestradiol **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Pump:** 1002; **Duration:** 4 weeks;  
**ALZET Comments:** Dose: Lira (200 µg/kg/day); Cpd C (1.5 mg/kg/day); 2-ME (40 mg/kg/day); Controls received mp w/ vehicle; animal info: 8-week-old mice Diabetic db/db mice; Liraglutide aka (Lira); Liraglutide is a GLP-1 Receptor Agonist; Cpd C aka (Compound C); 2-ME aka 2-methoxyestradiol is an inhibitor of Hif-1a; dependence;

**Q9913:** D. Yan, *et al.* Bazedoxifene Attenuates Abdominal Aortic Aneurysm Formation via Downregulation of Interleukin-6/Glycoprotein 130/Signal Transducer and Activator of Transcription 3 Signaling Pathway in Apolipoprotein E-Knockout Mice. *Frontiers in Pharmacology* 2020;11(392)

**Agents:** Angiotensin II; Bazedoxifene **Vehicle:** Saline; PBS; **Route:** SC; **Species:** Mice; **Pump:** 2004; **Duration:** 28 days;  
**ALZET Comments:** Dose (1000 ng/kg/min); 0.9% NaCl used; Controls received mp w/ vehicle; animal info (8-week-old male apolipoprotein-E-deficient mice); Angiotensin II aka AngII, Bazedoxifene aka GAZ; cardiovascular;

**Q9978:** A. Szeto, *et al.* Oxytocin reduces adipose tissue inflammation in obese mice. *Lipids in Health and Disease* 2020;19(1):188

**Agents:** Oxytocin **Vehicle:** Sodium Citrate; **Route:** SC; **Species:** Mice; **Pump:** 1004; **Duration:** 8 weeks;  
**ALZET Comments:** Dose (4.22 µg/day); Controls received mp w/ vehicle; animal info (Male, C57BLKS/J); pumps replaced every 6 weeks; immunology;

**Q8655:** Y. Matsuda, *et al.* NFE2L2 activator RS9 protects against corneal epithelial cell damage in dry eye models. *PLoS One* 2020;15(4):e0229421

**Agents:** Scopolamine **Vehicle:** Not Stated; **Route:** SC; **Species:** Rat; **Pump:** Not stated; **Duration:** 3 days;  
**ALZET Comments:** Dose (12.5 mg/day); animal info (Sprague-Dawley rats); dependence;

**Q8627:** J. Leslie, *et al.* FPR-1 is an important regulator of neutrophil recruitment and a tissue-specific driver of pulmonary fibrosis. *JCI Insight* 2020;5(4):

**Agents:** Antibody, Ly6G; Antibody, IgG2a **Route:** SC; **Species:** Mice; **Pump:** 2004; 1007D; **Duration:** 21 days; 1 day;  
**ALZET Comments:** Dose (28.5 µg/ mouse/d; 57 µg/mouse/d); animal info (C57BL/6 and fpr1-/- mice (male, 8-10 weeks old)); Ly6G Antibody aka 2A3; IgG2a Antibody aka 1A8; immunology;



**Q9078:** D. Sun, *et al.* cJun/Ap1 is upregulated in an Ang II-induced abdominal aortic aneurysm formation model and mediates Chop expression in mouse aortic smooth muscle cells. *Molecular Medicine Reports* 2019;19(5):3459-3468

**Agents:** Angiotensin II **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Pump:** 2004; **Duration:** 4 weeks;

**ALZET Comments:** Dose (1000 ng/kg/min); Controls received mp w/ vehicle; animal info (C57BL/6, Male, 20 g, 10 weeks old); cardiovascular;

**Q8366:** H. M. Perry, *et al.* Perivascular CD73(+) cells attenuate inflammation and interstitial fibrosis in the kidney microenvironment. *Am J Physiol Renal Physiol* 2019;317(3):F658-F669

**Agents:** CD73 **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Pump:** Not stated; **Duration:** #REF!;

**ALZET Comments:** Dose (250 mg/kg); Controls received mp w/ vehicle; animal info (Male, 8-12 weeks old, 18-25 g); CD73 aka 5' nucleotidase; ischemia (Ischemia-reperfusion injury);

**Q8263:** X. Liu, *et al.* Sensory nerve-derived neuropeptides accelerate the development and fibrogenesis of endometriosis. *Hum Reprod* 2019;34(3):452-468

**Agents:** Aprepitant **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Pump:** 1004; **Duration:** 4 weeks;

**ALZET Comments:** Dose (1 mg/kg/day); Controls received mp w/ vehicle; animal info (Female, 7 weeks old, Balb/C); dependence;

**Q8259:** M. L. Lindsey, *et al.* Exogenous CXCL4 infusion inhibits macrophage phagocytosis by limiting CD36 signalling to enhance post-myocardial infarction cardiac dilation and mortality. *Cardiovasc Res* 2019;115(2):395-408

**Agents:** CXCL4 **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Pump:** Not stated; **Duration:** 24 hours;

**ALZET Comments:** Dose (2.5, 5, 25, or 50 ug/kg/day); Controls received mp w/ vehicle; animal info (C57BL/6J, 3-6 months old);

**Q8258:** Y. T. Lin, *et al.* Cordycepin Suppresses Endothelial Cell Proliferation, Migration, Angiogenesis, and Tumor Growth by Regulating Focal Adhesion Kinase and p53. *Cancers (Basel)* 2019;11(2):

**Agents:** Cordycepin **Vehicle:** DMSO; **Route:** SC; **Species:** Mice; **Pump:** Not stated; **Duration:** 7 days;

**ALZET Comments:** Dose (2.4 mg/kg/day); Controls received mp w/ vehicle; animal info (BALB/c, ); dependence;

**Q7343:** X. Huang, *et al.* Resveratrol Promotes Diabetic Wound Healing via SIRT1-FOXO1-c-Myc Signaling Pathway-Mediated Angiogenesis. *Front Pharmacol* 2019;10(421)

**Agents:** EX-527; 10068-F4 **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice; **Pump:** 1002; **Duration:** 4 weeks;

**ALZET Comments:** Dose (EX-527 5 mg/kg/day, 10068-F4 30mg/kg/day ); Controls received mp w/ vehicle; animal info (BKS.Cg-Dock7mC=CLep<sup>rdb</sup>=J mice, 8 weeks old); enzyme inhibitor (EX-527 is an SIRT1 inhibitor, 10058-F\$ is a c-Myc inhibitor); diabetes;

**Q8188:** E. P. Daskalopoulos, *et al.* The Beneficial Effects of UM206 on Wound Healing After Myocardial Infarction in Mice Are Lost in Follow-Up Experiments. *Front Cardiovasc Med* 2019;6(118)

**Agents:** Peptide Fragment of Wnt5a **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Pump:** 2006; **Duration:** 5 weeks;

**ALZET Comments:** Dose (6 µg/kg/day); Controls received mp w/ vehicle; animal info (Male Swiss mice, 10-12 weeks of age); Peptide Fragment of Wnt5a aka UM206; cardiovascular;

**Q8990:** M. Zhai, *et al.* Ursolic acid prevents angiotensin II-induced abdominal aortic aneurysm in apolipoprotein E-knockout mice. *Atherosclerosis* 2018;271(128-135)

**Agents:** Angiotensin II **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Pump:** 2004; **Duration:** 28 days;

**ALZET Comments:** Dose (1000 ng/kg/min); Controls received mp w/ vehicle; animal info (8 weeks, male, ApoE(-/-)); cardiovascular; mp used to induce abdominal aortic aneurysms in mice;



**Q7739:** E. Shavit-Stein, *et al.* A Novel Compound Targeting Protease Receptor 1 Activators for the Treatment of Glioblastoma. *Front Neurol* 2018;9(1087)

**Agents:** ketone, six amino acid chloromethyl- **Vehicle:** Saline; **Route:** SC; **Species:** Rat; **Pump:** 2001; 2002; **Duration:** 7 days; 14 days;

**ALZET Comments:** Dose (0.2 ug/kg/day; 2ug/kg/day; 20 ug/kg/day); animal info (Adult Lewis rats 270–335 g); six amino acid chloromethyl-ketone aka SIXAC; enzyme inhibitor (SIXAC inhibit thrombin); ALZET brain infusion kit used; Brain coordinates (1mm lateral × 3mm posterior to the Bregma, 5.5mm deep); MRI;

**Q7251:** J. H. Park, *et al.* TAK-733 inhibits inflammatory neointimal formation by suppressing proliferation, migration, and inflammation in vitro and in vivo. *Experimental & Molecular Medicine* 2018;50(4):37

**Agents:** Angiotensin II **Vehicle:** Not Stated; **Route:** SC; **Species:** Rat; **Pump:** 2004; **Duration:** 2 Weeks;

**ALZET Comments:** Dose (500 ng/kg/min); Controls received mp w/ saline; animal info (Male Sprague-Dawley rats weighing 250-300 g); cardiovascular;

**Q8105:** E. J. Macarak, *et al.* Trametinib prevents mesothelial-mesenchymal transition and ameliorates abdominal adhesion formation. *J Surg Res* 2018;227(198-210)

**Agents:** Trametinib **Vehicle:** DMSO; **Route:** SC; **Species:** Mice; **Pump:** 1002; **Duration:** 8 days;

**ALZET Comments:** Dose (0.1, 1, or 3 mg/kg); Controls received mp w/ vehicle; animal info (C57BL/6, 18-25 g, 8-10 weeks old);

**Q7223:** J. Lu, *et al.* CIC-2 knockdown prevents cerebrovascular remodeling via inhibition of the Wnt/beta-catenin signaling pathway. *Cellular & Molecular Biology Letters* 2018;23(29)

**Agents:** Angiotensin II **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Pump:** 1002; **Duration:** Not Stated;

**ALZET Comments:** Dose (1.5 mg/kg/day); Controls received mp w/ vehicle; animal info (Male, 12 weeks old, 20-25 g, C57BL/6); gene therapy;

**Q7769:** F. Kurosaki, *et al.* AAV6-Mediated IL-10 Expression in the Lung Ameliorates Bleomycin-Induced Pulmonary Fibrosis in Mice. *Human Gene Therapy* 2018;29(11):1242-1251

**Agents:** bleomycin **Vehicle:** Saline, sterile; **Route:** SC; **Species:** Mice; **Pump:** 2001; **Duration:** 7 days;

**ALZET Comments:** Dose (1 µL/h of 125 mg/kg bleomycin); Controls received no vector and mp w/ vehicle; animal info (10-12 weeks, male, C57BL6/J, 25-30g); immunology;

**Q7078:** N. Kumar, *et al.* Thymosin beta4 Deficiency Exacerbates Renal and Cardiac Injury in Angiotensin-II-Induced Hypertension. *Hypertension* 2018;71(6):1133-1142

**Agents:** Angiotensin II **Vehicle:** Saline; Acetic acid; **Route:** SC; **Species:** Mice; **Pump:** Not Stated; **Duration:** 6 weeks;

**ALZET Comments:** Dose (980 ng/kg/min); animal info (8-10 week old C57BL/6 and TBeta4 KO mice); cardiovascular;

**Q7768:** S. Kim, *et al.* Acupuncture Resolves Persistent Pain and Neuroinflammation in a Mouse Model of Chronic Overlapping Pain Conditions. *J Pain* 2018;19(12):1384 e1-1384 e14

**Agents:** Dinitrocatechol, 3,5- **Vehicle:** saline, DMSO and ethanol buffered; **Route:** SC; **Species:** Mice (adult); **Pump:** 1002; **Duration:** 13 days;

**ALZET Comments:** Dose (15 mg/kg/d); 5:2:3 ratio of DMSO, ethanol and saline used; Controls received mp w/ vehicle; animal info (12-16 weeks, male and female, C57BL/6 or MRL/MpJ); behavioral testing (von Frey test); comparison of acupuncture vs mp; 3,5-Dinitrocatechol AKA OR486 is a COMT inhibitor; enzyme inhibitor (catechol-O-methyltransferase);

**Q6934:** F. Forini, *et al.* Integrative analysis of differentially expressed genes and miRNAs predicts complex T3-mediated protective circuits in a rat model of cardiac ischemia reperfusion. *Sci Rep* 2018;8(1):13870

**Agents:** THyroid hormone **Vehicle:** Saline; **Route:** SC; **Species:** Rat; **Pump:** 2ML4; **Duration:** Not Stated;

**ALZET Comments:** Dose (3 µg/kg/day); Controls received mp w/ vehicle; cardiovascular;



**Q7124:** M. Cusimano, *et al.* Selective killing of spinal cord neural stem cells impairs locomotor recovery in a mouse model of spinal cord injury. *J Neuroinflammation* 2018;15(1):58

**Agents:** Ganciclovir **Vehicle:** Water; **Route:** SC; **Species:** Mice; **Pump:** 2002; **Duration:** 28 days;

**ALZET Comments:** Dose (100 mg/kg/day); animal info (NestinTK); pumps replaced every 2 weeks; neurodegenerative (Spinal Chord);

**Q8179:** S. Cechova, *et al.* MYH9 E1841K Mutation Augments Proteinuria and Podocyte Injury and Migration. *J Am Soc Nephrol* 2018;29(1):155-167

**Agents:** Angiotensin II **Vehicle:** Not stated; **Route:** SC; **Species:** Mice; **Pump:** 2004; **Duration:** 4 weeks;

**ALZET Comments:** Dose (Ang II 1000 ng/kg per minute); animal info (E1841K mutation); diabetes;

**Q5725:** S. Zhao, *et al.* Tetramethylpyrazine attenuates carbon tetrachloride-caused liver injury and fibrogenesis and reduces hepatic angiogenesis in rats. *Biomedicine & Pharmacotherapy* 2017;86(521-530

**Agents:** Angiotensin II **Vehicle:** Not Stated; **Route:** Not Stated; **Species:** Rat; **Pump:** 2004; 2ML4; **Duration:** 5 weeks;

**ALZET Comments:** Controls received mp w/ saline; animal info (male, Sprague Dawley, 180-220g); cardiovascular; peptides; Dose (25 ug/kg/hr);

**Q5739:** J. Raber, *et al.* Mitigating effect of EUK-207 on radiation-induced cognitive impairments. *Behavioural Brain Research* 2017;320(457-463

**Agents:** EUK-207 **Vehicle:** Water; **Route:** SC; **Species:** Mice; **Pump:** Not Stated; **Duration:** Not Stated;

**ALZET Comments:** Controls received mp w/ vehicle; animal info (2 months old); behavioral testing (Morris Water Maze, Fear Conditioning); EUK-207 is a catalytic ROS scavenger ; Therapeutic indication (Hippocampus, hippocampal injury, cognitive impairment); Dose (0.2 mg/kg/day);

**Q5111:** W. Zhang, *et al.* Targeting of Survivin Pathways by YM155 Inhibits Cell Death and Invasion in Oral Squamous Cell Carcinoma Cells. *Cellular Physiology and Biochemistry* 2016;38(6):2426-37

**Agents:** YM155 **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice (nude); **Pump:** 1007D; **Duration:** 7 days;

**ALZET Comments:** Controls received mp w/ vehicle; animal info (female, nude, 5 weeks old); cancer (Oral squamous cell carcinoma SCC9); Dose (5 mg/kg/day); xenograph model;

**Q4902:** C. Weber, *et al.* Macrophage Infiltration and Alternative Activation during Wound Healing Promote MEK1-Induced Skin Carcinogenesis. *Cancer Research* 2016;76(4):805-817

**Agents:** arginine, N(omega)-hydroxy-nor-I **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice; **Pump:** 1004; **Duration:** 33 days;

**ALZET Comments:** animal info (InvEE); functionality of mp verified by plasma levels; stress/adverse reaction: (see pg. 811); stability verified by (10 days see pg 811); immunology; "Continuous dosing at a rate of 0.25 mL per hour ensured constant compound levels. Successful ARG1 inhibition was confirmed in blood plasma and wounded skin samples taken 5 days after implantation" pg 811; nor-NOHA aka N(omega)-hydroxy-nor-I-arginine;

**Q6648:** M. Rauner, *et al.* Increased EPO Levels Are Associated With Bone Loss in Mice Lacking PHD2 in EPO-Producing Cells. *J Bone Miner Res* 2016;31(10):1877-1887

**Agents:** Erythropoietin, recomb. human **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice (knockout); Mice (transgenic); **Pump:** Not Stated; **Duration:** 30 days;

**ALZET Comments:** Dose (3 U EPO/day or 10 U EPO/day ); Controls received mp w/ vehicle; animal info (8-12 week old WT and *Osx:cre-PHD2f/f* and *Vav:cre-PHD2f/f* mice);

**Q5171:** S. Okizaki, *et al.* Vascular Endothelial Growth Factor Receptor Type 1 Signaling Prevents Delayed Wound Healing in Diabetes by Attenuating the Production of IL-1beta by Recruited Macrophages. *American Journal of Pathology* 2016;186(6):1481-98

**Agents:** Placenta growth factor, recombinant human; antibody, interleukin-1B **Vehicle:** PBS; **Route:** SC; **Species:** Mice; **Pump:** 1007D; **Duration:** 7 days;

**ALZET Comments:** Controls received mp w/ vehicle or control antibody; animal info (male, C57BL6, 8 weeks old, STZ); immunology; diabetes; Dose (PIGF 10 ug/mouse; anti-IL-1B 1 ug/day);



**Q6632:** G. Nicolini, *et al.* Early and Short-term Triiodothyronine Supplementation Prevents Adverse Postischemic Cardiac Remodeling: Role of Transforming Growth Factor-beta1 and Antifibrotic miRNA Signaling. *Mol Med* 2016;21(1):900-911

**Agents:** Triiodothyronine **Vehicle:** Saline; **Route:** SC; **Species:** Rat; **Pump:** 2002; **Duration:** 48 hours;

**ALZET Comments:** Dose (6 mg/kg/day); Controls received mp w/ vehicle; animal info (adult male Wistar rats weighing 385 ± 9 g); Triiodothyronine aka T3; cardiovascular;

**Q5578:** S. E. Thatcher, *et al.* Exogenous 17-beta estradiol administration blunts progression of established angiotensin II-induced abdominal aortic aneurysms in female ovariectomized mice. *Biology of Sex Differences* 2015;6(12)

**Agents:** Angiotensin II **Vehicle:** Not Stated; **Route:** Not Stated; **Species:** Mice; **Pump:** 1004; **Duration:** 3 months;

**ALZET Comments:** Controls received mp w/ vehicle; animal info (Female low-density lipoprotein-receptor-deficient (Ldlr-/-) mice on a C57BL/6 background; 2-3 months of age); functionality of mp verified by ; long-term study; pumps replaced every 4 weeks; Dose (1000 ng/kg/min);

**Q4028:** S. Okizaki, *et al.* Suppressed recruitment of alternatively activated macrophages reduces TGF-beta1 and impairs wound healing in streptozotocin-induced diabetic mice. *Biomedicine & Pharmacotherapy* 2015;70(317-325)

**Agents:** Transforming growth factor-B1 **Vehicle:** PBS; **Route:** SC; **Species:** Mice; **Pump:** 1007D; **Duration:** 7 days;

**ALZET Comments:** Controls received mp w/ vehicle; animal info (male, C57BL6, 8 weeks old, diabetes induced STZ); immunology; diabetes;

**Q5167:** G. Nicolini, *et al.* Early and short-term triiodothyronine supplementation prevents adverse post-ischemic cardiac remodeling; role of transforming growth factor-beta1 and anti-fibrotic miRNA signaling. *Mol Med* 2015;

**Agents:** Triiodothyronine **Vehicle:** Saline; **Route:** SC; **Species:** Rat; **Pump:** 2002; **Duration:** 3 days;

**ALZET Comments:** Controls received mp w/ vehicle; animal info (male, Wistar, adult, 385+/- 9 g); functionality of mp verified by serum levels; cardiovascular; pumps removed after 3 days; Dose (6 ug/kg/day);

**Q3977:** Y. C. Lim, *et al.* Proinsulin C-Peptide Prevents Impaired Wound Healing by Activating Angiogenesis in Diabetes. *Journal of Investigative Dermatology* 2015;135(269-278)

**Agents:** C-peptide **Vehicle:** PBS; **Route:** SC; **Species:** Mice; **Pump:** 2004; **Duration:** 2 weeks;

**ALZET Comments:** Controls received sham surgery; animal info (male, C57BL6J, 6 weeks old, streptozotocin induced diabetes); cardiovascular; peptides; diabetes;

**Q3960:** J. Y. Lee, *et al.* Simultaneous Inferior Alveolar Nerve Regeneration and Osseointegration With a Nerve Growth Factor-Supplying Implant: A Preliminary Study. *Journal of Oral and Maxillofacial Surgery* 2015;73(410-423)

**Agents:** Nerve growth factor, human B- **Vehicle:** PBS; **Route:** CSF/CNS (inferior alveolar nerve); **Species:** Dog (beagle); **Pump:** 2ML2; **Duration:** 6 weeks;

**ALZET Comments:** Controls received mp w/ vehicle; animal info (male, beagle, 18 weeks old, 10-12 kg); good methods (picture of implant pg 413); Multiple pumps per animal (2; one pump delivered NGF other delivered PBS); used rat jugular catheter, 15 cm long; pump body placed into retromandibular area; long-term study;

**Q4329:** J. C. Bihl, *et al.* Angiotensin-(1-7) counteracts the effects of Ang II on vascular smooth muscle cells, vascular remodeling and hemorrhagic stroke: Role of the NFkappaB inflammatory pathway. *VASCULAR PHARMACOLOGY* 2015;73(115-123)

**Agents:** Angiotensin II; angiotensin (1-7); A-779 **Vehicle:** Not Stated; **Route:** IP; **Species:** Mice; **Pump:** 1004; **Duration:** 4 weeks;

**ALZET Comments:** Controls received mp w/ vehicle; animal info (C57BL6, 8-10 weeks old, 25-32g); ischemia (cerebral); behavioral testing (gait, circling/climbing behavior, body and front limb symmetry, compulsory circling); cardiovascular; peptides; bp measured using radiotelemetry (DSI); pumps primed for 48h at 37C sterile isotonic saline; used IP catheter; "Ang II and Ang-(1-7) infusions led to a significant increase in plasma Ang II and Ang-(1-7) levels, which indicate the success of minipump infusions"

**Q4295:** A. Aguado, *et al.* HuR mediates the synergistic effects of angiotensin II and IL-1 on vascular COX-2 expression and cell migration. *British Journal of Pharmacology* 2015;172(3028-3042)

**Agents:** Angiotensin II **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Pump:** Not Stated; **Duration:** 2 weeks;

**ALZET Comments:** Controls received mp w/ vehicle; animal info (male, C57BL6J); cardiovascular; peptides;



**Q4213:** A. Yoshii, *et al.* Role of Uterine Contraction in Regeneration of the Murine Postpartum Endometrium. *Biology of Reproduction* 2014;91(U48-U57)

**Agents:** Ritodrine hydrochloride **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice; **Pump:** Not Stated; **Duration:** Not Stated;  
**ALZET Comments:** Controls received mp w/ saline; animal info (female, ICR, 8-10 weeks old, pregnant, GD18-19, ovariectomy); cardiovascular; immunology; ritodrine is a B-2 adrenergic receptor agonist;

**Q4766:** Mohan R Dasu, *et al.* Crosstalk Between Adrenergic and Toll-Like Receptors in Human Mesenchymal Stem Cells and Keratinocytes: A Recipe for Impaired Wound Healing. *STEM CELLS TRANSLATIONAL MEDICINE* 2014;3:745-759

**Agents:** epinephrine, macrophage-activating lipopeptide-2; ICI-118,551 **Vehicle:** Not Stated; **Route:** SC; **Species:** mice; **Pump:** 1002; **Duration:** 7 days; 11 days;

**ALZET Comments:** animal info (Jax Mice, male, 8-10 weeks of age); peptides; macrophage-activating lipopeptide-2 aka MALP-2; Dose (7mg/kg body weight/day EPI; .7 mg/kg body weight/day ICI);

**Q3234:** M. H. Kim, *et al.* Catecholamine Stress Alters Neutrophil Trafficking and Impairs Wound Healing by beta(2)-Adrenergic Receptor-Mediated Upregulation of IL-6. *Journal of Investigative Dermatology* 2014;134(3):809-817

**Agents:** Epinephrine; antagonist, beta adrenergic receptor **Vehicle:** Saline; **Route:** SC; **Species:** Mice (transgenic); **Pump:** 1002; **Duration:** 8 days;

**ALZET Comments:** Controls received mp w/ vehicle; animal info (female, EGFP-lys); functionality of mp verified by plasma levels; dose-response (pg. 810); immunology;

**Q3931:** B. Johannesson, *et al.* Insulin-like growth factor-1 induces regulatory T cell-mediated suppression of allergic contact dermatitis in mice. *Disease Models & Mechanisms* 2014;7(977-985)

**Agents:** Insulin-like growth factor-1, recombinant human **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice; **Pump:** 2004; **Duration:** Not Stated;

**ALZET Comments:** Controls received sham surgery; animal info (C57BL6J, 8-10 weeks old); immunology; peptides;

**Q4784:** David W. Baker, *et al.* Alternative strategies to manipulate fibrocyte involvement in the fibrotic tissue response: Pharmacokinetic inhibition and the feasibility of directed-adipogenic differentiation. *Acta Biomaterialia* 2014;10:

**Agents:** Adipogenic supplement **Vehicle:** Basal medium; **Route:** SC; **Species:** Mice; **Pump:** 1002; **Duration:** 14 days;  
**ALZET Comments:** animal info (balb/c, 25g); Dose (0.25 ng/h)

**Q4819:** M. R. DASU, *et al.* Crosstalk Between Adrenergic and Toll-Like Receptors in Human Mesenchymal Stem Cells and Keratinocytes: A Recipe for Impaired Wound Healing. *STEM CELLS TRANSLATIONAL MEDICINE* 2014;3:745-759

**Agents:** Epinephrine; macrophage-activating lipopeptide-2; ICI-118,551 **Vehicle:** Not Stated; **Route:** SC; **Species:** mice; **Pump:** 1002; **Duration:** 7 days; 11 days;

**ALZET Comments:** animal info (Jax Mice, male, 8-10 weeks of age); peptides; macrophage-activating lipopeptide-2 aka MALP-2; Dose (7mg/kg body weight/day EPI; .7 mg/kg body weight/day ICI);

**Q3422:** N. A. Bracey, *et al.* Mitochondrial NLRP3 Protein Induces Reactive Oxygen Species to Promote Smad Protein Signaling and Fibrosis Independent from the Inflammasome. *Journal of Biological Chemistry* 2014;289(19571-19584)

**Agents:** Angiotensin II, recombinant human **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice; **Pump:** Not Stated; **Duration:** 28 days;

**ALZET Comments:** Controls received mp w/ saline; animal info (male, C57BL6 or Nlrp3 +/-, 10-12 weeks old); cardiovascular; peptides; bp measured using tail-cuff;

**Q3040:** Y. Q. Zuo, *et al.* Thymosin beta4 and its degradation product, Ac-SDKP, are novel reparative factors in renal fibrosis. *Kidney International* 2013;84(6):1166-1175

**Agents:** Ac-SDKP **Vehicle:** Not Stated; **Route:** Not Stated; **Species:** Mice; **Pump:** 1007D; **Duration:** Not Stated;  
**ALZET Comments:** Animal info (wt, PAI-1 -/-, 8-10 wks old, 25-30 g)



- Q3271:** T. Zhuang, *et al.* Involvement of nitric oxide synthase in matrix metalloproteinase-9- and/or urokinase plasminogen activator receptor-mediated glioma cell migration. *BMC Cancer* 2013;13(:):U1-U11  
**Agents:** Plasmid, MMP-9; plasmid, uPAR; plasmid, MMP-9-uPAR **Vehicle:** Medium, serum free; **Route:** CSF/CNS; **Species:** Mice (nude); **Pump:** Not Stated; **Duration:** 5 weeks;  
**ALZET Comments:** Animal info (nude); cancer (glioma);
- Q3594:** D. Panigrahy, *et al.* Epoxyeicosanoids promote organ and tissue regeneration. *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA* 2013;110(33):13528-13533  
**Agents:** Epoxyeicosatrienoic acid, 14,15-; epoxyeicosatrienoic acid, 11,12- **Vehicle:** Not Stated; **Route:** IP; **Species:** Mice; **Pump:** Not Stated; **Duration:** 4 days;  
**ALZET Comments:** Controls received mp w/ vehicle; animal info (male, Tie2-CYP2C8-Tr, Tie2-CYP2J2-Tr, sEH-null, 6 months old); replacement therapy (partial hepatectomy); tissue and organ regeneration
- Q4985:** L. L. Nikitenko, *et al.* Adrenomedullin haploinsufficiency predisposes to secondary lymphedema. *J Invest Dermatol* 2013;133(7):1768-76  
**Agents:** Adrenomedullin (AM) **Vehicle:** Not Stated; **Route:** IP; **Species:** mice; **Pump:** 1002; **Duration:** Not Stated;  
**ALZET Comments:** peptides; animal info: Adm-knockin stop mutation, heterozygotes; functionality of mp verified by edema score; Paper mentions osmotic minipumps being effective in the range  $10^{-8}$  to  $10^{-6}$  mol/l (pg. 1770). Adrenomedullin is a 52-amino-acid vasoactive peptide. mp were used to infuse AM to induce edema; dose: 300 ng/kg/hr
- Q4926:** A. C. Engevik, *et al.* The acid-secreting parietal cell as an endocrine source of Sonic Hedgehog during gastric repair. *Endocrinology* 2013;154(12):4627-39  
**Agents:** recombinant mouse Shh (Sonic Hedgehog) **Vehicle:** PBS; **Route:** IP; **Species:** mice; **Pump:** 1007D; **Duration:** Not Stated;  
**ALZET Comments:** male and female mice, PC-shhKo, C57BL/6, Parabiosis mice; mp were used to infuse Shh (Sonic Hedgehog). Shh is a fundamental protein mediating gastric ulcer healing. Paper is the first to examine effect of parietal cell sonic hedgehog on gastric healing; Shh 200 ng
- Q2477:** S. R. Doctrow, *et al.* A Synthetic Superoxide Dismutase/Catalase Mimetic EUK-207 Mitigates Radiation Dermatitis and Promotes Wound Healing in Irradiated Rat Skin. *Journal of Investigative Dermatology* 2013;133(4):1088-1096  
**Agents:** EUK-27, custom **Vehicle:** Water, ultrapure; **Route:** SC; **Species:** Rat; **Pump:** Not Stated; **Duration:** 90 days;  
**ALZET Comments:** Control animals received mp w/ vehicle; animal info (syngenic, male, WAG/RijCmcr, 8 wks old); long-term study
- Q4771:** R. F. Amy C. Engevik, Li Yang, and Yana Zavros. The Acid-Secreting Parietal Cell as an Endocrine Source of Sonic Hedgehog During Gastric Repair. *Endocrinology* 2013;154(12):4627-4639  
**Agents:** recombinant mouse Shh (Sonic Hedgehog) **Vehicle:** PBS; **Route:** IP; **Species:** Mice; **Pump:** 1007D; **Duration:** Not Stated;  
**ALZET Comments:** male and female mice, PC-shhKo, C57BL/6, Parabiosis mice; dose: Shh 200 ng ; mp were used to infuse Shh (Sonic Hedgehog). Shh is a fundamental protein mediating gastric ulcer healing. Paper is the first to examine effect of parietal cell sonic hedgehog on gastric healing;
- Q2363:** R. F. Oppeltz, *et al.* Gamma delta (gammadelta) T-cells are critical in the up-regulation of inducible nitric oxide synthase at the burn wound site. *Cytokine* 2012;60(2):528-534  
**Agents:** L-Nil **Vehicle:** PBS; **Route:** SC; **Species:** Mice; **Pump:** 2001; **Duration:** Not Stated;  
**ALZET Comments:** Animal info (C57BL/6, gamma TCR -/-, male, 8-10 wks old); enzyme inhibitor (nitric oxide synthase, iNOS)
- Q2040:** T. X. Li, *et al.* Preproendothelin-1 expression is negatively regulated by IFN $\gamma$  during hepatic stellate cell activation. *American Journal of Physiology Gastrointestinal and Liver Physiology* 2012;302(9):G948-G957  
**Agents:** Interferon, gamma **Vehicle:** PBS; BSA; **Route:** Not Stated; **Species:** Rat; **Pump:** 1002; **Duration:** 2 weeks;  
**ALZET Comments:** Controls received mp w/ vehicle; animal info (Sprague Dawley)



**Q0886:** N. Yoshioka, *et al.* Small Molecule Inhibitor of Type I Transforming Growth Factor-beta Receptor Kinase Ameliorates the Inhibitory Milieu in Injured Brain and Promotes Regeneration of Nigrostriatal Dopaminergic Axons. *Journal of Neuroscience Research* 2011;89(3):381-393

**Agents:** LY-364947 **Vehicle:** DMSO; **Route:** Not Stated; **Species:** Mice; **Pump:** 2002; **Duration:** 2 weeks;

**ALZET Comments:** Controls received mp w/ vehicle; animal info (2 mo old, ICR, male); enzyme inhibitor (TGF- $\beta$  receptor kinase); 5% DMSO used

**Q1523:** T. C. Wei, *et al.* Expression of Crip2, a LIM-domain-only protein, in the mouse cardiovascular system under physiological and pathological conditions. *GENE EXPRESSION PATTERNS* 2011;11(7):384-394

**Agents:** Isoproterenol **Vehicle:** PBS; **Route:** SC; **Species:** Mice; **Pump:** 1007D; **Duration:** 7 days;

**ALZET Comments:** Animal info (8-10 wks old, C57BL/6, male)

**Q1697:** L. Van Landeghem, *et al.* Enteric glia promote intestinal mucosal healing via activation of focal adhesion kinase and release of proEGF. *American Journal of Physiology Gastrointestinal and Liver Physiology* 2011;300(6):G976-G987

**Agents:** Ganciclovir **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice; **Pump:** Not Stated; **Duration:** 7 days;

**ALZET Comments:** Animal info (GFAP-HSVtk Tg, 22 wks old)

**Q1477:** H. Laeremans, *et al.* Blocking of Frizzled Signaling With a Homologous Peptide Fragment of Wnt3a/Wnt5a Reduces Infarct Expansion and Prevents the Development of Heart Failure After Myocardial Infarction. *Circulation* 2011;124(15):1626-U107

**Agents:** UM206; UM206 analog **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice; **Pump:** 2002; 2006; **Duration:** 2, 5 weeks;

**ALZET Comments:** Controls received mp w/ saline; functionality of mp verified by plasma UM206 levels; animal info (male, Swiss, 10-12 wks old)

**Q2240:** T. Kadar, *et al.* Delayed Loss of Corneal Epithelial Stem Cells in a Chemical Injury Model Associated with Limbal Stem Cell Deficiency in Rabbits. *Current Eye Research* 2011;36(12):1098-1107

**Agents:** Uridine, bromodeoxy **Vehicle:** DMSO; water; **Route:** SC; **Species:** Rabbit; **Pump:** Not Stated; **Duration:** Not Stated;

**ALZET Comments:** Animal info (New Zealand, White, female, 2-3 kg); labeling of slow cycling cells

**Q1500:** P. Jain, *et al.* An NGF mimetic, MIM-D3, stimulates conjunctival cell glycoconjugate secretion and demonstrates therapeutic efficacy in a rat model of dry eye. *Experimental Eye Research* 2011;93(4):503-512

**Agents:** Scopolamine hydrobromide **Vehicle:** Not Stated; **Route:** SC; **Species:** Rat; **Pump:** 2ML2; 2ML4; **Duration:** 14, 28 days;

**ALZET Comments:** Controls did not receive any scopolamine; animal info (male, Sprague Dawley, 6-8 wks old)

**Q0981:** J. E. Bond, *et al.* Wound Contraction Is Attenuated by Fasudil Inhibition of Rho-Associated Kinase. *Plastic and Reconstructive Surgery* 2011;128(5):438E-450E

**Agents:** Fasudil **Vehicle:** Saline; **Route:** SC; **Species:** Rat; **Pump:** 2ML4; **Duration:** Not Stated;

**ALZET Comments:** Controls received mp w/ vehicle; animal info (8-10 wks old, Wistar Han, 200-225 g)

**Q0676:** M. S. Aagren, *et al.* Nonselective matrix metalloproteinase but not tumor necrosis factor-alpha inhibition effectively preserves the early critical colon anastomotic integrity. *International Journal of Colorectal Disease* 2011;26(3):329-337

**Agents:** GM6001; AG3340 **Vehicle:** DMSO; **Route:** SC; **Species:** Rat; **Pump:** 2ML1; **Duration:** Not Stated;

**ALZET Comments:** Controls received mp w/ vehicle; animal info (male Sprague-Dawley, 205-360 g); enzyme inhibitor (matrix metalloproteinase, MMP); 50% DMSO used

**Q0478:** S. Yamano, *et al.* Effects of nicotine on gene expression and osseointegration in rats. *Clinical Oral Implants Research* 2010;21(12):1353-1359

**Agents:** Nicotine **Vehicle:** Saline; **Route:** SC; **Species:** Rat; **Pump:** 2004; **Duration:** 8 weeks;

**ALZET Comments:** Controls received mp w/vehicle; animal info (male, Sprague Dawley, 4-6 wks old); pumps replaced after 4 weeks; long-term study





**Q0089:** K. K. Veeravalli, *et al.* MMP-9, uPAR and Cathepsin B Silencing Downregulate Integrins in Human Glioma Xenograft Cells In Vitro and In Vivo in Nude Mice. PLoS One 2010;5(7):U28-U42

**Agents:** Plasmid, MMP-9; uPAR; Cathepsin B **Vehicle:** Not Stated; **Route:** CSF/CNS; **Species:** Mice; **Pump:** Not Stated; **Duration:** Not Stated;

**ALZET Comments:** Pump infused at a rate of 0.2 u/hr

**Q1029:** V. de Waard, *et al.* Systemic MCP1/CCR2 blockade and leukocyte specific MCP1/CCR2 inhibition affect aortic aneurysm formation differently. Atherosclerosis 2010;211(1):84-89

**Agents:** Angiotensin II **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice; **Pump:** Not Stated; **Duration:** 4-5 weeks;

**ALZET Comments:** Animal info (ApoE -/-); peptides

**Q0389:** S. W. M. van den Borne, *et al.* Mouse strain determines the outcome of wound healing after myocardial infarction. Cardiovascular Research 2009;84(2):273-282

**Agents:** Metoprolol; hydralazine **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice; **Pump:** 1007D; **Duration:** 7 days;

**ALZET Comments:** Controls were sham operated; animal info (male, 10-12 wks old, 129S6/SvEv); myocardial infarction by coronary artery ligation

**P9453:** A. A. Thomay, *et al.* Disruption of Interleukin-1 Signaling Improves the Quality of Wound Healing. American Journal of Pathology 2009;174(6):2129-2136

**Agents:** Interleukin-1 receptor antagonist, recomb. human; Interleukin-6 recomb. mouse **Vehicle:** Sodium citrate; Sodium chloride; EDTA; Tween 80; PBS; **Route:** SC; Wound site; **Species:** Mice; **Pump:** 1003D; 2002; **Duration:** 3, 14 days;

**ALZET Comments:** Controls received mp w/ vehicle; animal info (male, B6D2F1, 8-12 wks, 27-30 g., IL-1R KO); mp was fitted with a polypropylene mesh collar containing a PVA sponge; agent also known as Anakinra; deep tissue wounds; 0.1% Tween 80 used; 0.5 mM EDTA;

**P9588:** R. K. Sivamani, *et al.* Stress-Mediated Increases in Systemic and Local Epinephrine Impair Skin Wound Healing: Potential New Indication for Beta Blockers. PLOS MEDICINE 2009;6(1):105-115

**Agents:** Salbutamol; ICI-118,551 **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice; **Pump:** 2002; **Duration:** Not Stated;

**ALZET Comments:** Controls received mp w/saline; animal info (FVB/NJ)

**P9814:** G. Santulli, *et al.* In vivo properties of the proangiogenic peptide QK. Journal of Translational Medicine 2009;7(1):U1-U10

**Agents:** Vascular endothelial growth factor-15; vascular endothelial growth factor-165; QK **Vehicle:** Not Stated; **Route:** IA (femoral); **Species:** Rat; **Pump:** 2002; **Duration:** 14 days;

**ALZET Comments:** Peptides; animal info (12 wks old, WKY, normosensitive); QK is a de novo engineered VEGF mimicking peptide

**R0276:** J. P. Cooke, *et al.* Endothelial Nicotinic Acetylcholine Receptors and Angiogenesis. TRENDS IN CARDIOVASCULAR MEDICINE 2008;18(7):247-253

**Agents:** Mecamylamine **Vehicle:** Not Stated; **Route:** Not Stated; **Species:** Mice; **Pump:** Not Stated; **Duration:** 2 weeks;

**ALZET Comments:** REVIEW, see Kiuchi et al

**P8566:** J. A. I. Virag, *et al.* Fibroblast growth factor-2 regulates myocardial infarct repair - Effects on cell proliferation, scar contraction, and ventricular function. American Journal of Pathology 2007;171(5):1431-1440

**Agents:** Uridine, bromodeoxy- **Vehicle:** DMSO; Water; **Route:** SC; **Species:** Mice (knockout); **Pump:** 1007D; **Duration:** 4 days;

**ALZET Comments:** Cardiovascular; animal info (FGF2 knockout mice, 6-8 weeks old, 20-30 grams); 50% DMSO 50% water; labeling of endothelial cells

**P8735:** K. Nishikawa, *et al.* Effect of dopamine on the healing of acetic acid-induced gastric ulcers in rats.

Inflammopharmacology 2007;15(5):209-213

**Agents:** Dopamine **Vehicle:** Saline; **Route:** SC; **Species:** Rat; **Pump:** Not Stated; **Duration:** 7 days;

**ALZET Comments:** Controls received mp w/ vehicle; comparison of SC injections vs. mp; animal info (male, Sprague-Dawley, 230-260g, gastric ulceration)



**P7842:** R. X. Wu, *et al.* Fibroblast migration after myocardial infarction is regulated by transient SPARC expression. *Journal of Molecular Medicine-JMM* 2006;84(3):241-252

**Agents:** EMD121974 **Vehicle:** DMSO; PBS; **Route:** SC; **Species:** Mice; **Pump:** 2001; **Duration:** 7 days;

**ALZET Comments:** Controls received mp w/ vehicle; cardiovascular; ischemia (cardiac); animal info (male, female, C57BL/6, 22-25g., coronary artery ligation-induced MI); agent is a specific integrin  $\alpha$ -v inhibitor; 50% DMSO; wound healing

**P8211:** S. D. Luikart, *et al.* Mactinin treatment promotes wound-healing-associated inflammation in urokinase knockout mice. *Wound Repair and Regeneration* 2006;14(2):123-128

**Agents:** Mactinin; Glutathione 5-transferase **Vehicle:** Saline; **Route:** SC; **Species:** Rat; Mice (transgenic); **Pump:** 1007D; **Duration:** 1, 7 days;

**ALZET Comments:** Controls received mp w/ vehicle, or GST; peptides; animal info (Tgu PA-/- or wt; Fisher, 150-200g); Polyvinyl alcohol sponges soaked in agent implanted SC, with mp catheter directed to center of sponge: "osmotic pumps were used to continually deliver the fragment and replenish the mactinin in the sponges" (p.125); wound healing

**P7813:** D. Heffernan, *et al.* Local arginine supplementation results in sustained wound nitric oxide production and reductions in vascular endothelial growth factor expression and granulation tissue formation. *Journal of Surgical Research* 2006;133(1):46-54

**Agents:** Arginine, L- **Vehicle:** Saline; **Route:** Wound site; **Species:** Pig; **Pump:** 2ML2; **Duration:** 14 days;

**ALZET Comments:** Controls received mp w/ vehicle; functionality of mp verified by residual volume; animal info (female, domestic, Landrace, 15-20kg., hernia defect); tubing was looped and contained multiple side holes to ensure uniform delivery within the aqueous wound compartment; ultrasonography

**P8096:** A. Gosain, *et al.* Exogenous pro-angiogenic stimuli cannot prevent physiologic vessel regression. *Journal of Surgical Research* 2006;135(2):218-225

**Agents:** Vascular endothelial growth factor 164, recomb.; platelet-derived growth factor; fibroblast growth factor-2 **Vehicle:** Not Stated; **Route:** Wound site; **Species:** Mice; **Pump:** 2002; **Duration:** 11 days;

**ALZET Comments:** Controls received mp w/ PBS; functionality of mp verified by VEGF levels in wound sponges, residual volume; stability verified by activity of residual VEGF in endothelial cell cord formation assay (fig.4); cardiovascular; peptides; animal info (female, BALB/c, 8-9 wks old, implanted sponge wounds); "The activity of VEGF isolated from the pump was comparable to fresh recombinant VEGF 164, confirming that the recombinant growth factors present in the mini-osmotic pump retain robust biological activity." (p.221)

**P6895:** T. Poonawala, *et al.* Opioids heal ischemic wounds in the rat. *Wound Repair and Regeneration* 2005;13(2):165-174

**Agents:** Morphine **Vehicle:** PBS; **Route:** SC; **Species:** Rat; **Pump:** Not Stated; **Duration:** 8 days;

**ALZET Comments:** Controls received mp w/ vehicle; comparison of topical opioids and injections vs. mp; wound healing

**P7405:** S. Fruchtman, *et al.* Suppressor of cytokine signaling-2 modulates the fibrogenic actions of GH and IGF-I in intestinal mesenchymal cells. *American Journal of Physiology Gastrointestinal and Liver Physiology* 2005;289(2):G342-G350

**Agents:** Insulin-like growth factor I; Growth hormone **Vehicle:** Saline; **Route:** SC; **Species:** Mice (knockout); **Pump:** Not Stated; **Duration:** 5 days;

**ALZET Comments:** Controls received mp w/ vehicle; peptides

**P6949:** M. Fowler, *et al.* Assessment of pancreatic islet mass after islet transplantation using in vivo bioluminescence imaging. *Transplantation* 2005;79(7):768-776

**Agents:** Insulin, human **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice (SCID); **Pump:** 1002; **Duration:** 7,10 days;

**ALZET Comments:** Diabetes; bioluminescence imaging (BLI); IVIS 200 system used after pumps were removed

**P7131:** P. Brun, *et al.* Neuropeptide neurotensin stimulates intestinal wound healing following chronic intestinal inflammation. *American Journal of Physiology Gastrointestinal and Liver Physiology* 2005;288(4):G621-G629

**Agents:** Neurotensin **Vehicle:** PBS; BSA; **Route:** SC; **Species:** Mice; **Pump:** 2002; **Duration:** 5 days;

**ALZET Comments:** Controls received mp w/ vehicle; peptides; wound healing



**P6855:** S. Razani-Boroujerdi, *et al.* Chronic nicotine inhibits inflammation and promotes influenza infection. *Cellular Immunology* 2004;230(1):1-9

**Agents:** Nicotine **Vehicle:** Not Stated; **Route:** SC; **Species:** Rat; Mice; **Pump:** 2004; **Duration:** 23,28 days;  
**ALZET Comments:** Controls received mp w/ saline; influenza

**P5970:** A. Deten, *et al.* Effect of propranolol on cardiac cytokine expression after myocardial infarction in rats. *MOLECULAR AND CELLULAR BIOCHEMISTRY* 2003;251(1-2):127-137

**Agents:** Propranolol **Vehicle:** Not Stated; **Route:** SC; **Species:** Rat; **Pump:** 2ML4; **Duration:** 4 weeks;  
**ALZET Comments:** Cardiovascular

**Q7704:** P. Koshy, *et al.* Effects of low-dose candesartan on the rate of re-endothelialisation following vascular wound healing. *Journal of the Renin-Angiotensin-Aldosterone System* 2001;2(1\_suppl):S81-s83

**Agents:** candesartan **Vehicle:** Not Stated; **Route:** IP; **Species:** Rabbit; **Pump:** Not Stated; **Duration:** 2 weeks;  
**ALZET Comments:** Dose (50, 100, or 500 µg/kg/day); Controls received no mp prior to aortic injury; animal info (Male, New Zealand White, 3.0-3.5 kg); cardiovascular;

**P4811:** T. Kiyama, *et al.* Effect of matrix metalloproteinase inhibition on colonic anastomotic healing in rats. *JOURNAL OF GASTROINTESTINAL SURGERY* 2001;5(303-311

**Agents:** BE16627B **Vehicle:** DMSO; ethylene glycol; **Route:** SC; **Species:** Rat; **Pump:** 1003D; **Duration:** 3 days;  
**ALZET Comments:** Controls received mp w/ vehicle; enzyme inhibitor; vehicle mix was 50:50 ratio;

**Q7463:** T. R. Howdieshell, *et al.* Antibody neutralization of vascular endothelial growth factor inhibits wound granulation tissue formation. *J Surg Res* 2001;96(2):173-82

**Agents:** Antibody, anti-VEGF **Vehicle:** Saline; **Route:** SC; **Species:** Pig; **Pump:** 2ML2; **Duration:** 14 days;  
**ALZET Comments:** Dose (2-ml of 60 µg/ml anti-VEGF antibody); Controls received mp w/ vehicle or irrelevant murine IgG; animal info (female, Landrace, 15-20 kg); "To ensure uniform delivery of antibody or saline within the aqueous wound compartment, the tubing contained multiple side holes and was looped to increase surface area." p.174

**P4781:** D. T. Efron, *et al.* A novel method of studying wound healing. *Journal of Surgical Research* 2001;98(16-20

**Agents:** Methylisothiourea, S-; adenovirus vector; gene, mouse iNOS cDNA sequence **Vehicle:** Saline; Dye, methylene blue; Dye, India black ink; PBS; **Route:** SC (wound healing site); **Species:** Rat; **Pump:** 2001; 2ML1; **Duration:** 7 days;  
**ALZET Comments:** Controls received mp w/ saline; functionality of mp verified by dye infusion; gene therapy; enzyme inhibitor); wound healing; SC-implanted pumps infused 2 hydroxyproline sponges via catheter; initial studies used 2ML1 pumps to infuse dyes in order to assess the feasibility of direct infusion with pumps; iNOS inhibitor infusion was with 2001 pumps; pumps were designed to infuse directly into SC implanted polyvinyl sponges at the wound site; Adenovirus vector was dissolved in PBS; iNOS inhibitor was delivered in saline; diagram of pump-catheter assembly and location (p. 18); "Dye infusion demonstrated both grossly and microscopically excellent delivery of the infusate to wound sponges" (p. 18);

**P5800:** E. Creemers, *et al.* Disruption of the plasminogen gene in mice abolishes wound healing after myocardial infarction. *American Journal of Pathology* 2000;156(6):1865-1873

**Agents:** Uridine, bromodeoxy- **Vehicle:** Not Stated; **Route:** Not Stated; **Species:** Mice (knockout); **Pump:** 2001; **Duration:** 7 days;  
**ALZET Comments:** Wound healing

**P3924:** S. Koshizuka, *et al.* The beneficial effects of recombinant human insulin-like growth factor-1 (IGF-I) on wound healing in severely wounded senescent mice. *Jpn. J. Surg* 1997;27(946-952

**Agents:** Insulin-like growth factor I **Vehicle:** Saline, physiological; **Route:** SC; **Species:** Mice; **Pump:** 1007D; **Duration:** 7 days;  
**ALZET Comments:** Controls received mp w/ vehicle; no stress (see pg. 948); peptides; wound healing; recomb. human IGF-I used



**P3952:** M. S. Bitar. Insulin-like growth factor-1 reverses diabetes-induced wound healing impairment in rats. *Horm. Metab. Res* 1997;29(383-386)

**Agents:** Insulin-like growth factor I **Vehicle:** PBS; **Route:** SC; **Species:** Rat; **Pump:** Not Stated; **Duration:** 14 days;

**ALZET Comments:** controls received mp w/PBS; tissue perfusion (wound chamber); peptides; recomb. human IGF-I used

**P3442:** M. R. Schaffer, *et al.* Nitric oxide regulates wound healing. *J. Surg. Res* 1996;63(237-240)

**Agents:** MITU **Vehicle:** Not Stated; **Route:** IP; **Species:** Mice; **Pump:** Not Stated; **Duration:** 10 days;

**ALZET Comments:** Controls received mp w/ PBS; immunology; MITU is S-methyl isothiuronium, a competitive NO synthase inhibitor; wound healing

**P4247:** M. A. Hollyoak, *et al.* Beneficial wound healing and metabolic effects of clenbuterol in burned and nonburned rats. *J. Burn Care Rehabil* 1995;16(233-240)

**Agents:** Clenbuterol **Vehicle:** Saline; **Route:** SC; **Species:** Rat; **Pump:** 2ML2; 2ML4; **Duration:** 2,3 weeks;

**ALZET Comments:** controls received mp w/saline; wound healing study

**P2555:** R. V. Mueller, *et al.* The effect of insulinlike growth factor I on wound healing variables and macrophages in rats. *Arch Surg* 1994;129(262-265)

**Agents:** Insulin-like growth factor I **Vehicle:** PBS; **Route:** Not Stated; **Species:** Rat; **Pump:** 2002; **Duration:** 11 days;

**ALZET Comments:** controls received sham operation and/or mp w/ vehicle; tissue perfusion (wound healing chamber); replacement therapy (hypophysectomy); peptides; wound healing; recomb. human IGF-1 used

**P2050:** D. Y. Suh, *et al.* Insulin-like growth factor-I reverses the impairment of wound healing induced by corticosteroids in rats. *Endocrinology* 1992;131(5):2399-2403

**Agents:** Insulin-like growth factor I **Vehicle:** PBS; **Route:** Wound site; **Species:** Rat; **Pump:** Not Stated; **Duration:** 7,14 days;

**ALZET Comments:** Tissue perfusion (wound healing site); peptides; pump connected to wound healing chamber by means of a catheter; recomb. human IGF-1 used

**P0846:** A. Barbul, *et al.* Interleukin 2 enhances wound healing in rats. *J. Surg. Res* 1986;40(315-319)

**Agents:** Interleukin-2 **Vehicle:** Not Stated; **Route:** IP; **Species:** Rat; **Pump:** 2ML1; **Duration:** 7 days;

**ALZET Comments:** controls received mp w/vehicle; wound healing; functionality of mp verified upon removal; peptides; recomb. human IL-2 used