



**References on the Administration of Agents to Nerves
Using ALZET® Osmotic Pumps**

Q7850: M. L. D. Rayner, *et al.* Developing an In Vitro Model to Screen Drugs for Nerve Regeneration. *Anat Rec (Hoboken)* 2018;301(10):1628-1637

Agents: ibuprofen **Vehicle:** Saline; **Route:** CSF/CNS (sciatic nerve); **Species:** Rat; **Pump:** 1004; **Duration:** 21 days; **ALZET Comments:** Dose (7 µg/day); Controls received mp w/ vehicle; animal info (male, Wistar, 220-250g); pump was implanted locally parallel to re-connected nerve (p.1631);

Q7084: M. Caillaud, *et al.* Local low dose curcumin treatment improves functional recovery and remyelination in a rat model of sciatic nerve crush through inhibition of oxidative stress. *Neuropharmacology* 2018;139(98-116

ALZET Comments: Curcumin; Saline; CSF/CNS (Sciatic nerve); Rat; 2004; 4 weeks; Dose (0.2mg/day); 0.9% saline used; post op. care (buprenorphine 0.05 mg/kg); behavioral testing (Von Frey's filament test, SSI test, beam walking test); neurodegenerative (nerve regeneration);.

Q7085: M. Buffelli, *et al.* Activity-dependent vs. neurotrophic modulation of acetylcholine receptor expression: Evidence from rat soleus and extensor digitorum longus muscles confirms the exclusive role of activity. *Eur J Neurosci* 2018;47(12):1474-1481

ALZET Comments: Tetrodotoxin; Saline; CSF/CNS (left sciatic nerve); Rat; 2ML4; 2ML2; 20 days; Dose (10.2 ug/day); animal info (Adult male Wistar, 400–600 g); neurodegenerative (Skeletal muscles); Pump connected with a silicone tubing to a custom-made silicone cuff (9 mm length, 1.4/5.0 mm ID/OD) placed around the nerve;.

Q5901: N. H. Tu, *et al.* Na(+) /K(+) -ATPase coupled to endothelin receptor type B stimulates peripheral nerve regeneration via lactate signalling. *Eur J Neurosci* 2017;46(5):2096-2107

ALZET Comments: Ouabain; CSF/CNS (sciatic nerve); mice; 1004; 4 weeks; animal info (male, Thy1-YFP tg, 8-10 weeks old); post op. care (heater until mice could move freely); behavioral testing (hind paw withdrawal); Used ALZET catheter to infuse to sciatic stump; see diagram (pg 2098);.

Q6158: A. G. Fisher, *et al.* Transcriptomic and epigenetic regulation of disuse atrophy and the return to activity in skeletal muscle. *FASEB J* 2017;31(12):5268-5282

ALZET Comments: Tetrodotoxin; Saline; CSF/CNS (peroneal nerve); Rat; 2002; 14 days; Dose (350mg/ml); 0.9% saline used; Controls received mp w/ vehicle; animal info (Male Wistar rats weighing between 350–450 g); delivery tubes were channeled to a silicone rubber cuff that was carefully placed around the common peroneal nerve of the left hind limb (Fig.1);.

Q4655: J. G. Yan, *et al.* CALCITONIN PUMP IMPROVES NERVE REGENERATION AFTER TRANSECTION INJURY AND REPAIR. *MUSCLE & NERVE* 2015;51(229-234

ALZET Comments: Calcitonin; Water, distilled sterile; CSF/CNS (sciatic nerve); Rat; 2006; 12 weeks; Animal info (Sprague Dawley, 250-300g, 3 months old); half-life (p.233); long-term study; "To achieve a continuous and gradual mode of delivery, a mini-osmotic pump was implanted to deliver medication at a constant 0.15 ul/h" pg 233; "Calcitonin has short absorption and elimination half-lives of 10–15 minutes and 50–80 minutes, respectively; however, using an osmotic pump allows for gradual and prolonged release." pg233; pg230 diagram of pump implantation;.

Q4646: B. A. Williams, *et al.* Multimodal Perineural Analgesia with Combined Bupivacaine-Clonidine-Buprenorphine-Dexamethasone: Safe In Vivo and Chemically Compatible in Solution. *PAIN MEDICINE* 2015;16(186-198

ALZET Comments: Bupivacaine; clonidine; dexamethasone; Saline; CSF/CNS (sciatic nerve); Rat; 2ML1; 7 days; Controls received mp w/ vehicle; animal info (male, albino, CD[SD]); no stress (see pg. 192); post op. care (IM butorphanol tartrate 0.05 mg/kg, ceftiofur sodium 5 mg/kg); stability verified by (pg. 195); used polyurethane catheter 0.5mm ID 0.9 mmOD; pumps removed after 1 week; dose (66.6 ug/mL).



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

ALZET Comments: Nerve growth factor, human B-; PBS; CSF/CNS (inferior alveolar nerve); Dog (beagle); 2ML2; 6 weeks; 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;.

Q3330: S. Unezaki, *et al.* Involvement of Na(x) sodium channel in peripheral nerve regeneration via lactate signaling. *European Journal of Neuroscience* 2014;39(5):720-729

ALZET Comments: Lactate; hydroxycinnamic acid, alpha-cyano-4;; Saline; CSF/CNS (sciatic nerve); Mice (transgenic); 1004; 4 weeks; Controls received mp w/ vehicle; animal info ([B6.Cg-Tg (thy1-YFP)16Jrs/J, Nax -/-, 8-15 weeks old); behavioral testing (von frey filaments, neurometer analysis); alpha-cyano-4 hydroxycinnamic acid aka CIN; used catheter tubing #7701 to attach pump to silicone tubing sutured to nerve stump; schematic of surgery on pg.725, figure 3A;.

Q3625: C. D. Schuh, *et al.* Prostacyclin mediates neuropathic pain through interleukin 1beta-expressing resident macrophages. *Pain* 2014;155(3):545-555

ALZET Comments: CAY10441; PBS; DMSO; CSF/CNS (sciatic nerve); Mice; 1007D; 4 days; 7 days; Controls received mp w/ vehicle; animal info (C57BL6N or IP receptor KO mice); 1% DMSO used; behavioral testing (paw withdrawal latency); immunology; sciatic nerve injury; used RenaSil tube attached to PE-60, and fixed by Stabiloblast 2-component glue; pumps primed in 37C saline; pumps implanted subcutaneously and fixed with 6-0 Prolene suture to muscle; CAY10441 is an IP receptor antagonist;.

R0327: M. Favero, *et al.* The Timing of Activity Is a Regulatory Signal During Development of Neural Connections. *Journal of Molecular Neuroscience* 2014;53(324-329

ALZET Comments: Tetrodotoxin; CSF/CNS (sciatic nerve); Rat; 7-10 days; Animal info (AO Rat); nerve injury; functionality of mp verified by establishment of a chronic conduction block; tissue perfusion (sciatic nerve);.

Q4705: M. J. Buys, *et al.* Novel Use of Perineural Pregabalin Infusion for Analgesia in a Rat Neuropathic Pain Model 1809. *ANESTHESIA AND ANALGESIA* 2014;119(481-488

ALZET Comments: Pregabalin; Saline; CSF/CNS (sciatic nerve); Rat; 2ML1; 7 days; Controls received mp w/ vehicle; animal info (male, Sprague Dawley, 8-9 weeks old); behavioral testing (Hargreaves' radiant heat testing, guarding behavior, incapitance testing); pump and catheter secured using 4-0 silk suture; sciatic nerve injury;.

Q3125: J. G. Yan, *et al.* The effect of calcium modulating agents on peripheral nerve recovery after crush. *Journal of Neuroscience Methods* 2013;217(1-2):54-62

ALZET Comments: Nifedipine; calcitonin; CSF/CNS (sciatic nerve); Rat; 2006; 4 weeks; Controls received mp w/ saline or sham only; animal info (3 month old, male, Sprague-Dawley 250-300g); functionality of mp verified by decrease in calcium levels; peptides; Picture of MP p56, Fig1A. MP Pump setup p56, Fig1B;.

Q2637: B. C. Gill, *et al.* Neurotrophin therapy improves recovery of the neuromuscular continence mechanism following simulated birth injury in rats. *NEUROUROLOGY AND URODYNAMICS* 2013;32(1):82-87

ALZET Comments: Albumin; Saline, sterile; CSF/CNS (pudendal nerve); Rat; 1007D; 2002; 1, 2 weeks; Animal info (Sprague Dawley, female, virgin, 200-225 g); bilateral cannula used; "localized continuous neurotrophin supplementation has been most effective at promoting nerve regeneration and provided the rationale behind utilizing miniature osmotic pumps in this study." pg 86; bilateral infusion;.

Q2687: V. T. Ribeiro-Resende, *et al.* Bone marrow-derived fibroblast growth factor-2 induces glial cell proliferation in the regenerating peripheral nervous system. *Molecular Neurodegeneration* 2012;7(;):U1-U17

ALZET Comments: Antibody, Fibroblast growth factor-2, mouse, monoclonal; CSF/CNS (sciatic nerve); Rat; 2002; Animal info (male, Lister Hooded, 3 mo old).



Q1798: J. A. Martinez, *et al.* Comparison of central versus peripheral delivery of pregabalin in neuropathic pain states. *Molecular Pain* 2012;8(;):U7-U26

ALZET Comments: Pregabalin, 1¹²⁵; pregabalin, unlabeled; CSF/CNS (intrathecal); CSF/CNS (sciatic nerve); Rat; 2002; 72 hours; Controls received mp w/ saline; animal info (Sprague Dawley, male, 200-225 g); catheter patency and functionality of mp verified via pump infusion of india ink; neuropathic pain.

Q2547: J. M. Kim, *et al.* Increased expression of oxyproteins in the optic nerve head of an in vivo model of optic nerve ischemia. *BMC Ophthalmology* 2012;12(;):U1-U6

ALZET Comments: Endothelin-1; CSF/CNS (optic nerve, perineural region); Rabbit; 2, 4, 8 weeks; Animal info (New Zealand, 2.5-3.5 kg); long-term study; PE tubing used.

Q2157: M. Favero, *et al.* Spike timing plays a key role in synapse elimination at the neuromuscular junction. *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA* 2012;109(25):E1667-E1675

ALZET Comments: Tetrodotoxin; CSF/CNS (sciatic nerve); Rat; 2ML4; Animal info (AO strain, 200-400 g, Harlan); fig 1, schematic of pump and placement of conduction block.

Q2413: D. I. Carrasco, *et al.* Motor terminal degeneration unaffected by activity changes in SOD1(G93A) mice; a possible role for glycolysis. *NEUROBIOLOGY OF DISEASE* 2012;48(1):132-140

ALZET Comments: Tetrodotoxin; dexamethasone; CSF/CNS (sciatic nerve); Mice; 2002; Animal info (SOD1 G93A); good methods, pg 133.

Q1387: X. Y. Wang, *et al.* Impaired Activity-Dependent Plasticity of Quantal Amplitude at the Neuromuscular Junction of Rab3A Deletion and Rab3A Earlybird Mutant Mice. *Journal of Neuroscience* 2011;31(10):3580-3588

ALZET Comments: Tetrodotoxin; CSF/CNS (sciatic nerve); Mice; 7-8 days; Animal info (Rab3a +/-, male, female, 2.5-3.5 mo old, C57BL/6J); silastic cuff used.

Q1435: X. Y. Wang, *et al.* Activity-Dependent Regulation of the Binomial Parameters p and n at the Mouse Neuromuscular Junction In Vivo. *Journal of Neurophysiology* 2010;104(5):2352-2358

ALZET Comments: Tetrodotoxin; NaCl; CSF/CNS (sciatic nerve); Mice; 1002; Animal info (unaffected litter mates of ClCn1adr-mto2J, 2-4 mo old); catheter tubing was filled with saline so that "after surgery the foot muscles were not paralyzed" pg 2353.

Q1362: R. N. Toledo, *et al.* The Action of Topical Basic Fibroblast Growth Factor in Facial Nerve Regeneration. *OTOLOGY & NEUROTOLOGY* 2010;31(3):498-505

ALZET Comments: Fibroblast growth factor, basic; albumin, human; Ringer lactate solution; CSF/CNS (facial nerve anastomosis); Rat; 2002; 14 days; Controls received mp w/ sodium heparin, human albumin in Ringer lactate solution; animal info (male, Wistar, adult); functionality of mp verified by residual volume; good methods, pg 499; stress/adverse reaction: (see pg. 501) "neuroma at the anastomosis", "hemoatoma at the surgical incision"; tissue perfusion (epineural anastomosis); vinyl catheter used; "We chose to use minipumps because this method allows better control of the quantity of bFGF delivered at the target site and is compatible with standard facial nerve surgical techniques. Furthermore, the isolate reservoir of the minipumps prevents the contact of the study drug with substances that could inactivate it" pg 502.

Q0898: L. J. Kasselmann, *et al.* APPLICATION OF ANGIOTENSIN II TO HEALTHY RAT SCIATIC NERVE CAN PRODUCE NEUROPATHY WITHOUT ASSOCIATED VASCULOPATHY. *Muscle & Nerve* 2010;42(6):959-965

ALZET Comments: Angiotensin II; CSF/CNS (sciatic nerve); Rat; 2004; 12 weeks; Controls received mp w/ PBS; animal info (male, Wistar, 250-300 g); peptides; long-term study; good methods, pg 960; no stress (see pg. 961) "All animals from both groups survived the surgery without complications"; pump connected to silicone tube that was connected to a piece of Gelfoam; Fig. 1, schematic of pump, tube, and gelfoam. pg 960.

Q0133: M. Favero, *et al.* THE TIMING OF IMPULSE ACTIVITY SHAPES THE PROCESS OF SYNAPTIC COMPETITION AT THE NEUROMUSCULAR JUNCTION. *Neuroscience* 2010;167(2):343-353



ALZET Comments: Tetrodotoxin; Saline; CSF/CNS (sciatic nerve); Rat; 2002; 2ML4; Animal info (adult, male, Wistar, 180-350 g).

Q0154: P. J. Apel, *et al.* EFFECT OF LOCALLY DELIVERED IGF-1 ON NERVE REGENERATION DURING AGING: AN EXPERIMENTAL STUDY IN RATS. *Muscle & Nerve* 2010;41(3):335-341

ALZET Comments: Insulin-like growth factor-I, recomb. human; CSF/CNS (tibial nerve); Rat; 2004; 12 weeks; Controls received mp w/ saline; long-term study; pumps replaced after 6 weeks; animal info (Fischer 344 x Brown Norway, Sprague Dawley; 8 months old, 24 months old); diagram of pump with custom-made T-tube.

P9573: X. Wang, *et al.* Increase in endothelin B receptor expression in optic nerve astrocytes in endothelin-1 induced chronic experimental optic neuropathy. *Experimental Eye Research* 2009;88(3):378-385

ALZET Comments: Endothelin-1; CSF/CNS (optic nerve); Rat; 2004; 28 days; Post op. care (buprenorphine); animal info (adult, male, Brown Norway, 250-300g); fellow eye served as untreated control; silastic tubing used; brain tissue distribution.

Q0436: G. Vrbova, *et al.* Chemical communication between regenerating motor axons and Schwann cells in the growth pathway. *European Journal of Neuroscience* 2009;30(3):366-375

ALZET Comments: Gallamine triethiodide; tubocurarine; atropine; suramin; CSF/CNS (sciatic nerve); Rat; 2ML4; 2-4 weeks; Controls received mp w/saline; animal info (female, adult, Sprague Dawley, 200-220 g); schematic illustration of pump with silastic catheter, Fig 1b.

P9872: S. Unezaki, *et al.* Effects of neurotrophic factors on nerve regeneration monitored by in vivo imaging in thy1-YFP transgenic mice. *Journal of Neuroscience Methods* 2009;178(2):308-315

ALZET Comments: Nerve growth factor; glial-derived neurotrophic factor; Saline; CSF/CNS (sciatic nerve); Mice (transgenic); 1004; 4 weeks; Controls received mp w/ vehicle; half-life (p. 308) "short"; animal info (10 wks old, 20 g., Thy1-YEP); image of pump pg. 309; schematic of drug delivery system with pump+silicone, fig. 1); "Because of the short biological half-life of neurotrophic factors, a delivery system that protects the protein and slowly releases it locally over a prolonged period of time is required." pg. 308; tissue perfusion (sciatic nerve).

Q0519: C. C. Toth, *et al.* Locally Synthesized Calcitonin Gene-Related Peptide Has a Critical Role in Peripheral Nerve Regeneration. *Journal of Neuropathology and Experimental Neurology* 2009;68(3):326-337

ALZET Comments: Cycloheximide; puromycin; Saline; CSF/CNS (sciatic nerve); Rat; 2002; 14 days; Animal info (adult, male, Sprague-Dawley, 250-300 g).

Q0748: H. K. Lee, *et al.* Nidogen Plays a Role in the Regenerative Axon Growth of Adult Sensory Neurons Through Schwann Cells. *Journal of Korean Medical Science* 2009;24(4):654-659

ALZET Comments: Alkaline phosphatase tag; eTEM-AP, recomb.; CSF/CNS (sciatic nerve); Rat; 1002; 2 weeks; Controls received mp w/ alkaline phosphatase tag; animal info (adult, male, Sprague-Dawley, 150-300 g); peptides.

P9451: K. Temporin, *et al.* Interleukin-1 beta promotes sensory nerve regeneration after sciatic nerve injury. *Neuroscience Letters* 2008;440(2):130-133

ALZET Comments: Interleukin-1, beta; CSF/CNS (sciatic nerve); Rat; 2002; 2 weeks; Controls received mp w/ PBS; animal info (female, Wistar, 180-220 g., sciatic nerve injury); behavioral testing (motor function, toe spreading test, sensory function).

P9447: X. Y. Song, *et al.* Peripherally-Derived BDNF Promotes Regeneration of Ascending Sensory Neurons after Spinal Cord Injury. *PLoS One* 2008;3(3):U22-U37

ALZET Comments: Brain-derived neurotrophic factor, recomb. human; CSF/CNS (sciatic nerve); Rat; 1007D; 7 days; Controls received mp w/ PBS; comparison of foot pad injections vs. mp; peptides; animal info (female, Sprague Dawley, 8-10 wks old, SCI); behavioral testing (hind limb motor function); spinal cord injury.



P9230: M. Hashimoto, *et al.* Neuroprotective effect of sonic hedgehog up-regulated in Schwann cells following sciatic nerve injury. *Journal of Neurochemistry* 2008;107(4):918-927

ALZET Comments: Cyclopamine; Cyclodextrin, 2-hydroxypropyl-b-; CSF/CNS (sciatic nerve); Rat; 2001; 1 week; Controls received mp w/ vehicle to contralateral side; multiple pumps per animal (2); animal info (male, Wistar, 7 wks old, 200-250 g., sciatic nerve injury); 45% cyclodextrin used.

P9316: M. Favero, *et al.* Expression of small-conductance calcium-activated potassium channels (SK3) in skeletal muscle: regulation by muscle activity. *JOURNAL OF PHYSIOLOGY-LONDON* 2008;586(19):4763-4774

ALZET Comments: Tetrodotoxin; Saline; CSF/CNS (sciatic nerve); Rat; 2002; 12 days; Animal info (male, Wistar, 300-350 g., soleus nerve crushed); silicone cuff placed around the sciatic nerve connected to mp by catheter.

P8391: W. R. Xie, *et al.* Sympathetic sprouting near sensory neurons after nerve injury occurs preferentially on spontaneously active cells and is reduced by early nerve block. *Journal of Neurophysiology* 2007;97(1):492-502

ALZET Comments: Tetrodotoxin; tetraethylammonium chloride; pyridine, 4-amino-; CSF, artificial; CSF/CNS (sciatic nerve); Rat; 2001; 7 days; Controls received mp w/ vehicle, or contralateral uninjured nerve; targeted delivery (axotomy); animal info (female, Sprague-Dawley, 80-100g., sciatic nerve ligation/transection); mp primed 4 hrs in 37 celsius saline; chronic pain model.

P7968: Y. L. Wang, *et al.* The role of bone morphogenetic protein-2 in vivo in regeneration of peripheral nerves. *BRITISH JOURNAL OF ORAL & MAXILLOFACIAL SURGERY* 2007;45(3):197-202

ALZET Comments: Bone morphogenic protein-2; Saline; CSF/CNS (facial nerve); Rabbit; 2ML4; 10 days; Controls received mp w/ vehicle; animal info (New Zealand, 1.6-2.3 kg); total daily infused volume incorrect; tissue perfusion (facial nerve).

P8562: M. VanSaun, *et al.* Activation of matrix metal loproteinase-3 is altered at the frog neuromuscular junction following changes in synaptic activity. *Developmental Neurobiology* 2007;67(11):1488-1497

ALZET Comments: Tetrodotoxin; Ringer's solution; CSF/CNS (sciatic nerve); Frog (*rana pipiens*); 2001; 1 week; Pump implanted SC in the back with catheter guided to the sciatic nerve.

P8651: C. Matute, *et al.* P2X₇ receptor blockade prevents ATP excitotoxicity in oligodendrocytes and ameliorates experimental autoimmune encephalomyelitis. *Journal of Neuroscience* 2007;27(35):9525-9533

ALZET Comments: Adenosine triphosphate-gamma-S; adenosine triphosphate, 2', 3'-O-(benzoyl-4-benzoyl)-; adenosine triphosphate, oxidized; dye, brilliant blue G; Saline; PBS, sterile; CSF/CNS (optic nerve); Rabbit; 1003D; 3 days; Controls received mp w/ vehicle; neurodegenerative (multiple sclerosis).

P8810: L. H. Li, *et al.* Local Nogo-66 administration reduces neuropathic pain after sciatic nerve transection in rat. *Neuroscience Letters* 2007;424(3):145-148

ALZET Comments: Glutathione S-transferase; glutathione S-transferase-Nogo-66; CSF/CNS (sciatic nerve); Rat; 2002; 14 days; Controls received mp w/ GST or no treatment; peptides; animal info (male, Sprague Dawley, 240-260g., Sciatic nerve transection); pain; silicon tube used.

P8518: I. J. Lever, *et al.* Continuous infusion of the cannabinoid WIN 55,212-2 to the site of a peripheral nerve injury reduces mechanical and cold hypersensitivity. *British Journal of Pharmacology* 2007;151(2):292-302

ALZET Comments: WIN-55212-2 mesylate salt; SR141716A; SR144528; Saline; tween 20; albumin, rat serum; DMSO; CSF/CNS (sciatic nerve); Rat; 2001; 6, 7 days; Controls received mp w/ vehicle; functionality of mp verified after removal, as well as mp/catheter connection, catheter patency and position; dose-response (fig. 3); animal info (male, Wistar, 250-300 g, partial ligation injury); 4% DMSO; 14.5 % DMSO.

P8878: B. Hontanilla, *et al.* Nerve regeneration through nerve autografts after local administration of brain-derived neurotrophic factor with osmotic pumps. *Neurosurgery* 2007;61(6):1268-1274

ALZET Comments: Brain-derived neurotrophic factor; Saline; CSF/CNS (sciatic nerve); Rat; 1002; 2 weeks; Controls received mp w/ vehicle; tissue perfusion (sciatic nerve graft); replacement therapy (axotomy); no stress (see pg. 1270);



stress/adverse reaction: (see pg. 1270) "one pump was extruded"; animal info (male, Wistar, 200-250g.); pg. 1269, fig A shows image of pump implantation and cannulae location.

P8697: M. Favero, *et al.* Synapse formation and elimination: Role of activity studied in different models of adult muscle reinnervation. *Journal of Neuroscience Research* 2007;85(12):2610-2619

ALZET Comments: Tetrodotoxin; Saline; CSF/CNS (sciatic nerve); Rat; 2002; 2ML4; 14-21 days; Controls received no treatment; animal info (male, Wistar, 180-400g); silicone nerve cuff used.

P8717: D. E. Brooks, *et al.* Blood flow velocity response of the ophthalmic artery and anterior optic nerve head capillaries to carbogen gas in the rhesus monkey model of optic nerve head ischemia. *VETERINARY OPHTHALMOLOGY* 2007;10(;):20-27

ALZET Comments: Endothelin-1; CSF/CNS (optic nerve); Monkey (Rhesus); 2004; 8 months; Controls received mp w/ vehicle; long-term study; pumps replaced every 4 weeks; peptides; animal info (young, male, Rhesus); glaucoma.

P8653: E. K. Bichler, *et al.* Rat motoneuron properties recover following reinnervation in the absence of muscle activity and evoked acetylcholine release. *JOURNAL OF PHYSIOLOGY-LONDON* 2007;585(1):47-56

ALZET Comments: Tetrodotoxin; Penicillin G potassium; gentamicin sulfate; CSF/CNS (posterior tibial nerve); Rat; 2004; 4, 8 weeks; Controls received mp w/ saline; long-term study; pumps replaced after 28 days; no stress (see pg. 52); animal info (female, Wistar, 270-380g, MG nerve crush; used silastic nerve cuff.

P7988: X. Y. Wang, *et al.* Prolongation of evoked and spontaneous synaptic currents at the neuromuscular junction after activity blockade is caused by the upregulation of fetal acetylcholine receptors. *Journal of Neuroscience* 2006;26(35):8983-8987

ALZET Comments: Tetrodotoxin; Saline; CSF/CNS (sciatic nerve); Mice; 1002; Controls received mp w/ vehicle; animal info (2-4 months old); silastic nerve cuff; tissue perfusion (sciatic nerve).

P7928: C. Toth, *et al.* Rescue and regeneration of injured peripheral nerve axons by intrathecal insulin. *Neuroscience* 2006;139(2):429-449

ALZET Comments: Insulin; Saline; CSF/CNS (intrathecal, lumbar, peroneal nerve); Rat; 2002; 2 weeks; Controls received mp w/ vehicle; peptides; animal info (adult male, Sprague-Dawley, 250-300 grams); silicone catheters (0.012" x 0.025") used between L6-S1 vertebrae; nerve perfusion chamber used for nerve infusion; nerve injury; India Ink in pumps to verify delivery; behavioral testing.

P7416: W. R. Xie, *et al.* Neuropathic pain: Early spontaneous afferent activity is the trigger. *Pain* 2005;116(3):243-256

ALZET Comments: Tetrodotoxin; Saline; CSF/CNS (sciatic nerve); Rat; 1003D; 2001; 7 days; Controls received mp w/ vehicle; animal info (male, wistar, 200-250 g); nerve injury; silicone tubing (0.64 mm I.D., 1.19 mm O.D.); "implanting a silicone cuff on injured sciatic nerve was extremely difficult to do without further damaging the nerve." "hence instead of a cuff we surrounded the nerve with two soft pieces of silicone formed by cutting a slit in the end of silicone tubing." P. 245; behavioral study.

P7412: I. Vassias, *et al.* Modulation of GABA receptor subunits in rat facial motoneurons after axotomy. *MOLECULAR BRAIN RESEARCH* 2005;135(1-2):260-275

ALZET Comments: Colchicine; tetrodotoxin; PBS; CSF/CNS (facial nerve); Rat; 2002; 8 days; Controls received mp w/ vehicle; animal info (male, Long-Evans, 200 g); silastic tubing cuff.

P6904: J. Qiu, *et al.* Conditioning injury-induced spinal axon regeneration requires signal transducer and activator of transcription 3 activation. *Journal of Neuroscience* 2005;25(7):1645-1653

ALZET Comments: AG-490; Saline; CSF/CNS (sciatic nerve); Rat; 2004; Controls received mp w/ vehicle; enzyme inhibitor (JAK2); silastic tubing and a gortex nerve cuff used.

P7201: F. E. Perrin, *et al.* Involvement of monocyte chemoattractant protein-1, macrophage inflammatory protein-1alpha and interleukin-1beta in Wallerian degeneration. *Brain* 2005;128(854-866



ALZET Comments: Antibody, anti-MCP-1/MIA-1a; antibody, anti-IL-1B; immunoglobulin G; CSF/CNS (sciatic nerve); Mice; 1007D; 7 days; Controls received mp w/ IgG; animal info (adult female, BALB/c); tissue perfusion (sciatic nerve); PE tubing + silastic nerve cuff used.

P7606: T. Kadoya, *et al.* Oxidized galectin-1 advances the functional recovery after peripheral nerve injury. *Neuroscience Letters* 2005;380(3):284-288

ALZET Comments: Galectin-1, recomb. human oxidized; CSF/CNS (sciatic nerve); Rat; 2ML4; 12 weeks; Controls received mp w/ PBS; dose-response (fig. 1); long-term study; no stress (see pg. 285); peptides; animal info (male, adult, Sprague-Dawley); "No rats showed any toxic effects or reaction to the administration of rh GAL-1/Ox." (p. 285).

P7228: L. Eleore, *et al.* Modulation of glycine receptor subunits and gephyrin expression in the rat facial nucleus after axotomy. *European Journal of Neuroscience* 2005;21(3):669-678

ALZET Comments: Colchicine; tetrodotoxin; PBS; CSF/CNS (facial nerve); Rat; 2002; 1,3,8,30,60 days; Controls received mp w/ vehicle; facial palsy; long-term study.

P7453: M. Domercq, *et al.* Excitotoxic oligodendrocyte death and axonal damage induced by glutamate transporter inhibition. *Glia* 2005;52(1):36-46

ALZET Comments: Oligonucleotide, antisense; oligonucleotide sense; kainate, dihydro-; aspartic acid, DL-threo-B-benzyloxy-; Saline, sterile; CSF/CNS (optic nerve); Rabbit; 1003D; 3 days; Controls received mp w/ vehicle, or contralateral nerves; antisense (glutamate transporters GLAST + GLT-1); animal info (adult, male, white New Zealand).

P7025: X. Y. Wang, *et al.* Decreased synaptic activity shifts the calcium dependence of release at the mammalian neuromuscular junction in vivo. *Journal of Neuroscience* 2004;24(47):10687-10692

ALZET Comments: Tetrodotoxin; Sodium chloride; penicillin; streptomycin; CSF/CNS (sciatic nerve); Mice; 1002; 8-10 days; Controls received mp w/ vehicle; TTX cuff made from silastic tubing, was placed around sciatic nerve and connected to mp; tissue perfusion (sciatic nerve).

P6944: K. Motoyoshi, *et al.* Restoring vocal fold movement after transection and immediate suturing of the recurrent laryngeal nerve with local application of basic fibroblast growth factor: An experimental study in the rat. *Laryngoscope* 2004;114(7):1247-1252

ALZET Comments: Fibroblast growth factor, basic; PBS; BSA; CSF/CNS (recurrent laryngeal nerve); Rat; 2002; 14 days; Controls received mp w/ vehicle; functionality of mp verified by residual volume; good methods (p. 1248); nerve infusion schematic (p. 1248).

P6761: W. V. McCallister, *et al.* Regeneration along intact nerves using nerve growth factor and ciliary neurotrophic factor. *Journal of Reconstructive Microsurgery* 2004;20(6):473-481

ALZET Comments: Nerve growth factor; ciliary neurotrophic factor; CSF/CNS (peroneal nerve); Rat; 2ML4; 28 days; Controls received mp w/ isotonic saline; peptides; mp primed 24 hours in 37 degrees Celsius saline.

P6610: M. Buffelli, *et al.* Activity-dependent synaptic competition at mammalian neuromuscular junctions. *NEWS IN PHYSIOLOGICAL SCIENCES* 2004;19(85-91)

ALZET Comments: Tetrodotoxin; CSF/CNS (soleus nerve); Rat; Controls received mp on contralateral side.

P6541: D. E. Brooks, *et al.* Functional and structural analysis of the visual system in the rhesus monkey model of optic nerve head ischemia. *INVESTIGATIVE OPHTHALMOLOGY & VISUAL SCIENCE* 2004;45(6):1830-1840

ALZET Comments: Endothelin; Saline; acetic acid; CSF/CNS (optic nerve); Monkey; 18 months; Controls received mp w/ vehicle; long-term study; pumps replaced every 6 weeks; no stress (see pg. 1833); peptides; "The osmotic minipumps were well tolerated by the monkeys for the length (1.5 years) of the experiment." The long exposure time was used to "mimic more closely the prolonged human glaucomatous condition." p. 1838; pump model not listed; ischemia.