



**Recent References (2020-Present) on Spinal Cord Injury Research
Using ALZET® Osmotic Pumps**

R0454: Q. Huang, *et al.* Biomaterial-Based bFGF Delivery for Nerve Repair. *Oxidative Medicine and Cellular Longevity* 2023;2023(8003821)

Agents: Fibroblast growth factor, basic **Vehicle:** Heparin; **Route:** SC; CSF/CNS (lumbar thecal sac); CSF/CNS (lateral ventricle); **Species:** Rat; **Strain:** Not Stated; **Pump:** Not Stated; **Duration:** 1 week;
ALZET Comments: neurodegenerative (spinal cord injury, facial nerve injury)

Q11307: E. A. B. Gilbert, *et al.* Metformin Improves Functional Outcomes, Activates Neural Precursor Cells, and Modulates Microglia in a Sex-Dependent Manner After Spinal Cord Injury. *Stem Cells Translational Medicine* 2023;12(6):415-428

Agents: Metformin **Vehicle:** PBS, sterile; **Route:** SC; **Species:** Mice; **Strain:** C57BL6; **Pump:** 1007D; **Duration:** 7 days; 14 days;
ALZET Comments: Dose (200 mg/kg/day); Controls received mp w/ vehicle; animal info (Male and female; 10-12 weeks old); spinal cord injury;

Q11075: L. Gal, *et al.* Restoration of Motor Function through Delayed Intraspinal Delivery of Human IL-10-Encoding Nucleoside-Modified mRNA after Spinal Cord Injury. *Research* 2023;6(0056)

Agents: Interleukin-10, human recombinant **Vehicle:** Not Stated; **Route:** CSF/CNS (spinal cord); **Species:** Rat;
Strain: Sprague-Dawley; **Pump:** 1002; **Duration:** 2 weeks;
ALZET Comments: Dose: (4 µg/ml); animal info (Female; Weighed 220-240 g); spinal cord injury;

Q10640: J. L. Palacios, *et al.* Continuous Administration of Leuprolide Acetate Improves Urinary Function in Male Rats With Severe Thoracic Spinal Cord Injury. *Life Sciences* 2022;310(121113)

Agents: Leuprolide acetate **Vehicle:** Not Stated; **Route:** SC; **Species:** Rat; **Strain:** Wistar; **Pump:** 2002; **Duration:** 2 weeks;
ALZET Comments: Dose (10 µg/kg/day); 70 % ethanol used; animal info (male rats (250–350 g); Leuprolide acetate aka (LA); spinal cord injury; behavioral testing: (Micturition, hind-limb nociception and locomotor behaviors)Therapeutic indication (Urinary function);

Q10627: J. Ni, *et al.* Nerve growth factor-mediated Na(+) channel plasticity of bladder afferent neurons in mice with spinal cord injury. *Life Sciences* 2022;298(120524)

Agents: Antibody, anti-NGF **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice; **Strain:** C57BL/6; **Pump:** Not Stated;
Duration: 2 weeks;
ALZET Comments: Dose (10 µg/kg/h); animal info (Female ; 36 total; 8-10 weeks old; Weighed 18-22 g); spinal cord injury;

Q11178: X. Li, *et al.* Body Weight-Supported Treadmill Training Ameliorates Motoneuronal Hyperexcitability by Increasing GAD-65/67 and KCC2 Expression via TrkB Signaling in Rats with Incomplete Spinal Cord Injury. *Neurochemical Research* 2022;47(6):1679-1691

Agents: TrkB-IgG **Vehicle:** PBS; **Route:** SC; **Species:** Rat; **Strain:** Sprague-Dawley; **Pump:** 2002; **Duration:** 4 weeks;
ALZET Comments: Dose (0.25 g/l); Controls received mp w/ vehicle; animal info (Female; 40 total; Weighed around 210-250 g); behavioral testing (Treadmill training); PE-10, PE-50 catheter used; spinal cord injury;

Q11152: K. Kawakami, *et al.* Intrathecal morphine exacerbates paresis with increasing muscle tone of hindlimbs in rats with mild thoracic spinal cord injury but without damage of lumbar alpha-motoneurons. *PLoS One* 2022;17(8):e0273095

Agents: Morphine **Vehicle:** Saline; **Route:** SC; **Species:** Rat; **Strain:** Sprague Dawley; **Pump:** 1003D; **Duration:** 72 hours;
ALZET Comments: Dose: (3 ug/ul/hr); Controls received mp w/ vehicle; animal info: Adult male rats, 8–9 weeks old (weighing 240–300 g); spinal cord injury; comparison of single IT doses vs mp

Q10550: Y. Ikeda, *et al.* Targeting Neurotrophin And Nitric Oxide Signaling To Treat Spinal Cord Injury And Associated Neurogenic Bladder Overactivity. *Continence* 2022;1(**Agents:** LM22B-10 **Vehicle:** DMSO; Saline; **Route:** SC; **Species:** Mice; **Strain:** C57BL/6; **Pump:** 1004; **Duration:** 4 weeks;

ALZET Comments: Dose (5 mg/kg/day); 50% DMSO and 50% saline used; Controls received mp w/ vehicle; animal info (Female; Male; ; 8-12 weeks old); LMB22B-10 is a TrkB/C selective agonist; spinal cord injury;



Q10547: S. M. Hosseini, *et al.* Suppressing CSPG/LAR/PTPsigma Axis Facilitates Neuronal Replacement and Synaptogenesis by Human Neural Precursor Grafts and Improves Recovery after Spinal Cord Injury. *Journal of Neuroscience* 2022;42(15):3096-3121

Agents: ILP; ISP **Vehicle:** Saline; **Route:** SC; **Species:** Rat; **Strain:** Not Stated; **Pump:** 2006; **Duration:** 6 weeks;
ALZET Comments: Dose (20 ug/d); Controls received mp w/ vehicle; animal info (Female; 250-300 g; 50 total); behavioral testing (BBB Open Field Locomotor Score; Grid-walking analysis; Assessment of pain response after SCI); peptides; spinal cord injury; Therapeutic indication (Neuronal replacement; Synaptic re-connectivity; Neurologic recovery);

Q10384: A. Geyik, *et al.* Effect of decorin protein administration on rat sciatic nerve injury: an experimental study. *Neurological Research* 2022;44(3):252-261

Agents: Decorin **Vehicle:** PBS; **Route:** SC; **Species:** Rat; **Strain:** Not Stated; **Pump:** 1004; **Duration:** Not Stated;
ALZET Comments: Controls received mp w/ vehicle; animal info (24 total; Male; 12 weeks old; 350-400 g); behavioral testing (Open field maze test; Rotarod test); spinal cord injury;

Q10563: B. Cao, *et al.* Spinal Cord Retinoic Acid Receptor Signaling Gates Mechanical Hypersensitivity in Neuropathic Pain. *Neuron* 2022;110(24):4108-4124 e6

Agents: Ro41-5253 **Vehicle:** DMSO; **Route:** CSF/CNS (subarachnoid space); **Species:** Mice; **Strain:** P34-P42;
Pump: 1007D; 1004; **Duration:** 7 days; 4 weeks;
ALZET Comments: Dose (1.25 ug/hr); animal info (); Controls received mp w/ vehicle; catheter; spinal cord injury; behavioral testing (Open field test; Elevated plus maze; Y-maze test; Hargreaves test; Cold plantar assay; Formalin test; Von Frey withdrawal threshold test); pain (neuropathic)

Q9843: H. Zhang, *et al.* Sonic Hedgehog modulates the inflammatory response and improves functional recovery after spinal cord injury in a thoracic contusion-compression model. *European Spine Journal* 2021;30(6):1509-1520

Agents: recombinant mouse Shh (Sonic Hedgehog) **Vehicle:** Saline; **Route:** SC; **Species:** Rat; **Strain:** Wistar; **Pump:** 1007D; **Duration:** 7 days;
ALZET Comments: 0.9% NaCl used; Controls received mp w/ vehicle; animal info (female rats, 160 g); spinal cord injury;

Q9919: H. Yamanaka, *et al.* Aberrant Axo-Axonic Synaptic Reorganization in the Phosphorylated L1-CAM/Calcium Channel Subunit alpha2delta-1-Containing Central Terminals of Injured c-Fibers in the Spinal Cord of a Neuropathic Pain Model. *eNeuro* 2021;8(2):

Agents: Pregabalin **Vehicle:** Saline; **Route:** Saline; **Species:** Rat; **Strain:** Sprague Dawley; **Pump:** 2001; **Duration:** 14 days;
ALZET Comments: Dose (30 or 300 ug/day); Controls received mp w/ vehicle; animal info (male rats, 200-250 g);

Q9501: I. K. Timotius, *et al.* Combination of Defined CatWalk Gait Parameters for Predictive Locomotion Recovery in Experimental Spinal Cord Injury Rat Models. *eNeuro* 2021;8(2):

Agents: Not stated **Vehicle:** Saline; **Route:** SC; **Species:** Rat; **Strain:** Wistar; **Pump:** 2002; **Duration:** 2 weeks;
ALZET Comments: Controls received mp w/ vehicle; animal info (adult female, 220-250 g); behavioral testing (Open Field)

Q10329: N. Shahsavani, *et al.* Availability of neuregulin-1beta1 protects neurons in spinal cord injury and against glutamate toxicity through caspase dependent and independent mechanisms. *Experimental Neurology* 2021;345(113817

Agents: Neuregulin-1-beta-1 **Vehicle:** BSA; Saline; **Route:** CSF/CNS (subarachnoid space); **Species:** Rat; **Strain:** Sprague-Dawley; **Pump:** 1003D; 2001; **Duration:** 3 days; 7 days;
ALZET Comments: Dose: (1 µg/day); 0.1% BSA; 0.9% Saline vehicle used; Controls received mp w/ vehicle; animal info: adult female (8-10 weeks, 250 g); Neuregulin-1beta 1 aka (Nrg-1β1); spinal cord injury; dependence;

Q9454: K. Sessler, *et al.* Spinal cord fractalkine (CX3CL1) signaling is critical for neuronal sensitization in experimental nonspecific, myofascial low back pain. *Journal of Neurophysiology* 2021;125(5):1598-1611

Agents: Fractalkine; Anti-fractalkine antibody **Vehicle:** CSF, artificial; **Route:** CSF/CNS (spinal cord); **Species:** Rat; **Strain:** Sprague-Dawley; **Pump:** 2002; **Duration:** 5 days;
ALZET Comments: Dose (20 or 200 ng/mL); Controls received mp w/ vehicle; animal info (Adult male rats, 300-460 g);



Q10645: Y. Peng, *et al.* Administration of High-Dose Methylprednisolone Worsens Bone Loss after Acute Spinal Cord Injury in Rats. *Neurotrauma Rep* 2021;2(1):592-602

Agents: Methylprednisolone **Vehicle:** Propylene glycol; **Route:** SC; **Species:** Rat; **Strain:** Wistar; **Pump:** 2001; **Duration:** 24 hrs; **ALZET Comments:** Dose (5.4 mg/kg/h); Controls received mp w/ vehicle; animal info (9 weeks old); spinal cord injury;

Q10632: S. H. Oh, *et al.* Sec-O-Glucosylhamaudol Mitigates Inflammatory Processes and Autophagy Via p38/JNK MAPK Signaling in a Rat Neuropathic Pain Model. *Korean Journal of Pain* 2021;34(4):405-416

Agents: Sec-O-glucosylhamaudol **Vehicle:** DMSO; **Route:** CSF/CNS (intrathecal); **Species:** Rat; **Strain:** Sprague Dawley; **Pump:** 1002; **Duration:** 2 weeks;

ALZET Comments: Dose (96 ug/day); Controls received mp w/ vehicle; 70% DMSO used; animal info (Male ; Pathogen-free; 100-120 g); behavioral testing (Paw withdrawal threshold using von Frey filament; Naloxone challenge test); spinal cord injury;

Q9393: M. L. O'Reilly, *et al.* Pharmacological Inhibition of Soluble Tumor Necrosis Factor-Alpha Two Weeks after High Thoracic Spinal Cord Injury Does Not Affect Sympathetic Hyperreflexia. *Journal of Neurotrauma* 2021;38(15):2186-2191

Agents: XPro1595 **Vehicle:** Saline; **Route:** CSF/CNS (spinal cord); **Species:** Rat; **Strain:** Wistar; **Pump:** 2006; **Duration:** 42 days; **ALZET Comments:** Dose (60 ug/day); Controls received mp w/ vehicle; animal info (Adult, female rats, 225–250g);

Q10620: A. Nakano, *et al.* Intrathecal Infusion of Diosgenin during the Chronic Phase of Spinal Cord Injury Ameliorates Motor Function and Axonal Density. *Neurochemical Journal* 2021;15(4):454-461

Agents: Diosgenin **Vehicle:** CSF, artificial; **Route:** CSF/CNS (intrathecal); **Species:** Mice; **Strain:** ddY; **Pump:** 1004; **Duration:** 56 days;

ALZET Comments: Dose: (0.1 μM); 0.1% ethanol vehicle used; Controls received mp w/ vehicle; animal info: Eight-week-old female; post op. care: During and after surgery, the mice were placed on a heating pad to maintain their body temperature; behavioral testing: Climbing performance; spinal cord injury; mouse intrathecal catheter used; pumps replaced after 28 days

Q10247: R. Lu, *et al.* Astrocytic c-Jun N-terminal kinase-histone deacetylase-2 cascade contributes to glutamate transporter-1 decrease and mechanical allodynia following peripheral nerve injury in rats. *Brain Research Bulletin* 2021;175(213-223

Agents: MS-275; Suberoylanilide hydroxamic acid; SP600125; Etanercept; Minocycline **Vehicle:** DMSO; Saline; **Route:** SC; **Species:** Rat; **Strain:** Sprague-Dawley; **Pump:** Not Stated; **Duration:** 10 days;

ALZET Comments: Dose: (1 μl/h) all drugs. The final concentrations of the drugs were as follows: MS-275: 20 ng/μl, SAHA: 500 ng/μl, SP600125: 5 μg/μl, etanercept: 5 ng/μl, minocycline:10 μg/μl; 5% DMSO vehicle used; Controls received mp w/ vehicle; animal info: Male (SD) rats (220–250 g); behavioral testing: Pain behavior test; suberoylanilide hydroxamic acid aka (SAHA); SP600215 is a JNK inhibitor anthra; Etanercept is a neutralizing anti-TNF-alpha binding protein; Minocycline is a microglia inhibitor; spinal cord injury;

Q10235: Z. W. Li, *et al.* Blocking the EGFR/p38/NF-kappaB signaling pathway alleviates disruption of BSCB and subsequent inflammation after spinal cord injury. *Neurochemistry International* 2021;150(105190

Agents: PD168393 **Vehicle:** DMSO; **Route:** SC; **Species:** Rat; **Strain:** Sprague-Dawley; **Pump:** Not Stated; **Duration:** 14 days; **ALZET Comments:** 5% DMSO vehicle used; Controls received mp w/ vehicle; animal info: Adult female rats (weight 220–250 g); PD168393 (an EGFR inhibitor); spinal cord injury;

Q9293: I. Jakovcevski, *et al.* Impact of Depletion of Microglia/Macrophages on Regeneration after Spinal Cord Injury. *Neuroscience* 2021;459(129-141

Agents: Ganciclovir **Vehicle:** PBS; **Route:** SC; **Species:** Mice; **Strain:** TK; **Pump:** 1004; **Duration:** 28 days; **ALZET Comments:** Dose (50 mg/ml); animal info (three-month-old female mice); spinal cord injury;

Q10378: O. Echeverria-Rodriguez, *et al.* Participation of angiotensin-(1-7) in exercise-induced analgesia in rats with neuropathic pain. *Peptides* 2021;146(170670

Agents: Angiotensin 1-7; A779 **Vehicle:** Water, deionized; **Route:** SC; **Species:** Rat; **Duration:** 14 days;

ALZET Comments: Dose (Ang 1-7 0.1 and 1 mg/kg; A779 24 ug/kg/h); animal info (Male; Weigh 120-150 g); behavioral testing (Swimming); peptides; spinal cord injury;



Q9759: Z. Ding, *et al.* Neuregulin-1 converts reactive astrocytes toward oligodendrocyte lineage cells via upregulating the PI3K-AKT-mTOR pathway to repair spinal cord injury. *Biomedicine & Pharmacotherapy* 2021;134(111168)

Agents: Nrg1 **Vehicle:** Not stated; **Route:** SC; **Species:** Rat; **Strain:** Not Stated; **Pump:** Not Stated; **Duration:** Not Stated; **ALZET Comments:** Dose (0.3 ug/day); animal info (Female, 200-230 g); spinal cord injury;

Q10371: S. Chang, *et al.* The ROCK inhibitor Y-27632 ameliorates blood-spinal cord barrier disruption by reducing tight junction protein degradation via the MYPT1-MLC2 pathway after spinal cord injury in rats. *Brain Research* 2021;1773(147684)

Agents: Y-27632 **Vehicle:** PBS; **Route:** Not Stated; **Species:** Rat; **Strain:** Not Stated; **Pump:** 2002; **Duration:** 2 weeks; **ALZET Comments:** Dose (20 mM/200 uL); Controls received mp w/ vehicle; animal info (Male; Weigh 280-320 g; 11 weeks old); spinal cord injury;

Q10122: A. S. Brown, *et al.* Intrauterine Growth Restriction Causes Abnormal Embryonic Dentate Gyrus Neurogenesis in Mouse Offspring That Leads to Adult Learning and Memory Deficits. *eNeuro* 2021;8(5):

Agents: U-46 619 **Vehicle:** Ethanol; **Route:** Not Stated; **Species:** Mice; **Strain:** C57BL/6J; **Pump:** 1007D; **Duration:** Not Stated; **ALZET Comments:** Dose: (4000 ng/ml); 0.5% ethanol vehicle used; Controls received mp w/ vehicle; animal info: wild-type mice; U-46619 is a thromboxane A2-analog; spinal cord injury;

Q10113: P. Bonilla, *et al.* Human-Induced Neural and Mesenchymal Stem Cell Therapy Combined with a Curcumin Nanoconjugate as a Spinal Cord Injury Treatment. *International Journal of Molecular Sciences* 2021;22(11):

Agents: Polyacetal-curcumin nanoconjugate **Vehicle:** Saline; **Route:** CSF/CNS (intrathecal); **Species:** Rat; **Strain:** Sprague-Dawley; **Pump:** 1007D; **Duration:** 7 days; **ALZET Comments:** Saline 0.9% vehicle used; Controls received mp w/ vehicle; animal info: Female weighing 300g; post op. care: buprenorphine; behavioral testing: open-field BBB locomotor scale and video-based system for automated gait analysis; PA-C aka polyacetal-curcumin nonconjugate; spinal cord injury

Q9822: Z. Zhou, *et al.* miR-384-5p promotes spinal cord injury recovery in rats through suppressing of autophagy and endoplasmic reticulum stress. *Neuroscience Letters* 2020;727(134937)

Agents: miR-384-5p Agomir **Vehicle:** Not Stated; **Route:** SC; **Species:** Rat; **Strain:** Sprague-Dawley; **Pump:** Not Stated; **Duration:** 3 days; **ALZET Comments:** Dose (14 nmol); animal info (Seven to eight week-old female rats); post op. care (cefazolin);

Q9130: W. Zhong, *et al.* Blockade of peripheral nociceptive signal input relieves the formation of spinal central sensitization and retains morphine efficacy in a neuropathic pain rat model. *Neuroscience Letters* 2020;716(134643)

Agents: Ropivacaine **Vehicle:** Saline; **Route:** CSF/CNS (sciatic nerve); **Species:** Rat; **Strain:** Sprague-Dawley; **Pump:** 2ML1; **Duration:** 7 days; **ALZET Comments:** Dose (10 µl/hour); 0.9% NaCl used; animal info (male Sprague-Dawley rats, 200–250 g, aged 6–8 weeks);

Q9885: A. Younsi, *et al.* Treadmill training improves survival and differentiation of transplanted neural precursor cells after cervical spinal cord injury. *Stem Cell Research* 2020;45(101812)

Agents: Platelet-derived growth factor, human recombinant; Epidermal Growth Factor; Basic fibroblast growth factor, recombinant human; **Vehicle:** Not Stated; **Route:** SC; **Species:** Rat; **Strain:** Wistar; **Pump:** 1007D; **Duration:** 7 days; **ALZET Comments:** Dose (1 ug/100uL Platelet-derived growth factor, human recombinant; 3 ug/100uLEpidermal Growth Factor; 3 ug/100mL Basic fibroblast growth factor, recominant human); Controls received mp w/ vehicle; animal info (female, 250 g); behavioral testing (Basso-Beattie- Bresnahan locomotor rating scale); Platelet-derived growth factor, human recombinant aka PDGF-AA; Epidermal Growth Factor aka EGF; Basic fibroblast growth factor, recominant human aka bFGF; spinal cord injury;



- Q9884:** A. Younsi, *et al.* Three Growth Factors Induce Proliferation and Differentiation of Neural Precursor Cells In Vitro and Support Cell-Transplantation after Spinal Cord Injury In Vivo. *Stem Cells International* 2020;2020(5674921)
Agents: Platelet-derived growth factor, human recombinant; Epidermal Growth Factor; Basic fibroblast growth factor, recombinant human; **Vehicle:** Not Stated; **Route:** CSF/CNS (spinal cord); **Species:** Rat; **Strain:** Wistar; **Duration:** 7 days;
ALZET Comments: Dose (1 ug/ml Platelet-derived growth factor, human recombinant; 30 ug/ml Epidermal Growth Factor; 30 ug/ml Basic fibroblast growth factor, recombinant human); Controls received mp w/ vehicle; animal info (female (250 g); Platelet-derived growth factor, human recombinant aka PDGF-AA; Epidermal Growth Factor aka EGF; Basic fibroblast growth factor, recombinant human aka bFGF; spinal cord injury);
- Q9538:** X. Wang, *et al.* Nogo receptor decoy promotes recovery and corticospinal growth in non-human primate spinal cord injury. *Brain* 2020;143(6):1697-1713
Agents: NgR1(310)-Fc **Vehicle:** Not Stated; **Route:** CSF/CNS (spinal cord); **Species:** Monkey; **Strain:** African green; **Pump:** 2ML4; **Duration:** 4 months;
ALZET Comments: Dose (0.10-0.17 mg/kg/day); Controls received mp w/ vehicle; animal info (Adult African green monkeys (vervets, female, baseline body weight 4.2–7.2 kg)); pumps replaced every month; long-term study; NgR1(310)-Fc aka Nogo receptor decoy protein; spinal cord injury);
- Q9498:** Y. Tanie, *et al.* GRP78-Mediated Signaling Contributes to Axonal Growth Resulting in Motor Function Recovery in Spinal Cord-Injured Mice. *Frontiers in Pharmacology* 2020;11(789)
Agents: Neuroleukin; GRP78; Immunoglobulin **Vehicle:** CSF, artificial; **Route:** CSF/CNS (lateral ventricle); **Species:** Mice; **Strain:** ddY; **Pump:** 1004; **Duration:** 21 days;
ALZET Comments: Dose (100 mg/ml); Controls received mp w/ vehicle; animal info (Eight-week-old female mice); Immunoglobulin aka IgG, GRP78 aka 78-kDa glucose regulated protein; ALZET brain infusion kit 3 used; Brain coordinates (bregma –0.22 mm, lateral to the left +1 mm and –2.5 mm depth); spinal cord injury);
- Q9482:** P. Song, *et al.* The role of hepatocyte growth factor in mesenchymal stem cell-induced recovery in spinal cord injured rats. *Stem Cell Research & Therapy* 2020;11(1):178
Agents: Bone marrow conditioned medium; **Vehicle:** Not Stated; **Route:** SC; **Species:** Rat; **Strain:** Wistar; **Pump:** 1007D; **Duration:** 1 week;
ALZET Comments: Controls received mp w/ vehicle; animal info (Adult (6–8 weeks) female (weight, 200 to 250 g)); behavioral testing (Open Field Test); Bone marrow conditioned medium aka BMSC; spinal cord injury);
- Q10062:** J. Savidan, *et al.* Cutaneous Inputs to Dorsal Column Nuclei in Adult Macaque Monkeys Subjected to Unilateral Lesion of the Primary Motor Cortex or of the Cervical Spinal Cord and Treatments Promoting Axonal Growth. *Neuroscience Insights* 2020;15(2633105520973991)
Agents: Antibody, anti Nogo-A monoclonal 11C7; Brain-derived neurotrophic factor **Vehicle:** Not Stated; **Route:** CSF/CNS (spinal cord); **Species:** Monkey; **Strain:** Macaca fascicularis; **Pump:** 2ML2; **Duration:** 4 weeks;
ALZET Comments: Dose (14.8 mg anti Nogo-A monoclonal antibody 11C7; 1.4 mg Brain-derived neurotrophic factor); animal info (adult monkeys, 3.0 to 5.6 kg, 4 to 6 years old); Multiple pumps per animal (2 pumps); Brain-derived neurotrophic factor aka BDNF; spinal cord injury);
- Q8916:** R. L. O'Hare Doig, *et al.* Acute Cellular and Functional Changes With a Combinatorial Treatment of Ion Channel Inhibitors Following Spinal Cord Injury. *Frontiers in Molecular Neuroscience* 2020;13(85)
Agents: Lomerizine; YM872; oxATP **Vehicle:** PBS; **Route:** CSF/CNS; **Species:** Rat; **Strain:** Fischer; **Pump:** 2002; **Duration:** 2 w
ALZET Comments: Dose (); Controls received mp w/ vehicle; animal info (Female, 150–200 g, 12–15 weeks old); post op. care (Buprenorphine); behavioral testing (open field locomotion assessment); Lomerizine aka Lom; ALZET brain infusion kit 3 used;
- Q8633:** X. Li, *et al.* Exercise training modulates glutamic acid decarboxylase-65/67 expression through TrkB signaling to ameliorate neuropathic pain in rats with spinal cord injury. *Molecular Pain* 2020;16(1744806920924511)
Agents: Immunoglobulin G, TrkB **Vehicle:** PBS; **Route:** SC; **Species:** Rat; **Strain:** Sprague–Dawley; **Pump:** 2002; **Duration:** 2 w
ALZET Comments: Animal info (adult female); behavioral testing (Mechanical withdrawal thresholds assessment); TrkB Immunoglobulin G aka TrkB-IgG; spinal cord injury);



Q8644: J. Li, *et al.* Prolonged Use of NMDAR Antagonist Develops Analgesic Tolerance in Neuropathic Pain via Nitric Oxide Reduction-Induced GABAergic Disinhibition. *Neurotherapeutics* 2020;17(3):1016-1030

Agents: MK801; TrkB-Fc **Vehicle:** Saline; **Route:** CSF/CNS (Intrathecal); **Species:** Mice; Rat; **Strain:** Sprague-Dawley; **Pump:** 1004; 2ML4; **Duration:** 11 days;

ALZET Comments: Dose (5 ug/day MK801; 0.2 ug/day TrkB-Fc); Controls received mp w/ vehicle; animal info (Adult male rats, 250-300 g; Adult male mice, 6 to 7 weeks old); behavioral testing (Mechanical Nociception Assays; Thermal Nociception Assays); MK801 aka N-methyl-D-aspartate receptor antagonist; spinal cord injury;

Q10003: J. M. Kwiecien, *et al.* Neurologic and Histologic Tests Used to Measure Neuroprotective Effectiveness of Virus-Derived Immune-Modulating Proteins. *Methods in Molecular Biology* 2020;

Agents: Serp-1 **Vehicle:** Not Stated; **Route:** IP; **Species:** Rat; **Strain:** Long-Evans; **Pump:** 2ML1; **Duration:** 7 days;

ALZET Comments: Dose (0.2 mg/rat); animal info (male, 16 weeks old, 370-420 g); behavioral testing (Locomotor test; Toe-pinch withdrawal test); spinal cord injury;

Q8617: J. M. Kwiecien, *et al.* Neuroprotective Effect of Subdural Infusion of Serp-1 in Spinal Cord Trauma. *Biomedicines* 2020;8(10):

Agents: Serp-1 **Vehicle:** Saline; **Route:** CSF/CNS (spinal cord); **Species:** Rat; **Strain:** Long Evan; **Pump:** 2ML1; 2ML4; **Duration:** 7 days; 14 days; 28 days; 56 days;

ALZET Comments: Dose (0.008 mg, 0.04, mg, 0.2 mg, 0.2 mg/week,); dose-response (p. 3); animal info (male, 16 weeks old, 370-410 g); spinal cord injury;

Q10009: T. Kikuchi, *et al.* Recovery of motor function of chronic spinal cord injury by extracellular pyruvate kinase isoform M2 and the underlying mechanism. *Scientific Reports* 2020;10(1):19475

Agents: Pyruvate Kinase Isoform M2; CB-5083 **Vehicle:** CSF, Artificial; **Route:** CSF/CNS (lateral ventricle); **Species:** Mice; **Strain:** ddY; **Pump:** 1004; **Duration:** 28 days;

ALZET Comments: Dose (1 ng/ml Pyruvate Kinase Isoform M2; 100 nM CB-5083); Controls received mp w/ vehicle; animal info (eight-week-old female); behavioral testing (Basso Mouse Scale, Toyama Mouse Score, vertical cage test); Pyruvate Kinase Isoform M2 aka PKM2; CB-5083 aka valosin-containing protein inhibitor; ALZET brain infusion kit 3 used; Brain coordinates (bregma-0.22 mm, lateral to the left +1 mm and -2.5 mm depth); spinal cord injury;

Q10025: S. Ilari, *et al.* Natural Antioxidant Control of Neuropathic Pain-Exploring the Role of Mitochondrial SIRT3 Pathway. *Antioxidants (Basel)* 2020;9(11):

Agents: Bergamot Polyphenolic fraction; Pregabalin **Vehicle:** Saline; **Route:** SC; **Species:** Rat; **Strain:** Sprague Dawley; **Pump:** Not Stated; **Duration:** 21 days;

ALZET Comments: Dose (25, 50, 75 mg/kg Bergamot Polyphenolic fraction; 10 mg/kg Pregabalin); 0.9% NaCl used; Controls received mp w/ vehicle; animal info (8 week old male 225-250 g); behavioral testing (Mechanical allodynia, Mechanical hyperalgesia, Thermal hyperalgesia); Bergamot Polyphenolic fraction aka BPF; spinal cord injury;

Q8526: K. Hamamura, *et al.* Behavioral Effects of Continuously Administered Bergamot Essential Oil on Mice With Partial Sciatic Nerve Ligation. *Frontiers in Pharmacology* 2020;11(1310)

Agents: Naloxone HCl **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Strain:** ddY; **Pump:** 1007D; **Duration:** 1 week;

ALZET Comments: Dose (1 mg/100 uL); 0.9% NaCl used; animal info (four-week-old male 24 g); behavioral testing (double activity monitoring system; Von Frey Test); spinal cord injury;

Q9186: Y. Cheong, *et al.* Effect of two-week continuous epidural administration of 2% lidocaine on mechanical allodynia induced by spinal nerve ligation in rats. *Anesthesia & Pain Medicine* 2020;15(3):334-343

Agents: Lidocaine **Vehicle:** Saline; **Route:** SC; **Species:** Rat; **Strain:** Sprague-Dawley; **Pump:** 2ML1; **Duration:** 14 days;

ALZET Comments: Controls received mp w/ vehicle; animal info (male, 200-250 g); behavioral testing (Von Frey test; Motor function assessment); spinal cord injury; Therapeutic indication (neuropathic disorders);