



References on the Administration of Nucleic Acids Using ALZET® Osmotic Pumps

1. DNA

Q4242: A. L. Mathes, *et al.* CpGB DNA activates dermal macrophages and specifically recruits inflammatory monocytes into the skin. *EXPERIMENTAL DERMATOLOGY* 2015;24(133-139

Agents: CpGB DNA **Vehicle:** Route: SC; **Species:** Mice; **Pump:** **Duration:** 7 days; 28 days;

ALZET Comments: Controls received mp w/ PBS; animal info (male, C57BL6 or TNFa -/- or IFNg -/- or CXCR3 -/- or CCR5 -/- or CCL2 -/- or TLR9 -/-); functionality of mp verified by immunofluorescence at pump outlet; gene therapy; immunology; CpGB DNA is a TLR9 ligand;

Q5673: R. P. Kotipatruni, *et al.* Development of plasmid-lipid complexes for direct intratumoral injection. *Methods Mol Biol* 2014;1139(467-76

Agents: Plasmid DNA-lipid complex **Vehicle:** **Route:** **Species:** Mice (SCID, CD-1); **Pump:** **Duration:** **ALZET Comments:** Therapeutic indication (Gene therapy); Brain coordinates: 3 mm lateral and 2 mm caudal to bregma;

Q4928: A. Ewe, *et al.* Storage stability of optimal liposome-polyethylenimine complexes (lipopolyplexes) for DNA or siRNA delivery. *Acta Biomater* 2014;10(6):2663-73

Agents: DNA, RNA, small interfering **Vehicle:** Lipopolyplexes, (PEI F25-LMW, DPPC); **Route:** SC; CSF/CNS; IP; **Species:** **Pump:** **Duration:** 6+ weeks;

ALZET Comments: cancer (mamma carcinoma, prostate carcinoma, colon carcinoma); PEI F25-LMW aka Polyethylenimine F-25 Low molecular weight; DPPC aka dipalmitoyl-phosphatidyl-choline;

Q4773: A. S. b. Alexander Ewe a, Sabine Barnert c, Rolf Schubert c, Achim Temmed, Udo Bakowsky e,, *et al.* Storage stability of optimal liposome-polyethylenimine complexes

(lipopolyplexes) for DNA or siRNA delivery. *Acta Biomateriala* 2014;10):2663-2673

Agents: DNA, RNA, small interfering **Vehicle:** Lipopolyplexes, (PEI F25-LMW, DPPC); **Route:** SC; **Species:** **Pump:** **Duration:** 6+ weeks;

ALZET Comments: cancer (mamma carcinoma, prostate carcinoma, colon carcinoma); PEI F25-LMW aka Polyethylenimine F-25 Low molecular weight; DPPC aka dipalmitoyl-phosphatidyl-choline

Q0376: S. C. Tauber, *et al.* Stimulation of Toll-Like Receptor 9 by Chronic Intraventricular Unmethylated Cytosine-Guanine DNA Infusion Causes Neuroinflammation and Impaired Spatial Memory. *Journal of Neuropathology and Experimental Neurology* 2009;68(10):1116-1124

Agents: DNA, cytosine-guanine **Vehicle:** **Route:** CSF/CNS; **Species:** Mice; **Pump:** 2004; **Duration:** 4 weeks;

ALZET Comments: Controls received mp w/saline; animal info (male, C57BL/6, TLR9-deficient); ALZET brain infusion kit 2 used; stress/adverse reaction: (see pg. 1117) "One C57BL/6 mouse died because of complications during the operation, and 1 TLR9-deficient mouse died for unknown reasons 2 weeks after implantation of the pump".

P6539: C. P. Locher, *et al.* Evaluation of genetic immunization adjuvants to improve the effectiveness of a human immunodeficiency virus type 2 (HIV-2) envelope DNA vaccine. *DNA and Cell Biology* 2004;23(2):107-110

Agents: DNA, plasmid **Vehicle:** Gene, HIV-2 gpl40; **Route:** SC; **Species:** Mice; **Pump:** 2004; **Duration:** 28 days;

ALZET Comments: 28 day stability verified by agarose gel electrophoresis; immunology; different methods of immunization used; genetic immunization; DNA did not adhere to the osmotic minipump after 1 month since DNA concentration remained stable and intact



P5966: A. Roguin, *et al.* Restoration of blood flow by using continuous perimuscular infiltration of plasmid DNA encoding subterranean mole rat *Spalax ehrenbergi* VEGF. PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA 2003;100(8):4644-4648

Agents: DNA, naked; vascular endothelial growth factor, DNA **Vehicle:** Water; **Route:** Intramuscular (left quadriceps muscle); **Species:** Mice; **Pump:** 2001; **Duration:** 7 days;

ALZET Comments: Controls received mp w/ saline; tissue perfusion (quadriceps muscle); gene therapy; fenestrated catheter; pump implanted IP; "we have shown that when using plasmid DNA, continuous administration is superior to multiple simultaneous IM injections." (p. 4647)

2. RNA

R0380: A. Clavreul, *et al.* Nanocarriers and nonviral methods for delivering antiangiogenic factors for glioblastoma therapy: the story so far. Int J Nanomedicine 2019;14(2497-2513

Agents: Bevacizumab; RNA, small interfering (anti-HIF-1 α /PEG); Immunotoxin, DTAT/DTATEGF; Endostatin; 17-ODYA; Miconazole; **Vehicle:** CSF/CNS (intratumoral), IV; **Species:** Mice; **Pump:** **Duration:** **ALZET Comments:** enzyme inhibitor (CYP epoxygenase); cancer (glioblastoma); This review describes methods (including convection-enhanced delivery devices, implantable polymer devices, nanocarriers, and cellular vehicles) to deliver antiangiogenic factors to intracranial tumors.

Q6981: H. Chao, *et al.* Cardiolipin-dependent mitophagy guides outcome after traumatic brain injury. J Neurosci 2019;

Agents: RNA, small interfering (cardiolipin synthase); RNA, small interfering (Phospholipid scramblase-3) **Vehicle:** CSF/CNS; **Species:** Rat; **Pump:** 1003D; **Duration:** 72 hours;

ALZET Comments: Dose (30 nmol); animal info (17-day-old male Sprague–Dawley rats); Brain coordinates (–0.8 mm posterior to bregma, –1.5 mm lateral to midline, and –4.6 mm ventral to the skull surface); Traumatic brain injury;

Q7264: C. Rivat, *et al.* Inhibition of neuronal FLT3 receptor tyrosine kinase alleviates peripheral neuropathic pain in mice. Nat Commun 2018;9(1):1042

Agents: RNA, small interfering (Flt3, scrambled) **Vehicle:** CSF/CNS(Intrathecal); **Species:** Mice; **Pump:** 1002; **Duration:** 6 days;

ALZET Comments: Dose (12.53 ng/ml); animal info (C57BL/6 naive mice, Flt3KO mice 25–30 g.); behavioral testing (reflexive tail flick); spinal cord injury; stress/adverse reaction: (see pg. 10);

Q7151: D. S. Lee, *et al.* PDI-mediated S-nitrosylation of DRP1 facilitates DRP1-S616 phosphorylation and mitochondrial fission in CA1 neurons. Cell Death Dis 2018;9(9):869

Agents: RNA, small interfering (protein disulfide isomerase), L-NAME **Vehicle:** Saline; **Route:** CSF/CNS (right lateral ventricle); **Species:** Rats; **Pump:** 1007D; **Duration:** **ALZET Comments:** Dose (15 μ g/ μ l L-NAME); animal info (7-week-old male Sprague-Dawley rats); N ω -nitro-L-arginine methyl ester hydrochloride aka L-name; enzyme inhibitor (protein disulfide isomerase); ALZET brain infusion kit 1 used; Brain coordinates (right lateral ventricle, 1mm posterior; 1.5 mm lateral; 3.5 mm depth from bregma);

Q7191: J. E. Kim, *et al.* P2RX7-MAPK1/2-SP1 axis inhibits MTOR independent HSPB1-mediated astroglial autophagy. Cell Death Dis 2018;9(5):546

Agents: BzATP, OxATP, A740003, Compound C, 3-chloroacetyl indole, Mithramycin A, U0126, RNA, small interfering (Heat shock protein B1) **Vehicle:** CSF/CNS (lateral ventricle); **Species:** Mice; **Pump:** 1007D; **Duration:** 7 days;

ALZET Comments: Dose: BzATP (5 mM), OxATP (5 mM) A740003 (10 μ M), Comp C (100 nM), 3CAI (25 μ M), MMA (25 μ M), U0126 (25 μ M); animal info (Male, C57BL/6J, 25-30 g, 60-90 days old); BzATP is a P2RX7 agonist, OxATP and A740003 are P2RX7 antagonists; enzyme inhibitor (mitogen-activated protein kinase 1/2); ALZET brain infusion kit 3 used; Brain coordinates (lateral cerebral ventricle 1.0mm lateral to bregma); dependence; no stress: doses were well tolerated, and no signs of neurotoxicity (hind-limb paralysis, vocalization, food intake, or neuroanatomical damage) were observed;



Q6927: A. R. Jeon, *et al.* PDI Knockdown Inhibits Seizure Activity in Acute Seizure and Chronic Epilepsy Rat Models via S-Nitrosylation-Independent Thiolation on NMDA Receptor. *Front Cell Neurosci* 2018;12(438)

Agents: RNA, small interfering; L-NAME; PACMA31 **Vehicle:** Saline; **Route:** CSF/CNS (Right lateral ventricle); **Species:** Rat; **Pump:** 1007D; **Duration:** 1 week;

ALZET Comments: Controls received mp w/ vehicle; animal info (7 week old male Sprague-Dawley rats); enzyme inhibitor (PACMA31 is a selective PDI inhibitor); ALZET brain infusion kit 1 used; Brain coordinates (1 mm posterior; 1.5 mm lateral; 3.5 mm depth from bregma); Therapeutic indication (seizure);

Q7115: S. Y. Cheon, *et al.* Apoptosis Signal-regulating Kinase 1 Silencing on Astroglial Inflammasomes in an Experimental Model of Ischemic Stroke. *Neuroscience* 2018;390(218-230)

Agents: RNA, small interfering (ASK1) **Vehicle:** siPORTNeoFX Transfection agent; **Route:** CSF/CNS (left lateral ventricle); **Species:** Mice; **Pump:** 1003D; **Duration:** 3 days;

ALZET Comments: Dose (1 IL/h/ day); animal info (Adult, C57BL/6, male); enzyme inhibitor (apoptosis signal-regulating kinase 1); ALZET brain infusion kit used; ALZET brain infusion kit used; ischemia (Cerebral);

Q7089: F. X. Blaudin de The, *et al.* Engrailed homeoprotein blocks degeneration in adult dopaminergic neurons through LINE-1 repression. *EMBO J* 2018;37(15):

Agents: Colominic acid, RNA, small interfering (anti-Orf2p), cell-permeable peptide Penetratin-coupled siRNA **Vehicle:** Saline; **Route:** CSF/CNS; **Species:** Mice; **Pump:** 1003D; **Duration:** 3 days;

ALZET Comments: 0.9% sodium chloride used; Dose (1.5 ug/ul- colomic acid, 5 uM- En 1/2); Controls received mp w/ vehicle; animal info (male, En1-het mice,); Brain coordinates (-3.8 mm dorso/ventral); neurodegenerative (dopaminergic neurons);

Q6552: J. Zhang, *et al.* MiR-146a promotes remyelination in a cuprizone model of demyelinating injury. *Neuroscience* 2017;348(252-263)

Agents: RNA, micro 146a **Vehicle:** **Route:** CSF/CNS (corpus callosum); **Species:** Mice; **Pump:** 1007D; **Duration:** 7 days; **ALZET Comments:** animal info (8-10 week old male C57BL/6 mice); enzyme inhibitor (interleukin-1 receptor-associated kinase 1); Brain coordinates (0 mm to the bregma, 1 mm bilateral to the midline, 1.8 mm depth from the surface of the cortex);

Q5934: D. Yu, *et al.* Multiplexed RNAi therapy against brain tumor-initiating cells via lipopolymeric nanoparticle infusion delays glioblastoma progression. *Proc Natl Acad Sci U S A* 2017;114(30):E6147-E6156

Agents: RNA, small interfering **Vehicle:** **Route:** CSF/CNS (intratumoral); **Species:** mice (nude); **Pump:** 1002, 2002; **Duration:** 14 days;

ALZET Comments: animal info (athymic nude, 6-8 weeks old); ALZET brain infusion kit 3 used; cancer (glioblastoma);

“Because repeated surgery introduces stress and pain that may impact the survival of the experimental animals, we opted for the convection-enhanced delivery (CED) strategy using an Alzet osmotic pump to deliver a continuous supply of the nano RNAi combination...” pg E6151;

Q5892: J. Tang, *et al.* A selective CB2R agonist (JWH133) restores neuronal circuit after Germinal Matrix Hemorrhage in the preterm via CX3CR1(+) microglia. *Neuropharmacology* 2017;119(157-169)

Agents: shRNA, NM_133534.1; antibody, CX3CR1 **Vehicle:** NaCl; **Route:** CSF/CNS; **Species:** Rat; **Pump:** 1003D; **Duration:** 3 days;

ALZET Comments: Controls received mp w/ vehicle; animal info (male, Sprague Dawley, P7); ALZET brain infusion kit 3 used; ALZET brain infusion kit 3 used; Brain coordinates;

Q6753: P. G. Quresma, *et al.* Cdc2-like kinase 2 in the hypothalamus is necessary to maintain energy homeostasis. *Int J Obes (Lond)* 2017;41(2):268-278

Agents: RNA, small interfering (Cdc2-like kinase 2) **Vehicle:** Saline; DMSO; **Route:** CSF/CNS (lateral ventricle); **Species:** Mice; **Pump:** 1007D; **Duration:** 7 days;

ALZET Comments: Dose (2 µg/day); 0.3% DMSO used; Controls received mp w/ vehicle; animal info (Eight-week-old male Swiss, db/db mice (Leprdb/Leprdb) and Leprdb/+ mice); Small interference RNA aka siCLK2;



Q6597: C. Lin, *et al.* Omega-3 fatty acids regulate NLRP3 inflammasome activation and prevent behavior deficits after traumatic brain injury. *Exp Neurol* 2017;290(115-122)

Agents: RNA, small interfering **Vehicle:** Route: CSF/CNS (left lateral ventricle); **Species:** Rat; **Pump:** 1003D; **Duration:** 72 hours;

ALZET Comments: Dose (30 nmol); Controls received mp w/ vehicle; animal info (8-weeks-old male Sprague-Dawley rats); behavioral testing (Beam balance, Morris water maze);

Q6293: A. R. Ko, *et al.* TRPC6-mediated ERK1/2 phosphorylation prevents dentate granule cell degeneration via inhibiting mitochondrial elongation. *Neuropharmacology* 2017;121(120-129)

Agents: RNA, small interfering; TRPC6; U0126 **Vehicle:** Route: CSF/CNS (right lateral ventricle); **Species:** Rat; **Pump:** 1007D; **Duration:** **ALZET Comments:** Controls received mp w/ vehicle; animal info (7 week old male Sprague-Dawley rats); U0126 is a selective ERK1/2 inhibitor; ALZET brain infusion kit 1 used; Brain coordinates (1 mm posterior; 1.5 mm lateral; -3.5 mm depth to the bregma); Therapeutic indication (epilepsy);

Q5674: J. Y. Kim, *et al.* PDI regulates seizure activity via NMDA receptor redox in rats. *Sci Rep* 2017;7(42491)

Agents: RNA, small interfering (PDI; DTNB); bacracin; Immunoglobulin, anti-PDI; tunicamycin ; **Vehicle:** Route: CSF/CNS; **Species:** Rat; **Pump:** 1007D; **Duration:** 7 days, 14 days;

ALZET Comments: Controls received mp w/ vehicle or control siRNA or control IgG; animal info (male, Sprague Dawley, 7 weeks old); pumps replaced every week; ALZET brain infusion kit 1 used; behavioral testing (behavioral seizure severity); Brain coordinates;

Q5837: J. E. Kim, *et al.* Sustained HSP25 Expression Induces Clasmotodendrosis via ER Stress in the Rat Hippocampus. *Front Cell Neurosci* 2017;11(47)

Agents: RNA, small interfering (HSP25) **Vehicle:** Saline; **Route:** CSF/CNS (right lateral ventricle); **Species:** Rat; **Pump:** 1007D; **Duration:** 7 days, 1 week;

ALZET Comments: Controls received control siRNA ; animal info (7 months old); ALZET brain infusion kit 1 used; Electrophysiology; Therapeutic indication (Heat shock proteins, ER stress);

Q5844: X. Jiang, *et al.* Gastrin stimulates renal dopamine production by increasing the renal tubular uptake of L-DOPA. *Am J Physiol Endocrinol Metab* 2017;312(1):E1-E10

Agents: RNA, small interfering (Gastrin-specific) **Vehicle:** TransIT in vivo transfection reagent; **Route:** Kidney (subscapular space); **Species:** Mice; **Pump:** 1007D; **Duration:** 7 days;

ALZET Comments: Controls received mp with mock (nonsilencing) siRNA; ALZET polyethylene tubing used ; Therapeutic indication (Nephrology, Hypertension, L-Dopa); Dose (3 ug/day)

Q6011: S. Y. Cheon, *et al.* Regulation of Microglia and Macrophage Polarization via Apoptosis Signal-Regulating Kinase 1 Silencing after Ischemic/Hypoxic Injury. *Front Mol Neurosci* 2017;10(261)

Agents: RNA, small interfering (ASK1) **Vehicle:** siPORTNeoFX Transfection agent; **Route:** CSF/CNS (Left ventricle); **Species:** Mice; **Pump:** 1003D; **Duration:** 3 days;

ALZET Comments: animal info (C57BL/6, 8-12 weeks) ; Therapeutic indication (Hypoxia, late inflammation, ischemic stroke);

Q6007: M. Y. Chang, *et al.* MicroRNAs 218a-5p, 219a-5p, and 221-3p regulate vestibular compensation. *Sci Rep* 2017;7(1):8701

Agents: RNA, micro **Vehicle:** CSF, artificial; **Route:** CSF/CNS (right lateral ventricle); **Species:** Rat; **Pump:** 2001; **Duration:** 7 days;

ALZET Comments: Controls received mp w/ vehicle; ALZET brain infusion kit 2 used; behavioral testing (Rotarod); Dose (12.5 uM);

Q6662: J. Shen, *et al.* NMDA receptors participate in the progression of diabetic kidney disease by decreasing Cdc42-GTP activation in podocytes. *J Pathol* 2016;240(2):149-60



Agents: RNA, NR1-short hairpin **Vehicle:** Route: CSF/CNS (Intrathecal); **Species:** Mice; **Pump:** Intrathecal catheter; **Duration:** 10.1002/path.4764;

ALZET Comments: animal info (Diabetes-induced C57BL/6 J mice, 8 weeks of age); diabetes; ALZET intrathecal catheter used with another product

Q4900: P. Q. H. Renjun Wang, MD; Rui Zhou, BSc; Zengxiang Dong, PhD, *et al.* Sympathoexcitation in Rats With Chronic Heart Failure

Depends on Homeobox D10 and MicroRNA-7b Inhibiting

GABBR1 Translation in Paraventricular Nucleus. *Circ Heart Fail.* 2016;9(1-10)

Agents: AntagomiR-7b; RNA, small interfering GABBR1; angiotensin II **Vehicle:** Route: CSF/CNS (paraventricular nucleus);

Species: Rat; **Pump:** 1004; 1002; **Duration:** 4 weeks; 2 weeks;

ALZET Comments: animal info (male, Wistar, 180-200g); pumps replaced after 4 weeks; bilateral cannula used; tissue perfusion (paraventricular nucleus); cardiovascular; peptides; bilateral infusion; Dose (AntagomiR-7b or Ad-siGABBR1 40 ng/h; antiotensin II 1 ng/kg/min);

Q6055: A. Minami, *et al.* Role of Sialidase in Long-Term Potentiation at Mossy Fiber-CA3 Synapses and Hippocampus-Dependent Spatial Memory. *PLoS One* 2016;11(10):e0165257

Agents: RNA, small interfering (Neu4) **Vehicle:** AteloGene transfection reagent; **Route:** CSF/CNS (third ventricle); **Species:** Rat; **Pump:** **Duration:** 7 days;

ALZET Comments: Controls received mp w/ vehicle; animal info (8-9 weeks); behavioral testing (Morris water mazex); AteloGene = in vivo siRNA transfection reagent; coordinates (AP = -4.2 mm; ML = 0.0 mm; DV = 4.6 mm)

Q5410: W. Liu, *et al.* Effects of microRNA-21 and microRNA-24 inhibitors on neuronal apoptosis in ischemic stroke. *Am Journal of Translational Research* 2016;8(7):3179-3187

Agents: miR-21 inhibitor; miR-24 inhibitor; scramble RNA, miR-21 inhibitor negative control; scramble RNA, miR-24 inhibitor negative control **Vehicle:** CSF, artificial; **Route:** CSF/CNS (Left lateral ventricle); **Species:** Rat; **Pump:** 1004; **Duration:** 2 days;

ALZET Comments: Controls received mp w/ negative control of miR inhibitors; animal info (Male Sprague Dawley rats, 8 weeks old, 250-300 g); Brain Infusion Kit used; Ischemic stroke; microRNA - miR; Dose: 0.2 ml/min; Brain coordinates (Bregma: -0.22 mm; Dorsovenral: 3 mm; Lateral: 1 mm);

Q4813: Kyoung Joo Cho, *et al.* Apoptosis signal-regulating kinase 1 mediates striatal degeneration via the regulation of C1q. *SCIENTIFIC REPORTS* 2016;6(1-11)

Agents: Nitropropionic acid, 3-; RNA, small interfering ASK1 **Vehicle:** Transfection reagent; **Route:** SC; CSF/CNS (striatum); **Species:** Mice (transgenic); **Pump:** 1007D; **Duration:** 7 days;

ALZET Comments: Controls received mp w/ vehicle; animal info (male, C57BL6J or R6/2 HD tg, 10 weeks old); behavioral testing (rotarod apparatus);

Q5158: M. Gujrati, *et al.* Multifunctional pH-Sensitive Amino Lipids for siRNA Delivery. *Bioconjug Chem* 2016;27(1):19-35

Agents: RNA, small interfering/EHCO; PEGylated EHCO **Vehicle:** **Route:** **Species:** Mice (nude); **Pump:** **Duration:** 14 days;

ALZET Comments: Controls received treated with nonspecific PEGylated EHCO/siGFP nanoparticles (PEGGFP) and non-PEGylated EHCO/HIF-1 α ; cancer; gene therapy, RNA nanoparticle infusion; peptides; "These results indicate that PEGylation can significantly improve the stability of EHCO/siRNA nanoparticles during storage in solution, possibly by preventing the aggregation of the nanoparticles and providing better protection to the siRNA cargo from degradation" (pg 31);

Q5348: J. D. Figueroa, *et al.* Fatty Acid Binding Protein 5 Modulates Docosahexaenoic Acid-Induced Recovery in Rats Undergoing Spinal Cord Injury. *J Neurotrauma* 2016;33(15):1436-49

Agents: Oligonucleotides, scramble nontargeting; siRNA **Vehicle:** Ethanol; **Route:** CSF/CNS (Intrathecal); **Species:** Rat; **Pump:** 2001; **Duration:** 7 days;

ALZET Comments: Controls received mp w/ vehicle; animal info (Young adult female Sprague-dawley rats); good methods (pg 1443); spinal cord injury; "Pumps were primed with DHA-albumin complex (DHA), FABP5 siRNA, and vehicle controls" (pg 1443); ALZET rat intrathecal catheter used;



Q5789: M. C. Didiot, *et al.* Exosome-mediated Delivery of Hydrophobically Modified siRNA for Huntingtin mRNA Silencing. *Mol Ther* 2016;24(10):1836-1847

Agents: Exosomes; RNA, hydrophobically-modified small interfering (anti-Huntingtin); **Vehicle:** CSF, artificial; **Route:** CSF/CNS; **Species:** Mice; **Pump:** 1007D; **Duration:** 7 days;

ALZET Comments: Controls received mp w/ vehicle; neurodegenerative (Huntingtin); "Pump implantation for the infusion of exosomes and hsiRNA-loaded exosomes have no statistically significant impact on innate immune response in vivo." Therapeutic indication (Huntingtin); Dose (p. 1884);

Q5754: R. Boukari, *et al.* Membrane progesterone receptor-beta, but not -alpha, in dorsal brain stem establishes sex-specific chemoreflex responses and reduces apnea frequency in adult mice. *J Appl Physiol* (1985) 2016;121(3):781-791

Agents: RNA, small interfering **Vehicle:** CSF, artificial; **Route:** CSF/CNS (fourth ventricle); **Species:** Mice; **Pump:** 1002; **Duration:** 2 weeks, 14 days;

ALZET Comments: Controls received mp w/ vehicle; animal info (3-4 months old); antisense (siRNA against MPR-a or mPR-b); "Previous studies

in adult mice showed that 2-wk infusion of nonviral siRNA in the third ventricle ensured efficient (~50%) and widespread (5-6 mm around the infusion point) knockdown of target genes in the brain (48)." Pg 782; Therapeutic indication (Sex steroids, Chemoreflex);

Q4648: H. K. A. Wong, *et al.* The Cancer Genome Atlas Analysis Predicts MicroRNA for Targeting Cancer Growth and Vascularization in Glioblastoma. *MOLECULAR THERAPY* 2015;23(12):1234-1247

Agents: RNA, micro antisense inhibitors 2'-O-MOE-PO **Vehicle:** **Route:** CSF/CNS (striatum); **Species:** Mice (nude); **Pump:** 2004; **Duration:** 30 days; 60 days;

ALZET Comments: Animal info (nude, 8 weeks old); pumps replaced every 30 days; ALZET brain infusion kit 3 used; "To ensure efficient and continuous local delivery of either miR-31 or miR-148a inhibitors to the intracranial tumors, and avoid repeated neurosurgeries, we used osmotic pumps" pg 1236; picture of implanted pump pg 1238;

Q3790: C. C. Tan, *et al.* NLRP1 inflammasome is activated in patients with medial temporal lobe epilepsy and contributes to neuronal pyroptosis in amygdala kindling-induced rat model. *Journal of Neuroinflammation* 2015;12(U1-U12)

Agents: RNA, small interfering **Vehicle:** **Route:** CSF/CNS (third ventricle); **Species:** Rat; **Pump:** 2006; **Duration:** 6 weeks;

ALZET Comments: Control animals received mp w/ control siRNA in aCSF; animal info (Sprague Dawley, 260-300 g); long-term study;

Q4110: J. Song, *et al.* The effect of ASK1 on vascular permeability and edema formation in cerebral ischemia. *Brain Research* 2015;1595(143-155)

Agents: RNA, ASK1-small interfering **Vehicle:** siPORTNeoFX; **Route:** CSF/CNS; **Species:** Mice; **Pump:** **Duration:** 3 days;

ALZET Comments: Controls received mp w/ scrambled si-RNA; animal info (male, C57BL6, 8-12 weeks old); ischemia (transient focal cerebral);

Q4976: F. A. Oladosu, *et al.* Mu Opioid Splice Variant MOR-1K Contributes to the Development of Opioid-Induced Hyperalgesia. *PLoS One* 2015;10(8):e0135711

Agents: RNA, small interfering 13 antisense **Vehicle:** CSF, artificial; **Route:** CSF/CNS (intrathecal); **Species:** Mice; **Pump:** **Duration:** 7 days;

ALZET Comments: Controls received mp w/ sense siRNA; animal info (C57BL6J or CXB7/ByJ, 8-12 weeks old, 20-30g);

R0348: M. Malhotra, *et al.* RNAi therapeutics for brain cancer: current advancements in RNAi delivery strategies. *Mol Biosyst* 2015;11(10):2635-57

Agents: Nanoparticles; RNAi **Vehicle:** **Route:** **Species:** Mice (nude); Mice (NOD/SCID); **Pump:** **Duration:** **ALZET Comments:** cancer (brain tumors); Mechanisms of RNAi delivery to brain tumors; adenovirus viral system used for delivery; SNB19 cells used for in vitro model; nanoparticles used for delivery; Therapeutic indication (brain cancer);



Q5014: Y. J. Kim, *et al.* The role of TRPC6 in seizure susceptibility and seizure-related neuronal damage in the rat dentate gyrus. *Neuroscience* 2015;307(215-30)

Agents: RNA, small interfering TRPC6 **Vehicle:** Route: CSF/CNS; **Species:** Rat; **Pump:** 1007D; **Duration:** 1 week;

ALZET Comments: Controls received mp w/ saline; animal info (male, Sprague Dawley, 7 weeks old); ALZET brain infusion kit 1 used; used dental cement;

Q4386: S. Cuevas, *et al.* Role of Nuclear Factor Erythroid 2-Related Factor 2 in the Oxidative Stress-Dependent Hypertension Associated With the Depletion of DJ-1. *HYPERTENSION* 2015;65(1251-U173)

Agents: RNA, small interfering (Drd2-); RNA, small interfering (DJ-1-) **Vehicle:** TransIT; **Route:** Kidney (subcapsular space);

Species: Mice; **Pump:** 1007D; **Duration:** 7 days;

ALZET Comments: Controls received mp w/ non-silencing RNA; animal info (male, C57BL6J, uninephrectomized); used PE tubing #0007701 with surgical glue; pump sutured to abdominal wall;

Q4371: X. D. Cheng, *et al.* PKR inhibits the DNA damage response, and is associated with poor survival in AML and accelerated leukemia in NHD13 mice. *BLOOD* 2015;126(1585-1594)

Agents: RNA-activated protein kinase inhibitor **Vehicle:** DMSO; PBS; **Route:** **Species:** Mice; **Pump:** 1004; **Duration:** 28 days;

ALZET Comments: Controls received mp w/ vehicle; animal info (NHID13, 4 months old); enzyme inhibitor (RNA-activated protein kinase)