Recent References (2015-2019) on the Administration of Antisense Oligonucleotides Using ALZET® Osmotic Pumps

Q8007: V. Gerzanich*, et al.* Sulfonylurea Receptor 1, Transient Receptor Potential Cation Channel Subfamily M Member 4, and KIR6.2:Role in Hemorrhagic Progression of Contusion. J Neurotrauma 2019;36(7):1060-1079
Agents: Antisense oligodeoxynucleotides **Vehicle:** Saline; **Route:** SC; **Species:** Rat; **Pump:** 2001; **Duration:** Not stated;
ALZET Comments: Dose (400 ng/h); Controls received mp w/ vehicle; animal info (Male, Wistar, 12-16 weeks old, 325-400 g); Antisense oligodeoxynucleotides aka AS-ODN ; antisense (Antisense oligodeoxynucleotides); neurodegenerative (Traumatic Brain Injury);

R0389: S. M. Pulst*, et al.* 2017 Year in Review and Message from the Editors to Our Reviewers. Neurol Genet 2018;4(1):e221
Agents: Oligonucleotide, antisense **Vehicle:** Not Stated; **Route:** CSF/CNS (Lateral Ventricle); **Species:** Mice; **Pump:** Not Stated; **Duration:** Not Stated;
ALZET Comments: neurodegenerative (tau pathology); Therapeutic indication (neurodegenerative disease);

Q7231: I. Michailidou*, et al.* Systemic inhibition of the membrane attack complex impedes neuroinflammation in chronic relapsing experimental autoimmune encephalomyelitis. Acta Neuropathologica Communications 2018;6(1):36
Agents: Oligonucleotide, antisense **Vehicle:** PBS; **Route:** SC; **Species:** Mice; **Pump:** 1002; **Duration:** 14 days;
ALZET Comments: Dose (5 mg/kg); animal info (Male 7 to 8-week-old Biozzi AB/H mice, 26.93 ± 0.33 g); C6 antisense aka c6 Locked nucleic acid oligonucleotide; antisense (C6); immunology;

Q6747: N. Prakoura*, et al.* NFkappaB-Induced Periostin Activates Integrin-beta3 Signaling to Promote Renal Injury in GN. J Am Soc Nephrol 2017;28(5):1475-1490
Agents: Oligonucleotide, antisense **Vehicle:** Saline; **Route:** SC; **Species:** Mice (knockout); **Pump:** 1002; **Duration:** Not Stated;
ALZET Comments: Dose (0.25 ml/h or 150 pmol/day); animal info (SV129malewild-typemice aged 8–10 weeks); antisense (periostin)

Q6600: C. Mazur*, et al.* Development of a simple, rapid, and robust intrathecal catheterization method in the rat. J Neurosci Methods 2017;280(36-46
Agents: Oligonucleotide, antisense **Vehicle:** Not Stated; **Route:** CSF/CNS (intrathecal); **Species:** Rat; **Pump:** Not Stated; **Duration:** Not Stated;
ALZET Comments: animal info (Sixteen maleSprague-Dawley rats); Publication describes the development of a rapid and robust intrathecal catheterization method for the testing of putative ASO therapeutics for diseases of the CNS.

Q6035: A. J. Donner*, et al.* Co-Administration of an Excipient Oligonucleotide Helps Delineate Pathways of Productive and Nonproductive Uptake of Phosphorothioate Antisense Oligonucleotides in the Liver. Nucleic Acid Ther 2017;27(4):209-220
Agents: Oligonucleotide, antisense **Vehicle:** PBS; **Route:** SC; **Species:** Mice; **Pump:** 2001D; **Duration:** 1 day;
ALZET Comments: Controls received mp w/ vehicle; animal info (C57BL/6); Therapeutic indication (hepatocytes); Dose (10 uL/body weight);

Q5785: S. devos. Tau reduction prevents neuronal loss and reverses pathological tau deposition and seeding in mice with tauopathy. Science Translational Medicine 2017;9(374):
Agents: Oligonucleotide, antisense (Tau-specific) **Vehicle:** Saline; **Route:** CSF/CNS; **Species:** Mice; **Pump:** Not Stated; **Duration:** 28 days, 4 weeks;
ALZET Comments: Controls received mp w/ scrambled ASO, or vehicle; animal info (PS19 mice); antisense (Tau-specific ASO-12); neurodegenerative (Alzheimer's disease); Therapeutic indication (Alzheimer's disease, tauopathy); Dose (30 ug/day);

Q5474: A. Vikram*, et al.* Vascular microRNA-204 is remotely governed by the microbiome and impairs endothelium-dependent vasorelaxation by downregulating Sirtuin1. Nat Commun 2016;7(12565
Agents: Oligonucleotide, anti-miR-204 **Vehicle:** Not Stated; **Route:** Not Stated; **Species:** Mice; **Pump:** 2006; **Duration:** 6 weeks;

ALZET Comments: Controls received mp w/ scrambled oligonucleotides; animal info (male, eSirt1 -/- or C57BL6); cardiovascular; Dose (0.7 mg/kg/day);

Q5207: Y. Solomonov*, et al.* Reduction of cytosolic phospholipase A2alpha upregulation delays the onset of symptoms in SOD1G93A mouse model of amyotrophic lateral sclerosis. J Neuroinflammation 2016;13(1):134
Agents: Oligonucleotide, antisense anti-Cytosolic phospholipase A2 alpha **Vehicle:** Saline; **Route:** CSF/CNS; **Species:** Mice (transgenic); **Pump:** Not Stated; **Duration:** 4 weeks; 6 weeks;
ALZET Comments: Controls received mp w/ vehicle; animal info (male, B6.Cg-Tg(SOD1G93A)1Gur/J hemizygous transgenic, 10 weeks old, 25 g); ALZET brain infusion kit 3 used; antisense (oligonucleotide anti-Cytosolic phospholipase A2 alpha); neurodegenerative (amyotrophic lateral sclerosis); behavioral testing (rotarod test; ladder testing); pumps primed overnight in 37C saline; Dose (10 ug/day); Brain coordinates (right lateral cerebral ventricle (−1.0 mm mediolateral and −0.5 mm anteroposterior from Bregma));

Q5197: K. M. Schoch*, et al.* Increased 4R-Tau Induces Pathological Changes in a Human-Tau Mouse Model. Neuron 2016;90(5):941-7
Agents: Oligonucleotides, antisense **Vehicle:** Not Stated; **Route:** CSF/CNS; **Species:** Mice (transgenic); **Pump:** Not Stated; **Duration:** 28 days;
ALZET Comments: Controls received mp w/ saline or scrambled ASO; animal info (hTau transgenic or tau N279k transgenic, 3-4 months old); antisense (3R to 4R MAPT splicing ASO; 4R to 3R MAPT splicing ASO); neurodegenerative (Alzheimer's disease); behavioral testing (nesting behavior); cyanoacrylate adhesive; pumps primed in 37C saline overnight; Industry authored (Ionis Pharmaceuticals); Dose (14 ug/day for 3R to 4R MAPT splicing ASO; 25 ug/day for 4R to 3R MAPT splicing ASO); Brain coordinates (-1.1mm M/L, -0.5mm A/P, -2.5mm D/V from bregma supplement pg 5);

Q5622: D. Kim. Anti-miR delivery strategies to bypass the blood-brain barrier in glioblastoma therapy. Oncotarget 2016;7(20):29400-11
Agents: Oligonucleotide, anti-miR, anti-let-7 **Vehicle:** Saline; **Route:** CSF/CNS (intrathecal); **Species:** Mice; **Pump:** 1004D; **Duration:** 7 days;
ALZET Comments: Controls received mp w/ vehicle; animal info (6-7 weeks); ALZET brain infusion kit 3 used; "Among them, the osmotic pump system is one of the most useful convection-enhanced delivery methods for delivering drugs to brain tumors and bypassing the BBB" pg 29408; Dose (20 µM, 50 µM); good figures (p29402;

Q6041: L. German-Castelan*, et al.* Intracellular Progesterone Receptor Mediates the Increase in Glioblastoma Growth Induced by Progesterone in the Rat Brain. Archives of Medical Science 2016;47(6):419-426
Agents: Oligodeoxynucleotide, antisense **Vehicle:** Propylene glycol; **Route:** CSF/CNS; **Species:** Rat; **Pump:** Not Stated; **Duration:** 15 days;
ALZET Comments: animal info (250-300g) ; tissue perfusion (brain tissue); Guide cannula used; Therapeutic indication (Astrocytomas, CNS tumor); Dose (0.5 ug/day);

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;

Q5805: S. Eid*, et al.* mTORC2 Signaling Regulates Nox4-Induced Podocyte Depletion in Diabetes. Antioxidants & Redox Signaling 2016;25(13):703-719
Agents: Oligonucleotide, phosphorothioate antisense (Rictor); Oligonucleotide, phosphorothioate sense (Rictor); **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Pump:** 2006; **Duration:** 5 weeks;
ALZET Comments: Controls received mp w/ vehicle;animal info (17 weeks old)antisense (phosphorothioated Sense and Antisense for Rictor);diabetes;Therapeutic indication (Diabetes);Dose (90 ng*g body wt-1 * day-1),);

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);

Q4223: X. Zhang*, et al.* Prosurvival NMDA 2A Receptor Signaling Mediates Postconditioning Neuroprotection in the Hippocampus. Hippocampus 2015;25(286-296
Agents: Oligonucleotide, antisense NR2A **Vehicle:** Saline; **Route:** CSF/CNS; **Species:** Rat; **Pump:** 1007D; **Duration:** Not Stated;
ALZET Comments: Controls received mp w/ scrambled oligonucleotide; animal info (male, Sprague Dawley, adult, 250-300g); antisense (oligonucleotide NR2A);

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(1234-1247
Agents: RNA, micro antisense inhibitors 2'-O-MOE-PO **Vehicle:** Not Stated; **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;

Q4640: M. Wellman*, et al.* Knockdown of central ghrelin O-acyltransferase by vivo-morpholino reduces body mass of rats fed a high-fat diet. PEPTIDES 2015;70(17-22
Agents: Oligonucleotide, antisense vivo-morpholino **Vehicle:** PBS; **Route:** CSF/CNS; **Species:** Rat; **Pump:** 2004; **Duration:** 4 weeks;
ALZET Comments: Controls received mp w/ vehicle; animal info (male, Long Evans, 276-300g); Cannula placement verified via injection of dye;

Q5279: Y. Sztainberg*, et al.* Reversal of phenotypes in MECP2 duplication mice using genetic rescue or antisense oligonucleotides. Nature 2015;528(7580):123-6
Agents: Oligonucleotide, antisense MECP2 **Vehicle:** Saline; **Route:** CSF/CNS; **Species:** mice; **Pump:** 1004; **Duration:** 28 days;
ALZET Comments: Controls received mp w/ vehicle; animal info (FVB/N pure background); functionality of mp verified by EEG; ALZET brain infusion kit 3 used; ALZET brain infusion kit 3 used; good methods (pg. 6); gene therapy; Dose (500 ug); Brain coordinates; AP = − 0.2 mm, ML = 1 mm, DV = − 3 mm

Q4800: K. B. a. T. E. Spencer. Biological Roles of Interferon Tau (IFNT) and Type I IFN Receptors in Elongation of the Ovine Conceptus1. Biology of Reproduction 2015;92(2)(47):1-10
Agents: oligonucleotdies, antisense morpholino **Vehicle:** PBS; **Route:** Intrauterine; **Species:** Sheep (ewe, pregnant); **Pump:** 2ML1; **Duration:** 7 days;
ALZET Comments: Controls received mp w/ control oligonucleotides; animal info (female, Columbia Rambouillet); teratology; cyanoacrylate adhesive; used vinyl catheter tubing (0007760) to cannulate uterine lumen; pump affixed to mesosalpinx using cyanoacrylate glue;

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, artifical; **Route:** CSF/CNS (intrathecal); **Species:** Mice; **Pump:** Not Stated; **Duration:** 7 days;

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

Q5232: M. McMillin*, et al.* Suppression of the HPA Axis During Cholestasis Can Be Attributed to Hypothalamic Bile Acid Signaling. Mol Endocrinol 2015;29(12):1720-30
Agents: Oligonucleotide, Vivo-morpholino **Vehicle:** Not Stated; **Route:** CSF/CNS (lateral ventricle); **Species:** Rat; **Pump:** Not Stated; **Duration:** 3 days;
ALZET Comments: Controls received mp w/ vehicle; brain infusion kit used; brain tissue distribution; Dose (1 mg/kg / d);

Q5229: S. Maeda*, et al.* DNA Aptamer Raised against Advanced Glycation End Products Prevents Abnormalities in Electroretinograms of Experimental Diabetic Retinopathy. Ophthalmic Res 2015;54(4):175-80
Agents: AGE-aptamer **Vehicle:** BSA; **Route:** IP; **Species:** Rat; **Pump:** 1004; **Duration:** 16 weeks;
ALZET Comments: Controls received mp w/ control aptamer; animal info (Six-week-old male Wistar rats); functionality of mp verified by urine tests; pumps replaced every 4 weeks; antisense (AGE-aptamer versus control aptamer); diabetes; AGE-aptamer aka Advanced Glycation End Products Aptamer; Dose (6 ng/body weight/day);

Q4336: K. E. Brooks*, et al.* Peroxisome Proliferator Activator Receptor Gamma (PPARG) Regulates Conceptus Elongation in Sheep. Biology of Reproduction 2015;92(U102-U114
Agents: Oligonucleotide, antisense morpholino PPARD; oligonucleotide, antisense morpholino PPARG **Vehicle:** PBS; **Route:** Intrauterine (uterine horn); **Species:** Sheep (ewe); **Pump:** 2ML1; **Duration:** 7 days;
ALZET Comments: Controls received mp w/ control morpholino; animal info (Ovis aries, 7 days after mating); cyanoacrylate adhesive; used vinyl catheter tubing; pump glued to mesosalpinyx and sutures; pumps primed in 37C sterile PBS for 24 hours

Q3642: Q. G. Zhang*, et al.* Brain-derived estrogen exerts anti-inflammatory and neuroprotective actions in the rat hippocampus. MOLECULAR AND CELLULAR ENDOCRINOLOGY 2014;389(84-91
Agents: Oligodeoxynucleotide, antisense **Vehicle:** Saline; **Route:** CSF/CNS; **Species:** Rat; **Pump:** 1007D; **Duration:** 7 days;
ALZET Comments: Controls received mp w/ control scrambled missense oligonucleotides; animal info (female, Sprague Dawley, 3 months old, ovariectomized); ALZET brain infusion kit 2 used; antisense (oligodeoxynucleorides); ischemia (global cerebral); gene therapy; immunology;

Q4752: X. H. Yu*, et al.* Chemosensitization of Solid Tumors by Inhibition of Bcl-xL Expression Using DNAzyme. ONCOTARGET 2014;5(9039-9048
Agents: DNAzyme oligonucleotide **Vehicle:** Saline; **Route:** IP; **Species:** Mice (nude); **Pump:** 1002; **Duration:** 14 days;
ALZET Comments: Animal info (female, Balb/C, 4 weeks old); functionality of mp verified by plasma levels and residual volumes; cancer (prostate adenocarcinoma); “Analysis showed that the DNAzyme was stable over the treatment period and the Alzet osmotic pump provided a consistent delivery of the DNAzyme in vivo ” pg 9044;

Q3732: A. Vinciguerra*, et al.* MicroRNA-103-1 Selectively Downregulates Brain NCX1 and Its Inhibition by Anti-miRNA Ameliorates Stroke Damage and Neurological Deficits. MOLECULAR THERAPY 2014;22(1829-1838
Agents: Oligonucleotide, anti-mir-103-1; oligonucleotide, anti-mir-107-1 **Vehicle:** Not Stated; **Route:** CSF/CNS; **Species:** Rat; **Pump:** Not Stated; **Duration:** 48 hours;
ALZET Comments: ALZET brain infusion kit 1 used; "The 48-hour anti-miR infusion allowed us to overcome problems related to the short half-life of miRNA" pg 1836; half life (1-3.5 hours) pg 1836

Q3313: J. R. Nadeau*, et al.* Induction of a reactive state in perineuronal satellite glial cells akin to that produced by nerve injury is linked to the level of p75NTR expression in adult sensory neurons. Glia 2014;62(5):763-777
Agents: Oligonucleotide, antisense p75 **Vehicle:** PBS; rat serum albumin; streptomycin; penicillin; **Route:** CSF/CNS (intrathecal); **Species:** Rat; **Pump:** 2001; **Duration:** 2 days; 3 days; 7 days;
ALZET Comments: Controls received mp w/ control oligonucleotide; animal info (male, Wistar, 250-300g); functionality of mp verified by fluorescent tagged AS; antisense (oligonucleotide p75); post op. care (Temgesic SC 0.1-0.2 mg/kg); gene therapy; used silastic tubing; pumps and tubing primed overnight in PBS; 100U/ml streptomycin; 100U/ml penicillin; 1mg/ul rat serum albumin;

Q3754: Y. Lu*, et al.* TRAF6 upregulation in spinal astrocytes maintains neuropathic pain by integrating TNF-alpha and IL-1beta signaling. Pain 2014;155(2618-2629
Agents: Oligonucleotide, antisense; oligonucleotide, mismatch **Vehicle:** Not Stated; **Route:** CSF/CNS (intrathecal); **Species:** Mice; **Pump:** 1007D; **Duration:** 5 days;
ALZET Comments: Animal info (ICR, adult, male, 8 wks old); PE8 catheter used; antisense (TRAF6); neuropathic pain

Q3735: W. K. D. Ko*, et al.* RGS4 is involved in the generation of abnormal involuntary movements in the unilateral 6-OHDA-lesioned rat model of Parkinson's disease. NEUROBIOLOGY OF DISEASE 2014;70(138-148
Agents: Oligonucleotide, antisense **Vehicle:** Not Stated; **Route:** CSF/CNS (lateral striatum); **Species:** Rat; **Pump:** 2004; **Duration:** Not Stated;
ALZET Comments: Control animals received saline IP; animal info (male, Sprague Dawley); ALZET brain infusion kit used; antisense (RGS4)

Q5598: L. Winer*, et al.* SOD1 in cerebral spinal fluid as a pharmacodynamic marker for antisense oligonucleotide therapy. JAMA Neurol 2013;70(2):201-7
Agents: Oligonucleotide, antisense (333611) **Vehicle:** Saline; **Route:** CSF/CNS (right lateral ventricle); **Species:** Rat; **Pump:** 2004; **Duration:** 30 days;
ALZET Comments: Controls received mp w/ vehicle; animal info (2 months old); antisense (333611); half-life (p.205); peptides; Therapeutic indication (Amyotrophic lateral sclerosis); Dose (100ug/d);

Q2462: F. M. Uckun*, et al.* Rational design of an immunoconjugate for selective knock-down of leukemia-specific E2A-PBX1 fusion gene expression in human Pre-B leukemia. Integrative Biology 2013;5(1):122-132
Agents: Oligonucleotide, alpha CD 19 **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice (SCID); **Pump:** 1002; **Duration:** 14 days;
ALZET Comments: Control animals received mp w/ control oligonucleotide; antisense (E2A-PBX1 with mAb specific for CD 19 receptor); cancer (leukemia)

Q2912: C. Tosun*, et al.* Inhibition of the Sur1-Trpm4 Channel Reduces Neuroinflammation and Cognitive Impairment in Subarachnoid Hemorrhage. Stroke 2013;44(12):3522-3528
Agents: Glibenclamide; oligonucleotide, antisense **Vehicle:** DMSO; **Route:** IV; **Species:** Rat; **Pump:** 2001; **Duration:** 1 week; 24 hours;
ALZET Comments: Animal info (SAH model, Wistar, 300-350g); Sur1-Trpm4 channels are upgreulated in cortex adjaced to SAH which induces abnormal BBB permeability and neuroinflammation

Q3166: J. Qiu*, et al.* Neuroprotective Effects of MicroRNA-210 on Hypoxic-Ischemic Encephalopathy. Biomaterials Science 2013;;(;):U1-U5
Agents: Oligonucleotide, miR-210 mimic; inhibitor, miR-210 **Vehicle:** Saline; **Route:** CSF/CNS; **Species:** Rat (neonate); **Pump:** 1007D; **Duration:** 72 hours;
ALZET Comments: Controls received mp w/ vehicle; animal info (male, Sprague Dawley, P7); ischemia (hypoxic-ischemic encephalopathy); gene therapy;

Q3347: E. D. Koval*, et al.* Method for widespread microRNA-155 inhibition prolongs survival in ALS-model mice. Human Molecular Genetics 2013;22(20):4127-4135
Agents: Antagomir, miR-155 **Vehicle:** Saline; **Route:** CSF/CNS; **Species:** Mice; **Pump:** 2004; 2006; **Duration:** 28 days; 42 days;
ALZET Comments: Controls received mp w/ saline or control mi-RNA; animal info (C571BL6); antisense (oligonucleotide); neurodegenerative (ALS - Amyotrophic Lateral Sclerosis);

Q6679: T. Kondo*, et al.* Activation of p38 MAPK through transient receptor potential A1 in a rat model of gastric distension-induced visceral pain. Neuroreport 2013;24(2):68-72
Agents: Antisense oligodeoxynucleotide; Mismatch oligodeoxynucleotide **Vehicle:** Saline; **Route:** CSF/CNS (Intrathecal); **Species:** Rat; **Pump:** 2001; **Duration:** 3 days;

ALZET Comments: Controls received mp w/ vehicle; animal info (male Sprague–Dawley rats weighing 190–260 g); antisense (oligodeoxynucleotide);

Q2986: D. Kesanakurti*, et al.* Essential role of cooperative NF-kappaB and Stat3 recruitment to ICAM-1 intronic consensus elements in the regulation of radiation-induced invasion and migration in glioma. ONCOGENE 2013;32(43):5144-5155
Agents: Oligonucleotide, antisense; plasmid, scrambled vector, pSV; PBS **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice (nude); **Pump:** 2004; **Duration:** Not Stated;
ALZET Comments: Cancer (glioblastoma); animal info (nu/nu mice)

Q2603: R. Kashimoto*, et al.* Phosphorylation of ezrin/radixin/moesin (ERM) protein in spinal microglia following peripheral nerve injury and lysophosphatidic acid administration. Glia 2013;61(3):338-348
Agents: Lysophosphatidic acid; oligonucleotide, antisense **Vehicle:** Saline; **Route:** CSF/CNS (intrathecal); **Species:** Rat; **Pump:** 2001; **Duration:** 3 days;
ALZET Comments: Control animals received mp w/ vehicle; animal info (Sprague Dawley, male, 200-250 g); antisense (locked nucleic acid, LNA); behavioral testing (mechanical sensitivity)

Q2607: D. R. Kapusta*, et al.* Central Nervous System Galphai(2)-Subunit Proteins Maintain Salt Resistance via a Renal Nerve-Dependent Sympathoinhibitory Pathway. Hypertension 2013;61(2):368-U319
Agents: Oligonucleotide, G alpha i2 **Vehicle:** Saline, isotonic; **Route:** CSF/CNS; **Species:** Rat; **Pump:** 2004; **Duration:** Not Stated;
ALZET Comments: Control animals received mp w/ scrambled oligonucleotide; animal info (Sprague Dawley, male, 275-300 g)

Q2931: A. Gouaze*, et al.* Cerebral Cell Renewal in Adult Mice Controls the Onset of Obesity. PLoS One 2013;8(8):U971-U981
Agents: Uridine, bromodeoxy-; **Vehicle:** NaCl; **Route:** SC; **Species:** Mice; **Pump:** 1007D; **Duration:** 1 month; 1 week;
ALZET Comments: Brain infusion kit (3) used; antisense (Arac); 65 mm tubing connected to mp allowed for delayed delivery of vehicle for 2 days after surgery; animal info. (seven week-old male, C57BL/6);

Q5642: A. A. Eid*, et al.* Sestrin 2 and AMPK connect hyperglycemia to Nox4-dependent endothelial nitric oxide synthase uncoupling and matrix protein expression. Mol Cell Biol 2013;33(17):3439-60
Agents: Oligonucleotide, antisense (Nox4) **Vehicle:** Not Stated; **Route:** SC; **Species:** Rat; **Pump:** Not Stated; **Duration:** 2 weeks;
ALZET Comments: animal info (200-225g); antisense (Nox4); diabetes; Therapeutic indication (Diabetes); Dose (90 ng/g of body weight/day);

Q2930: S. L. DeVos*, et al.* Antisense Oligonucleotides: Treating Neurodegeneration at the Level of RNA. Neurotherapeutics 2013;10(3):486-497
Agents: Oligonucleotide, antisense, ASO **Vehicle:** Not Stated; **Route:** SC; **Species:** Rat; **Pump:** Not Stated; **Duration:** Not Stated;
ALZET Comments: Neurodegenerative (Parkinson's, Huntington, amyotrophic lateral sclerosis); paper only references ALZET. Paper provides a starting guide for designing basic ASO sequences (Fig. 4)

Q3069: S. L. DeVos*, et al.* Antisense Reduction of Tau in Adult Mice Protects against Seizures. Journal of Neuroscience 2013;33(31):12887-12897
Agents: Tau, ASO-3; Oligonucleotides, antisense scrambled **Vehicle:** Saline; **Route:** CSF/CNS; **Species:** Mice; **Pump:** Not Stated; **Duration:** 28 days;
ALZET Comments: Controls received mp w/ vehicle; animal info (C57BL6J, Tao -/-); antisense (oligonucleotides); neurodegenerative (Alzheimer's Disease); behavioral testing (elevated plus maze, Morris water maze, seizure score); gene therapy; brain tissue distribution;

Q5531: L. O. Brandenburg*, et al.* CpG oligodeoxynucleotides induce the expression of the antimicrobial peptide cathelicidin in glial cells. J Neuroimmunol 2013;255(1-2):18-31

Agents: Oligodeoxynucleotide, antisense **Vehicle:** Saline; **Route:** CSF/CNS; **Species:** Mice; **Pump:** 2004; **Duration:** 4 weeks; **ALZET Comments:** Controls received mp w/ Saline; animal info (TLR9-deficient, age: 2-3 months, weight: 19-23g); ALZET brain infusion kit 2 used;
antisense (CpG); Therapeutic indication (Immunology);