References on Huntington's Research Using ALZET® Osmotic Pumps

Q11006: P. Stepanova, *et al.* Beneficial behavioral effects of chronic cerebral dopamine neurotrophic factor (CDNF) infusion in the N171-82Q transgenic model of Huntington's disease. Scientific Reports 2023;13(1):2953
Agents: Neurotrophic factor, cerebral dopamine **Vehicle:** PBS; **Route:** CSF/CNS (right striatum); **Species:** Mice; **Strain:** C57BL/6JRccHsd × B6C3-Tg (HD82Gln)81Gschi/J; **Pump:** 1004; **Duration:** 4 weeks;
ALZET Comments: Dose (9.6 ug/ul); Controls received mp w/ vehicle; animal info: Adult female and male 9 weeks; Brain coordinates: A/P + 0.86; M/L − 1.8; D/V − 3.0; cyanoacrylate adhesive; behavioral testing (Rotarod test; Digigait test; The balance beam test); neurodegenerative (Huntington's disease); brain tissue distribution

R0398: M. Klonarakis, *et al.* The Three Sisters of Fate: Genetics, Pathophysiology and Outcomes of Animal Models of Neurodegenerative Diseases. Neuroscience and Biobehavioral Reviews 2022;135(104541
Agents: Sodium azide **Vehicle:** Not Stated; **Route:** SC; **Species:** Rat; **Pump:** Not Stated; **Duration:** 4 weeks;
ALZET Comments: animal info (Male Sprague-Dawley); neurodegenerative (Alzheimer's; Parkinson's; Huntington's disease);

Q9411: B. Martinez, *et al.* Altered microRNA expression in animal models of Huntington's disease and potential therapeutic strategies. Neural Regeneration Research 2021;16(11):2159-2169
Agents: 3-nitropropionic acid **Vehicle:** Not Stated; **Route:** SC; **Species:** Rat; **Pump:** Not Stated; **Duration:** Not Stated;
ALZET Comments: Animal info (male Lewis rats, 12 weeks old); 3-nitropropionic acid aka 3NP; neurodegenerative (Huntington's disease);

Q10148: K. Cho, *et al.* Selective striatal cell loss is ameliorated by regulated autophagy of the cortex. Life Sciences 2021;282(119822
Agents: 3-nitropropionic Acid; NQDI-1 **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Pump:** Not Stated; **Duration:** 7 days;
ALZET Comments: Dose:3-NP (0.5 µl/h); NQDI-1 (2.5 mg/kg/day); 3-nitropropionic acid aka (3-NP); NQDI-1 aka ASK1 inhibitor; "Neurodegenerative (Alzheimer's disease; Parkinson's disease (PD); Huntington's disease (HD)"

Q8479: J. Ganz, *et al.* A novel specific PERK activator reduces toxicity and extends survival in Huntington's disease models. Scientific Reports 2020;10(1):6875
Agents: MK-28 **Vehicle:** DMSO; PEG-400; **Route:** SC; **Species:** Mice; **Pump:** 1004; **Duration:** 2 weeks; 28 days;
ALZET Comments: Dose (6 mg/kg; 1 mg/kg); Controls received mp w/ vehicle; animal info (B6 wild type mice; four-week-old mice); behavioral testing (Rotarod test); MK-28 aka small molecule PERK activator; neurodegenerative (Huntington's disease);

Q8389: G. Birolini, *et al.* Striatal infusion of cholesterol promotes dose-dependent behavioral benefits and exerts disease-modifying effects in Huntington's disease mice. EMBO Mol Med 2020;12(10):e12519
Agents: cholesterol (cyclodextrin, methyl-b balanced) **Vehicle:** CSF, Artificial; **Route:** CSF/CNS (corpus striatum); **Species:** Mice; **Pump:** 1004; **Duration:** 28 days;
ALZET Comments: Controls received mp w/ vehicle; animal info (wild-type mice, 5 weeks old); behavioral testing (Rotarod, Activity Cage, Novel object recognition (NOR) test); methyl-b-cyclodextrin aka MBCD; ALZET brain infusion kit 3 used; Brain coordinates (stereotaxic coordinates 1.75 mm mediolateral, 0.5 mm anteroposterior, 3 mm dorsoventral);

Q8971: Y. Zhao, *et al.* ATAD3A oligomerization causes neurodegeneration by coupling mitochondrial fragmentation and bioenergetics defects. Nature Communications 2019;10(1):1371
Agents: TAT control peptide; DA1 peptide **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice; **Pump:** 2004; **Duration:** 6, 8 weeks;
ALZET Comments: Dose (1 mg/kg/day); animal info (Male, YAC128, 3 month old); behavioral testing (Tail Suspension Test); pumps replaced every 4 weeks; peptides; neurodegenerative (Huntington's Disease);

Q7602: E. Paldino, *et al.* Modulation of Phospho-CREB by Systemically Administered Recombinant BDNF in the Hippocampus of the R6/2 Mouse Model of Huntington's Disease. Neurosci J 2019;2019(8363274
Agents: neurotrophic factor, Recombinant brain derived **Vehicle:** Saline **Route:** SC **Species:** Mice **Pump:** 1004 **Duration:** 4 wk
ALZET Comments: Dose (4 ug/d); Controls received mp w/ vehicle; animal info (4 week old, Male);

Q6969: A. U. Joshi, *et al.* Drp1/Fis1-mediated mitochondrial fragmentation leads to lysosomal dysfunction in cardiac models of Huntington's disease. J Mol Cell Cardiol 2019;127(125-133
Agents: P110 **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice; **Pump:** Not Stated; **Duration:** 8 weeks;
ALZET Comments: Dose ((3 mg/Kg/day); animal info (5-week old Hemizygous R6/2 HD mice); P110 is a Drp1/Fis1 interaction peptide inhibitor; neurodegenerative (Huntington's);

Q7587: Y. T. Hsu, *et al.* Enhanced Na(+) -K(+) -2Cl(-) cotransporter 1 underlies motor dysfunction in Huntington's disease. Mov Disord 2019;34(6):845-857
Agents: XPro1595 **Vehicle:** Saline; **Route:** CSF/CNS (lateral ventricle); **Species:** Mice; **Pump:** 1004; **Duration:** 4 weeks;
ALZET Comments: "Dose (0.08 mg/kg/day); Controls received mp w/ vehicle; animal info (6.5 weeks, Transgenic R6/2); XPro1595 is a dominant-negative inhibitor of soluble TNF-alpha; ALZET brain infusion kit 3 used; neurodegenerative (Huntington's); Therapeutic indication (disease progression in HD due to inflammation); "

Q9006: Y. Zhao, *et al.* Inhibition of Drp1 hyperactivation reduces neuropathology and behavioral deficits in zQ175 knock-in mouse model of Huntington's disease. Biochemical and Biophysical Research Communications 2018;507(1-4):319-323
Agents: Peptide, TAT; Peptide, P110 **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice; **Pump:** 2004; **Duration:** 8 months;
ALZET Comments: "Dose ((TAT 3 mg/kg/day), (P110 3 mg/kg/day)); Controls received mp w/ TAT control peptide; animal info (4 months, male, C57BL/6J and zQ175 knock-in); behavioral testing (open field test); pumps replaced once every month; long-term study; TAT is a control peptide. P110 peptide is a Drp1 inhibitor; P110 peptide is an enzyme inhibitor (Drp1); peptides; neurodegenerative (Huntington's); Therapeutic indication (Drp1 hyperactivation by P110 treatment has a neuroprotective effect in zQ175 KI HD mice by attenuating behavioral deficits, striatal neuronal loss and white matter disorganization and also reduces anxiety-like behavior); "

Q8149: K. Ouk, *et al.* Chronic paroxetine treatment prevents disruption of methamphetamine-sensitive circadian oscillator in a transgenic mouse model of Huntington's disease. Neuropharmacology 2018;131(337-350
Agents: Cocaine hydrochloride **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Pump:** 1004; **Duration:** 4 weeks;
ALZET Comments: Dose (30 mg/kg/day); 0.9% Saline used; Controls received mp w/ vehicle; animal info (12 weeks old); neurodegenerative (Huntington's Disease);

Q7127: Z. Dargaei, *et al.* Restoring GABAergic inhibition rescues memory deficits in a Huntington's disease mouse model. Proc Natl Acad Sci U S A 2018;115(7):E1618-E1626
Agents: Bumetanide **Vehicle:** DMSO, ethanol, saline; **Route:** CSF/CNS (lateral ventricle); **Species:** Mice; **Pump:** 1002; **Duration:** 2 weeks;
ALZET Comments: Dose (6 mg/mL); 50% DMSO and 15% ethanol used; Controls received mp w/ vehicle; animal info (Males, females, R6/2); behavioral testing (Novel object recognition test, Novel object location test); functionality of mp verified by (incorrectly) weighing the pump; functionality of mp verified by (incorrectly) weighing the pump; Cannula placement and patency were confirmed by injection of luxol fast green dye followed by dissection of the brain while; neurodegenerative (Huntington's disease); Bumetanide was administered directly to the lateral ventricle since previous studies reported that brain penetration may not be optimal following systemic administration due to its pharmacokinetic properties;

Q7116: D. D. Child, *et al.* Cardiac mTORC1 Dysregulation Impacts Stress Adaptation and Survival in Huntington's Disease. Cell Reports 2018;23(4):1020-1033
Agents: Isoproterenol **Vehicle:** PBS; **Route:** SC; **Species:** Mice; **Pump:** Not Stated; **Duration:** 14 days;
ALZET Comments: Dose (30 mg/kg/day); animal info (Male, B6C3F1/J or C56B6/J); neurodegenerative (Huntington's disease);

Q6196: L. Naia*, et al.* Comparative Mitochondrial-Based Protective Effects of Resveratrol and Nicotinamide in Huntington's Disease Models. Mol Neurobiol 2017;54(7):5385-5399
Agents: Resveratrol; Nicotinamide **Vehicle:** Cyclodextrin, 2-hydroxypropyl-b; Saline; **Route:** SC; **Species:** Mice; **Pump:** Not Stated; **Duration:** 28 days;
ALZET Comments: Dose (resveratrol 1 mg/kg/day; nicotinamide 250 mg/kg/day); Controls received mp w/ vehicle; animal info (9-month-old YAC128 transgenic mice and age-matched WT controls); neurodegenerative (Huntington's Disease);

Q6704: L. Naia*, et al.* Histone Deacetylase Inhibitors Protect Against Pyruvate Dehydrogenase Dysfunction in Huntington's Disease. J Neurosci 2017;37(10):2776-2794
Agents: Sodium butyrate **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Pump:** 2004; **Duration:** 28 days;
ALZET Comments: Dose (1 mg/kg/d); 0.9% saline used; Controls received mp w/ vehicle; post op. care (butorphanol (1:50; 2.5 ml/kg));

Q6450: Y. H. Kao*, et al.* Targeting ENT1 and adenosine tone for the treatment of Huntington's disease. Hum Mol Genet 2017;26(3):467-478
Agents: JMF1907 **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice; **Pump:** Not Stated; **Duration:** 6 weeks;
ALZET Comments: Dose (0.11mg/kg/day); Controls received mp w/ vehicle; animal info (7 week old R6/2 mice); enzyme inhibitor (ENT1); neurodegenerative (Huntington's disease);

Q5966: P. Weydt. Mechanisms and Modifiers of Energy Metabolism in ALS and Huntington Disease. Open Access Repositorium der Universität Ulm 2016;
Agents: Cannabinol **Vehicle:** PEG 400; **Route:** SC; **Species:** Mice; **Pump:** 2004; **Duration:** 4 weeks;
ALZET Comments: animal info (SOD 1 transgenic); pumps replaced every 28 days; Therapeutic indication (amyotrophic lateral sclerosis); Dose (5 mg/kg);

Q4882: A. M. Schroeder*, et al.* Cardiac Dysfunction in the BACHD Mouse Model of Huntington's Disease. PLoS One 2016;11(1):1-25
Agents: Isoproterenol **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Pump:** 2001; **Duration:** 3 months;
ALZET Comments: Controls received mp w/ vehicle; animal info (BACHD or WT, 2-3 months old); neurodegenerative (Huntington's Disease); long-term study; cardiovascular; Dose (0.24, 0.48, 0.97 mg/day);

Q5174: Y. Pan*, et al.* Inhibition of DNA Methyltransferases Blocks Mutant Huntingtin-Induced Neurotoxicity. Sci Rep 2016;6(31022
Agents: Cytidine, fluorodeoxy- **Vehicle:** Saline; **Route:** CSF/CNS; **Species:** Mice; **Pump:** 2001; **Duration:** 1 week;
ALZET Comments: ALZET brain infusion kit 3 used; neurodegenerative (Huntington's disease); stability verified by ("…FdCYd fully maintained its neuroprotective activity after 45 days of pre-incubation" see supplement 2); "…decitabine and FdCyd, are known to be degraded rapidly by cytidine deaminase in the liver (in vivo half-life of decitabine <20 min)62, indicating that systemic administration may not be an effective strategy for drug delivery to the brain. We therefore chose (icv) administration using an Alzet osmotic pump, which provides continuous infusion of drug at a consistent rate from a subcutaneous pump" pg 8; FdCyd aka Cytidine, fluorodeoxy-; decitabine and FdCyd are similar in structure

Q6590: Y. Mao*, et al.* Targeting TEAD/YAP-transcription-dependent necrosis, TRIAD, ameliorates Huntington's disease pathology. Hum Mol Genet 2016;25(21):4749-4770
Agents: Lysophosphatidic acid; Sphingosine-1-phosphate **Vehicle:** PBS; **Route:** CSF/CNS (subarachnoid); **Species:** Mice; **Pump:** Not Stated; **Duration:** 3 days;
ALZET Comments: Controls received mp w/ vehicle; animal info (9 week old R6/2 mice); Brain coordinates (lateral 0.6mm; -2.0mm from Bregma);

Q4907: Jun Wu, *et al.* Enhanced Store-Operated Calcium Entry Leads to Striatal Synaptic Loss in a Huntington's Disease Mouse Model. The Journal of Neuroscience 2016;36(1):125-141
Agents: EVP4593 **Vehicle:** DMSO; PEG 300; **Route:** CSF/CNS; **Species:** Mice (transgenic); **Pump:** 2006; **Duration:** 6 weeks;
ALZET Comments: Controls received mp w/ vehicle; animal info (YAC128 or WT, 10.5 months old); 10% DMSO and 90% PEG used; neurodegenerative (Huntington's disease);

Q4804: Ilaria Ceccarelli, *et al.* Recombinant Adeno Associated Viral (AAV) vector type 9 delivery of Ex1-Q138-mutant huntingtin in the rat striatum as a short-time model for in vivo studies in drug discovery. Neurobiology of Disease 2016;86):41-51
Agents: Cystamine dihydrochloride **Vehicle:** Dulbecco's PBS; **Route:** SC; **Species:** Rat; **Pump:** 2ML4; **Duration:** 21 days;
ALZET Comments: Controls received mp w/ vehicle; animal info (female, Wistar, 175-200g); neurodegenerative (Huntington's disease); Dose (100 mg/Kg/day);

Q5858: X. Guo, *et al.* VCP recruitment to mitochondria causes mitophagy impairment and neurodegeneration in models of Huntington's disease. Nat Commun 2016;7(12646
Agents: TAT peptide; HV-3 peptide **Route:** SC; **Species:** Mice; **Duration:** 8 weeks, 9 months;
ALZET Comments: Controls received mp w/ control peptide; animal info (5 weeks old, 3 months old); pumps replaced every 4 weeks in 5 week old mice, replaced every month x 9 months; long-term study; peptides; Dose (3 mg/kg/day);

Q6163: M. H. Disatnik, *et al.* Potential biomarkers to follow the progression and treatment response of Huntington's disease. J Exp Med 2016;213(12):2655-2669
Agents: P110-TAT (47-57) **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice; **Pump:** Not Stated; **Duration:** 1 week, 8 weeks;
ALZET Comments: Dose (3 mg/Kg/d); Controls received mp w/ vehicle; animal info (5 week old Hemizygous R6/2 HD mice); pumps replaced every 4 weeks; neurodegenerative (Huntington's);

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 (Huntington's);"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);

Q5604: M. Anglada-Huguet, *et al.* Prostaglandin E2 EP2 activation reduces memory decline in R6/1 mouse model of Huntington's disease by the induction of BDNF-dependent synaptic plasticity. Neurobiol Dis 2016;95(22-34
Agents: Misoprostol **Vehicle:** PBS; **Route:** IP; **Species:** Mice; **Pump:** 1004; **Duration:** 4 weeks;
ALZET Comments: Controls received mp w/ vehicle; animal info (14-18 weeks) ; neurodegenerative (Huntington's diease); behavioral testing (T-maze test, novel object recognition test); Therapeutic indication (Huntington's disease); Dose (50 µg/kg/day);

Q3738: J. G. Doria, *et al.* The mGluR5 positive allosteric modulator, CDPPB, ameliorates pathology and phenotypic signs of a mouse model of Huntington's disease. NEUROBIOLOGY OF DISEASE 2015;73(163-173
Agents: CDPPB **Vehicle:** DMSO; **Route:** SC; **Species:** Mice; **Pump:** 2006; **Duration:** 18 weeks;
ALZET Comments: Control animals received mp w/ vehicle; animal info (FVB/NJ, FVB/N-Tg); long-term study; CDPPB is a mGluR5 PAM, a metabotropic glutamate receptor 5 positive allosteric modulator; neurodegenerative disease (Huntington's disease)

Q4296: I. Aharony, *et al.* A Huntingtin-based peptide inhibitor of caspase-6 provides protection from mutant Huntingtin-induced motor and behavioral deficits. HUMAN MOLECULAR GENETICS 2015;24(2604-2614
Agents: ED11 **Vehicle:** Saline; water, sterile; **Route:** SC; **Species:** Mice; **Pump:** 1004; **Duration:** 20 weeks;
ALZET Comments: Controls received mp w/ vehicle; animal info (5 weeks old); animal info (5 weeks old); neurodegenerative (Huntington's disease); behavioral testing (rotarod test, forced swim test, open field test, light dark choice test); long-term study; peptides; enzyme inhibitor (caspase-6);

Q3766: M. Mielcarek, *et al.* The Huntington's Disease-Related Cardiomyopathy Prevents a Hypertrophic Response in the R6/2 Mouse Model. PLoS One 2014;9(U2078-U2087
Agents: Isoproterenol hydrochloride **Vehicle:** PBS; **Route:** SC; **Species:** Mice; **Pump:** 2002; **Duration:** 14 days;
ALZET Comments: Control animals received mp w/ vehicle; animal info (hemizygous, R6/2)

Q3932: T. C. Ju, *et al.* AMPK-alpha1 functions downstream of oxidative stress to mediate neuronal atrophy in Huntington's disease. Biochimica et Biophysica Acta (BBA) - Molecular Basis of Disease 2014;1842(1668-1680
Agents: AICAR **Vehicle:** Not Stated; **Route:** CSF/CNS (striatum); **Species:** Mice; **Pump:** Not Stated; **Duration:** 1 day;
ALZET Comments: Animal info (R6/2 or Hdh150Q); neurodegenerative (Huntington's disease);

Q3507: H. Y. Hsiao, *et al.* Inhibition of soluble tumor necrosis factor is therapeutic in Huntington's disease. Human Molecular Genetics 2014;23(4328-4344
Agents: XPro1595 **Vehicle:** Not Stated; **Route:** CSF/CNS; **Species:** Mice; **Pump:** 2004; **Duration:** 28 days;
ALZET Comments: Controls received mp w/ saline; animal info (WT or R62, 7.5-11.5 weeks old); ALZET brain infusion kit 3 used; comparison of IP injections vs mp ICV infusion; neurodegenerative (Huntington's disease); behavioral testing (rotarod performance, beam walking, foot clasping, t-maze); "Our data also showed that an i.p. injection of XPro1595 further decreased theBW of R6/2 mice, whereas an i.c.v. infusion of a dominant negative inhibitor of soluble TNF-a (XPro1595) did not affect the BW... i.c.v. delivery of XPro1595 appeared to be safer and more effective for treating HD." pg 4334; XPro1595 is a selective inhibitor of solTNF;

Q3403: M. Anglada-Huguet, *et al.* Prostaglandin E2 EP1 Receptor Antagonist Improves Motor Deficits and Rescues Memory Decline in R6/1 Mouse Model of Huntington's Disease. MOLECULAR NEUROBIOLOGY 2014;49(2):784-795
Agents: SC-51089 **Vehicle:** Water; **Route:** IP; **Species:** Mice (transgenic); **Pump:** 1004; 1002; **Duration:** 28 days; 10 days;
ALZET Comments: Controls received mp w/ vehicle; animal info (male, R6/1, 13 weeks old); neurodegenerative (Huntington's disease); behavioral testing (clasping; rotarod apparatus; balance beam; vertical pole; novel object recognition; t-maze spontaneous alternation task); "SC-51089 treatment reduced drastically the volume of striatal lesion induced by QUIN injection (62.3 %; Fig. 1),demonstrating that SC-51089 mini-osmotic pump deliver system exerts a neuroprotective role" pg 787; SC-51089 is an EP1 receptor antagonist

Q4765: Jianfang Chen, *et al.* Iron Accumulates in Huntington's Disease Neurons: Protection by Deferoxamine. PLoS One 2013;8(10):12
Agents: deferoxamine **Vehicle:** Not Stated; **Route:** CSF/CNS (left lateral ventricle); **Species:** mice; **Pump:** 1002; **Duration:** Not Stated;
ALZET Comments: 6 wk old, R6/2 HD mice; neurodegenerative (Huntington's disease); dose: 1 nmole/hr

Q3188: X. Guo, *et al.* Inhibition of mitochondrial fragmentation diminishes Huntington's disease-associated neurodegeneration. Journal of Clinical Investigation 2013;123(12):5371-5388
Agents: P110-TAT **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice (transgenic); **Pump:** Not Stated; **Duration:** 8 weeks;
ALZET Comments: Controls received mp w/TAT control peptide; animal info (R6/2 HD model, 5 weeks old); functionality of mp verified by FITC positive signal in neurons pg 5379; pumps replaced every 28 days; neurodegenerative (Huntington's disease); no stress (see pg.5381, 5383); behavioral testing (motor function and behaviors); stability verified by (HPLC with UV detection for 28 days); peptides; P110-TAT is a Drp1-selective peptide inhibitor

Q2946: C. Giampa, *et al.* Systemic Delivery of Recombinant Brain Derived Neurotrophic Factor (BDNF) in the R6/2 Mouse Model of Huntington's Disease. PLoS One 2013;8(6):U444-U455
Agents: Brain-derived neurotrophic factor; **Vehicle:** PBS; BSA; **Route:** SC; **Species:** Mice; **Pump:** 1004; **Duration:** 28 days;
ALZET Comments: Controls received mp w/ saline; animal info (F1, R6/2); pumps replaced every 28 days; behavioral testing (motor coordination); mp were used to infuse BDNF peripherally to examine its effect centrally;

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)

Q2731: D. B. Yu*, et al.* Single-Stranded RNAs Use RNAi to Potently and Allele-Selectively Inhibit Mutant Huntingtin Expression. Cell 2012;150(5):895-908
Agents: RNA, small interfering, single stranded **Vehicle:** PBS, sterile; **Route:** CSF/CNS; **Species:** Mice; **Pump:** 2002; 2004; **Duration:** 28 days;
ALZET Comments: Control animals received mp w/ vehicle; animal info (HdhQ150); cyanoacrylate adhesive used; neurodegenerative (Huntington's disease)

R0305: S. Ramaswamy*, et al.* Gene therapy for Huntington's disease. NEUROBIOLOGY OF DISEASE 2012;48(2):243-254
Agents: Ciliary neurotrophic factor **Vehicle:** Not Stated; **Route:** Not Stated; **Species:** Not Stated; **Pump:** Not Stated; **Duration:** Not Stated;
ALZET Comments: Peptides; method of delivery with mp mentioned as efficiently reduces cell death in the AQ-treated striatum (pg.5); ALZET not mentioned often;

Q3032: H. B. Kordasiewicz*, et al.* Sustained Therapeutic Reversal of Huntington's Disease by Transient Repression of Huntingtin Synthesis. Neuron 2012;74(1031-1044
Agents: Oligonucleotide, antisense, human, huntingtin; **Route:** CSF/CNS; **Species:** Mice; **Duration:** 2 weeks;
ALZET Comments: Controls received mp w/ saline; animal info (BACHD mouse model of HD, 2 months); dose-response (Fig 1A); neurodegenerative (Huntington's disease); behavioral testing (accelerating rotarod, elevated-plus maze, open-field test, light/dark analysis)

Q1989: K. J. Griffioen*, et al.* Aberrant heart rate and brainstem brain-derived neurotrophic factor (BDNF) signaling in a mouse model of Huntington's disease. Neurobiology of Aging 2012;33(7):U377-U381
Agents: Brain-derived neurotrophic factor; **Route:** CSF/CNS; **Species:** Mice; **Pump:** 1002; **Duration:** 7 days;
ALZET Comments: Controls received mp w/ artificial CSF; animal info (N17182Q, wt, male); ALZET brain infusion kit 3 used

Q1833: A. Di Pardo*, et al.* Ganglioside GM1 induces phosphorylation of mutant Huntington and restores normal motor behavior in Huntington disease mice. PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA 2012;109(9):3528-3533
Agents: Ganglioside GM1 **Vehicle:** CSF, artificial; **Route:** CSF/CNS; **Species:** Mice; **Pump:** 2004; **Duration:** 28 days;
ALZET Comments: Controls received mp w/ vehicle; animal info (YAC128, male, 5-6 mo old, 26-34 g); neurodegenerative (Huntington's disease)

Q2281: M. M. Chaumeil*, et al.* pH as a biomarker of neurodegeneration in Huntington's disease: a translational rodent-human MRS study. Journal of Cerebral Blood Flow and Metabolism 2012;32(5):771-779
Agents: Nitropropionic acid, 3- **Vehicle:** Not Stated; **Route:** SC; **Species:** Rat; **Pump:** Not Stated; **Duration:** Not Stated;
ALZET Comments: Animal info (male, Lewis, 12 wks old, 336 g)

Q0821: S. Zhu*, et al.* Necrostatin-1 ameliorates symptoms in R6/2 transgenic mouse model of Huntington's disease. Cell Death & Disease 2011;2(U38-U41
Agents: Necrostatin-1 **Vehicle:** Cyclodextran, methyl-beta; PBS; **Route:** CSF/CNS; **Species:** Mice; **Duration:** 6 weeks;
ALZET Comments: Controls received mp w/ vehicle; animal info (female, 5 wks old); pumps replaced after 28 days; enzyme inhibitor (RIP1 kinase); half-life (p. e115) "1-hour"; neurodegenerative (Huntington's disease); behavioral testing (rotarod performance); "Nec-1 can cross the blood-brain barrier easily but has a short half-life, about B1h.10 So we delivered Nec-1 intracerebroventricularly with Alzet osmotic pump by neurosurgery to ensure continuous supply of the drug."

Q1202: S. T. Lee*, et al.* Altered microRNA regulation in Huntington's disease models. Experimental Neurology 2011;227(1):172-179
Agents: Nitropropionic acid, 3- **Vehicle:** Not Stated; **Route:** SC; **Species:** Rat; **Pump:** 2ML1; **Duration:** 1, 3, 5 days;
ALZET Comments: Animal info (Lewis, male, 300-320 g, 12 wks old)

Q1152: T. C. Ju*, et al.* Nuclear translocation of AMPK-alpha1 potentiates striatal neurodegeneration in Huntington's disease. Journal of Cell Biology 2011;194(2):209-227
Agents: AICAR **Vehicle:** Not Stated **Route:** CSF/CNS (striatum) **Species:** Mice (transgenic) **Pump:** Not Stated **Duration:** 7 days
ALZET Comments: Controls received mp w/ saline; animal info (12 wks old, male, R6/2 Tg)

Q1127: N. K. Huang*, et al.* A New Drug Design Targeting the Adenosinergic System for Huntington's Disease. PLoS One 2011;6(6):U56-U68
Agents: T1-11 **Vehicle:** DMSO; **Route:** SC; **Species:** Mice; **Pump:** Not Stated; **Duration:** 48 hours; 6 weeks;
ALZET Comments: Controls received mp w/ vehicle; animal info (C57BL/6, A2AR KO, 7-99 wks old); T1-11 also known as N6-(4-hydroxybenzyl)adenine riboside; 1% DMSO used

Q0428: T. Hathorn*, et al.* Nicotinamide improves motor deficits and upregulates PGC-1alpha and BDNF gene expression in a mouse model of Huntington's disease. Neurobiology of Disease 2011;41(1):43-50
Agents: Nicotinamide **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice; **Pump:** 2004; **Duration:** 10 weeks;
ALZET Comments: Controls received mp w/saline; animal info (male, female, B6.HDR6/1, 8 wks old); pumps replaced after 5 weeks; long-term study; neurodegenerative (Huntington's disease); behavioral testing (open field testing, rotarod performance, balance beam)

Q1507: A. Giralt*, et al.* Increased PKA signaling disrupts recognition memory and spatial memory: role in Huntington's disease. Human Molecular Genetics 2011;20(21):4232-4247
Agents: cAMP, Rp-adenosine **Vehicle:** PBS; **Route:** CSF/CNS (hippocampus); **Species:** Mice; **Pump:** 2004; **Duration:** Not Stated;
ALZET Comments: Controls received mp w/ vehicle; animal info (WT, R6/2, 8 wks old); bilaterial cannula used; enzyme inhibitor (protein kinase); bilateral infusion;

Q1502: A. I. Duarte*, et al.* IGF-1 protects against diabetic features in an in vivo model of Huntington's disease. Experimental Neurology 2011;231(2):314-319
Agents: Insulin-like growth factor-1, recomb. human **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Pump:** 1002 **Duration:** 14 days
ALZET Comments: Controls received mp w/ vehicle; animal info (R6/2, wt, male, 9 wks old); neurodegenerative (Huntington's disease)

Q1472: X. S. Chen*, et al.* Expanded Polyglutamine-Binding Peptoid as a Novel Therapeutic Agent for Treatment of Huntington's Disease. Chemistry & Biology 2011;18(9):1113-1125
Agents: HQP09 **Vehicle:** CSF, artificial; **Route:** CSF/CNS; **Species:** Mice; **Pump:** 1004; **Duration:** 30 days;
ALZET Comments: Controls received mp w/ vehicle; HQP09 is a peptoid; animal info (adult, 8-9 mo old, WT, YAC128); ALZET brain infusion kit 3 used; neurodegenerative (Huntington's disease); HQP09 is a peptoid

Q0499: E. Puerta*, et al.* Sildenafil protects against 3-nitropropionic acid neurotoxicity through the modulation of calpain, CREB, and BDNF. NEUROBIOLOGY OF DISEASE 2010;38(2):237-245
Agents: Nitropropionic acid, 3- **Vehicle:** Not Stated; **Route:** SC; **Species:** Rat; **Pump:** 2ML1; **Duration:** 5 days;
ALZET Comments: Animal info (male, Lewis, 290-340 g.); neurodegenerative (Huntington's Disease)

Q1643: M. Kandasamy, *et al.* Stem Cell Quiescence in the Hippocampal Neurogenic Niche Is Associated With Elevated Transforming Growth Factor-beta Signaling in an Animal Model of Huntington Disease. Journal of Neuropathology and Experimental Neurology 2010;69(7):717-728
Agents: Transforming growth factor, beta 1, recomb. **Vehicle:** CSF, artificial; **Route:** CSF/CNS; **Species:** Rat; **Pump:** 2002; **Duration:** 14 days;
ALZET Comments: Controls received mp w/ vehicle; animal info (Fischer 344, female, 2-3 mo old, 180 g)

P9556: L. C. Yang, *et al.* Combination therapy with Coenzyme Q_{10} and creatine produces additive neuroprotective effects in models of Parkinson's and Huntington's Diseases. Journal of Neurochemistry 2009;109(5):1427-1439
Agents: MPTP; Nitropropionic acid, 2- **Vehicle:** PBS; **Route:** SC; **Species:** Rat; Mice; **Pump:** 2004; 2ML1; **Duration:** Not Stated;
ALZET Comments: Animal info (male, C57BL/6, 25-30g, Lewis 260-300g); neurodegenerative (Parkinson's, Huntington's disease)

P9837: L. C. Yang, *et al.* Neuroprotective Effects of the Triterpenoid, CDDO Methyl Amide, a Potent Inducer of Nrf2-Mediated Transcription. PLoS One 2009;4(6):U87-U99
Agents: MPTP; nitropropionic acid, 3- **Vehicle:** PBS; **Route:** SC; **Species:** Rat; mice; **Pump:** 2004; 2ML1; **Duration:** 7, 28 days;
ALZET Comments: Animal info (male, C57BL/6, 3 months old, 25-30 g., male, Lewis, 3 months old, 250-300 g.); neurodegenerative (Parkinson's, Huntington's Disease)

Q0693: M. Rohe, *et al.* Brain-Derived Neurotrophic Factor Reduces Amyloidogenic Processing through Control of SORLA Gene Expression. Journal of Neuroscience 2009;29(49):15472-15478
Agents: Brain-derived neurotrophic factor **Vehicle:** CSF, artificial; **Route:** CSF/CNS (hippocampus); **Species:** Mice; **Pump:** 1007D; **Duration:** 7 days;
ALZET Comments: Controls received mp w/ vehicle; animal info (BNDF -/-); ALZET brain infusion kit 2 used; neurodegenerative (Alzheimer's disease, Huntington's disease)

Q0814: K. J. Cho, *et al.* INHIBITION OF APOPTOSIS SIGNAL-REGULATING KINASE 1 REDUCES ENDOPLASMIC RETICULUM STRESS AND NUCLEAR HUNTINGTIN FRAGMENTS IN A MOUSE MODEL OF HUNTINGTON DISEASE. Neuroscience 2009;163(4):1128-1134
Agents: Antibody, anti-Ask1 **Vehicle:** Not Stated; **Route:** CSF/CNs (striatum, intra-); **Species:** Mice (transgenic); **Pump:** Not Stated; **Duration:** 4 weeks;
ALZET Comments: Controls received mp w/ rabbit IgG or pre-immune Ask1 antibody); animal info (8-12 wks old, R6/2 HD male tg); neurodegenerative (Huntington's disease); behavioral testing (rotarod test); pump infused at a rate of 1 ul/hr

P9305: J. E. Park, *et al.* Galantamine reduces striatal degeneration in 3-nitropropionic acid model of Huntington's disease. Neuroscience Letters 2008;448(1):143-147
Agents: Nitropropionic acid, 3- **Vehicle:** PBS; **Route:** SC; **Species:** Rat; **Pump:** 2ML1; **Duration:** 5 days;
ALZET Comments: Animal info (male, Lewis, 12 wks old, 300-320 g.); neurodegenerative (Huntington's Disease)

P8801: S. T. Lee, *et al.* Granulocyte-colony stimulating factor attenuates striatal degeneration with activating survival pathways in 3-nitropropionic acid model of Huntington's disease. Brain Research 2008;1194(;):130-137
Agents: Nitropropionic acid, 3- **Vehicle:** PBS; NaOH; **Route:** SC; **Species:** Rat; **Pump:** 2ML1; **Duration:** 5 days;
ALZET Comments: Animal info (male, Lewis, 300-320g., 12 wks. old); neurodegenerative (Huntington's disease)

P8922: C. Escartin, *et al.* IGF-1 exacerbates the neurotoxicity of the mitochondrial inhibitor 3NP in rats. Neuroscience Letters 2007;425(3):167-172
Agents: Insulin-like growth factor I; Nitropropionic acid, 3- **Vehicle:** Acetic acid; BSA; **Route:** SC; **Species:** Rat; **Pump:** 2001; 2ML1; **Duration:** 5 days;
ALZET Comments: Controls received mp w/ vehicle; functionality of mp verified by plasma glucose; dose-response (fig. 1, pg. 169); ALZET brain infusion kit used; animal info (Lewis, 400 g.); neurodegenerative (Huntington's Disease)

P8626: S. R. Cho, *et al.* Induction of neostriatal neurogenesis slows disease progression in a transgenic murine model of Huntington disease. Journal of Clinical Investigation 2007;117(10):2889-2902
Agents: Ara-C **Vehicle:** Saline; **Route:** CSF/CNS; **Species:** Mice (transgenic); **Pump:** 1002; **Duration:** 4 weeks;
ALZET Comments: Controls received mp w/ vehicle; pumps replaced after 2 weeks; ALZET brain infusion kit 3 used; animal info (R6/2, wt, 5-9 weeks old); neurodegenerative (Huntington's disease)

P8039: T. M. Woodruff, *et al.* Therapeutic activity of C5a receptor antagonists in a rat model of neurodegeneration. FASEB Journal 2006;20(9):1407-1417
Agents: Nitropropionic acid, 3- **Vehicle:** PBS; Sodium hydroxide; **Route:** SC; **Species:** Rat; **Pump:** 2ML1; **Duration:** 7 days;
ALZET Comments: Animal info (male, Lewis); neurodegenerative (Huntington's disease)

P7909: B. Picconi, *et al.* Plastic and behavioral abnormalities in experimental Huntington's disease: A crucial role for cholinergic interneurons. NEUROBIOLOGY OF DISEASE 2006;22(1):143-152
Agents: Nitropropionic acid, 3- **Vehicle:** Water, distilled; NaOH; **Route:** SC; **Species:** Rat; **Pump:** 2ML4; **Duration:** 5 days;
ALZET Comments: Controls received empty mp; neurodegenerative (Huntington's disease); animal info (male, Lewis, 340-370 g, 12 weeks old)

P8115: S. T. Lee, *et al.* Memantine reduces striatal cell death with decreasing calpain level in 3-nitropropionic model of Huntington's disease. Brain Research 2006;1118(;):199-207
Agents: Nitropropionic acid, 3- **Vehicle:** PBS; NaOH; **Route:** SC; **Species:** Rat; **Pump:** 2ML1; **Duration:** 4, 5 days;
ALZET Comments: Animal Info (male, Sprague-Dawley, 220-240g.); neurodegenerative (Huntington's disease)

P8899: C. Jacquard, *et al.* Brain mitochondrial defects amplify intracellular [Ca^{2+}] rise and neurodegeneration but not Ca^{2+} entry during NMDA receptor activation. FASEB Journal 2006;20(7):U322-U336
Agents: Nitropropionic acid, 3- **Vehicle:** Water, deionized; NaOH; Phosphate buffer; **Route:** SC; **Species:** Rat; **Pump:** 2ML1; **Duration:** 6 days;
ALZET Comments: Controls received empty mp; dose-response (fig.2); animal info (male, Lewis, 320-350 g., 12 wks old); neurodegenerative (Huntington's Disease)

R0232: E. Brouillet, *et al.* 3-Nitropropionic acid: a mitochondrial toxin to uncover physiopathological mechanisms underlying striatal degeneration in Huntington's disease. Journal of Neurochemistry 2005;95(6):1521-1540
Agents: Nitropropionic acid, 3- **Vehicle:** Not Stated; **Route:** SC; IP; **Species:** Rat; mice; **Pump:** 2002; 2ML1; 2ML4; **Duration:** 4 weeks; 5,14 days;
ALZET Comments: Neurodegenerative (Huntington's disease); dose-response (table 1); toxicology; animal info (C57BL/6, Sprague-Dawley, Lewis); "an improved 3NP model using osmotic minipumps in Lewis rats." (p. 1526)

P7053: B. Zucker, *et al.* Gabapentin-lactam, but not gabapentin, reduces protein aggregates and improves motor performance in a transgenic mouse model of Huntington's disease. Naunyn-Schmiedebergs Archives of Pharmacology 2004;370(2):131-139
Agents: Gabapentin-lactam; gabapentin **Vehicle:** Isobutanol; Saline; **Route:** SC; **Species:** Rat; Mice (transgenic); **Pump:** 2002; **Duration:** 4,8 weeks;
ALZET Comments: Controls received mp w/ vehicle, or no treatment; functionality of mp verified by residual volume; pumps replaced every 2 weeks; no stress (see pg. 137); half-life (pg. 134, 136) approx. 2 hours; "The continuous application of both GBP-L and of GBP by ALZET pumps have maintained the plasma levels so that the actions of these drugs at their targets in the CNS were not interrupted due to their rather short half-lives." (pg. 138); neurodegenerative (huntington's disease)

P6934: I. Lastres-Becker, *et al.* Potential involvement of cannabinoid receptors in 3-nitropropionic acid toxicity in vivo. NeuroReport 2004;15(15):2375-2379
Agents: Nitropropionic acid, 3- **Vehicle:** Not Stated; **Route:** SC; **Species:** Rat; **Pump:** 2ML1; **Duration:** 5 days;
ALZET Comments: Neurodegenerative (Huntington's disease)

P6932: C. Escartin, *et al.* Insulin growth factor-I protects against excitotoxicity in the rat striatum. NeuroReport 2004;15(14):2251-2254
Agents: Insulin-like growth factor, recomb. human **Vehicle:** BSA; acetic acid; **Route:** CSF/CNS; **Species:** Rat; **Pump:** 1003D; **Duration:** 2 days;
ALZET Comments: ALZET brain infusion kit; neurodegenerative (Huntington's disease); dental cement used

P6770: J. M. Canals, *et al.* Brain-derived neurotrophic factor regulates the onset and severity of motor dysfunction associated with enkephalinergic neuronal degeneration in Huntington's disease. Journal of Neuroscience 2004;24(35):7727-7739
Agents: Brain-derived neurotrophic factor **Vehicle:** PBS; **Route:** CSF/CNS (striatum); **Species:** Mice (transgenic); **Pump:** 2001; **Duration:** 1 week;
ALZET Comments: Controls received mp w/ vehicle; peptides; neurodegenerative (Huntington's disease)

P6441: D. Blum, *et al.* Chronic intoxication with 3-nitropropionic acid in rats induces the loss of striatal dopamine terminals without affecting nigral cell viability. Neuroscience Letters 2004;354(3):234-238
Agents: Nitropropionic acid, 3- **Vehicle:** PBS; NAOH; **Route:** SC; **Species:** Rat; **Pump:** 2ML1; **Duration:** 5 days;
ALZET Comments: Enzyme inhibitor (succinate dehydrogenase); neurodegenerative (Huntington's disease); 3NP pH was adjusted to 7.4; "chronic intoxication with 3NP leads to alterations in striatal dopamine terminals similar to those found in HD patients and transgenic models." p.237

P5599: I. Sanchez, *et al.* Pivotal role of oligomerization in expanded polyglutamine neurodegenerative disorders. Nature 2003;421(6921):373-379
Agents: Dye, Congo Red **Vehicle:** PBS; DMSO; **Route:** CSF/CNS; **Species:** Mice (transgenic); **Pump:** 2004; **Duration:** 28 days;
ALZET Comments: Controls received mp w/ vehicle; ALZET brain infusion kit 2 used (confirmed by Dr. Sanchez); neurodegenerative (Huntington's disease); 2% DMSO used

P7106: J. L. McBride, *et al.* Structural and functional neuroprotection in a rat model of Huntington's disease by viral gene transfer of GDNF. Experimental Neurology 2003;181(213-223
Agents: Nitropropionic acid, 3- **Vehicle:** Not Stated; **Route:** SC; **Species:** Rat; **Pump:** 2ML4; **Duration:** 6 days;
ALZET Comments: Neurodegenerative (huntington's disease)

P6893: N. Bizat, *et al.* In Vivo Calpain/Caspase Cross-talk during 3-Nitropropionic Acid-induced Striatal Degeneration. Journal of Biological Chemistry 2003;278(44):43245-43253
Agents: Nitropropionic acid, 3-; calpain inhibitor I **Vehicle:** DMSO; PBS; **Route:** SC; CSF/CNS; **Species:** Rat; **Pump:** 2001; 2ML1; **Duration:** 1,5 days;
ALZET Comments: Controls received mp w/ vehicle or sham operation; enzyme inhibitor (succinate dehydrogenase); ALZET brain infusion kit used; multiple pumps per animal (2); 40% DMSO used for calpain inhibitor I; neurodegenerative (Huntington's disease)

P5908: N. Bizat, *et al.* Calpain is a major cell death effector in selective striatal degeneration induced in vivo by 3-nitropropionate: Implications for Huntington's disease. Journal of Neuroscience 2003;23(12):5020-5030
Agents: Nitropropionic acid, 3-; calpain inhibitor-1 **Vehicle:** PBS; DMSO; **Route:** SC; CSF/CNS; **Species:** Rat; **Pump:** 2001; 2ML1; **Duration:** 5 days;
ALZET Comments: ALZET brain infusion kit 1 used; neurodegenerative (Huntington's disease); 3-NP was infused using the 2ML1, & the CI-1 was delivered ICV using the 2001; CI-1 was dissolved in PBS & 40% DMSO; pumps implanted simultaneously

P5367: Z. Sun, *et al.* The differential vulnerability of striatal projection neurons in 3-nitropropionic acid-treated rats does not match that typical of adult-onset Huntington's disease. Experimental Neurology 2002;176(1):55-65
Agents: Nitropropionic acid, 3- **Vehicle:** Not Stated; **Route:** SC; **Species:** Rat; **Pump:** Not Stated; **Duration:** 28 days;
ALZET Comments: Neurodegenerative (Huntington's disease)

P6179: V. Mittoux, *et al.* Corticostriatopallidal Neuroprotection by Adenovirus-Mediated Ciliary Neurotrophic Factor Gene Transfer in a Rat Model of Progressive Striatal Degeneration. Journal of Neuroscience 2002;22(11):4478-4486
Agents: Nitropropionic acid, 3- **Vehicle:** Water, deionized; NaOH; **Route:** SC; **Species:** Rat; **Pump:** 2ML4; **Duration:** 5,16 days;
ALZET Comments: Controls received mp w/ nothing; gene therapy; neurodegenerative (Huntington's disease); behavioral testing; 3NP had a pH of 7.4

P5084: M. Garcia, *et al.* The mitochondrial toxin 3-nitropropionic acid induces striatal neurodegeneration via a c-Jun N-terminal kinase/c-Jun module. Journal of Neuroscience 2002;22(6):2174-2184
Agents: Nitropropionic acid, 3- **Vehicle:** Water; Sodium hydroxide; **Route:** SC; **Species:** Rat; **Pump:** 2ML4; **Duration:** 3,6 days;
ALZET Comments: Controls received empty pumps; neurodegenerative (Huntington's disease); 3-NP causes pathophysiological features and striatal degeneration of Huntington's.

P5325: D. Blum, *et al.* The adenosine A1 receptor agonist adenosine amine congener exerts a neuroprotective effect against the development of striatal lesions and motor impairments in the 3-nitropropionic acid model of neurotoxicity. Journal of Neuroscience 2002;22(20):9122-9133
Agents: Nitropropionic acid, 3- **Vehicle:** PBS; **Route:** SC; **Species:** Rat; **Pump:** 2ML1; **Duration:** 5 days;
ALZET Comments: Neurodegenerative (Huntington's disease)

P5504: D. Blum, *et al.* Striatal and cortical neurochemical changes induced by chronic metabolic compromise in the 3-nitropropionic model of Huntington's disease. NEUROBIOLOGY OF DISEASE 2002;10(3):410-426
Agents: Nitropropionic acid, 3- **Vehicle:** PBS; **Route:** SC; **Species:** Rat; **Pump:** 2ML1; **Duration:** 1, 2, 3, 4, 5 days;
ALZET Comments: Neurodegenerative (Huntington's disease); neurotoxicity

P4813: J. C. Vis, *et al.* The mitochondrial toxin 3-nitropropionic acid induces differential expression patterns of apoptosis-related markers in rat striatum. Neuropathology and Applied Neurobiology 2001;27(68-76
Agents: Nitropropionic acid, 3- **Vehicle:** Water; **Route:** SC; **Species:** Rat; **Pump:** Not Stated; **Duration:** 4 weeks;
ALZET Comments: Controls received mp w/ saline; neurodegenerative (Huntington's disease)

P6937: D. Blum, *et al.* Topological analysis of striatal lesions induced by 3-nitropropionic acid in the Lewis rat. Neuropharmacology and Neurotoxicology 2001;12(8):1769-1772
Agents: Nitropropionic acid, 3- **Vehicle:** PBS; **Route:** SC; **Species:** Rat; **Pump:** 2ML1; **Duration:** 5 days;
ALZET Comments: Neurodegenerative (Huntington's Disease)

P4835: M. P. Andersen, *et al.* Effects of acute versus chronic treatment with typical or atypical antipsychotics on d-amphetamine-induced sensorimotor gating deficits in rats. Psychopharmacology 2001;156(291-304
Agents: Haloperidol; Olanzapine; Sertindole **Vehicle:** Saline; HCl; Tartaric acid; **Route:** SC; **Species:** Rat; **Pump:** 2ML4;
Duration: 21 days;
ALZET Comments: Controls received mp w/ vehicle; functionality of mp verified by drug plasma levels (" ... the continuous infusion via mini-pumps is certainly the most relevant way to mimic conditions of treatment in clinic." p. 302); dose response (p. 302); comparison of SC injections vs. mp; half-life (p. 293); compared acute, subchronic (3 day) vs chronic (21 day) treatment; oral administration also examined; antipsychotics; schizophrenia; neurodegenerative (Huntington's disease); Olanzapine and sertindole were dissolved in a minimum amount of dilute HCl before dilution in saline; Haloperidol dissolved in minimal amount of dilute tartaric acid before final dilution in 0.9% saline

P4670: S. Ouary, *et al.* Major strain differences in response to chronic systemic administration of the mitochondrial toxin 3-nitropropionic acid in rats: Implications for neuroprotection studies. Neuroscience 2000;97(3):521-530
Agents: Nitropropionic acid, 3- **Vehicle:** Saline; **Route:** SC; **Species:** Rat; **Pump:** 2ML4; **Duration:** 5 days;
ALZET Comments: Controls received empty pumps; comparison of IP injections vs. mp; neurodegenerative (Huntington's disease); mitochondrial toxin; neuroprotection.

P4756: L. Leventhal, *et al.* Cyclosporin A protects striatal neurons in vitro and in vivo from 3-nitropropionic acid toxicity. The Journal of Comparative Neurology 2000;425(471-478
Agents: Nitropropionic acid, 3- **Vehicle:** PBS; **Route:** SC; **Species:** Rat; **Pump:** 2004; **Duration:** 7 days;
ALZET Comments: Controls received mp w/ vehicle; toxicology; 3-nitro-propionate also called 3-nitropropionic acid (3NP); 3NP is a mitochondrial toxin; neurodegenerative (Huntington's disease)

P6936: C. Dautry, *et al.* Early N-Acetylaspartate Depletion is a Marker of Neuronal Dysfunction in Rats and Primates Chronically Treated With the Mitochondrial Toxin 3-Nitropropionic Acid. Journal of Cerebral Blood Flow and Metabolism 2000;20(789-799
Agents: Nitropropionic acid, 3- **Vehicle:** Not Stated; **Route:** SC; **Species:** Rat; **Pump:** 2ML4; **Duration:** 3,5 days;
ALZET Comments: Controls received empty mp; neurodegenerative (Huntington's Disease)

P7110: V. O. Ona, *et al.* Inhibition of caspase-1 slows disease progression in a mouse model of Huntington's disease. Letter to Nature 1999;399(263-267
Agents: zVAD-fmk; zFA-fmk **Vehicle:** Not Stated; **Route:** CSF/CNS; **Species:** Mice; **Pump:** Not Stated; **Duration:** 4 weeks;
ALZET Comments: Controls received mp w/ zFA-fmk; enzyme inhibitor (caspase)

P6881: M. C. Guyot, *et al.* Quantifiable bradykinesia, gait abnormalities and Huntington's disease-like striatal lesions in rats chronically treated with 3-nitropropionic acid. Neuroscience 1997;79(1):45-56
Agents: Nitropropionic acid, 3- **Vehicle:** Not Stated; **Route:** Not Stated; **Species:** Rat; **Pump:** 2ML4; **Duration:** 1 month;
ALZET Comments: Controls received mp w/ saline; comparison of IP injections vs. mp; stress/adverse reaction: (see pg. 47) 5 animals with 3NP and mp and 4 animals with 3NP IP injections died due to toxicity of agent, no animals w/ saline mp died or had any adverse effects; toxicology; neurodegenerative (Huntington's disease)

P6910: B. G. Jenkins, *et al.* Non-Invasive Neurochemical Analysis of Focal Excitotoxic Lesions in Models of Neurodegenerative Illness Using Spectroscopic Imagine. Journal of Cerebral Blood Flow and Metabolism 1996;16(450-461
Agents: Nitropropionic acid, 3-; azide, sodium **Vehicle:** Not Stated **Route:** SC **Species:** Rat **Pump:** Not Stated **Duration:** 2 wks
ALZET Comments: Neurodegenerative (Huntington's disease, Parkinson's disease)

P6935: E. Brouillet, *et al.* Age-dependent vulnerability of the striatum to the mitochondrial toxin 3-nitropropionic acid. J. Neurochem 1993;60(1):356-359
Agents: Nitropropionic acid, 3- **Vehicle:** Water, deionized; NaOH **Route:** Not Stated **Species:** Rat **Pump:** 2ML4 **Duration:** 1 month
ALZET Comments: Neurodegenerative (Huntington's disease)

P1860: G. K. Rieke, *et al.* Chronic intrastriatal L-pyroglutamate: neuropathology and neuron sparing like Huntington's Disease. Experimental Neurology 1989;104(147-154
Agents: Pyroglutamate, L- **Vehicle:** Saline; **Route:** CSF/CNS (striatum); **Species:** Rat; **Pump:** 2002; **Duration:** 9-14 days;
ALZET Comments: Neurodegenerative (Huntington's disease)

P1526: G. K. Rieke, *et al.* L-pyroglutamate: an alternate neurotoxin for a rodent model of Huntington's disease. Brain Research Bulletin 1984;13(443-456
Agents: Pyroglutamate, L- **Vehicle:** Millinog's phosphate buffer; **Route:** CSF/CNS (caudate putamen); **Species:** Mice; **Pump:** 2002; **Duration:** Not Stated;
ALZET Comments: controls received mp with vehicle; stress/adverse reaction: (pg. 450) small necrotic region seen around tip of implanted cannula in control animals; not actually a pump paper; authors' previous pump research mentioned in discussion section (pg. 450 & 454); neurodegenerative (Huntington's disease)