Recent References (2015-Present) on Toxicology Research Using ALZET® Osmotic Pumps

Q9055: X. Zhang, *et al.* FNDC5 alleviates oxidative stress and cardiomyocyte apoptosis in doxorubicin-induced cardiotoxicity via activating AKT. Cell Death & Differentiation 2020;27(2):540-555
Agents: Irisin **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Pump:** 2004; **Duration:** 14 days;
ALZET Comments: Dose (12 nmol/kg/day); Controls received mp w/ vehicle; animal info (C57BL/6, Male, 8-10 weeks old, 23.5-275 g); toxicology;

Q10054: L. Pandolfi, *et al.* Loading Imatinib inside targeted nanoparticles to prevent Bronchiolitis Obliterans Syndrome. Scientific Reports 2020;10(1):20726
Agents: Imatinib **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Pump:** 2004; **Duration:** 28 days;
ALZET Comments: Controls received mp w/ vehicle; animal info (Pathogen-free, male C57BL/6 and Balb/c mice, 20-24 g); Imatinib aka GNP-HClm; toxicology;

Q8645: T. Majima, *et al.* The effect of mirabegron on bladder blood flow in a rat model of bladder outlet obstruction. World J Urol 2020;38(8):2021-2027
Agents: Mirabegron **Vehicle:** Dimethylacetamide, N, N-; Crempohor; Distilled Water; **Route:** SC; **Species:** Rat; **Pump:** Not stated; **Duration:** 14 days;
ALZET Comments: Dose (0.3 mg/kg/h); 10% Dimethylacetamide, N, N- used; 5% Crempohor used; 85% Distilled Water used; Controls received mp w/ vehicle; animal info (Twelve- week-old female Sprague–Dawley rats); Blood pressure measured via PE-10 catheter;toxicology;

Q9343: S. Li, *et al.* FGF22 promotes generation of ribbon synapses through downregulating MEF2D. Aging 2020;
Agents: Adeno-associated virus **Vehicle:** Not Stated; **Route:** Ear (cochlea); **Species:** Mice; **Pump:** 1004; **Duration:** 4 days;
ALZET Comments: Animal info (male CBA/J mice, aged 6 weeks, weight around 18g); Adeno-associated virus aka AAV; toxicology;

Q9313: A. Kiryk, *et al.* IntelliCage as a tool for measuring mouse behavior - 20 years perspective. Behavioural Brain Research 2020;388(112620
Agents: Alprazolam **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Pump:** Not Stated; **Duration:** 1 day;
ALZET Comments: Controls received mp w/ vehicle; animal info (female C57BL/6 mice); toxicology;

Q8585: A. Kiryk, *et al.* IntelliCage as a tool for measuring mouse behavior - 20 years perspective. Behav Brain Res 2020;388(112620
Agents: Alprazolam **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Pump:** Not stated; **Duration:** 1 day;
ALZET Comments: Controls received mp w/ vehicle; animal info (female C57BL/6 mice); toxicology;

Q9304: F. K. Khalaf, *et al.* Epithelial and Endothelial Adhesion of Immune Cells Is Enhanced by Cardiotonic Steroid Signaling Through Na(+)/K(+)-ATPase-alpha-1. Journal of the American Heart Association 2020;9(3):e013933
Agents: Telocinobufagin **Vehicle:** Not Stated; **Route:** IP; **Species:** Mice; **Pump:** 1004; **Duration:** 4 weeks;
ALZET Comments: Dose (0.1 ug/g/day); Controls received mp w/ vehicle; animal info (Na/K-ATPase a 1 subunit heterozygous null mice; wild-type littermate controls (NKA a-1+/+)); toxicology;

Q8553: G. Jia, *et al.* Nicotine induces cardiac toxicity through blocking mitophagic clearance in young adult rat. Life Sciences 2020;257(118084
Agents: Nicotine **Vehicle:** Not stated; **Route:** SC; **Species:** Rat; **Pump:** Not stated; **Duration:** 6 weeks;
ALZET Comments: Dose (3 mg/kg/day); Controls received mp w/ vehicle; animal info (Sprague-Dawly rats, 2-4 months old); toxicology;

Q8484: P. Garland, *et al.* Haemoglobin causes neuronal damage in vivo which is preventable by haptoglobin. Brain Commun 2020;2(1):fcz053
Agents: Haemoglobin; Haptoglobin **Vehicle:** Saline; **Route:** CSF/CNS; **Species:** Mice; **Pump:** 2002; **Duration:** 2 weeks;
ALZET Comments: Dose (20mg/ml Haemoglobin; 14mg/ml Haptoglobin); 0.9% Saline used; Controls received mp w/ vehicle; animal info (Locally bred male C57BL/6 mice, 10–12 weeks of age); post op. care (Buprenorphine); Haemoglobin aka Hb; Haptoglobin aka Hp; ALZET brain infusion kit 3 used; Brain coordinates (from bregma: anteroposter- ior, ?0.4 mm; lateral, 1 mm; depth, 2.5 mm.); cyanoacrylate adhesive; toxicology;

Q8428: Y. Cong, *et al.* A Structure-Activity Relationship between the Veratrum Alkaloids on the Antihypertension and DNA Damage Activity in Mice. Chem Biodivers 2020;17(2):e1900473
Agents: Angiotensin II **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Pump:** 1002; **Duration:** 1 week;
ALZET Comments: Dose (2.4 ug/kg/min); Controls received mp w/ vehicle; animal info (C57BL/6 mice, 9 to 10 weeks); Blood pressure measured via tail cuff method;XX mmHg - 145 mmHg;toxicology;

Q8400: C. M. Campolim, *et al.* Short-term exposure to air pollution (PM2.5) induces hypothalamic inflammation, and long-term leads to leptin resistance and obesity via Tlr4/Ikbke in mice. Scientific Reports 2020;10(1):10160
Agents: RNA, small interfering **Vehicle:** Not stated; **Route:** CNS/CSF (lateral ventricle); **Species:** Mice; **Pump:** 1007D; **Duration:** 5 days;
ALZET Comments: small interfering RNA aka si-RNA; Brain coordinates (AP −0.5 mm; L −1.3 mm; DV −2.2 mm); Cannula placement verified via angiotensin II and measurement of water intake; toxicology;

Q8388: D. Bhattacharya, *et al.* Concurrent nicotine exposure to prenatal alcohol consumption alters the hippocampal and cortical neurotoxicity. Heliyon 2020;6(1):e03045
Agents: Nicotine **Vehicle:** Alcohol, Saline; **Route:** SC; **Species:** Rat; **Pump:** Not stated; **Duration:** Not stated;
ALZET Comments: Dose (6 mg/kg/day); Controls received mp w/ vehicle; animal info (Sprague Dawley (Time pregnant) rats); behavioral testing (Y maze); toxicology;

Q8387: I. M. Bertasso, *et al.* Programming of hepatic lipid metabolism in a rat model of postnatal nicotine exposure - Sex-related differences. Environmental Pollution 2020;258(113781
Agents: Nicotine **Vehicle:** Saline; **Route:** SC; **Species:** Rat; **Pump:** 2ML2; **Duration:** 14 days;
ALZET Comments: Dose (6 mg/kg/ day); 0.9% NaCl used; Controls received mp w/ vehicle; animal info (pregnant lactating Wistar rat); toxicology;

Q7664: L. Shifeng, *et al.* Ac-SDKP increases alpha-TAT 1 and promotes the apoptosis in lung fibroblasts and epithelial cells double-stimulated with TGF-beta1 and silica. Toxicol Appl Pharmacol 2019;369(17-29
Agents: Ac-SDKP **Vehicle:** Saline; **Route:** IP; **Species:** Rat; **Pump:** 2ML4; **Duration:** Not Stated;
ALZET Comments: Dose (800 µg/kg/d); Controls received mp w/ vehicle; animal info (3 weeks, male, Sprague-Dawley, 180+/-10g); Ac-SDKP is an anti-fibrotic tetrapeptide; toxicology; Therapeutic indication (anti-silicotic effect through attenuation of lung parenchymal distortion and collagen deposition);

Q8657: S. Z. McIntosh, *et al.* Intrauterine inhibition of chemokine receptor 4 signaling modulates local and systemic inflammation in ovine pregnancy. Am J Reprod Immunol 2019;82(5):e13181
Agents: CXCR4 inhibitor **Vehicle:** PBS; **Route:** Intrauterine; **Species:** Sheep; **Pump:** 2ML2; **Duration:** 14 days;
ALZET Comments: Dose (4120 ng); Controls received mp w/ vehicle; animal info (Rambouillet-cross ewes); CXCR4 inhibitor aka AMD3100; toxicology;

Q9007: N. Zhao, *et al.* After Treatment with Methylene Blue is Effective against Delayed Encephalopathy after Acute Carbon Monoxide Poisoning. Basic & Clinical Pharmacology & Toxicology 2018;122(5):470-480
Agents: Methylene blue **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice; **Pump:** 1007D; **Duration:** 7 days;
ALZET Comments: Dose (0.5 mg/kg/day); Controls received sham surgery; animal info (male, Sprague-Dawley); behavioral testing (Barnes maze); toxicology; immunology; Therapeutic indication (methylene blue treatment initiated 1 hr after CO exposure decreased pro-inflammatory cytokine levels, suppressed oxidative damage, preserved mitochondrial function, reduced neuronal apoptosis in the hippocampus and alleviated cognitive impairments in a rat model of severe CO poisoning);

Q7885: C. Vandenbussche*, et al.* Tacrolimus-induced nephrotoxicity in mice is associated with microRNA deregulation. Archivos de Zootecnia 2018;92(4):1539-1550
Agents: Tacrolimus **Vehicle:** Serum, physiological; **Route:** SC; **Species:** Mice; **Pump:** 2004; **Duration:** 28 days;
ALZET Comments: Dose (1 mg/kg/d); Controls received mp w/ vehicle; animal info (4 weeks, male, CD-1, 30-40g); enzyme inhibitor (Calcineurin); toxicology; Tacrolimus actively participates to chronic allograft dysfunction through miR-21-5p modulation.;

Q7153: T. Lilius*, et al.* Ketamine and norketamine attenuate oxycodone tolerance markedly less than that of morphine: from behaviour to drug availability. British Journal of Cancer 2018;120(4):818-826
Agents: Morphine, oxycodone **Vehicle:** Sterile water; **Route:** SC; **Species:** Rats; **Pump:** 2ML1; **Duration:** 7 days;
ALZET Comments: Dose (oxycodone 3.6 mg day-1); (morphine 40 mg ml-1);animal info (Male Sprague-Dawley rats); behavioral testing (tail-flick, hot-plate tests); Toxicology (tolerance);

Q7824: C. Haines*, et al.* Comparison of the effects of sodium phenobarbital in wild type and humanized constitutive androstane receptor (CAR)/pregnane X receptor (PXR) mice and in cultured mouse, rat and human hepatocytes. Toxicology 2018;396-397(23-32
Agents: uridine, 5-bromo-2'-deoxy- **Vehicle:** PBS; **Route:** SC; **Species:** Mice; **Pump:** 2001; **Duration:** 7 days;
ALZET Comments: Dose (15 mg/ml); PBS (pH 7.4) used; Controls received mp w/ agent; animal info (12 weeks, male, C57BL/6J or hCAR/hPXR); toxicology; minipumps used to measure replicative DNA synthesis;

Q7823: C. Haines*, et al.* Comparison of the hepatic and thyroid gland effects of sodium phenobarbital in wild type and constitutive androstane receptor (CAR) knockout rats and pregnenolone-16alpha-carbonitrile in wild type and pregnane X receptor (PXR) knockout rats. Toxicology 2018;400-401(20-27
Agents: uridine, 5-bromo-2'-deoxy- **Vehicle:** PBS; **Route:** SC; **Species:** Rat; **Pump:** 2ML1; **Duration:** 7 days;
ALZET Comments: Dose (15 mg/ml); PBS (pH 7.4) used; Controls received mp w/ agent; animal info (14 weeks, male, Sprague-Dawley , CAR KO and PXR KO); toxicology; minipumps used for measure replicative DNA synthesis;

Q5170: T. Nojiri*, et al.* Atrial natriuretic peptide protects against cisplatin-induced granulocytopenia. Cancer Chemotherapy and Pharmacology 2016;78(1):191-7
Agents: Atrial natriuretic peptide **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Pump:** 1003D; **Duration:** Not Stated;
ALZET Comments: Controls received mp w/ vehicle; animal info (C57BL6, 7 weeks old); toxicology; immunology; Dose (1.5 ug/kg/min);

Q5168: T. Nojiri*, et al.* Protective effects of ghrelin on cisplatin-induced nephrotoxicity in mice. Peptides 2016;82(85-91
Agents: Ghrelin **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Pump:** 1003D; **Duration:** 3 days;
ALZET Comments: Controls received mp w/ vehicle; Controls received mp w/ vehicle; toxicology; cardiovascular; Dose 0.8 ug/kg/min;

Q5451: Y. Mikhed*, et al.* Nitroglycerin induces DNA damage and vascular cell death in the setting of nitrate tolerance. Basic Research in Cardiology 2016;111(4):52
Agents: Nitroglycerin; Glyceril Trinitrate **Vehicle:** Ethanol; **Route:** SC; **Species:** Rat; **Pump:** 2001; **Duration:** 3.5 days;
ALZET Comments: Controls received mp w/ vehicle; animal info (male Wistar rats, 6 weeks old, 300 grams); toxicology; cardiovascular; nitroglycerin is a vasodilator; Dose (10, 20 mg/kg/day);

Q5466: S. Mia*, et al.* Role of AMP-activated protein kinase alpha1 in angiotensin-II-induced renal Tgfss-activated kinase 1 activation. Biochemical and Biophysical Research Communications 2016;476(4):267-272
Agents: Angiotensin II **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice; **Pump:** Not Stated; **Duration:** 2 weeks;
ALZET Comments: Controls received mp w/ vehicle; animal info (Ampk(alpha)1 -/- mice); functionality of mp verified by analysis of renal tissue; toxicology; peptides; Angiotensin II key factor in renal fibrosis; Dose (1.46 mg/kg/day);

Q5409: H. Lui, *et al.* Combining 2-deoxy-D-glucose with fenofibrate leads to tumor cell death mediated by simultaneous induction of energy and ER
stress. ONCOTARGET 2016;7(24):36461-36473
Agents: Fenofibrate; Glucose, 2-Deoxy **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Pump:** Not Stated; **Duration:** 62 Days;
ALZET Comments: Controls received mp w/ vehicle and oral gavage; cancer (human melanoma xenograft model); dose-response (pg 36469); toxicology; "slow-release pump seems to be an effective way to deliver 2-DG" pg 36470; Oral gavage vs. mp; dose given via mp requires 3 times lower total dose than IP injection (3x/week); Therapeutic indication (tumor growth); Dose (FF 100 mg/kg/day, 41 ug/ml/hr);

Q5408: S. J. Liu, *et al.* Sodium selenate retards epileptogenesis in acquired epilepsy models reversing changes in protein phosphatase 2A and hyperphosphorylated tau. Brain 2016;139(Pt 7):1919-38
Agents: Sodium Selenate **Vehicle:** Sodium Chloride; **Route:** SC; **Species:** Rat; **Pump:** 2004, 2006; **Duration:** 4 weeks, 12 weeks;
ALZET Comments: Controls received mp w/ vehicle; animal info (adult male Wistar and Long-Evans rats, 12 weeks); pumps replaced after initial 6 weeks; functionality of mp verified by residual volume; neurodegenerative (Traumatic brain injury, Alzheimer's disease); behavioral testing (neurotoxicity scale (0-4) testing); long-term study; Toxicology, sodium selenate; Epilepsy model; EEG used to monitor status epilepticus; Dose (1 mg/kg/day);

P2091: M. Liu, *et al.* A H 2 S Donor GYY4137 Exacerbates Cisplatin-Induced Nephrotoxicity in Mice. Mediators Inflamm 2016;2016(8145785
Agents: GYY4137 **Vehicle:** DMSO; PEG; **Route:** SC; **Species:** Mice; **Pump:** Not Stated; **Duration:** 72 hours;
ALZET Comments: animal info (Male C57BL/6 mice aged 8–10 weeks old); 1:1 mixture of DMSO:PEG used; toxicology; employedmorpholin-4-ium4-methoxyphenyl (morpholino) phosphinodithioate, a.k.a., GYY4137 is a novel slow releasing H2S donor; Therapeutic indication (Nephrotoxicity); Dose (21mg/kg/d);

Q5380: M. Kockx, *et al.* Low-Density Lipoprotein Receptor-Dependent and Low-Density Lipoprotein Receptor-Independent Mechanisms of Cyclosporin A-Induced Dyslipidemia. Arteriosclerosis, Thrombosis, and Vascular Biology 2016;36(7):1338-49
Agents: Cyclosporine A **Vehicle:** Ethanol; Cremophor EL; **Route:** SC; **Species:** Mice; **Pump:** 2004; **Duration:** 4 weeks;
ALZET Comments: Controls received mp w/ vehicle; animal info (female mice, C57Bl/6, 18-20 g); functionality of mp verified by plasma levels; 33% ethanol, 62% Cremophor EL used; toxicology; Cyclosporine A aka CsA; CsA does not induce liver or kidney toxicity; Dose (20 mg/kg/day); Resultant plasma level (1087±124 ng/mL, 711±91 ng/mL after 1 week, 4 weeks);

Q5376: N. J. Hunt, *et al.* Changes in orexinergic immunoreactivity of the piglet hypothalamus and pons after exposure to chronic postnatal nicotine and intermittent hypercapnic hypoxia. European Journal of Neuroscience 2016;43(12):1612-22
Agents: Nicotine hydrogen tartrate salt **Vehicle:** Water; **Route:** SC; **Species:** Pig (mini); **Pump:** 2ML2; **Duration:** 14 days;
ALZET Comments: Controls received mp w/ vehicle; animal info (male mixed breed miniature piglets, postnatal day 2, 1.27 kg); functionality of mp verified by brain analysis; toxicology; Chronic postnatal nicotine and intermittent hypercapnic hypoxia (IHH); Dose (2 mg/kg/day);

Q7246: X. Bao, *et al.* Preclinical toxicity evaluation of a novel immunotoxin, D2C7-(scdsFv)-PE38KDEL, administered via intracerebral convection-enhanced delivery in rats. Invest New Drugs 2016;34(2):149-58
Agents: Immunotoxin, D2C7-(scdsFv)-PE38KDEL **Vehicle:** Not Stated; **Route:** CSF/CNS (right caudate nucleus); **Species:** Rat; **Pump:** 2ML1, 2001; **Duration:** 72 hours;
ALZET Comments: Dose (0, 0.05, 0.1, 0.35, 0.4 µg/rat/72 hrs); animal info (Sprague–Dawley; 13-17 weeks old; 360–460 g for males and 210–290 g for females); stability verified by (cytotoxicity assay); stability verified by (cytotoxicity assay); Brain coordinates (1 mmanterior to the bregma, 3 mm to the right of the cranium midline, and 5 mm into the caudate nucleus); cyanoacrylate adhesive (3 M Vetbond Tissue Adhesive); cancer (Glioblastoma); toxicology;

Q4182: K. C. Wu, *et al.* Decreased expression of organic cation transporters, Oct1 and Oct2, in brain microvessels and its implication to MPTP-induced dopaminergic toxicity in aged mice. Journal of Cerebral Blood Flow and Metabolism 2015;35(37-47
Agents: MPTP **Vehicle:** Ringer's solution; **Route:** CSF/CNS (striatum); **Species:** Mice; **Pump:** Not Stated; **Duration:** 7 days;
ALZET Comments: Controls received mp w/ vehicle; animal info (male, Oct1/2 -/-, young and aged B6, WT FVB); ALZET brain infusion kit used; toxicology;

Q5289: A. Vivekanandarajah, *et al.* Postnatal nicotine effects on the expression of nicotinic acetylcholine receptors in the developing piglet hippocampus and brainstem. Int J Dev Neurosci 2015;47(Pt B):183-91
Agents: Nicotine Hydrogen Tartrate **Vehicle:** water; **Route:** IP; **Species:** Pig (mini); **Pump:** 2ML2; **Duration:** 14 days;
ALZET Comments: Controls received mp w/ vehicle; animal info (piglets); functionality of mp verified by blood and urine samples; toxicology; Dose (2 mg/kg/d); Resultant plasma level (20.3 ± 2.5 ng/mL);

Q5281: M. Tremblay-Franco, *et al.* Dynamic Metabolic Disruption in Rats Perinatally Exposed to Low Doses of Bisphenol-A. PLoS One 2015;10(10):e0141698
Agents: Bisphenol A **Vehicle:** DMSO; **Route:** SC; **Species:** Rat (pregnant); **Pump:** 2004; **Duration:** 28 days;
ALZET Comments: Controls received mp w/ vehicle; animal info (Sexually mature virgin female SD rats (8–10 weeks); functionality of mp verified by Blood and liver levels; 50% DMSO used; toxicology; implanted on day 9 of pregnancy; Dose (0.25, 2.5, 25, or 250 µg/kg/day);

Q4115: S. Steven, *et al.* Gliptin and GLP-1 analog treatment improves survival and vascular inflammation/dysfunction in animals with lipopolysaccharide-induced endotoxemia. Basic Research in Cardiology 2015;110(U103-U116
Agents: Linagliptin; sitagliptin **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice; **Pump:** Not Stated; **Duration:** 3 days;
ALZET Comments: Animal info (male, C57BL6); functionality of mp verified by DPP-4 activity in serum;

Q4032: M. C. O'Sullivan, *et al.* Dibenzosuberyl substituted polyamines and analogs of clomipramine as effective inhibitors of trypanothione reductase; molecular docking, and assessment of trypanocidal activities. Bioorganic & Medicinal Chemistry 2015;23(996-1010
Agents: Compound 7 **Vehicle:** Not Stated; **Route:** Not Stated; **Species:** Mice; **Pump:** Not Stated; **Duration:** 3 days;
ALZET Comments: Animal info (female, Swiss-Webster); comparison of injection vs mp; toxicology;

Q4485: S. Kumar, *et al.* Role of Lipocalin-type prostaglandin D(2) synthase (L-PGDS) and its metabolite, prostaglandin D(2), in preterm birth. PROSTAGLANDINS & OTHER LIPID MEDIATORS 2015;118(28-33
Agents: BWA868C; PGD2, 11-deoxy-11-methylene **Vehicle:** Saline; **Species:** Mice; **Pump:** 1004; **Duration:** 28 days;
ALZET Comments: Controls received mp w/ vehicle; animal info (L-PGDS); teratology; toxicology; BWA868C; PGD2, 11-deoxy-11-methylene are DP1 and DP2 receptor antagonists;

Q4473: L. Kass, *et al.* Prenatal Bisphenol A exposure delays the development of the male rat mammary gland. REPRODUCTIVE TOXICOLOGY 2015;54(37-46
Agents: Bisphenol A **Vehicle:** DMSO; **Route:** SC; **Species:** Rat; **Pump:** 1002; **Duration:** 14 days;
ALZET Comments: Controls received mp w/ vehicle; animal info (female, WistarGD9); teratology; toxicology;

Q4418: M. Fujimura, *et al.* Methylmercury causes neuronal cell death through the suppression of the TrkA pathway: In vitro and in vivo effects of TrkA pathway activators. TOXICOLOGY AND APPLIED PHARMACOLOGY 2015;282(259-266
Agents: MCC-257 **Vehicle:** Not Stated; **Route:** SC; **Species:** Rat; **Pump:** 2004; **Duration:** 4 weeks;
ALZET Comments: Controls received mp w/ vehicle; animal info (male, Wistar, 6 weeks old, 240-290g); toxicology; MCC-257 is a GM1 ganglioside analog;

Q3874: J. D. Elsworth, *et al.* Low Circulating Levels of Bisphenol-A Induce Cognitive Deficits and Loss of Asymmetric Spine Synapses in Dorsolateral Prefrontal Cortex and Hippocampus of Adult Male Monkeys. Journal of Comparative Neurology 2015;523(1248-1257
Agents: Bisphenol A, deuterium-labeled **Route:** SC; **Species:** Monkey (African velvet); **Pump:** 2ML4; **Duration:** 30 days;
ALZET Comments: Controls received mp w/ vehicle; animal info (male, St, Kitts African vervet S. sabaeus, young); functionality of mp verified by plasma levels; behavioral testing (working memory performance); toxicology; "we administered BPA from a subcutaneous minipump that ensured a constant and reliable delivery of BPA" pg 1249; pumps removed after 30 days;

Q4382: E. P. Conceicao, *et al.* Maternal nicotine exposure leads to higher liver oxidative stress and steatosis in adult rat offspring. FOOD AND CHEMICAL TOXICOLOGY 2015;78(52-59
Agents: Nicotine **Vehicle:** Saline; **Route:** SC; **Species:** Rat (lactating); **Pump:** 2ML2; **Duration:** 14 days;
ALZET Comments: Controls received mp w/ vehicle; animal info (female, Wistar, PN2); teratology; toxicology; dependence;