Recent References (2010-Present) on the Administration of Agents to Severe Combined Immunodeficient (SCID) Mice
Using ALZET® Osmotic Pumps


Agents: IODVA1; Imatinib
Vehicle: Not Stated; Route: SC; Species: Mice; Pump: Not Stated; Duration: 28 days;
ALZET Comments: Controls received mp w/ vehicle; animal info (Vav3-deficient mice and Rac1Δ/Δ+Rac2-deficient mice; C57Bl/10 (females, 8–16 weeks old) and NSG (NOD/SCID/IL2RG-/ males and females, 8–14 weeks old); IODVA1 aka 2-guanidinobenzimidazole derivative with anti-tumorigenic properties; cancer (leukemia)


Agents: PTUPB
Vehicle: Not Stated; Route: IP; Species: Mice (SCID); Pump: Not Stated; Duration: 4 weeks;
ALZET Comments: Dose (30 mg/kg/d); animal info (6-wk-old female C57BL/6 or SCID mice); PTUPB aka 4-(5-phenyl-3-(3-[3-(4-trifluoromethyl-phenyl)-ureido]-propyl)-pyrazol-1-yl) benzenesulfonamide is a dual COX-2/sEH inhibitor; enzyme inhibitor (cyclooxygenase-2 and soluble epoxide hydrolase); cancer (ovarian);


Vehicle: Saline; Route: CSF/CNS (nucleus striatum); Species: Mice (SCID); Pump: Not Stated; Duration: 2 weeks;
ALZET Comments: ALZET brain infusion kit 3 used; cyanoacrylate adhesive; cancer (glioblastoma multiforme); good method; Methods paper describing local intracranial delivery of drugs by osmotic mini-pumps.


Agents: Resolvin D1, Resolvin D2, Resolvin E1, Annexin V recombinant protein, Vehicle: Not Stated; Route: IP; Species: Mice (SCID); Pump: pump model not stated; Duration: 28 days, 2 and 3 months;
ALZET Comments: Dose: Resolvins (15 ng/d), Annexin V recombinant protein (4 μg/kg/d); Controls received mp w/ vehicle; animal info (C57BL/6J, SCID); pumps replaced after 14 days for the 28 day studies and every 28 days for the 2/3 month studies


Agents: Nitrooleate, 9-Vehicle: PEG 400, ethanol; Route: SC; Species: Mice (SCID); Pump: 2001; Duration: 5 days;
ALZET Comments: Dose (16 mg/kg/d); 10% ethanol and 90% PEG400 used; animal info (5–6 week old SCID mice); pumps replaced after 7 days; 9-NOA is a Nitro-fatty acids; cancer (colorectal); “we have chosen a continuous application of NFAs via ALZET® osmotic pumps giving the advantage of a reduction of interindividual variations in mice due to a diverse oral chow consumption behavior and therefore kept the number of animals needed as low as possible.” pg. 57; Due to poor solubility of 9-NOA and limited pump size in consequence of the weight of the mice, pumps were surgically removed and replaced with new ones on day 8 of the experiment;


Agents: Ciclopirox
Vehicle: Not Stated; Route: SC; Species: Mice (SCID); Pump: 1004; Duration: 4 weeks;
ALZET Comments: Controls received mp w/ vehicle; cancer (neuroblastoma); “Because of the short half-life of CPX in mice, we first chose to deliver the drug via a subcutaneously implanted, continuous release pump” pg 9; Therapeutic indication (neuroblastoma); resultant plasma level (calculated 2.5 μmol/L);


Agents: YM155
Vehicle: Saline; Route: SC; Species: Mice (SCID); Pump: 1003D; Duration: 2 weeks;
ALZET Comments: Controls received mp w/ vehicle; animal info (female, SCID, 4–6 weeks old); cancer (oral squamous cell carcinoma, SCC9); xenograft model; Pumps infused for 3 days per week for two weeks; Therapeutic indication (oral squamous cell carcinoma); Dose (50 mg/kg);

**Agents:** S-(2-boronoethyl)-L-cysteine  
**Vehicle:** Not Stated  
**Route:** SC  
**Species:** Mice (SCID)  
**Pump:** Not Stated  
**Duration:** 14 days;

**ALZET Comments:** Dose (mg/kg/d); Controls received mp w/ vehicle; animal info (TCR-transgenic SCID mice); enzyme inhibitor (arginase); cancer ()


**Agents:** FIPI, VU0155072-2  
**Vehicle:** DMSO  
**Route:** SC  
**Species:** Mice (SCID)  
**Pump:** 1004  
**Duration:** 4-5 weeks;

**ALZET Comments:** Controls received mp w/ vehicle; animal info (8 weeks old) 50% DMSO used; cancer (breast); half-life FIPI: 5.5 hours, 18% bioavailability (p.4); post op. care (Carprofen (5 mg/kg) administered for analgesia); “silencing the PLD2 gene in cancer cells or implanting mice with micro-osmotic (Alzet) pumps containing the PLD small-molecule inhibitors FIPI and VU0155072-2 resulted in smaller tumors and fewer lung metastases” pg. 20; VU0155072-2 aka NOPT; FIPI aka 5-fluoro-2-indolyl des-chlorohalopemide; enzyme inhibitor (Phospholipase D- small-molecule inhibitors); Therapeutic indication (Breast cancer); Dose (1.8 mg/kg/day);


**Agents:** CYD 6-17  
**Vehicle:** DMSO  
**Route:** SC  
**Species:** Mice (SCID)  
**Pump:** 1004  
**Duration:** 7 days;

**ALZET Comments:** Controls received mp w/ vehicle; cancer (Bladder); immunology; Therapeutic indication (Bladder Cancer); Dose (30 mg/kg);


**Agents:** Granulocyte-colony stimulating factor; AMD3100  
**Vehicle:** Not Stated  
**Route:** IP  
**Species:** Mice (NOD/SCID)  
**Pump:** 1007D  
**Duration:** 1 week;

**ALZET Comments:** animal info (NOD-scid humanized (huNSG) mice); gene therapy; immunology; Engraftment of human CD45+ cells; viral persistence; Dose (300mg/ml Colony-stim; 125 ug AMD3100);


**Agents:** Paclitaxel  
**Vehicle:** Cremophor EL, Ethanol  
**Route:** IP  
**Species:** Mice (SCID)  
**Pump:** 1004  
**Duration:** 2 weeks;

**ALZET Comments:** Controls received mp w/ vehicle; animal info (SCID mice 6–8 weeks old); functionality of mp verified by bioluminescence imaging to check metastatic spread; 50% Cremophor, 50% ethanol used; cancer (Cholangiocarcinoma); Xenograft model; Dose (2.6 mg/kg/d);


**Agents:** Prolactin, recombinant human; oligomer, splice-modulating  
**Vehicle:** Not Stated  
**Route:** SC  
**Species:** Mice (NOD/SCID)  
**Pump:** Not Stated  
**Duration:** 5 days; 25 days; 40 days;

**ALZET Comments:** Controls received mp w/ vehicle; animal info (female, BALB/cJ or NOD SCID, 8-9 weeks old); functionality of mp verified by plasma levels; pumps replaced every 28 days; cancer (breast); dose-response (pg 87);


**Agents:** Endocan/S137A, recombinant human  
**Vehicle:** PBS  
**Route:** SC  
**Species:** Mice (SCID)  
**Pump:** 2004  
**Duration:** 28 days;

**ALZET Comments:** Controls received mp w/ vehicle; animal info (male, CB-17 scid/scid homozygous, 5-6 weeks old); functionality of mp verified by blood levels; cancer (colon adenocarcina HT-29); immunology;

**Agents:** Stromal cell-derived factor 1; receptor activator of nuclear factor kappa-B ligand **Vehicle:** Not Stated; **Route:** Bone; **Species:** Mice (NOD/SCID; nude); **Pump:** 1004; **Duration:** 30 days;

**ALZET Comments:** Controls received mp w/ PBS; animal info (female, NOD/SCID, 6-10 weeks old; male, athymic nude, 6-10 weeks old); cancer (breast; prostate); receptor activator of nuclear factor kappa-B ligand aka RANKL;


**Agents:** AMD3465 **Vehicle:** PBS; **Route:** SC; **Species:** Mice (NOD/SCID); **Pump:** 2002; **Duration:** 2 weeks;

**ALZET Comments:** Controls received mp w/ vehicle; animal info (female, C57BL6, 6-8 weeks old); cancer (leukemia);


**Agents:** AMD3100 **Vehicle:** PBS; **Route:** SC; **Species:** Mice (NOD/SCID); **Pump:** Not Stated; **Duration:** 4 weeks;

**ALZET Comments:** Controls received mp w/ saline; animal info (female, NOD/SCID; cancer (pancreatic); dose-response (pg 8640); enzyme inhibitor (SDF-1); AMD3100 is a specific inhibitor binding of SDF-1 and its receptor C-X-C chemokine receptor 4 (CXC4); 3 % isoflurane used; dose: 2 mg


**Agents:** Nanoparticles; RNAi **Vehicle:** Not Stated; **Route:** Not Stated; **Species:** Mice (nude); Mice (NOD/SCID); **Pump:** Not Stated; **Duration:** Not Stated;

**ALZET Comments:** cancer (brain tumors); Mechanisms of RNAi delivery to brain tumors; adenovirus viral system used for delivery; SNB19 cells used for in vitro model; nanoparticles used for delivery; Therapeutic indication (brain cancer);

Q4483: R. Kogo, et al. The microRNA-218 similar to Survivin axis regulates migration, invasion, and lymph node metastasis in cervical cancer. ONCOTARGET 2015;6(1090-1100

**Agents:** YM155 **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice (SCID); **Pump:** 1003D; **Duration:** 6 days;

**ALZET Comments:** Controls received mp w/ saline; animal info (female, SCID, 6-8 weeks old); pumps replaced every week - YM155 administered 3 days per week for 2 weeks; cancer (cervical); YM155 is a small molecule survivin inhibitor;


**Agents:** Compound 47 **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice (SCID); **Pump:** 2001D; **Duration:** 24 hours; 28 hours;

**ALZET Comments:** Animal info (female, SCID); cancer (human acute myeloid leukemia EOL-1, human colon adenocarcinoma HCT116); dose-response (pg 369); Compound 47 aka SAR156497; SAR156497 is an aurora kinase inhibitor;

Q4193: T. Yamada, et al. Human Hepatocytes Support the Hypertrophic but not the Hyperplastic Response to the Murine Nongenotoxic Hepatocarcinogen Sodium Phenobarbital in an In Vivo Study Using a Chimeric Mouse with Humanized Liver. TOXICOLOGICAL SCIENCES 2014;142(137-157

**Agents:** Growth hormone, recombinant human; uridine, bromodeoxy **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice(transgenic; SCID); Rat; **Pump:** 1002; 2ML1; **Duration:** 7 days; 14 days;

**ALZET Comments:** Animal info (mice male, CD-1 or ICR or SCID, 10 weeks old; rat male, Wistar, 10 weeks old); toxicology;


**Agents:** KU-60019 **Vehicle:** Ethanol; **Route:** CSF/CNS; **Species:** Mice (NOD/SCID); **Pump:** 1007D; **Duration:** 7 days;

**ALZET Comments:** Controls received mp w/ vehicle; animal info (NOD/SCID); 10% ethanol used; cancer (gliomablastoma); stress/adverse reaction: (see pg. 486); KU-60019 is a specific ATM inhibitor;
**Agents:** Sphingosine-1-phosphate  
**Vehicle:** Not Stated;  
**Route:** Not Stated;  
**Species:** Mice (SCID);  
**Pump:** Not Stated;  
**Duration:** 4 days;  
**ALZET Comments:** Controls received mp w/ vehicle; animal info (SCID, xenograph); cancer (ovarian); ”Mini-osmotic pumps were used because of the very short plasma half-life of S1P.” pg 108;

**Agents:** Plasmid DNA-lipid complex  
**Vehicle:** Not Stated;  
**Route:** Not Stated;  
**Species:** Mice (SCID, CD-1);  
**Pump:** Not Stated;  
**Duration:** Not Stated;  
**ALZET Comments:** Therapeutic indication (Gene therapy); Brain coordinates: 3 mm lateral and 2 mm caudal to bregma;

Q3525: W. Ju, et al. Combination of 9-aminoacridine with Campath-1H provides effective therapy for a murine model of adult T-cell leukemia. Retrovirology 2014;11(U1-U11
**Agents:** Aminoacridine, 9-  
**Vehicle:** PEG 300;  
**Route:** SC;  
**Species:** Mice (NOD/SCID);  
**Pump:** Not Stated;  
**Duration:** 14 days;  
**ALZET Comments:** Controls received mp w/ vehicle or no mp or cancer; 10% PEG used; cancer (leukemia MET-1);

**Agents:** S961  
**Vehicle:** Water;  
**Route:** SC;  
**Species:** Mice (NOD/SCID);  
**Pump:** 2001;  
**Duration:** 7 days;  
**ALZET Comments:** Controls received mp w/ vehicle; animal info (female, Nod-SCID, 8 weeks old); diabetes; S961 is an insulin receptor antagonist; infusion causes hyperglycemia in NOD/SCID

Q2878: N. Zhidkov, et al. Continuous Intraperitoneal Carboplatin Delivery for the Treatment of Late-Stage Ovarian Cancer. MOLECULAR PHARMACEUTICS 2013;10(9):3315-3322
**Agents:** Carboplatin  
**Vehicle:** PBS;  
**Route:** IP;  
**Species:** Mice (SCID);  
**Pump:** 1002;  
**Duration:** 14 days;  
**ALZET Comments:** Controls received mp w/ saline; toxicology; animal info (6-8 week old female SCID); comparison of bolus injection vs mp; cancer (ovarian)

**Agents:** Alda-89  
**Vehicle:** DMSO; PEG 400;  
**Route:** IP;  
**Species:** Mice (SCID);  
**Pump:** 2006;  
**Duration:** 6 weeks;  
**ALZET Comments:** Controls received mp w/ vehicle; animal info (female, C57BL6, 4-5 weeks old; SCID, 4-6 weeks old); 50% DMSO; 50% PEG 400 used; cancer (head and neck); stress/adverse reaction: (see pg.4459); Alda-89 is an ALDH3 activator;

**Agents:** AMD 3100  
**Vehicle:** Not Stated;  
**Route:** Not Stated;  
**Species:** Mice (NOD/SCID);  
**Pump:** Not Stated;  
**Duration:** 3 weeks;  
**ALZET Comments:** Control animals received mp w/ vehicle; animal info (NOD/SCID)

**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)

**Agents:** Muscimol  
**Vehicle:** PBS;  
**Route:** SC;  
**Species:** Mice (NOD/SCID);  
**Pump:** 1002;  
**Duration:** 14 days;  
**ALZET Comments:** Controls received mp w/ vehicle; animal info (male, C57BL6, 10 weeks old; NOD/SCID); diabetes
Agents: Stem cell factor, human recom.; Vehicle: Not Stated; Route: SC; Species: Mice (NOD/SCID); Pump: Not Stated; Duration: 2 weeks;
ALZET Comments: Animal info (NOD/SCID (male, 5-7 weeks old); KSN/Slc (4-5 weeks old)); immunology; peptides

Agents: Interleukin-12, recomb. human Vehicle: Saline; Route: SC; Species: Mice (SCID; NOD/SCID); Pump: 2004; Duration: 28 days;
ALZET Comments: Animal info (female, SCID and NOD/SCID, 8-10 weeks old); cancer (Lymphoma);

Agents: Uridine, bromodeoxy; Vehicle: Not Stated; Route: IP; Species: Mice (SCID); Pump: Not Stated; Duration: 3 days; 14 days; 28 days;

Agents: Pioglitazone Vehicle: Dulbecco’s modified eagle medium; Route: CSF/CNS; Species: Mice (SCID); Pump: 2004; Duration: 21 days;
ALZET Comments: Controls received mp w/ vehicle; animal info (Balb/CJHanHsd-Prkdc-SCID, 6 weeks old); ALZET brain infusion kit used; comparison of oral dosing vs mp; cancer (tumors); dose-response (CNS); stability verified by (p.934 - incubation at 37C for 21 days); "Intracerebral treatment with 1 lM pio prolonged survival significantly from 49 to 68 days... This defines the minimal effective dose for oral pio treatment at 240 PPM (20.2 mg/kg) and for intracerebral pio treatment at 1 IM (0.11 ug/kg)." pg 932;

Agents: Propranolol hydrochloride Vehicle: PBS; Route: SC; Species: Mice (SCID); Pump: Not Stated; Duration: Not Stated;
ALZET Comments: Controls received mp w/ vehicle; animal info (SCID, male, 6-8 wks old)

Agents: Transforming growth factor-beta-induced gene h3 Vehicle: Not Stated; Route: Not Stated; Species: Mice (SCID); Pump: Not Stated; Duration: Not Stated;
ALZET Comments: Animal info (SCID, 6-8 wks old); cancer

Agents: YM155 Vehicle: Saline; Route: SC; Species: Mice (nude/SCID); Pump: 1003D; Duration: 3 days;
ALZET Comments: Controls received mp w/ vehicle; animal info (SCID, STS26T)

Agents: Uridine, bromodeoxy Vehicle: NaCl; Route: SC; Species: Mice (SCID); Pump: Not Stated; Duration: 2 weeks;
ALZET Comments: Animal info (male, SCID); 14-day pump used; labeling of CR BM18 cancer cells; cancer (prostate)
Agents: Exenatide Vehicle: Not Stated; Route: SC; IP; Species: Mice (NOD/SCID); Pump: Not Stated; Duration: 2 weeks;
ALZET Comments: Controls received mp without hyperbaric oxygen therapy; animal info (NOD/MrkTac, NOD.SCID); hyperbaric oxygen therapy 100% (HOT-100%); diabetes

Agents: AMD 3100 Vehicle: Not Stated; Route: SC; Species: Mice (NOD/SCID); Pump: Not Stated; Duration: Not Stated;
ALZET Comments: Animal info (NOD.CB17-Prkdc, 5-8 wks old); 0.5 ul/hr pump used; cancer

Agents: HG-829 Vehicle: Cremophor EL; ethanol; water; Route: IP; Species: Mice (SCID); Pump: 2004; Duration: Not Stated;
ALZET Comments: Control animals received mp w/ vehicle; animal info (SCID, CB17, 5-7 wks old); 35% cremophor EL, 35% ethanol used; SC pump connected to IP catheter; cancer; HG-829, aka PGE2799041, is a Pgp modulator

Agents: Anakinra Vehicle: Not Stated; Route: Not Stated; Species: Mice (NOD/SCID); Pump: Not Stated; Duration: 8 weeks;
ALZET Comments: Controls received mp w/ saline; animal info (11 wks old, NOD/SCID); pumps replaced every 2 weeks; immunology

Agents: Granulocyte-colony stimulating factor, AMD-3100 Vehicle: Not Stated; Route: SC; Species: Mice (NOD-scid); Pump: 1007D; Duration: 7 days;
ALZET Comments: Dose: G-CSF (300 mg/ml), AMD3100 (5mg/kg);

Agents: Growth hormone, human Vehicle: Not Stated; Route: SC; Species: Mice (transgenic/SCID); Pump: Not Stated; Duration: 2 weeks;
ALZET Comments: Animal info (uPA/SCID, 20-30 days old, chimeric)

Agents: Sphingosine-1-Phosphate Vehicle: Saline; Route: SC; Species: Mice (SCID); Pump: 2001D; Duration: 1-4 days; 24 hours;
ALZET Comments: Controls received mp w/ vehicle; animal info (SCID)

Agents: Galectin-3C Vehicle: PBS; Route: IP; IV; Species: Mice (NOD/SCID); Pump: 2002; Duration: 16 days;
ALZET Comments: Controls received mp w/ vehicle; animal info (female, 6 wks old, NOD/SCID); cancer (multiple myeloma); half-life, 3 hours (p. e21811); “Our data suggest that sustained delivery may be preferable (over injections intramuscularly twice daily) for maximal response to treatment” pg e21811; galectin-3C is an N-terminally truncated form of galectin-3

Agents: Beta-35 Vehicle: Not Stated; Route: IP; Species: Mice (SCID); Pump: Not Stated; Duration: 200 hours;
ALZET Comments: Controls received mp w/ vehicle; animal info (male, 24-27 g); pumps replaced every 7 days; cancer (pancreatic, melanoma); Beta-35 is an angiogenesis inhibitor

**Agents:** Peptide (18-36); scrambled peptide **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice (SCID); **Pump:** 1002; **Duration:** 15 days;

**ALZET Comments:** Animal info (pathogen-free, 6 wks old, female, CB17, scid/scid); peptides; cancer; angiogenesis


**Agents:** Epidermal growth factor, recomb. human; erythropoietin; cyclosporine A **Vehicle:** Not Stated; **Route:** CSF/CNS; SC; **Species:** Mice (NOD/SCID); **Pump:** 1007D; **Duration:** Not Stated;

**ALZET Comments:** Animal info (male, C57/BL6, 8-10 wks old); pumps replaced after 7 days; ALZET brain infusion kit 3 used


**Agents:** Interleukin-13 **Vehicle:** PBS; Albumin, human serum; **Route:** IP; **Species:** Mice (SCID); **Pump:** 1007D; **Duration:** 7 days;

**ALZET Comments:** Controls received vehicle injections; animal info (5-6 wks old, male, SCID); comparison of ip injections vs ip mp; cancer (pancreatic); “Compared with (bolus IP) 50 ug/kg IL -13 cytotoxin daily for 7 consecutive days, (ALZET pumps) (infused over 7 days) significantly suppressed tumor growth (P = 0.022) from the beginning of the treatment until the end of the experiment... Compared with the (bolus IP) 50 ug/kg group, a significant prolonged survival time was observed in the (ALZET pump) 50 ug/kg group”, pg 581


**Agents:** RNA, small interfering **Vehicle:** Not Stated; **Route:** Not Stated; **Species:** Mice (NOD/SCID); **Pump:** 1007D; **Duration:** 1 week;

**ALZET Comments:** Animal info (6 wks old, female NOD-SCID); MGMT-siRNA/LipoTrust complex; O6-methylguanine-DNA methyltransferase; incorrectly stated 1003D pump; cancer


**Agents:** PF-03814735 **Vehicle:** Cremophor EL; **Route:** IP; **Species:** Mice (nude; SCID); **Pump:** 1007D; **Duration:** 7 days;

**ALZET Comments:** Controls received mp w/ vehicle; animal info (athymic, nude-Foxn1); cancer; enzyme inhibitor (Aurora kinase)


**Agents:** AMD 3100 **Vehicle:** PBS; **Route:** SC; **Species:** Mice (SCID); **Pump:** 1004; **Duration:** Not Stated;

**ALZET Comments:** Controls received mp w/ vehicle; animal info (8-10 wks old, B6.CB17-Prkdc scid/SzJ); tissue adhesive and wound clips used


**Agents:** Peptide, loop 6 **Vehicle:** Not Stated; **Route:** IP; **Species:** Mice (SCID); **Pump:** Not Stated; **Duration:** Not Stated;

**ALZET Comments:** Controls received mp w/ PBS; peptides; enzyme inhibitor (metalloproteinase); cancer; Loop 6, anti-angiogenic peptide, is a smaller domain C-terminal portion of TIMP-2


**Agents:** Angiotensin II **Vehicle:** NaCl, Saline; **Route:** SC; **Species:** Mice (SCID); **Pump:** 2004; **Duration:** 28 days;

**ALZET Comments:** Controls received mp w/ vehicle; animal info (wt, C3H, C3H SCID, 2-4 mo old); peptides

**Agents:** Estradiol; estrogen-dendrimer conjugate  
**Vehicle:** DMSO;  
**Route:** IP;  
**Species:** Mice (SCID);  
**Pump:** 1004;  
**Duration:** 72 hours; 28 days;

**ALZET Comments:** Controls received mp w/ empty dendrimer; cardiovascular; cancer (breast); animal info (female, ERE-Luc reporter, 10-13 weeks old; Ex3aERKO, 8-9 weeks old; C57BL/6 Apoe-/-, 6 weeks old; SCID, 8 weeks old); functionality of mp verified by serum agent levels; Estradiol Dose (6 ug/d); replacement therapy (ovariectomy; pumps replaced after 28 days); half-life (p.2321); half life of EDC = 28 hours; stability verified by (Serum evaluation of experimental and control mice); photon recording with light emission tomography (LET) system with a CCD camera; Research Diets D10001