



Recent References (2018-Present) on the Administration of Estrogens
Using ALZET® Osmotic Pumps

Q11352: Z. Li, *et al.* Intranasal 15d-PGJ2 inhibits the growth of rat lactotroph pituitary neuroendocrine tumors by inducing PPARgamma-dependent apoptotic and autophagic cell death. *Frontiers in Neuroscience* 2023;17(1109675)
Agents: Estradiol **Vehicle:** Saline; DMSO; **Route:** SC; **Species:** Rat; **Strain:** Fischer; **Pump:** 2006; **Duration:** 6 weeks;
ALZET Comments: Dose (1, 2, 4, 8, 16 mg); dose-dependent; 1% DMSO, 99% saline used; controls received mp w/ vehicle; animal info (Ten-week-old female); MRI; "E2 treatment significantly increased the volumes and weights of lactotroph PitNETs and serum PRL in OVX rats in a dose-dependent manner." p. 8

Q11288: E. Itzhaki, *et al.* Tumor-Targeted Poly(ArgGlyAsp) Nanocapsules for Personalized Cancer Therapy – In Vivo Study. *Advanced Therapeutics* 2023;6(6):
Agents: Estradiol, 17b- **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice; **Strain:** NRG; NSG; **Pump:** Not Stated; **Duration:** 28 d
ALZET Comments: Dose (1.08 mg/pellet); controls received mp w/ vehicle; animal info (5–8 week old); cancer (colon, breast, gastric);

Q11309: L. Guo, *et al.* PER2 integrates circadian disruption and pituitary tumorigenesis. *Theranostics* 2023;13(8):2657-2672
Agents: 17 Beta-estradiol **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice; **Strain:** Per2-/- (C57BL6 background); **Pump:** 2004;
Duration: Not Stated;
ALZET Comments: Dose (20 mg); animal info (8-12 weeks old);

Q10613: N. Moskovits, *et al.* Palbociclib in Combination With Sunitinib Exerts a Synergistic Anti-Cancer Effect in Patient-Derived Xenograft Models of Various Human Cancers Types. *Cancer Letters* 2022;536(215665)
Agents: Estradiol **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice; **Strain:** NSG, NOD.Cg-25 PrkdcscidIl2rgtm1Wjl/SzJl; NRG, NOD.Cg-Rag1tm1Mom Il2rgtm1Wjl/SzJ; **Pump:** Not Stated; **Duration:** 28 days;
ALZET Comments: Dose (1.08 mg/pellet); animal info (5–8 weeks old mice () female or male according to the patient's sex.); cancer (Breast);

Q10817: K. Kaster, *et al.* A Novel Assay to Assess the Effects of Estrogen on the Cardiac Calmodulin Binding Equilibrium. *Life Sciences* 2022;290(120247)
Agents: Estradiol, 17B **Vehicle:** Not Stated; **Route:** SC; **Species:** Rat; **Strain:** Sprague-Dawley; **Pump:** 2002; **Duration:** 2 weeks;
ALZET Comments: Dose (Estradiol 30 ug/day); animal info (9 weeks old; Female ovariectomized); replacement therapy (Estrogen);

Q10538: E. E. Handley, *et al.* Estrogen Enhances Dendrite Spine Function and Recovers Deficits in Neuroplasticity in the prpTDP-43(A315T) Mouse Model of Amyotrophic Lateral Sclerosis. *Molecular Neurobiology* 2022;59(5):2962-2976
Agents: Estradiol **Vehicle:** Saline; DMSO; **Route:** SC; **Species:** Mice; **Strain:** Wild-type; TDP-43; **Pump:** 2004; **Duration:** 60 d
ALZET Comments: Dose (10 mg/ml); 50% DMSO used; Controls received mp w/ vehicle; animal info (Female; ; Ovariectomy); wound clips used; pumps replaced every 4 weeks; replacement therapy (Estrogen); neurodegenerative (ALS)

Q10324: Z. L. Sebo, *et al.* Testosterone metabolites differentially regulate obesogenesis and fat distribution. *molecular Metabolism* 2021;44(101141)
Agents: Testosterone; Dihydrotestosterone; Estradiol; Letrozole; Bicalutamide **Vehicle:** 2-hydroxypropyl-B-cyclodextrin; PBS; DMSO; **Route:** SC; **Species:** Mice; **Strain:** ARdY; mTmG; **Pump:** 1004; **Duration:** Not Stated;
ALZET Comments: Dose: Testosterone (2 mg/kg body weight/day); Estradiol (2 ug/kg body weight/day); Letrozole (0.4 mg/kg body weight/day); Dutasteride (0.5 mg/kg body weight/day); 10% DMSO vehicle used Controls received mp w/ vehicle; animal info: mice and mice 3 weeks of age; replacement therapy; (Testosterone)dependence;



Q10311: A. Ribon-Demars, *et al.* Lung oxidative stress and transcriptional regulations induced by estradiol and intermittent hypoxia. *Free Radical Biology and Medicine* 2021;164(119-129

Agents: Estradiol, 17-B **Vehicle:** Propylene glycol; DMSO; **Route:** SC; **Species:** Rat; **Strain:** Sprague-Dawley; **Pump:** 2ML4; **Duration:** 21 days;

ALZET Comments: Dose: (0.5 mg/kg/day); (50% Propylene glycol and 50% dimethyl sulfoxide) vehicle used; animal info: female rats (57–70 days old - initial body weight 250–300 g); post op. care: All animals received systemic (buprenorphine - 0.01mg/kg – sc) and local analgesia (lidocaine + bupivacaine – total dose 7 and 3.5 mg/kg at the sites of incision) immediately before surgery and 2 consecutive days of caprofen (20 mg/kg) starting immediately after surgery; 17 β - Estradiol aka (E2)"

Q9363: F. Marcouiller, *et al.* Metabolic responses to intermittent hypoxia are regulated by sex and estradiol in mice. *American Journal of Physiology Endocrinology and Metabolism* 2021;320(2):E316-E325

Agents: 17 B-Estradiol **Vehicle:** DMSO; Propylene Glycol; **Route:** SC; **Species:** Mice **Strain:** C57BL/6 **Pump:** 1004 **Duration:** 4 w
ALZET Comments: Dose (0.5 ug/day); 50% DMSO used; Controls received mp w/ vehicle; animal info (mice, 2-3 months old); 17 B-Estradiol aka E2; replacement therapy (estradiol);

Q9355: J. Liu, *et al.* Maternal Diabetes-Induced Suppression of Oxytocin Receptor Contributes to Social Deficits in Offspring. *Frontiers in Neuroscience* 2021;15(634781

Agents: Lentivirus vector, control; Lentivirus vector, oxytocin receptor; Lentivirus vector, estrogen receptor **Vehicle:** CSF, artificial; **Route:** CSF/CNS (amygdala); **Species:** Mice; **Strain:** Not Stated; **Pump:** 2002; **Duration:** 2 weeks;

ALZET Comments: Animal info (Male mice, 6 weeks old); behavioral testing (Animal Behavior Test); Brain coordinates (AP = -1.4, (ML = \pm 3.5, DV = -5.1); neurodegenerative (Autism spectrum disorders);

Q10203: X. Jin, *et al.* Oestrogen inhibits salt-dependent hypertension by suppressing GABAergic excitation in magnocellular AVP neurons. *Cardiovascular Research* 2021;117(10):2263-2274

Agents: Oestrogen; ICI 182780 **Vehicle:** Hydroxypropyl-b-cyclodextrin; **Route:** CSF/CNS (intracerebroventricular); **Species:** Rat; **Strain:** Sprague-Dawley; **Pump:** 2002; **Duration:** Not Stated;

ALZET Comments: 20% hydroxypropyl-b-cyclodextrin used; Controls received mp w/ vehicle; animal info: rats, 6–7weeks of age; post op. care: antibiotic (ubacillin); Blood pressure measured via: Tail cuff; Telemetry method; Blood pressure results (see pg.11); Oestrogen aka E2; ICI182780 aka (ICI); Brain Infusion Kit 2 used; Brain coordinates ((AP: 1.0mm from the bregma, ML: 1.6mm from the midline, DV: 4mm below the surface of the skull); cardiovascular;

Q10318: H. S. Huang, *et al.* Insuline-Like Growth Factor-2 (IGF2) and Hepatocyte Growth Factor (HGF) Promote Lymphomagenesis in p53-null Mice in Tissue-specific and Estrogen-signaling Dependent Manners. *Journal of Cancer Research and Clinical Oncology* 2021;12(20):6021-6030

Agents: Estrogen **Vehicle:** PBS; **Route:** SC; **Species:** Mice; **Strain:** C57BL6/J; **Pump:** 1004; **Duration:** 28 days;

ALZET Comments: Dose: (80 nM); Controls received mp w/ vehicle; animal info: male Trp53-/-; Lymphoma; dependence;

Q10317: H. Huang, *et al.* Liraglutide via Activation of AMP-Activated Protein Kinase-Hypoxia Inducible Factor-1alpha-Heme Oxygenase-1 Signaling Promotes Wound Healing by Preventing Endothelial Dysfunction in Diabetic Mice. *Frontiers in Physiology* 2021;12(660263

Agents: Liraglutide; Compound C; 2-methoxyestradiol **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Strain:** db/db; db/m; **Pump:** 1002; **Duration:** 4 weeks;

ALZET Comments: Dose: Lira (200 μ g/kg/day); Cpd C (1.5 mg/kg/day); 2-ME (40 mg/kg/day); Controls received mp w/ vehicle; animal info: 8-week-old; Liraglutide is a GLP-1 Receptor Agonist; 2-ME is an inhibitor of Hif-1a; dependence;

Q9246: E. Y. Gohar, *et al.* Activation of G protein-coupled estrogen receptor 1 ameliorates proximal tubular injury and proteinuria in Dahl salt-sensitive female rats. *American Journal of Physiology - Regulatory, Integrative and Comparative Physiology* 2021;320(3):R297-R306

Agents: G protein-coupled estrogen receptor 1 **Vehicle:** DMSO; Saline; **Route:** IP; **Species:** Rat; **Strain:** Dahl SS; **Pump:** 2ML4; **Duration:** Not Stated;

ALZET Comments: Dose (400 μ g/kg/day); 75% DMSO in Saline used; Controls received mp w/ vehicle; animal info (female rats, 12-14 weeks old); Blood pressure measured via telemetry; cardiovascular;



Q10523: L. J. Fritsch, *et al.* Exercise prevents whole body type 2 diabetes risk factors better than estradiol replacement in rats. *Journal of Applied Physiology* (1985) 2021;131(5):1520-1531

Agents: Estradiol **Vehicle:** DMSO; **Route:** SC; **Species:** Rat; **Strain:** Wistar; **Pump:** 2006; **Duration:** 6 weeks;

ALZET Comments: Dose: (1.4µg/day); 50% sterile DMSO vehicle used; animal info: 181 ± 2 g female rats; replacement therapy (Estradiol); diabetes; type II diabetes

Q9441: W. Sakuma, *et al.* Antidepressant effect of BE360, a new selective estrogen receptor modulator, activated via CREB/BDNF, Bcl-2 signaling pathways in ovariectomized mice. *Behavioural Brain Research* 2020;393(112764

Agents: Estradiol, 17B-; Tamoxifen; Raloxifene; BE360 **Vehicle:** PEG 300; **Route:** SC; **Species:** Mice; **Strain:** ddY; **Pump:** 2002; **Duration:** 2 weeks;

ALZET Comments: Dose (0.1 µg/day 17B-Estradiol; 1000 µg/day Tamoxifen; 1000 µg/day Raloxifene; 30 and 100 µg/day BE360); animal info (Female mice (8 weeks old)); behavioral testing (Forced swimming test); 17B-Estradiol aka E2, Tamoxifen aka TAM, Raloxifene aka RAL; replacement therapy (estradiol);

Q10303: A. V. Prakapenka, *et al.* Intranasal 17beta-Estradiol Modulates Spatial Learning and Memory in a Rat Model of Surgical Menopause. *Pharmaceutics* 2020;12(12):

Agents: Estradiol, 17-B **Vehicle:** PEG300; **Route:** SC; **Species:** Rat; **Strain:** Not Stated; **Pump:** Not Stated; **Duration:** Not Stated;

ALZET Comments: Dose: (0.04 mCi per kg body weight); Controls received mp w/ vehicle; animal info: 9–11-month-old (Study 1) and 40 9–10-month-old (Study 2) female Fischer-344CDF virgin rats; post op. care: carprofen (5 mg/mL/kg) for pain; behavioral testing: Water Radial-Arm Maze; Morris Water Maze; Visible Platform; Open Field 17 B-Estradiol aka (E2); neurodegenerative;

Q8646: S. K. Mamta, *et al.* Controlled release of sex steroids through osmotic pump alters brain GnRH1 and catecholaminergic system dimorphically in the catfish, *Clarias gariepinus*. *Brain Research Bulletin* 2020;164(325-333

Agents: Estradiol, 17B-; Testosterone, 17a-methyl **Vehicle:** Ethanol; Saline; **Route:** IP; **Species:** Fish (catfish); **Strain:** Not Stated; **Pump:** 1007D; **Duration:** 21 days;

ALZET Comments: Dose (0.48 ug/day); Controls received mp w/ vehicle; animal info (male and female catfish); functionality of mp verified by residual volume; 17B-estradiol aka E2, 17a-methyltestosterone aka MT; replacement therapy (testosterone; estradiol);

Q8873: Y. Lu, *et al.* Neuron-Derived Estrogen Is Critical for Astrocyte Activation and Neuroprotection of the Ischemic Brain. *The Journal of Neuroscience* 2020;40(38):7355-7374

Agents: Estradiol, 17B- **Vehicle:** Cyclodextrin; **Route:** SC; **Species:** Mice; **Strain:** FLOX; FBN-ARO-KO; **Pump:** Not Stated; **Duration:** 14 days;

ALZET Comments: Dose (0.0167 mg); 20% Cyclodextrin used; Controls received mp w/ vehicle; animal info (three-month-old female mice); behavioral testing (Barnes Maze; Novel Object Recognition Test); 17B-Estradiol aka E2; ischemia (Ischemic Brain);

Q8591: S. V. Koebele, *et al.* Characterizing the effects of tonic 17beta-estradiol administration on spatial learning and memory in the follicle-deplete middle-aged female rat. *Hormones and Behavior* 2020;126(104854

Agents: Estradiol, 17-beta- **Vehicle:** PEG; **Route:** SC; **Species:** Rat; **Strain:** Fischer-344; **Pump:** 2006; **Duration:** 6 weeks;

ALZET Comments: Dose (3 ug/day); Controls received mp w/ vehicle; animal info (female, virgin, Fischer-344 rats, 11 months old); 17-beta-estradiol aka E2; replacement therapy (estradiol);

Q8584: Z. Z. Kirshner, *et al.* Impact of estrogen receptor agonists and model of menopause on enzymes involved in brain metabolism, acetyl-CoA production and cholinergic function. *Life Sciences* 2020;256(117975

Agents: 17 B-Estradiol; 4,4',4''-(4- Propyl-[1H]-pyrazole-1,3,5-triyl) trisphenol; Diarylpropionitrile; G-1 **Vehicle:** DMSO; Hydroxypropyl-B-cyclodextrin; **Route:** SC; **Species:** Rat; **Strain:** Sprague–Dawley; **Pump:** 2002; **Duration:** 30 days;

ALZET Comments: Dose (3 ug/day 17 B-Estradiol; 5 ug/day other agonists); 10% DMSO, 20% Hydroxypropyl-β-Cyclodextrin used; Controls received mp w/ vehicle; animal info (Female rats, 11 weeks of age); 17 B-Estradiol aka E2; 4,4',4''-(4- Propyl-[1H]-pyrazole-1,3,5-triyl) trisphenol aka PPT; Diarylpropionitrile aka DPN; G-1 aka GPER1 agonist; replacement therapy (estradiol);



Q8542: R. Hornung, *et al.* Reduced activity of GAD67 expressing cells in the reticular thalamus enhance thalamic excitatory activity and varicella zoster virus associated pain. *Neuroscience Letters* 2020;736(135287)

Agents: Estradiol benzoate, 17-beta- **Vehicle:** PEG; **Route:** SC; **Species:** Rat; **Strain:** Long Evans; **Pump:** Not stated; **Duration:** 28 days;

ALZET Comments: Dose (750 ng/6 ul/day); animal info (Transgenic male (300 g) and female rats (260 g)); replacement therapy (estradiol);

Q8410: J. R. Chen, *et al.* Nox4 Expression Is Not Required for OVX-Induced Osteoblast Senescence and Bone Loss in Mice. *JBMR Plus* 2020;4(8):e10376

Agents: Estradiol, 17B- **Vehicle:** Not stated; **Route:** Intraovarian; **Species:** Mice; **Strain:** Wild type C57Bl6; **Pump:** Not stated; **Duration:** 8 weeks;

ALZET Comments: Dose (20 ug/kg/day); animal info (Six-month-old); replacement therapy (estradiol);

Q7504: Y. D. Wang, *et al.* 17beta-estradiol preserves right ventricular function in rats with pulmonary arterial hypertension: an echocardiographic and histochemical study. *International Journal of Cardiovascular Imaging* 2019;35(3):441-450

Agents: Estradiol, 17 beta- **Vehicle:** Not Stated; **Route:** SC; **Species:** Rat; **Strain:** Sprague-Dawley; **Pump:** 2ML4; **Duration:** 5 w

ALZET Comments: Dose (75 µg/kg/d); Controls received mp w/ vehicle; animal info (Male 8 week old rats (300–350 g)); cardiovascular; Therapeutic indication (Pulmonary arterial hypertension);

Q9067: K. Sharma, *et al.* Sexually dimorphic oxytocin receptor-expressing neurons in the preoptic area of the mouse brain. *PLoS One* 2019;14(7):e0219784

Agents: 17B-Estradiol **Vehicle:** DMSO; **Route:** SC; **Species:** Mice; **Strain:** Not Stated; **Pump:** 1004; **Duration:** Not Stated;

ALZET Comments: Dose (13.9 mM); Controls received mp w/ vehicle; animal info (Female, 6-8 weeks old, 20-23 g); post op. care (Buprenorphine); hormone replacement therapy (estradiol)

Q8831: A. Ribon-Demars, *et al.* Protective roles of estradiol against vascular oxidative stress in ovariectomized female rats exposed to normoxia or intermittent hypoxia. *Acta Physiologica* 2019;225(2):e13159

Agents: 17B Estradiol **Vehicle:** PEG; DMSO; **Route:** SC; **Species:** Rat; **Strain:** Sprague Dawley; **Pump:** 2ML4; 2006;

Duration: 7 days; 35 days;

ALZET Comments: Dose (0.5 mg/kg/day); Controls received mp w/ vehicle; animal info (, 57-70 days old, Female); cardiovascular;

Q8937: Prokai-T.K., *et al.* A Novel Prodrug Approach for Central Nervous System-Selective Estrogen Therapy. *Molecules* 2019;24(22):

Agents: Estradiol, 17b- **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice; **Strain:** Non-transgenic (NTG); DTG; **Pump:** Not Stated; **Duration:** 8 weeks;

ALZET Comments: Dose (2 ug/day); animal info (male mice); behavioral testing (Water Maze Test); 17b-estradiol aka E2; neurodegenerative (neurodegeneration);

Q8772: M. Oydanich, *et al.* Mechanisms of sex differences in exercise capacity. *American Journal of Physiology. Regulatory, Integrative and Comparative Physiology* 2019;316(6):R832-R838

Agents: 17B-Estradiol **Vehicle:** Propylene Glycol; **Route:** SC; **Species:** Mice; **Strain:** C57BL/6J; **Pump:** 1004; **Duration:** 28 days;

ALZET Comments: Dose (0.2 mg/kg/day); animal info (, 5 months old); 17B-Estradiol aka Estrogen; dependence;

Q7424: E. Noirrit, *et al.* Effects of conjugated estrogen and bazedoxifene on hemostasis and thrombosis in mice. *Endocrine Connections* 2019;

Agents: Estrogen, conjugated; Bazedoxifene **Vehicle:** Cyclodextrin, hydroxypropyl-beta; HEPES buffer; **Route:** SC; **Species:** Mice; **Strain:** C57BL/6J; **Pump:** Not Stated; **Duration:** 3 weeks;

ALZET Comments: Dose (BZA (10 mg/kg/day), CE (3 mg/kg/day)); animal info (Female mice 4 weeks old); replacement therapy (ovariectomized);



Q7576: Y. Lu, *et al.* Neuron-Derived Estrogen Regulates Synaptic Plasticity and Memory. *J Neurosci* 2019;39(15):2792-2809
Agents: Estradiol, 17 beta- **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice; **Strain:** Chimera; **Pump:** 1007D; **Duration:** 7 days;
ALZET Comments: Dose (0.0167mg); Controls received mp w/ placebo; animal info (male); replacement therapy (ovariectomy);

Q7321: Y. Wu, *et al.* Downregulation of G protein coupled receptor 30 in the hippocampus attenuates the neuroprotection of estrogen in the critical period hypothesis. *Molecular Medicine Reports* 2018;17(4):5716-5725
Agents: Estradiol, 17b- **Vehicle:** Saline; **Route:** SC; **Species:** Rat; **Strain:** Sprague-Dawley; **Pump:** Not Stated; **Duration:** 10 w
ALZET Comments: Dose (0.025 mg/day); Controls received mp w/ vehicle; animal info (female, , 12 weeks old, 250-300 g); neurodegenerative (Alzheimer's disease);

Q7935: T. Wada, *et al.* Impact of central and peripheral estrogen treatment on anxiety and depression phenotypes in a mouse model of postmenopausal obesity. *PLoS One* 2018;13(12):e0209859
Agents: Estradiol **Vehicle:** CSF, artificial; **Route:** SC; CSF/CNS (lateral ventricle); **Species:** Mice; **Strain:** C57BL/6; **Pump:** 1004; **Duration:** 3 weeks;
ALZET Comments: Dose ((SC 50 µg/kg/day), (ICV 1 µg/kg/day)); Controls received mp w/ vehicle; animal info (16 weeks, female); behavioral testing (Open field, Light-dark box, Tail suspension, Forced swim); Multiple pumps per animal (2 for SC group); comparison of SC mp vs ICV mp; ALZET brain infusion kit 3 used; Brain coordinates (0.3 mm posterior to the bregma, 0.9 mm lateral to the central sulcus, 2.5 mm below the skull); replacement therapy (estradiol); Therapeutic indication (mouse model of postmenopausal obesity that exhibited anxiety disorder and depression phenotypes were improved by E2 replacement.);

Q6903: A. Vinel, *et al.* Respective role of membrane and nuclear estrogen receptor (ER) alpha in the mandible of growing mice: Implications for ERalpha modulation. *J Bone Miner Res* 2018;33(8):1520-1531
Agents: Estrogen-dendrimer conjugate **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice; **Strain:** C57BL/6J; **Pump:** 2004; **Duration:** 28 days;
ALZET Comments: Dose (240mg/kg/day); Controls received mp w/ vehicle; animal info (mice);

Q7875: A. E. Tschiffely, *et al.* An exploratory investigation of brain-selective estrogen treatment in males using a mouse model of Alzheimer's disease. *Horm Behav* 2018;98(16-21
Agents: Estradiol, 17-beta-; DHED **Vehicle:** PEG; **Route:** SC; **Species:** Mice; **Strain:** C57BL/6; APPswe/PS1dE9; **Pump:** Not Stated; **Duration:** 8 weeks;
ALZET Comments: Dose ((E2 2 µg/day), (DHED 2 µg/day)); Controls received mp w/ vehicle; animal info (5.5-6 months, male,); behavioral testing (radial-arm water maze); pumps replaced every 4 weeks; 10beta,17beta-dihydroxyestra-1,4-dien-3-one (DHED) is a brain-selective prodrug of E2; neurodegenerative (Alzheimer's); pump model not stated but flow rate listed as 0.025 µL/min; Therapeutic indication (DHED-based estrogen treatment shown to decrease APP and Abeta peptide levels concomitantly improving learning in male animals at an early stage of the neuropathology.);

Q7244: R. Thakkar, *et al.* 17beta-Estradiol Regulates Microglia Activation and Polarization in the Hippocampus Following Global Cerebral Ischemia. *Oxidative Medicine and Cellular Longevity* 2018;2018(4248526
Agents: Estradiol, 17b **Vehicle:** Cyclodextrin, B-; **Route:** SC; **Species:** Rat; **Strain:** Sprague Dawley; **Pump:** Not Stated; **Duration:** 14 days;
ALZET Comments: Dose (0.0167 mg); 20% β-cyclodextrin used; animal info (3 month old, female,); ischemia (Cerebral);

Q7856: M. J. Ronis, *et al.* EB 2017 Article: Soy protein isolate feeding does not result in reproductive toxicity in the pre-pubertal rat testis. *Experimental Biology and Medicine* 2018;243(8):695-707
Agents: Estradiol, 17-beta- **Vehicle:** PEG; **Route:** SC; **Species:** Rat; **Strain:** Sprague-Dawley; **Pump:** 2002; **Duration:** 13 days;
ALZET Comments: Dose (10 µg/kg/d); Controls received mp w/ vehicle; animal info (PND 21, male,); comparison of soy protein isolate vs mp;



R0393: C. Physiology. Mechanisms of Sex Disparities in Cardiovascular Function and Remodeling. *Compr Physiol* 2018;9(1):375-411

Agents: Estradiol; Estrogen-dendrimer conjugate **Vehicle:** Not Stated; **Route:** Not Stated; **Species:** Not Stated; **Strain:** Not Stated; **Pump:** Not Stated; **Duration:** 2 weeks;

ALZET Comments: ischemia (placental); replacement therapy (ovariectomy);

Q8131: S. M. J. MohanKumar, *et al.* Chronic estradiol exposure - harmful effects on behavior, cardiovascular and reproductive functions. *Reproduction* 2018;156(5):R169-R186

Agents: 17 β -Estradiol **Vehicle:** Not stated; **Route:** SC; **Species:** Rat; **Strain:** Wistar; **Pump:** Not stated; **Duration:** 1, 3, 7 days;

ALZET Comments: animal info (Female, ;) dependence;

Q7181: B. L. Hoh, *et al.* Estrogen Deficiency Promotes Cerebral Aneurysm Rupture by Upregulation of Th17 Cells and Interleukin-17A Which Downregulates E-Cadherin. *J Am Heart Assoc* 2018;7(8):

Agents: Angiotensin II, estradiol, 17 β - **Vehicle:** PBS, Ethanol; **Route:** SC; **Species:** Mice; **Strain:** C57BL/6; **Pump:** Not Stated; **Duration:** Not Stated;

ALZET Comments: Ang-II (1000 ng/kg/min), Estradiol (0.25 μ g/hr); Beta-estradiol reconstituted in a PBS-ethanol solution [9:1]; animal info (8- to 12-week-old female mice);

Q7143: E. Guivarc'h, *et al.* Predominant Role of Nuclear Versus Membrane Estrogen Receptor alpha in Arterial Protection: Implications for Estrogen Receptor alpha Modulation in Cardiovascular Prevention/Safety. *J Am Heart Assoc* 2018;7(13):

Agents: Estrogen-dendrimer conjugate, angiotensin II, Estetrol **Vehicle:** DMSO; **Route:** SC; **Species:** Mice; **Strain:** C57BL/6; **Pump:** 2004; **Duration:** 28 days;

ALZET Comments: Dose (80 μ g/kg/day-EDC, 0.5 mg/kg/day- Ang II, 6 mg/kg/day -estetrol); Controls received mp w/ vehicle; animal info (); cardiovascular;

Q7779: M. Buscato, *et al.* The antagonist properties of Bazedoxifene after acute treatment are shifted to stimulatory action after chronic exposure in the liver but not in the uterus. *Molecular and Cellular Endocrinology* 2018;472(87-96)

Agents: Estrogen, Conjugated Equine; Bazedoxifene **Vehicle:** Hydroxypropyl-beta-cyclodextrin; HEPES buffer; **Route:** SC; **Species:** Mice; **Strain:** C57BL/6J; **Pump:** Not Stated; **Duration:** 14 days;

ALZET Comments: Dose (CE- 3 mg/kg/day, BZA- 10 mg/kg/day); animal info (Female,); Conjugated Equine Estrogen aka CE, Bazedoxifene aka BE; replacement therapy (Estrogen);