



Recent References (2022-Present) on the Intracerebroventricular Administration of Agents to Rats Using ALZET® Osmotic Pumps

Q12548: S. Y. Tsai, *et al.* Anti-Nogo-A antibody treatment six months post-stroke results in neuroplasticity and improved functional outcome. *Experimental Neurobiology* 2025;391(1):15306

Agents: Anti-Nogo-A **Vehicle:** Not Stated; **Route:** CSF/CNS (ventricle); **Species:** Rats; **Strain:** Long Evans black hooded; **Pump:** 2ML2; **Duration:** 2 weeks;

ALZET Comments: animal info (male mean weight of 300 g); ischemia (stroke);

Q12539: E. Rodriguez-Vazquez, *et al.* Central lipid sensing pathways contribute to the control of puberty and its alterations in conditions of obesity. *American Journal of Physiology Endocrinology and Metabolism* 2025;328(5):E675-E694

Agents: TGR5 agonist **Vehicle:** DMSO; **Route:** SC; CSF/CNS (ventricle); **Species:** Rats; **Strain:** Wistar; **Pump:** 2001; **Duration:** 10 days; 7 days;

ALZET Comments: Dose (5 ug/day); 60% DMSO vehicle used; controls received mp w/ vehicle; animal info (Female); catheter; ALZET BIK 3 used; brain coordinates (2 mm beneath surface of skull, 1 mm posterior, 1.2 mm lateral to Bregma); obesity;

Q12380: I. Maric, *et al.* Amygdala aromatase controls food intake, reward, and thermoregulation. *Molecular Metabolism* 2025;99(10):2202

Agents: Letrozole **Vehicle:** Not Stated; **Route:** CSF/CNS (lateral ventricle); **Species:** Rats; **Strain:** Sprague-Dawley; **Pump:** Not Stated; **Duration:** Not Stated;

ALZET Comments: Dose (10 µg/day); controls received mp w/ vehicle; animal info (Seven to eight-week-old male and female); functionality of mp verified by residual volume; aromatase inhibitor (CYP19A1); ALZET brain infusion kit II used; brain coordinates (0.6 mm posterior to bregma, 1.4 mm lateral from midline, 2.3 mm ventral from skull); cannula placement verified via postmortem India Ink injection; dental cement used; behavioral testing (feeding assays; operant conditioning with progressive ratio for food reward); obesity; "To specifically explore the role of brain estrogen synthesis, an osmotic pump was surgically implanted to continuously infuse the aromatase inhibitor Letrozole into the lateral ventricle." p.3;

Q12321: K. L. Liu, *et al.* Blockade of PVN neuromedin B receptor alleviates inflammation via the RAS/ROS/NF-kappaB pathway in spontaneously hypertensive rats. *Brain Research Bulletin* 2025;220(1):11180

Agents: BIM-23127 **Vehicle:** CSF, artificial; **Route:** CSF/CNS (paraventricular nucleus); **Species:** Rats; **Strain:** WKY; SHR; **Pump:** 2006; **Duration:** 6 weeks;

ALZET Comments: Dose (1 nmol/h); controls received mp w/ vehicle; animal info (250-270 g, sodium pentobarbital anesthesia); blood pressure measured via tail cuff; Measurements Fig.1C (pg.3); NMBR antagonist; brain coordinates (7.9 mm below the dura, 0.4 mm lateral from the midline, and 1.8 mm posterior to the bregma); cannula placement verified via pontamine sky blue injection; cardiovascular; (hypertension)

Q12443: J. E. Kim, *et al.* PHLPP1 regulates region-specific astroglial mitochondrial fission in response to oxidative stress in the male rat hippocampus. *Scientific Reports* 2025;15(1):26077

Agents: SC79; 3CAI; RNA, small interfering, control; RNA, small interfering, PHLPP1 **Vehicle:** Not Stated; **Route:** CSF/CNS (right lateral ventricle); **Species:** Rats; **Strain:** Sprague-Dawley; **Pump:** 1007D; **Duration:** 7 days;

ALZET Comments: Dose: (SC79 25 µM, 3CAI 25 µM); controls received mp w/ vehicle; animal info (Adult male, 7 weeks old, isoflurane anesthesia); ALZET BIK 1 used; brain coordinates (1.0 mm posterior; 1.5 mm lateral; 3.5 mm depth); gene therapy;

Q12207: T. Aoki, *et al.* Sodium appetite is enhanced in 5/6 nephrectomized rat by high-sodium diet via increased levels of angiotensin II in the subfornical organ. *Hypertension Research* 2025;

Agents: ZD7155 **Vehicle:** Saline; **Route:** CSF/CNS (intracerebroventricular); **Species:** Rat; **Strain:** Sprague-Dawley; **Pump:** 2ML4; **Duration:** 4 weeks;

ALZET Comments: Dose (0.1 mg/kg/day); controls received mp w/ vehicle; animal info (6 week old male, 160-180 g); blood pressure measured via noninvasive tail-cuff method; ALZET BIK 2 used; brain coordinates (0.8 mm caudal, 1.6 mm lateral, 4.3 mm ventral from bregma); behavioral testing (sodium appetite test); cardiovascular; nephrology; chronic kidney disease model; "The continuous ICV administration of ZD 7155 (a strong AT1R antagonist) using an ALZET osmotic pump significantly reduced the number of AGT- and AngII-positive cells in the SFO, indicating the attenuation of increased levels of AngII in the SFO." p9;



Q11989: U. Yilmaz, *et al.* Intracerebroventricular BDNF infusion may reduce cerebral ischemia/reperfusion injury by promoting autophagy and suppressing apoptosis. *Journal of Cellular and Molecular Medicine* 2024;28(8):e18246

Agents: Brain-derived neurotrophic factor **Vehicle:** CSF, artificial; **Route:** CSF/CNS (right lateral ventricle); **Species:** Rat; **Strain:** Sprague-Dawley; **Pump:** 2001; **Duration:** 7 days;

ALZET Comments: Dose (0.06 ug/hr); controls received mp w/ vehicle; animal info (male; 220-280 g); ALZET brain infusion kit used; brain coordinates (1.6 mm lateral, 0.8 mm posterior and 4 mm vertical from bregma); ischemia (cerebral); behavioral testing (balance; coordination; sensorimotor dysfunction; neurological); "In these three studies, ICV BDNF was administered with osmotic minipumps after CI. All three studies reported that ICV BDNF administration with osmotic minipumps reduced the post-CI infarct area and exhibited neuroprotective properties." pg. 10;

Q12577: Y. Xiao, *et al.* Inflammatory mediator contributes to leptin resistance and obesity in craniopharyngioma. *Federations of American Societies for Experimental Biology* 2024;38(23):e70242

Agents: Cyst fluid; CXCL1 **Vehicle:** Saline, sterile; **Route:** CSF/CNS (left ventricle); **Species:** Rats; **Strain:** Sprague-Dawley; **Pump:** 2006; **Duration:** Not Stated;

ALZET Comments: Dose (10 µg/mL); controls received mp w/ vehicle; animal info (Young male, 6 weeks of age, 160 to 180 g); vinyl catheter; ALZET brain infusion kit 2 used; brain coordinates (-0.8 mm anteroposterior; -1.3 mm lateral; -4.5 mm vertical from dura); obesity; "Therefore, we implant the osmotic minipump allowing the substances to enter the lateral ventricle slowly, to reduce the hypothalamic damage caused by syring insertion or acute inflammation caused by a high dose of CF. Avoiding hypothalamic damage is critical for confirming the independent obesogenic role of CF and CXCL1 in CP. Thus, we implanted an osmotic minipump allowing CF into the lateral ventricle slowly and chose the lateral ventricle rather than the hypothalamus as the insertion site." pg. 3; "

Q12560: K. L. H. Wu, *et al.* Butyrate reduction and HDAC4 increase underlie maternal high fructose-induced metabolic dysfunction in hippocampal astrocytes in female rats. *Journal of Nutritional Biochemistry* 2024;126(109571

Agents: Mc1568 **Vehicle:** Not Stated; **Route:** CSF/CNS (ventricle); **Species:** Rats; **Strain:** Sprague-Dawley; **Pump:** 1004; **Duration:** 4 weeks;

ALZET Comments: Dose (5 µM); animal info (Female, 2 month old); enzyme inhibitor (histone deacetylase 4);

Q11970: M. N. Wojtas, *et al.* Interplay between hippocampal TACR3 and systemic testosterone in regulating anxiety-associated synaptic plasticity. *Molecular Psychiatry* 2024;29(3):686-703

Agents: Osanetan **Vehicle:** Saline; **Route:** CSF/CNS (intracerebroventricular); **Species:** Rat; **Strain:** Wistar; **Pump:** 2004; **Duration:** Not Stated;

ALZET Comments: Dose: (100 nM) 0.9% NaCl used; controls received mp w/ vehicle; animal info (male 3 months, isoflurane anesthesia); post op. care (buprenorphine 0.65 mg/kg)ALZET brain infusion kit II used; brain coordinates (AP, -0.8 mm; ML, +1.6 mm; and DV, -4.0 mm.); behavioral testing (elevated plus-maze);

Q11928: K. Tanbek, *et al.* Effects of Glucagon as Neurohormone on the Central Nervous System and Glucose Homeostasis. *European Review for Medical and Pharmacological Sciences* 2024;

Agents: CSF, artificial **Vehicle:** Not Stated; **Route:** CSF/CNS (third ventricle); **Species:** Rat; **Strain:** Wistar albino; **Pump:** 2ML1; **Duration:** 7 days;

ALZET Comments: Dose (240 ul/day); animal info (male; 8 weeks old; 300-350 g);

Q11924: M. Sun, *et al.* Treatment with the vascular endothelial growth factor-A antibody, bevacizumab, has sex-specific effects in a rat model of mild traumatic brain injury. *Journal of Cerebral Blood Flow & Metabolism* 2024;44(4):542-555

Agents: Bevacizumab **Vehicle:** CSF, artificial; BSA; **Route:** CSF/CNS (lateral ventricle); **Species:** Rat; **Strain:** Sprague-Dawley; **Pump:** 2002; **Duration:** 11 days;

ALZET Comments: Dose: (10 mg/kg) BSA (1 mg/mL) used; controls received mp w/ vehicle; animal info (10 weeks old male, female); post op. care (buprenorphine, 0.05 mg/kg); ALZET brain infusion kit 2 used; brain coordinates (bregma: posterior 0.2 mm, lateral 1.6 mm and at 4.5 mm depth from skull surface); dental cement used; behavioral testing (beam; water maze; open field test); neurodegenerative (traumatic brain injury);



Q11899: A. Sanson, *et al.* CRF Binding Protein Activity in the Hypothalamic Paraventricular nucleus is Essential for Stress Adaptations and Normal Behaviour in Lactating Rats. *Neurobiology of Stress* 2024;30(100631)

Agents: Corticotropin releasing factor (6-33) **Vehicle:** Ringer's solution; **Route:** CSF/CNS (left, right paraventricular nucleus); **Species:** Rat; **Strain:** Sprague-Dawley; **Pump:** 1007D; **Duration:** 7 days;

ALZET Comments: Dose: (0.05 ug/ul); animal info (naive virgin female 200g-220g); brain coordinates (-1.4mm posterior, +1.8mm/-2.1mm lateral, +8.3mm ventral to bregma at +/-10 deg angle); bilateral cannula used; behavioral testing (Maternal care; pup retrieval test; anxiety-related behaviour; maternal defence test; forced swim test);

Q12533: B. Rubio, *et al.* Central Actions of Leptin Induce an Atrophic Pattern and Improves Heart Function in Lean Normoleptinemic Rats via PPARbeta/delta Activation. *Biomolecules* 2024;14(8):

Agents: leptin **Vehicle:** Saline; **Route:** CSF/CNS (lateral ventricle); **Species:** Rats; **Strain:** Wistar **Pump:** Not Stated **Duration:** 7d **ALZET Comments:** Dose (0.2 ug/d); controls received mp w/ vehicle; animal info (Male; 3 months old, isoflurane anesthesia); cardiovascular; obesity;

Q11882: P. A. Pereira, *et al.* Effects of Aging and Nerve Growth Factor on Neuropeptide Expression and Cholinergic Innervation of the Rat Basolateral Amygdala. *Biology* 2024;13(3):

Agents: Neurotrophine nerve growth factor; methylene blue **Vehicle:** CSF, artificial; BSA; **Route:** CSF/CNS (right lateral ventricle); **Species:** Rat; **Strain:** Wistar; **Pump:** 2002; **Duration:** 12 days;

ALZET Comments: Dose (150 ug/150 ul); 0.1% bovine serum albumin; controls received mp w/ vehicle; animal info (male 6 months old, 24 months, promethazine/xylazine anesthesia); post op. care (saline injections to prevent dehydration/weight loss); pulsed delivery; Lynch coil; ALZET brain infusion kit used; brain coordinates: 1.7 mm lateral to the midline, 1.1 mm posterior to the bregma, 4.0 mm below the skull surface; aging

Q11876: D. A. Ozturk Ozturk, *et al.* Central MOTS-c infusion affects reproductive hormones in obese and non-obese rats. *Neuroscience Letters* 2024;826(137722)

Agents: Peptide, mitochondrial-derived **Vehicle:** Not Stated; **Route:** CSF/CNS (right lateral ventricle); **Species:** Rat; **Strain:** Wistar; Albino; **Pump:** 2ML2; **Duration:** 14 days;

ALZET Comments: Dose (10 uM, 100 uM); controls received mp w/ aCSF; animal info (male 21 days old); peptides; ALZET brain infusion kit 1 used; brain coordinates (1.4 mm lateral; 0.8 mm posterior; 4.8 mm vertical); bilateral cannula used; dental cement used; obesity;

Q12410: A. C. L. Nunes, *et al.* Adenosine A(2A) Receptor Blockade Provides More Effective Benefits at the Onset Rather than after Overt Neurodegeneration in a Rat Model of Parkinson's Disease. *International Journal of Molecular Sciences* 2024;25(9):

Agents: 1-methyl-4-phenylpyridinium **Vehicle:** Saline; **Route:** CSF/CNS (lateral ventricle); **Species:** Rats; **Strain:** Wistar; **Pump:** 1002; **Duration:** 14 days;

ALZET Comments: Dose (0.15 mg/kg/day); controls received mp w/ vehicle; animal info (male and female; 3 months old; 221.4±4.3 g, ketamine/xylazine anesthesia); ALZET brain infusion kit 2 used; brain coordinates (relative to bregma: 1.5 mm posterior, 1.0 mm lateral, and 3.7 mm below the horizontal plane of bregma); behavioral testing (Balance; Motor coordination); neurodegenerative (Parkinson's);

R0472: D. Navarro-Tumar, *et al.* Novel Applications in Controlled Drug Delivery Systems by Integrating Osmotic Pumps and Magnetic Nanoparticles. *Sensors (Basel)* 2024;24(21):

Agents: DNA, tc; fluvastatin; meloxicam; angiotensin II: perilymph, artificial; isoform FS-288; neurotrophin-3 **Vehicle:** Not Stated; **Route:** IV; SC; CSF/CNS (ventricle); Ear; **Species:** Mice; bird (pigeon); guinea pig; rat; **Strain:** C57BL/6; Mdx52; Mst1-/-; Sprague Dawley; Apoe-/-; **Pump:** 1002; 1004; 2001; 2002; 2004; 2006; 2ML4; **Duration:** Not Stated;

ALZET Comments: see Table 1 for list of studies; "This method of drug administration presents several advantages for research purposes over conventional delivery systems including (i) the maintenance of a constant concentration of the drug to maximize its efficacy and reduce adverse effects, (ii) the elimination of the need for researcher intervention during the experiment, and (iii) the time savings by removing the need for frequent handling and repetitive injection of the animal." p. 5



Q12315: L. Y.-F. MD., *et al.* The Impact of Hydrogen Sulfide in the Paraventricular Nucleus on the MAPK Pathway in High Salt-Induced Hypertension. *Journal of Cardiovascular Pharmacology* 2024;

Agents: Hydroxylamine hydrochloride **Vehicle:** CSF, artificial; **Route:** CSF/CNS (bilateral periventricular nucleus); **Species:** Rats; **Strain:** Dahl salt-sensitive; **Pump:** 2006; **Duration:** 6 weeks;

ALZET Comments: Dose (9 nmol/h); controls received mp w/ vehicle; animal info (male >250 g, ketamine/xylazine anesthesia); blood pressure measured via tail cuff; Measurements (pg. 471); cystathionine beta-synthase inhibitor; brain coordinates (1.8 mm posterior to the bregma, 0.4 mm from the midline, and 7.9 mm ventral to the zero level); cardiovascular; hypertension

Q12350: L. Mazuecos, *et al.* Central leptin signaling deficiency induced by leptin receptor antagonist leads to hypothalamic proteomic remodeling. *Life Sciences* 2024;346(122649)

Agents: SLA **Vehicle:** PBS; **Route:** CSF/CNS (lateral ventricle); **Species:** Rats; **Strain:** Wistar; **Pump:** Not Stated; **Duration:** 21 d
ALZET Comments: Dose (0.2 ug/day); controls received mp w/ vehicle; animal info (male; 3 months old); "In this work, we blocked the central actions of leptin in lean male adult Wistar rat by chronically administering intracerebroventricularly the superactive leptin receptor antagonist (SLA) (D23L/ L39A/D40A/F41A) and investigated its impact on the hypothalamic proteome..." pg. 1;

Q12323: C. F. Liu, *et al.* Lactocaseibacillus-deglycosylated isoflavones prevent Abeta 40-induced Alzheimer's disease in a rat model. *AMB Express* 2024;14(1):90

Agents: Amyloid-beta 40 **Vehicle:** Acetonitrile; Trifluoroacetic acid; **Route:** CSF/CNS (intracerebroventricular); **Species:** Rats; **Strain:** Sprague-Dawley; **Pump:** 2004; **Duration:** 28 days;

ALZET Comments: Dose (24.299 ug/180 ul); 35% acetonitrile, 0.1% trifluoroacetic acid used; controls received mp w/ vehicle; animal info (male; 6-8 weeks old; 300 g, sodium pentobarbital anesthesia); peptides; brain coordinates (left skull relative to bregma 0.8 mm posterior, 1.4 mm lateral); dental cement used; behavioral testing (maze; memory; learning); neurodegenerative (Alzheimer's disease);

Q12319: Y. T. Lin, *et al.* Targeting acetylated high mobility group box 1 protein (HMGB1) and toll-like receptor (TLR4) interaction to alleviate hypertension and neuroinflammation in fructose-fed rats. *British Journal of Pharmacology* 2024;

Agents: CLI-095 **Vehicle:** DMSO; PEG 300; Tween-80; CSF, artificial; **Route:** CSF/CNS (lateral ventricle); **Species:** Rats; **Strain:** Wistar-Kyoto; **Pump:** 2002; **Duration:** 14 days;

ALZET Comments: 5% DMSO, 30% PEG-300, 2% Tween-80; 63% aCSF used; controls received mp w/ vehicle; animal info (6-8 weeks old, atropine/zoletil/xylazine anesthesia); post op. care (5 mg/k/d ketotifen); blood pressure measured via tail cuff; Measurements (pg. 7) Fig. B; CLI-095 is a TLR4 inhibitor; ALZET brain infusion kit 2 used; brain coordinates (5 mm to the right and 0.8 mm down); cardiovascular; hypertension;

Q12272: J. E. Kim, *et al.* GPx1-ERK1/2-CREB pathway regulates the distinct vulnerability of hippocampal neurons to oxidative stress via modulating mitochondrial dynamics following status epilepticus. *Neuropharmacology* 2024;260(110135)

Agents: siRNA control; siRNA GPx1; siRNA CREB; U0126 **Vehicle:** Not Stated; **Route:** CSF/CNS (right lateral ventricle); **Species:** Rats; **Strain:** Sprague-Dawley; **Pump:** 1007D; **Duration:** Not Stated;

ALZET Comments: Dose (20 uM); controls received mp w/ vehicle; animal info (male; 7 weeks old, isoflurane anesthesia); ALZET brain infusion kit 1 used; brain coordinates (1 mm posterior; 1.5 mm lateral; 3.5 mm depth); behavioral testing (Muscle strength; Tail suspension);

Q11761: S. Kajiwara, *et al.* Persistent brain exposure to high sodium induces stroke onset by upregulation of cerebral microbleeds and oxidative stress in hypertensive rats. *Hypertension Research* 2024;47(1):78-87

Agents: Sodium **Vehicle:** Not Stated; **Route:** CSF/CNS (right cerebral ventricle); **Species:** Rat; **Strain:** SHR; Wistar Kyoto; **Pump:** 2004; **Duration:** 4 weeks;

ALZET Comments: Dose (6 uL/day); controls received mp w/ vehicle; animal info (11 week-old male, isoflurane anesthesia); post op. care: iodine, meloxicam (1 mg/kg); blood pressure measured via: tail sphygmomanometer; Measurement (pg.83) Fig.2; ALZET brain infusion kit 1 used; brain coordinates (1.0 mm posterior and 2.0 mm lateral from the bregma); behavioral testing (rotarod test; beam walking test); cardiovascular; "To test this hypothesis, we employed hypertensive and normotensive rats, continuously administered multiple doses of sodium intracerebroventricularly, and evaluated stroke onset and the related brain injuries between the rats" pg.2 ;



Q11734: C. Y. Ho, *et al.* Microglial activation and toll-like receptor 4-Dependent regulation of angiotensin II type I receptor-mu-opioid receptor 1 heterodimerization and hypertension in fructose-fed rats. *European Journal of Pharmacology* 2024;962(176171)

Agents: CLI-095; glycyrrhizic acid **Vehicle:** DMSO; PEG300; Tween 80; CSF, artificial; **Route:** CSF/CNS (intracerebroventricular); **Species:** Rat; **Strain:** Wistar Kyoto; **Pump:** Not Stated; **Duration:** 14 days;

ALZET Comments: 5% DMSO; 30% PEG-300; 2% Tween-80; 63% aCSF used; controls received mp w/ vehicle; animal info (atropine, zoletil, xylazine anesthesia); blood pressure measured via non-invasive tail-cuff; Measurements (pg.6) Fig.6; brain coordinates (lateral 1.5 mm, caudal 0.8 mm, and ventral 4.0 mm from the bregma); cardiovascular; "It is in our concerns that this study has limitations, namely, the large molecular weight of GA, which hampers its ability to easily permeate the blood-brain barrier (BBB). Consequently, we resorted to using an ICV injection to deliver the drug into the CNS" pg. 8;

Q12115: M. Hernandez, *et al.* The Effects of Cathepsin B Inhibition in the Face of Diffuse Traumatic Brain Injury and Secondary Intracranial Pressure Elevation. *Biomedicines* 2024;12(7):

Agents: CA-074 methyl ester **Vehicle:** DMSO; Saline, sterile; **Route:** CSF/CNS (left lateral ventricle); **Species:** Rat; **Strain:** Sprague Dawley; **Pump:** 2002; **Duration:** 2 weeks;

ALZET Comments: 10% DMSO used; controls received mp w/ vehicle; animal info (male, 320-420g); ALZET brain infusion kit 1 used; brain coordinates (0.8 mm posterior, 1.3 mm lateral, 2.5-3 mm ventral to bregma); cyanoacrylate adhesive; "Overall, the findings from this study show that CA-074Me, when given as a bolus followed by continuous osmotic pump infusion into the left ventricle, successfully inhibits Cath B activity in the left and right lateral neocortex" pg. 20;

Q12178: H. L. Gao, *et al.* Puerarin Alleviates Blood Pressure via Inhibition of ROS/TLR4/NLRP3 Inflammasome Signaling Pathway in the Hypothalamic Paraventricular Nucleus of Salt-Induced Prehypertensive Rats. *Nutrients* 2024;16(16):

Agents: Puerarin **Vehicle:** CSF, artificial; **Route:** CSF/CNS (paraventricular nucleus); **Species:** Rat; **Strain:** Dahl; **Pump:** 2006; **Duration:** 6 weeks;

ALZET Comments: controls received mp w/ vehicle; animal info (male; 7 weeks old, 180-210 g); blood pressure measured via tail-cuff method; cardiovascular; therapeutic indication (hypertension);

Q12164: L. M. Frago, *et al.* Reduction in Hippocampal Amyloid-beta Peptide (A β) Content during Glycine-Proline-Glutamate (Gly-Pro-Glu) Co-Administration Is Associated with Changes in Inflammation and Insulin-like Growth Factor (IGF)-I Signaling. *International Journal of Molecular Sciences* 2024;25(11):

Agents: Amyloid beta 25-35 **Vehicle:** Acetic acid; **Route:** CSF/CNS (right ventricle); **Species:** Rat; **Strain:** Wistar; **Pump:** Not Stated; **Duration:** 14 days;

ALZET Comments: Dose (300 pmol/day); 1% acetic acid used; controls received mp w/ vehicle; animal info (female, 8 weeks of age, 250-280g); peptides; brain coordinates (-0.3 mm anteroposterior, 1.1 mm lateral); neurodegenerative (Alzheimer's); "Here, we report that GPE blocks most of the changes in cytokine content in the hippocampus induced by the continuous infusion of A β and that this effect may be mediated by preserving the activation of leptin- and IGF-I-related signaling pathways," pg. 8;

Q11720: Y. Feng, *et al.* Activation of testosterone-androgen receptor mediates cerebrovascular protection by photobiomodulation treatment in photothrombosis-induced stroke rats. *CNS Neuroscience & Therapeutics* 2024;30(2):e14574

Agents: Flutamide **Vehicle:** Saline; DMSO; **Route:** CSF/CNS (right lateral ventricle); **Species:** Rats; **Strain:** Sprague-Dawley; **Pump:** Not Stated; **Duration:** 14 days;

ALZET Comments: Dose (10 ug); 60% DMSO saline used; controls received mp w/ vehicle; animal info (male 2 months old); receptor agonist (Androgen receptor); ALZET brain infusion kit 2 used; brain coordinates (AP -0.8 mm; L -1.5 mm; V -3.5 mm); ischemia (brain stroke); behavioral testing (motor coordination and ability; paw usage; somatosensory deficits);

Q12123: Y. El-Hakim, *et al.* Peripheral, but not central, IGF-1 treatment attenuates stroke-induced cognitive impairment in middle-aged female Sprague Dawley rats: The gut as a therapeutic target. *Brain Behavior and Immunity* 2024;122(150-166

Agents: Insulin-like growth factor-1, human recomb. **Vehicle:** PBS; **Route:** CSF/CNS (intracerebroventricular); **Species:** Rats; **Strain:** Sprague- Dawley; **Pump:** 1007D; **Duration:** 48 hrs;

ALZET Comments: controls received mp w/ vehicle; animal info (female; 12 months old); ischemia (stroke); behavioral testing (maze; memory; social interaction); aging;



Q12122: S. Eitmann, *et al.* Activity of the hypothalamic neuropeptide Y increases in adult and decreases in old rats. *Scientific Reports* 2024;14(1):22676

Agents: Neuropeptide Y **Vehicle:** Saline, pyrogen-free; **Route:** CSF/CNS (right lateral ventricle); **Species:** Rats; **Strain:** Wistar; **Pump:** 2001; **Duration:** 7 days;

ALZET Comments: Dose (1 µg/µl/h); controls received mp w/ vehicle; animal info (male 3, 6, 12, 18, 24 months of age); post op. care (intramuscular gentamycin 2 mg/kg); ALZET brain infusion kit used; obesity; aging;

Q12105: A. D. Dodson, *et al.* Sympathetic Innervation of Interscapular Brown Adipose Tissue Is Not a Predominant Mediator of Oxytocin-Induced Brown Adipose Tissue Thermogenesis in Female High Fat Diet-Fed Rats. *Current Issues in Molecular Biology* 2024;46(10):11394-11424

Agents: Oxytocin **Vehicle:** Water, saline; **Route:** CSF/CNS (fourth ventricle); **Species:** Rat; Mice; **Strain:** Long Evans; C57BL/6J; DBA/2J; **Pump:** 2004; **Duration:** 29 days;

ALZET Comments: Dose (16 nmol/d); controls received mp w/ vehicle; animal info (adult female rats and mice, isoflurane anesthesia); post op. care (ketoprofen 2 mg/kg; antibiotic enrofloxacin 5 mg/kg); brain coordinates: rats –3.5 mm caudal to the interaural line; 1.4 mm lateral to the midline, 7.2 mm ventral to the skull surface; mice –5.9 mm caudal to bregma; 0.4 mm lateral to the midline, 3.7 mm ventral to the skull surface; dental cement used; obesity; “To test whether the effects of 4V OT to elicit weight loss translate to other female rodent species, we also examined the effect of chronic 4V infusion of OT on body weight in two separate strains of female HFD-fed mice. Similar to what we found in the HFD-fed rat model, we also found that chronic 4V OT (16 nmol/day) infusion resulted in reduced body weight gain, adiposity and/or energy intake in female HFD-fed C57BL/6J and DBA/2J mice.” pg. 11417;

Q12152: J. M. do Carmo, *et al.* Chronic central nervous system leptin administration attenuates kidney dysfunction and injury in a model of ischemia/reperfusion-induced acute kidney injury. *American Journal of Physiology Renal Physiology* 2024;327(6):F957-F966

Agents: Leptin **Vehicle:** Saline; **Route:** CSF/CNS (right lateral ventricle); **Species:** Rats; **Strain:** Sprague-Dawley; **Pump:** 2002; **Duration:** 12 days;

ALZET Comments: Dose: (0.021 µg/h); controls received mp w/ vehicle; animal info (male 12 weeks old); post op. care (penicillin G, 10 mg/kg, 50 µg/kg bolus injection of long-lasting buprenorphine); blood pressure measured via femoral artery catheter during GFR measurement; MAP monitored in mmHg (fig 3); peptides; ischemia (unilateral renal ischemia/reperfusion); nephrology; acute kidney injury

Q12087: V. Csikos, *et al.* Social Isolation Induces Changes in the Monoaminergic Signalling in the Rat Medial Prefrontal Cortex. *Cells* 2024;13(12):

Agents: Agomelatine **Vehicle:** DMSO; **Route:** CSF/CNS (lateral ventricle); **Species:** Rats; **Strain:** Wistar; **Pump:** 2004; **Duration:** 15 days;

ALZET Comments: Dose (0.08 mg/kg body weight); 5% DMSO used; controls received mp w/ vehicle; animal info (300 g; ketamine, xylazine anesthesia); post op. care (Tardomyocel 0.1 mL/kg SC); 5-Hydroxytryptamine receptor 2C antagonist; brain coordinates (–0.5 mm AP to the bregma; 1.4 mm lateral to the bregma, 3.6 mm ventral to the surface of the brain); behavioral testing (open field test; maze; swim; social interaction); “In order to avoid daily injections, which may create stress interfering with social behaviour, a continuous injection of Agomelatine was applied using osmotic minipumps.” pg. 22;

Q11667: P. T. Chiang, *et al.* In vivo detection of poststroke cerebral cell proliferation in rodents and humans. *Annals of Clinical and Translational Neurology* 2024;11(2):497-507

Agents: Methylazoxymethanol acetate **Vehicle:** Not Stated; **Route:** CSF/CNS (ventricle); **Species:** Rat; **Strain:** Sprague-Dawley; **Pump:** Not Stated; **Duration:** 7 days;

ALZET Comments: Dose: (7 mg/kg); animal info (tiletamine HCl, zolozepam, xylazine); brain coordinates (bregma: anteroposterior = -0.8 mm, lateral = -1.5 mm, depth = 3.5 mm); ischemia; behavioral testing (motor, sensory, reflex, and balance test);



Q11038: J. Zicha, *et al.* Nitric oxide and salt resistance in Dahl rats: no role of inducible NO synthase. *Physiological Research* 2023;72(1):123-127

Agents: Aminoguanidine; 2-amino-5,6-dihydro-6-methyl-4H-1,3-thiazine **Vehicle:** Water; saline; **Route:** CSF/CNS (lateral ventricle); **Species:** Rat; **Strain:** Wistar; **Pump:** 2004; **Duration:** 4 weeks;

ALZET Comments: Dose: AMG (2 mg/kg/day); AMT (0.5 mg/kg/day); Controls received mp w/ vehicle; animal info: Male 8-week-old outbred rats; Blood pressure measured via pressure transducer and a multichannel recorder; Blood pressure measurement see (pg.3 &4) fig.1,2,3 polyethylene catheter; AMG and AMT used as NOS II inhibitors; cardiovascular (blood pressure and high salt intake)

Q12027: C. Zhou, *et al.* Sympathetic overdrive and unrestrained adipose lipolysis drive alcohol-induced hepatic steatosis in rodents. *Molecular Metabolism* 2023;78(10)1813

Agents: CPT-157633 **Vehicle:** CSF, artificial; **Route:** CSF/CNS (lateral ventricle); **Species:** Rat; **Strain:** Sprague-Dawley; **Pump:** 1004; **Duration:** 5 days;

ALZET Comments: Dose: (0.2 mg/day); animal info (12- to 14-week-old female); PTP1b inhibitor;

Q11977: C. Xu, *et al.* Anthocyanin attenuates high salt-induced hypertension via inhibiting the hyperactivity of the sympathetic nervous system. *Clinical and Experimental Hypertension* 2023;45(1):2233717

Agents: Anthocyanin **Vehicle:** CSF, artificial; **Route:** CSF/CNS (paraventricular nucleus); **Species:** Rat; **Strain:** Sprague-Dawley; **Pump:** 2006; **Duration:** 4 weeks;

ALZET Comments: Dose (10 mg/kg); controls received mp w/ vehicle; animal info (male 180–200 g, 12 weeks); blood pressure measured via tail-cuff; measurements pg. 3 fig A&B; bilateral cannula used; cardiovascular (hypertension); "Bilateral PVN infusion of anthocyanin lowers peripheral sympathetic nerve activity and blood pressure in rats with salt-induced hypertension by improvement of expression" pg. 1;

Q11897: M. Sancho-Alonso, *et al.* Enhanced Activation of the S1PR2-IL-1beta-Src-BDNF-TrkB Pathway Mediates Neuroinflammation in the Hippocampus and Cognitive Impairment in Hyperammonemic Rats. *International Journal of Molecular Sciences* 2023;24(24):

Agents: JTE-013 **Vehicle:** Saline; DMSO; **Route:** CSF/CNS (cerebral ventricle); **Species:** Rat; **Strain:** Wistar; **Pump:** Not Stated; **Duration:** 28 days;

ALZET Comments: Dose: (1.22 mM); DMSO 1%, used; controls received mp w/ vehicle; animal info (male, isoflurane anesthesia); ALZET brain infusion kit 2 used; behavioral testing (novel object recognition, memory test);

Q10986: S. M. Robert, *et al.* The choroid plexus links innate immunity to CSF dysregulation in hydrocephalus. *Cell* 2023;186(4):764-785 e21

Agents: E. coli, wild type; E. coli, -LPS; lipopolysaccharide **Vehicle:** CSF, artificial; **Route:** CSF/CNS (right lateral ventricle); **Species:** Rat; **Strain:** Wistar; **Pump:** 1003D; **Duration:** 72 hours;

ALZET Comments: Dose (10 ng/mL); Controls received mp w/ vehicle; animal info 8-week-old; ALZET brain infusion kit 2 used; Brain coordinates ((coordinates, x= -0.8, y= -1.7 mm from bregma)cyanoacrylate adhesive; gene therapy; immunology

Q11886: B. E. Powers, *et al.* Anti-Nogo-A Antibody Therapy Improves Functional Outcome Following Traumatic Brain Injury. *American Society of Neurorehabilitation* 2023;37(10):682-693

Agents: Antibody, anti-Nogo-A **Vehicle:** Not Stated; **Route:** CSF/CNS (ipsilesional lateral cerebral ventricle); **Species:** Rat; **Strain:** Long Evans; **Pump:** 2ML2; **Duration:** 2 weeks;

ALZET Comments: Dose: (2.5 mg/ml); animal info (male, black-hooded); catheter; brain coordinates (2mm burr hole, 1.3mm lateral, 0.8mm posterior, and 3.8mm dorsoventral, relative to bregma); behavioral testing (skilled forelimb reaching task; horizontal ladder walk task); neurodegenerative (traumatic brain injury);

Q11086: C.-W. Lin, *et al.* Monascus-fermented metabolites repressed amyloid β -peptide-induced neurotoxicity and inflammatory response in in vitro and in vivo studies. *Journal of Functional Foods* 2023;104(Agents: Amyloid beta-peptide-40 **Vehicle:** Acetonitrile; trifluoroacetic acid; **Route:** CSF/CNS (left ventricle); **Species:** Rat; **Strain:** Sprague-Dawley; **Pump:** Not Stated; **Duration:** 28 days;

ALZET Comments: 35% acetonitrile solution; Controls received mp w/ vehicle; animal info (Male; 6-8 weeks old); peptides; ALZET brain infusion kit 2 used; dental cement used; Alzheimer's



Q11434: S. M. Perez, *et al.* Aberrant Dopamine System Function in the Ferrous Amyloid Buthionine (FAB) Rat Model of Alzheimer's Disease. *international Journal of Molecular Sciences* 2023;24(8):

Agents: Ferrous amyloid buthionine; ferrous sulfate; L L-buthionine (S,R)-sulfoximine **Vehicle:** DPBS; **Route:** CSF/CNS (lateral ventricle); **Species:** Rat; **Strain:** Long Evans; **Pump:** 2ML4; **Duration:** 3 weeks;

ALZET Comments: Dose FAB: 1 µmol/L Aβ42, 1 mmol/L FeSO₄, 12 mmol/L L-buthionine (S,R)-sulfoximine (BSO); controls received mp w/ vehicle; animal info (male, 325–350 g); ALZET BIK2 used; brain coordinates (A/P –0.9 mm and M/L +1.4 mm from Bregma; D/V –4.2 mm ventral of the brain surface); dental cement used; behavioral testing (Y-maze; Social interaction; Pre-pulse inhibition; MK-801-induced Locomotor response); neurodegenerative (Alzheimer's);

Q11430: J. S. Park, *et al.* Amphiregulin normalizes altered circuit connectivity for social dominance of the CRT3 knockout mouse. *Molecular Psychiatry* 2023;28(11):4655-4665

Agents: Amphiregulin, mouse recombinant; amphiregulin, epidermal growth factor; amphiregulin, heparin binding; epidermal growth factor proteins, mouse **Vehicle:** PBS; **Route:** CSF/CNS (right lateral ventricle); **Species:** Rat; **Strain:** Sprague Dawley; WT, CRT3; **Pump:** 1004; 2004; **Duration:** 21 days;

ALZET Comments: controls received mp w/ vehicle; animal info (male 5-6 weeks old rats; male 12 week old mice); post op. care (ketoprofen 8 mg/kg); peptides; ALZET brain infusion kit 3 used; brain coordinates (AP -0.3 mm from bregma, lateral 1 mm from bregma, AP: -1.2 mm from bregma, lateral -2 mm, DV 5 mm); MRI; PEEK tubing used

Q11351: X. Li, *et al.* Isoquercitrin Played a Neuroprotective Role in Rats After Cerebral Ischemia/Reperfusion Through Up-Regulating Neuroglobin and Anti-Oxidative Stress. *Transplantation Proceedings* 2023;55(7):1751-1761

Agents: Oligonucleotides, antisense **Vehicle:** CSF, artificial; **Route:** CSF/CNS (lateral ventricle); **Species:** Rat; **Strain:** Sprague Dawley; **Pump:** 2002; **Duration:** 72 hours;

ALZET Comments: Dose (1 mL/h); controls received mp w/ vehicle; sham operation; animal info (200 +/- 20 g); cerebral ischemia

Q11132: L. Li, *et al.* Downregulation of Nrf2 in the Hippocampus Contributes to Postoperative Cognitive Dysfunction in Aged Rats by Sensitizing Oxidative Stress and Neuroinflammation. *Oxidative Medicine and Cellular Longevity* 2023;2023(7):272456

Agents: Bardoxolone methyl **Vehicle:** Not Stated; **Route:** CSF/CNS (lateral ventricle); **Species:** Rat; **Strain:** F344/BNF1; **Pump:** 2002; **Duration:** Not Stated;

ALZET Comments: Controls received mp w/ vehicle; animal info (Male; 3 and 24 months old); catheter; dental cement used; brain coordinates used: 1.5 mm lateral to midline, 1.0 mm caudal to bregma, 3.5 mm ventral of dura; behavioral testing (Fear conditioning test; Open field test);

Q11083: D. S. Lee, *et al.* CDDO-Me Abrogates Aberrant Mitochondrial Elongation in Clasmatodendritic Degeneration by Regulating NF-kappaB-PDI-Mediated S-Nitrosylation of DRP1. *International Journal of Molecular Sciences* 2023;24(6):

Agents: CDDO-Me; SN50; RNA, small interfering, non-targeting control; RNA, small interfering, PDI **Vehicle:** Not Stated; **Route:** CSF/CNS (right lateral ventricle); **Species:** Rat; **Strain:** Sprague-Dawley; **Pump:** 1007D; **Duration:** Not Stated;

ALZET Comments: Dose: Controls received mp w/ vehicle; animal info (Male; 7 weeks old); ALZET brain infusion kit 1 used; Brain coordinates (1 mm posterior; 1.5 mm lateral; -3.5 mm depth to bregma); SN50 is a nuclear factor-KB inhibitor; clasmatodendrosis

Q11123: J. E. Kim, *et al.* Peroxiredoxin 6 Regulates Glutathione Peroxidase 1-Mediated Glutamine Synthase Preservation in the Hippocampus of Chronic Epilepsy Rats. *Antioxidants (Basel)* 2023;12(1):

Agents: MJ33 **Vehicle:** Not Stated; **Route:** CSF/CNS (right lateral ventricle); **Species:** Rat; **Strain:** Sprague-Dawley; **Pump:** 1007D; **Duration:** 7 days;

ALZET Comments: Dose (50 µM); Controls received mp w/ vehicle; animal info (Male; 7 weeks old; Weighed 200-250 g); MJ33 is a selective inhibitor of aiPLA2 activity of Prdx6; Brain coordinates (1 mm posterior; 1.5 mm lateral; 3.5 mm depth); epilepsy



Q11046: J. E. Kim, *et al.* Distinct Roles of CK2- and AKT-Mediated NF-kappaB Phosphorylations in Clasmatodendrosis (Autophagic Astroglial Death) within the Hippocampus of Chronic Epilepsy Rats. *Antioxidants* (Basel) 2023;12(5):

Agents: 2-[4,5,6,7-Tetrabromo-2-(dimethylamino)-1H-benzo[d]imidazole-1-yl]acetic acid; 3-chloroacetyl-indole **Vehicle:** Not Stated; **Route:** CSF/CNS (right lateral ventricle); **Species:** Rat; **Strain:** Sprague-Dawley; **Pump:** 1007D; **Duration:** 7 days; **ALZET Comments:** Dose: TMCB 0.5 ul, 3CAI 25 uM; animal info: Male 200–250 g; ALZET brain infusion kit 1 used; brain coordinates (coordinates: 1 mm posterior; 1.5 mm lateral; 3.5 mm depth); TMCB is a selective CK2 inhibitor; 3CAI is an AKT inhibitor; seizure

Q11300: J. E. Kim, *et al.* Epigallocatechin-3-Gallate Attenuates Leukocyte Infiltration in 67-kDa Laminin Receptor-Dependent and -Independent Pathways in the Rat Frontoparietal Cortex following Status Epilepticus. *Antioxidants* 2023;12(4):

Agents: Epigallocatechin-3-Gallate; IgG, control anti-mouse; IgG, anti-MCP; IgG control anti-rabbit; IgG anti-67LR **Vehicle:** Not Stated; **Route:** CSF/CNS (right lateral ventricle); **Species:** Rat; **Strain:** Sprague-Dawley; **Pump:** 1003D; 1007D; **Duration:** 3 days; 7 days; **ALZET Comments:** Dose (EGCG 50 uM; IgG 50 ug/mL); controls received mp w/ vehicle; animal info (Male; 7 weeks old; Weighed 200–220 g); ALZET brain infusion kit 1 used; brain coordinates (1 mm posterior; 1.5 mm lateral; 3.5 mm depth); dental cement used; cannula location verified during brain sections

Q11299: J. E. Kim, *et al.* EGCG Attenuates CA1 Neuronal Death by Regulating GPx1, NF-kappaB S536 Phosphorylation and Mitochondrial Dynamics in the Rat Hippocampus following Status Epilepticus. *Antioxidants* 2023;12(4):

Agents: Epigallocatechin-3-gallate; U0126 **Vehicle:** Not Stated; **Route:** CSF/CNS (right lateral ventricle); **Species:** Rat; **Strain:** Sprague-Dawley; **Pump:** 1007D; **Duration:** 3 days; **ALZET Comments:** Dose (50 uM EGCG, 25 uM U0126); controls received mp w/ vehicle; animal info (Male; Weighed 200–220 g); post op. care (Lithium chloride); ALZET brain infusion kit 1 used; brain coordinates (1 mm posterior; 1.5 mm lateral; 3.5 mm depth);

R0454: Q. Huang, *et al.* Biomaterial-Based bFGF Delivery for Nerve Repair. *Oxidative Medicine and Cellular Longevity* 2023;2023(8003821

Agents: Fibroblast growth factor, basic **Vehicle:** Heparin; **Route:** SC; CSF/CNS (lumbar thecal sac); CSF/CNS (lateral ventricle); **Species:** Rat; **Strain:** Not Stated; **Pump:** Not Stated; **Duration:** 1 week; **ALZET Comments:** neurodegenerative (spinal cord injury, facial nerve injury)

Q12104: J. M. do Carmo, *et al.* Sex differences in weight gain, blood pressure control, and responses to melanocortin-4 receptor antagonism in offspring from lean and obese parents. *American Journal of Physiology-Regulatory, Integrative and Comparative Physiology* 2023;325(4):R401-R410

Agents: SHU-9119 **Vehicle:** Saline; **Route:** CSF/CNS (intracerebroventricular); **Species:** Rats; **Strain:** Sprague-Dawley; **Pump:** 2002; **Duration:** 7 days; **ALZET Comments:** Dose (1 nmol/h); 0.9% saline used; controls received mp w/ vehicle; animal info (male and female, 24–26 weeks old, isoflurane anesthesia); functionality of mp verified via plasma leptin concentration; blood pressure measured via telemetry probes in abdominal aorta; MC4R antagonist; peptides; Tygon tubing; cardiovascular; hypertension; obesity; parental obesity model

Q11073: L. Dias, *et al.* Increased Synaptic ATP Release and CD73-Mediated Formation of Extracellular Adenosine in the Control of Behavioral and Electrophysiological Modifications Caused by Chronic Stress. *ACS Chem Neuroscience* 2023;14(7):1299-1309

Agents: Alpha, beta-methylene ADP **Vehicle:** Saline; **Route:** CSF/CNS (right lateral ventricle); **Species:** Rat; **Strain:** Wistar; **Pump:** 1004; **Duration:** 14 days; **ALZET Comments:** Controls received mp w/ vehicle; animal info (Male; Weighed 220–250 g); enzyme inhibitor (CD73); ALZET brain infusion kit 2 used; Brain coordinates (anter-posterior = 0 relative to bregma; lateral = 1.5 mm to midline; depth = 4.5 mm down from surface of skull); behavioral testing (restraint test, open-field test, object displacement, elevated-plus maze, forced swimming test); stress, memory



Q11099: F. De Lorenzo, *et al.* CDNF rescues motor neurons in models of amyotrophic lateral sclerosis by targeting endoplasmic reticulum stress. *Brain* 2023;146(9):3783-3799

Agents: Cerebral dopamine neurotrophic factor **Vehicle:** PBS; **Route:** CSF/CNS (lateral ventricle); **Species:** Rat; **Strain:** TDP43-M337V; **Pump:** Not Stated; **Duration:** 28 days;

ALZET Comments: Dose (6 ug/day); Controls received mp w/ vehicle; catheter; behavioral testing (Rotarod test); neurodegenerative (Amyotrophic lateral sclerosis);

Q11072: V. Csikos, *et al.* Microglia depletion prevents lactation by inhibition of prolactin secretion. *iScience* 2023;26(3):106264

Agents: Pexidartinib 3397 **Vehicle:** CSF, artificial; **Route:** CSF/CNS (lateral ventricle); **Species:** Rat; **Strain:** Wistar; **Pump:** 2004; **Duration:** 28 days;

ALZET Comments: Dose (0.5 mg/ml); Controls received mp w/ vehicle; animal info (Female; Wild-type; 2-4 months old; Pregnant); comparison of oral treatment vs mp; post op. care (Antibiotics III 0.1 ml/kg); ALZET brain infusion kit 2 used; Brain coordinates (-0.5 mm anteroposterior to bregma; 1.4 mm lateral to bregma; 3.6 mm ventral to brain surface); dental cement used; behavioral testing (Pup retrieval test; Spontaneous maternal behavior); PLX3397 inhibits colony stimulating factor 1 receptor

Q11243: K. A. Alkadhi. A rat model of pre-clinical Alzheimer's disease. *Handbook of Animal Models in Neurological Disorders* 2023;43-55

Agents: Amyloid beta (1-42) **Vehicle:** Acetonitrile; trifluoroacetic acid; **Route:** CSF/CNS (lateral ventricle); **Species:** Rat; **Strain:** Wistar; **Pump:** Not Stated; **Duration:** 2 weeks;

ALZET Comments: Dose (160pmol/day); 35% acetonitrile/0.1% trifluoroacetic acid used; post op. care: wound clips used; triple antibiotic ointment; peptides; catheter; Brain coordinates (AP: -0.3, L: 1.2, V: 4.5); dental cement used; behavioral testing: Radial arm water maze task; Short term memory; Long term memory; neurodegenerative (Alzheimer's); good methods p. 44-45

Q11596: J. Zicha, *et al.* Blood pressure reduction induced by chronic intracerebroventricular or peroral clonidine administration in rats with salt-dependent or angiotensin II-dependent hypertension. *Physiological Research* 2022;71(6):763-770

Agents: Clonidine **Vehicle:** Not Stated; **Route:** CSF/CNS (lateral ventricle); **Species:** Rat; **Strain:** Dahl; **Pump:** 2004; **Duration:** 4 weeks;

ALZET Comments: Dose (0.1 mg/kg/day); animal info (male 8 weeks old); Blood pressure measured via pressure transducer and multichannel recorder; α_2 -adrenergic receptor antagonist; PE catheter; cardiovascular; "The expected attenuation of sympathetic tone (decreased BP response to acute ganglionic blockade by pentolinium) was found only in rats receiving clonidine through icv infusion, whereas no significant change was observed in animals given clonidine in the drinking fluid." p3;

Q10803: P. Xiao, *et al.* RTN4/Nogo-A-S1PR2 Negatively Regulates Angiogenesis and Secondary Neural Repair Through Enhancing Vascular Autophagy in the Thalamus After Cerebral Cortical Infarction. *Autophagy* 2022;18(11):2711-2730

Agents: RTN4-d20-Fc; Immunoglobulin G, recombinant **Vehicle:** PBS; PEG 300; **Route:** CSF/CNS (right lateral ventricle); **Species:** Rat; **Strain:** Sprague-Dawley; **Pump:** 1003D; **Duration:** 24 hours;

ALZET Comments: Dose: (40 μ g/kg); 2% DMSO; 40% PEG300 vehicle used Controls received mp w/ vehicle; animal info: rats weighting 90–110 g; Recombinant human IgG Fc aka (IgG Fc); Brain coordinates (into the right lateral ventricle under a stereotaxic apparatus (-1.0 mm anteroposterior, 1.4 mm mediolateral, -4.0 mm dorsoventral relative to the bregma); neurodegenerative (cerebral cortical infarction);

Q10680: P. K. Singh, *et al.* Specific Inhibition of NADPH Oxidase 2 Modifies Chronic Epilepsy. *Redox Biology* 2022;58(10):2549

Agents: Gp91ds-tat **Vehicle:** Not Stated; **Route:** CSF/CNS (right lateral ventricle); **Species:** Rat; **Strain:** Sprague-Dawley; **Pump:** 2002; **Duration:** 2 weeks;

ALZET Comments: Dose (800 ng/kg/day); Controls received mp w/ vehicle; animal info (Naïve male and female rats (200–250 g); post op. care (Before initiating the surgery, rats were injected with buprenorphine (0.2 mg/kg; SC) and Metacam (1 mg/kg; SC) for pain relief); After surgery rats were injected with 3–5 ml of warmed Ringer's solution and amoxicillin (Betamox LA, 100 mg/kg); peptides; catheter; ALZET brain infusion kit 2 used; Brain coordinates (vinyl catheter tube was implanted into the right lateral ventricle of brain [1 mm posterior, 1.2 mm lateral, 4.5 mm ventral from the bregma); dental cement used; neurodegenerative (Epilepsy);



Q10675: G. Sekerci, *et al.* Effects of Meteorin-Like Hormone on Endocrine Function of Hypothalamo-Hypophysial System and Peripheral Uncoupling Proteins in Rats. *Molecular Biology Reports* 2022;49(7):5919-5925

Agents: Meteorin-like hormone **Vehicle:** CSF, artificial; **Route:** CSF/CNS (right lateral ventricle); **Species:** Rat; **Strain:** Sprague–Dawley; **Pump:** 2ML2; **Duration:** 14 days;

ALZET Comments: Dose: 10 nM, 100 nM; Controls received mp w/ vehicle; animal info: male rats with approximate body weight of 432 g; aCSF aka (Artificial cerebrospinal fluid)ALZET brain infusion kit 1 used; Brain coordinates (The right lateral ventricle coordinates (1.40 mm lateral, 0.8 mm posterior and 4.8 mm vertical from the bregma); dental cement used; (Thyroid hormones);

Q10660: L. Rezacova, *et al.* Both Central Sympathoexcitation and Peripheral Angiotensin II-Dependent Vasoconstriction Contribute to Hypertension Development in Immature Heterozygous Ren-2 Transgenic Rats. *Hypertension Research* 2022;45(3):414-423

Agents: Losartan **Vehicle:** Not Stated; **Route:** IP; CSF/CNS (lateral ventricle); **Species:** Rat (transgenic); **Strain:** mRen-2; **Pump:** 2004; **Duration:** Not Stated;

ALZET Comments: Dose (1 or 2 mg/kg/day); animal info (immature Male heterozygous ()27 transgenic; 6 weeks old; Fed Sniff diet); Blood pressure measured via pressure transducer and multichannel recorder; Brain coordinates: (AP = -1.0, L= 1.5, V= 4.1); polyethylene catheter used; antihypertensive; cardiovascular;

Q11550: C. Z. Ren, *et al.* SIRT1 exerts anti-hypertensive effect via FOXO1 activation in the rostral ventrolateral medulla. *Free Radical Biology and Medicine* 2022;188(1-13

Agents: Resveratrol **Vehicle:** CSF, artificial; **Route:** CSF/CNS (fourth ventricle); **Species:** Rat; **Strain:** Wistar-Kyoto, SHR; **Pump:** Not Stated; **Duration:** 7 days;

ALZET Comments: Dose (2.5 ug/ul); Controls received mp w/ vehicle; animal info (male 16-18 weeks old, 280-350 g); post op. care (IM injection buprenorphine; penicillin); cardiovascular (hypertension); "In order to determine the role of SIRT1 in the central regulation of cardiovascular activity, ICV infusion of RSV was used to activate the SIRT1 in the brain." pg. 4;

Q11536: Y. Ou, *et al.* Adult neurogenesis of the median eminence contributes to structural reconstruction and recovery of body fluid metabolism in hypothalamic self-repair after pituitary stalk lesion. *Cellular and Molecular Life Sciences* 2022;79(8):

Agents: Cytarabine; IGF1 **Vehicle:** CSF, artificial; **Route:** CSF/CNS (right ventricle); **Species:** Rat; **Strain:** Sprague Dawley; **Pump:** 2001; **Duration:** 7 days;

ALZET Comments: Controls received mp w/ vehicle; animal info: male 6–8 weeks, 180–220 g; Brain coordinates right lateral ventricle (- 1.0 mm posterior, - 2.0 mm lateral,- 4.0 mm ventral to bregma);

Q11208: L. G. Niu, *et al.* Genistein Alleviates Oxidative Stress and Inflammation in the Hypothalamic Paraventricular Nucleus by Activating the Sirt1/Nrf2 Pathway in High Salt-Induced Hypertension. *Cardiovascular Toxicology* 2022;22(10-11):898-909

Agents: Genistein; nicotinamide **Vehicle:** Saline; **Route:** CSF/CNS (hypothalamic paraventricular nucleus); **Species:** Rat; **Strain:** Wistar; **Pump:** 1004; **Duration:** 4 weeks;

ALZET Comments: Dose (20 µg/h); (0.3% NaCl); (8% NaCl) used; Controls received mp w/ vehicle; animal info: Four-week-old male 100–120 g; blood pressure measured via: Tail cuff; Blood pressure measurement results (see pg.900) fig.1 b; Brain coordinates (1.8 mm caudal to the bregma, 0.4 mm lateral to the central line, and 7.9 mm ventral to the dorsal surface); bilateral cannula used; cardiovascular;

Q10593: B. Lv, *et al.* Exenatide improves the luteinizing hormone pulse in obese polycystic ovary syndrome rats by upregulating sirtuin-1 in the hypothalamus. *The American Journal of Drug and Alcohol Abuse* 2022;

Agents: EX527 **Vehicle:** DMSO; **Route:** CSF/CNS (third ventricle); **Species:** Rat; **Strain:** PCOS; **Pump:** Not Stated; **Duration:** 3 w **ALZET Comments:** Dose: EX527 (5 µg/24 h); Controls received mp w/ vehicle; animal info: Obese rats;

Q11511: W.-C. Liu, *et al.* Lipopolysaccharide-induced Autophagy Increases SOX2-positive Astrocytes While Decreasing Neuronal Differentiation in the Adult Hippocampus. *Experimental Neurobiology* 2022;31(5):307-323

Agents: Lipopolysaccharide; methyladenine, 3- **Vehicle:** Saline; **Route:** IP; CSF/SNS (right lateral ventricle); **Species:** Rat; **Strain:** Sprague Dawley; **Pump:** 1007D; 1002; **Duration:** 7 days;

ALZET Comments: Dose (5 ng/100g/hr); animal info (male, 7 week old); ALZET brain infusion kit used; brain coordinates (A/P -1.4 mm, M/L 1.8 mm, D/V -3.0 mm);



Q11169: D. S. Lee, *et al.* CDDO-Me Attenuates Clasmatodendrosis in CA1 Astrocyte by Inhibiting HSP25-AKT Mediated DRP1-S637 Phosphorylation in Chronic Epilepsy Rats. *International Journal of Molecular Sciences* 2022;23(9):

Agents: CDDO-Me; 3CAI; siRNA, non-targeting control; siRNA, HSP25 **Vehicle:** Saline; **Route:** CSF/CNS (right lateral ventricle); **Species:** Rat; **Strain:** Sprague-Dawley; **Pump:** 1007D; **Duration:** 7 days;

ALZET Comments: Dose: CDDO-Me (10 uM); 3CAI (25 uM); Controls received mp w/ vehicle; animal info: 7 weeks old; 3CAI is an AKT inhibitor; ALZET brain infusion kit 1 used; Brain coordinates: right lateral ventricle (1 mm posterior; 1.5 mm lateral; -3.5 mm depth to the bregma); dental acrylic used; neurodegenerative (Temporal lobe epilepsy);

Q11158: J. E. Kim, *et al.* CDDO-Me Attenuates CA1 Neuronal Death by Facilitating RalBP1-Mediated Mitochondrial Fission and 4-HNE Efflux in the Rat Hippocampus Following Status Epilepticus. *Antioxidants (Basel)* 2022;11(5):

Agents: CDDO-Me; siRNA, non-targeting control; siRNA, RalBP1 **Vehicle:** Not Stated; **Route:** CSF/CNS (right lateral ventricle); **Species:** Rat; **Strain:** Sprague-Dawley; **Pump:** 1007D; **Duration:** Not Stated;

ALZET Comments: Controls received mp w/ vehicle; animal info: Male 7 weeks old; ALZET brain infusion kit 1 used; Brain coordinates: 1 mm posterior; 1.5 mm lateral; -3.5 mm depth to the bregma; Dental acrylic used; correct infusion into lateral ventricle confirmed tissue process for immunohistochemistry and Western blot; neurodegenerative (Status epilepticus);

Q11159: J. E. Kim, *et al.* Sp1-Mediated Prdx6 Upregulation Leads to Clasmatodendrosis by Increasing Its aiPLA2 Activity in the CA1 Astrocytes in Chronic Epilepsy Rats. *Antioxidants (Basel)* 2022;11(10):

Agents: CDDO-Me; Mithramycin A; MJ33 **Vehicle:** Not Stated; **Route:** CSF/CNS (right lateral ventricle); **Species:** Rat; **Strain:** Sprague-Dawley; **Pump:** 1007D; **Duration:** 7 days;

ALZET Comments: Dose: CDDO-Me 10 uM, MMA 25 uM, MJ33 50 uM; Controls received mp w/ vehicle; animal info: Seven-week-old male; ALZET brain infusion kit 1 used; Brain coordinates: 1 mm posterior; 1.5 mm lateral; 3.5 mm depth; dental cement used; CDDO-Me is an Nrf2 activator; MMA is an Sp1 DNA-binding transcriptional inhibitor; cannula placement verified during brain sections and sampling tissues for Western blot; neurodegenerative (Epilepsy);

Q11157: J. E. Kim, *et al.* Blockade of TASK-1 Channel Improves the Efficacy of Levetiracetam in Chronically Epileptic Rats. *Biomedicines* 2022;10(4):

Agents: ML365 **Vehicle:** Saline; **Route:** SC; CSF/CNS (right lateral ventricle); **Species:** Rat; **Strain:** Sprague-Dawley; **Pump:** 1007D; **Duration:** 7 days;

ALZET Comments: Dose: ML365 (400 nM); Controls received mp w/ vehicle; animal info: male 7 weeks old; ALZET brain infusion kit 1 used; Brain coordinates: 1 mm posterior, 1.5 mm lateral and 3.5 mm depth to the bregma; dental acrylic used; ML365 is a specific TASK-1 inhibitor; neurodegenerative (Epilepsy);

Q10570: D. Keller, *et al.* A Thalamo-Preoptic Pathway Promotes Social Grooming in Rodents. *Current Biology* 2022;32(21):4593-4606 e8

Agents: HYWH-TIP39 **Vehicle:** CSF, artificial; **Route:** CSF/CNS (lateral ventricle); **Species:** Rat; **Strain:** Not Stated; **Pump:** 2002; **Duration:** Not Stated;

ALZET Comments: Controls received mp w/ vehicle; animal info: female rats; behavioral testing: Social behavioral tests; Freely moving social behavior test; Social interaction test without direct contact; Social novelty test; HYWH-TIP39 is Parathyroid hormone 2 antagonist; ALZET brain infusion kit 2 used; Brain coordinates (AP = 0.5mm from bregma, ML = +1.6mm from the midline.); dental cement used; cranioplastic cement

Q10408: V. Barrios, *et al.* Chronic Central Leptin Infusion Promotes an Anti-Inflammatory Cytokine Profile Related to the Activation of Insulin Signaling in the Gastrocnemius of Male Rats. *Biomedicines* 2022;10(7):

Agents: Leptin **Vehicle:** Saline; BSA; **Route:** CSF/CNS (right ventricle); **Species:** Rat; **Strain:** Not Stated; **Pump:** Not Stated; **Duration:** 14 days;

ALZET Comments: Dose (12 µg/day); 0.9% saline and 1% serum albumin used; Controls received mp w/ vehicle; animal info (Male; Weighed about 250 g); diabetes;