Recent References (2019-Present) on Diabetes Research
Using ALZET® Osmotic Pumps


**Agents:** Intermedin **Vehicle:** Saline; **Route:** SC; **Species:** Rat; **Pump:** 2004; **Duration:** 4 weeks;
**ALZET Comments:** Dose (100 ng/kg/h); Controls received mp w/ vehicle; animal info (male Six-week-old healthy SPF-grade SD rats, 130-170 g); Intermedin aka IMD; diabetes;


**Agents:** RAGE-Apt **Vehicle:** Not Stated; **Route:** IP; **Species:** Mice; **Pump:** Not Stated; **Duration:** 8 weeks;
**ALZET Comments:** Dose (2.0 pmol/day/g); animal info (Male 8-week-old KKAy/Ta mice); Blood pressure measured via tail-cuff method; diabetes;


**Agents:** Aminobutyric acid, gamma **Vehicle:** Saline; **Route:** IP; **Species:** Mice; **Pump:** Not Stated; **Duration:** 14 days;
**ALZET Comments:** Dose (10 mg/kg/day); animal info (CD-1 IGS mice, 67 to 81 days old); diabetes;


**Agents:** PTUPB **Vehicle:** Not stated; **Route:** IP; **Species:** Rat; **Pump:** Not Stated; **Duration:** 8 weeks;
**ALZET Comments:** Controls received mp w/ vehicle; animal info (16 week-old, male obese ZSF1 rats); Blood pressure measured via tail-cuff plethysmography; 139 mmHg - 182 mmHg; diabetes;


**Agents:** Rapamycin; LY294002; Interleukin-1 beta receptor antagonist; SC144; etanercept **Vehicle:** CSF, Artificial; **Route:** CSF/CNS (dorsolateral striatum); **Species:** Rat; **Pump:** 1003D; **Duration:** Not Stated;
**ALZET Comments:** "Controls received mp w/ vehicle; animal info (Adult male Sprague-Dawley rats, 200-250 g); behavioral testing (Mechanical paw withdrawal threshold; Thermal Place Preference System); Interleukin-1 beta receptor antagonist aka IL-1b receptor antagonist; ALZET brain infusion kit used; Brain coordinates (7.6 mm posterior to the bregma, 0.65 mm lateral to the midline, and 4.2 mm ventral to the brain surface); diabetes; “

Q9214: M. Dixit, et al. Skeletal Response to Insulin in the Naturally Occurring Type 1 Diabetes Mellitus Mouse Model. JBMR Plus 2021;5(5):e10483

**Agents:** Humulin R **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice; **Pump:** 1002; **Duration:** 4 weeks;
**ALZET Comments:** Dose (0.25 U/day); animal info (female autoimmune-prone NOD mice, 12 to 14 weeks old); diabetes;


**Agents:** Leptin **Vehicle:** Not Stated; **Route:** CSF/CNS (intracerebral); IV; **Species:** Rat; **Pump:** 2001; **Duration:** 7 days;
**ALZET Comments:** Dose (0.62 ug/h); animal info (male and female Sprague-Dawley rats, 12 weeks old); Blood pressure measured via BP telemeter device; 95 mmHg – 110 mmHg; peptides; diabetes;


**Agents:** Rapamycin; Tacrolimus **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice; **Pump:** 1004; **Duration:** Not Stated;
**ALZET Comments:** Dose: (1 μg/g/day) Rapamycin; Tacrolimus; Controls received mp w/ vehicle; animal info: Male Six-week-old C57BL/6J; Tacrolimus aka (FK506); diabetes; Diabetic retinopathy

Agents: CL 316,243 Vehicle: Saline; Route: IP; Species: Mice; Pump: 1002; 1004; Duration: 14; 28 days;

ALZET Comments: Dose CL316,243 (1 mg/kg/day); animal info: C57BL/6 mice 8–10 weeks of age; C57BL6/J mice 6–8 weeks of age; post op. care: (Carprofen, 5 mg/kg sc); Compound aka: CL316,243 is a β3-adrenoceptor agonist; ischemia (Hind limb schema); cardiovascular; diabetes; “Following randomization 1 control mouse allocated to vehicle treatment died during a procedure due to equipment failure and 1 diabetic mouse randomized to the CL 316,243 group did not recover from surgery.


Agents: Angiotensin II Vehicle: Not Stated; Route: SC; Species: Rat; Pump: 2002; Duration: 14 days;

ALZET Comments: Dose: Ang II (450 ng/min/kg.); Controls received mp w/ vehicle; animal info (male SD rats (Harlan) were weighing ca. 260 g; Blood pressure measured via tail-cuff method; Recorded blood pressure (see pg 2367); cardiovascular; diabetes; Kidney disease; In essence, and as summarized in Fig. 12, the sGC activator runcaciguat has shown significant benefits and efficacy in (hypertensive and diabetic) preclinical CKD models with progressive proteinuria. These data are suggesting a treatment benefit of runcaciguat in patients with diabetic and hypertensive CKD.

Q10104: R. M. B. Bell, et al. Carbonyl reductase 1 amplifies glucocorticoid action in adipose tissue and impairs glucose tolerance in lean mice. Molecular Metabolism 2021;100(101225)

Agents: Dexamethasone; Aldosterone; 20b-DHB Vehicle: DMSO; Propylene glycol; Route: SC; Species: Mice; Pump: Not Stated; Duration: 7 days;

ALZET Comments: Dose: 20b-DHB(20 ug/day); animal info (C57BL/6 Male, Female (8 weeks of age); Dihydrocorticosterone aka (20b-DHB) is a full agonist of the mineralocorticoid receptor.; Mifepristone is a GR antagonist RU486; Spironolactone is a MR antagonist; Carbonyl reductase 1 (Cbr1),is an enzyme inhibitor; diabetes; obesity


Agents: Interleukin-6; Tumor necrosis factor, alpha Vehicle: Not Stated; Route: SC; Species: Mice; Duration: 7 days;

ALZET Comments: Dose (16 ug/mL Interleukin-6; 16 ug/mL Tumor necrosis factor, alpha); animal info (8-week-old C57BL/6 mice); Interleukin-6 aka IL-6; Tumor necrosis factor, alpha aka TNF-a; diabetes;


Agents: YM-155 Vehicle: Saline; Route: SC; Species: Mice; Pump: 1007D; Duration: 7 days;

ALZET Comments: Dose (5 mg/kg); Controls received mp w/ vehicle; animal info (female non-obese diabetic severe combined immunodeficient gamma (NSG) mice); dependence;


Agents: Insulin Receptor Antagonist Vehicle: Saline; Route: SC; Species: Mice; Pump: 2001; Duration: 7 days;

ALZET Comments: Controls received mp w/ vehicle; animal info (8 weeks old, RIP-Cre);

Q8333: M. Stanley M Chen Cardenas, Larissa A Shimoda, PhD, Naresh M Punjabi, MD, PhD. SUN-LB121 Nifedipine Worsens Glucose Tolerance in C57BL/6J Mice Exposed to Intermittent Hypoxia. Journal of the Endocrine Society 2020;

Agents: Nifedipine Vehicle: PEG 400; Route: SC; Species: Mice; Pump: 2001; Duration: 5 days;

ALZET Comments: Dose (20 mg/kg/day); animal info (Adult male C57BL6/J mice (age 19-week- old)); Nifedipine aka L-type CCB; diabetes;


Agents: Cholecystokinin Vehicle: Saline; Route: SC; Species: Mice; Pump: Not Stated; Duration: 4 weeks;

ALZET Comments: Dose (1 ug/kg/hr or 5 ug/kg/hr); 0.9% Saline used; Controls received mp w/ vehicle; animal info (Male); Cholecystokinin aka CCK ; diabetes;
Agents: Dabrafenib Vehicle: DMSO; Route: SC; Species: Mice; Pump: 2006; Duration: 24 weeks;
ALZET Comments: Dose (16.7 mg/ml, 0.15 μl/hr); Controls received mp w/ vehicle; animal info (6-8-week-old male mice, weighing 20-25 g); long-term study; diabetes;

Agents: Oligodeoxynucleotide, phosphorothioate; Oligodeoxynucleotide, phosphorothioate antisense Vehicle: Not Stated; Route: SC; Species: Mice; Rat; Pump: Not Stated; Duration: 14 days;
ALZET Comments: Dose (90 ng/g of body weight/day); animal info (8-week-old male C57BL/6 mice, 21-26 g; rats, 200-250 g); diabetes;

Agents: Fluorescein isothiocyanate-sinistrin Vehicle: Not stated; Route: SC; Species: Mice; Pump: 1002; Duration: 14 days;
ALZET Comments: Dose (0.25 ul/hr/day); animal info (18 weeks old); diabetes;

Agents: Sacubitril; Valsartan Vehicle: Not Stated; Route: SC; Species: Rat; Pump: 2ML4; Duration: 3 days;
ALZET Comments: Dose (75 u?g/day); Controls received mp w/ vehicle; animal info (Male Dahl SS rats, 7 wk of age); Blood pressure measured via tail-cuff plethysmography;155.8 mmHg - 176.0 mmHg;diabetes;

Agents: Glucagon Vehicle: Not Stated; Route: SC; Species: Rat; Pump: 1002; Duration: 4 weeks;
ALZET Comments: Dose (0.15 ng/min); animal info (Sprague Dawley, 300 g, Male); diabetes;

Q8925: M. Otto, et al. 12(S)-HETE mediates diabetes-induced endothelial dysfunction by activating intracellular endothelial cell TRPV1. The Journal of Clinical Investigation 2020;130(9):4999-5010
Agents: V1-Cal Vehicle: Not Stated; Route: SC; Species: Mice; Pump: Not Stated; Duration: 4 days;
ALZET Comments: Dose (1mg/kg/d); animal info (male and female 6-8 week-old mice); V1-cal aka TRPV1 inhibitor;

Agents: Glucagon Vehicle: Not Stated; Route: SC; Species: Mice; Pump: 1002; Duration: 4 weeks;
ALZET Comments: Dose (138 or 413 nmol/kg/day); Controls received mp w/ vehicle; animal info (Male ApoE-/- mice, 6 weeks old); pumps replaced every 2 weeks; Blood pressure measured via tail-cuff method;103 mmHg - 115 mmHg;Resultant plasma level (81 mg/dl Plasma glucose); diabetes;

Agents: C-peptide Vehicle: Saline; Route: Abdomen; Species: Rat; Pump: 2ML4; Duration: 4 weeks;
ALZET Comments: Dose (50 pmol/kg/min); Controls received mp w/ vehicle; animal info (male Sprague-Dawley rats, 180-200 g); diabetes;

Agents: Angiotensin II Vehicle: Saline; Route: SC; Species: Rat; Pump: Not Stated; Duration: 7 days;
ALZET Comments: Dose (200 ng/kg/min); 0.9% Saline used; Controls received mp w/ vehicle; animal info (Male Wistar rats, 200-250 g); Blood pressure measured via tail-cuff method;diabetes;
Agents: Glucose Vehicle: PBS; Route: IP; Species: Mice; Pump: Not stated; Duration: 15 days;
ALZET Comments: Controls received mp w/ vehicle; animal info (C57BL/6 mice); diabetes;

Q8653: Z. Maria, et al. Insulin Treatment Reduces Susceptibility to Atrial Fibrillation in Type 1 Diabetic Mice. Frontiers in Cardiovascular Medicine 2020;7(134)
Agents: Insulin, humulin R Vehicle: Citrate buffer; Route: SC; Species: Mice; Pump: 1004; Duration: 7 days;
ALZET Comments: Dose (0.5 U/mouse/day); Controls received mp w/ vehicle; animal info (Male FVBN/J mice, 8-10 weeks old); diabetes;

Agents: Peptide, Gp91ds-tat Vehicle: Not Stated; Route: Not Stated; Species: Mice; Pump: 1004; Duration: 8 weeks;
ALZET Comments: Dose (10 mg/kg/day); animal info (Mice, 8 weeks old); pumps replaced every 4 weeks; Peptide, Gp91ds-tat aka gp91dstat; peptides; diabetes;

Agents: Insulin Vehicle: Saline; Route: Not stated; Species: Mice; Pump: Not stated; Duration: 2 weeks;
ALZET Comments: Controls received mp w/ vehicle; animal info (C57BL/6J male mice, 6 or 7 weeks of age); diabetes;

Agents: Small extracellular vesicles, human Vehicle: PBS; Route: IV (right jugular vein); Species: Mice; Pump: 1003D; Duration: 4 days;
ALZET Comments: Controls received mp w/ vehicle; animal info (Nonpregnant female C57BL/6 mice); human small extracellular vesicles aka human sEVs; diabetes;

Agents: Aldosterone Vehicle: Saline; Route: SC; Species: Mice; Pump: 2004; 2006; Duration: 6 weeks;
ALZET Comments: Dose (0.4 mg/kg/day); Controls received mp w/ vehicle; animal info (db/db mice, 10 weeks old); Blood pressure measured via tail cuff method;diabetes;

Agents: Pancreastatin inhibitor Vehicle: Saline; Route: SC; Species: Mice; Pump: 2004; 2006; Duration: 4 weeks;
ALZET Comments: Dose (1 mg/kg); Controls received mp w/ vehicle; animal info (male C57BL/6 male mice, 20 ± 2 g); Pancreastatin inhibitor aka PSTi8; diabetes;

Agents: Angiotensin II Vehicle: Saline; Route: Not stated; Species: Mice; Pump: Not stated; Duration: 28 days;
ALZET Comments: Dose (1000 ng/kg/min); Controls received mp w/ vehicle; animal info (8-week-old C57BL/6J mice); Angiotensin II aka ANG II; diabetes;

Agents: Exendin 9-39 Vehicle: DMSO; Route: SC; Species: Mice; Pump: 2002; Duration: 2 weeks;
ALZET Comments: Dose (150 pmol/kg/min); 4% DMSO used; Controls received mp w/ vehicle; animal info (6 weeks old, Male, C57BL/6, TRPV$ -/-, 18-22 g); diabetes;
Agents: miR-204 Vehicle: Not stated; Route: Not stated; Species: Mice; Pump: 2006; Duration: 6 weeks;
ALZET Comments: Dose (0.7 mg/kg/day); animal info (male and female C57BL/6 mice); diabetes;

Agents: Bromocriptine Vehicle: Not Stated; Route: SC; Species: Mice; Pump: 1002; Duration: 2 weeks;
ALZET Comments: Dose (8 mg/kg/day); Controls received mp w/ vehicle; animal info (9-17 weeks old, C57BL/6J); diabetes;

Agents: Compound 21 Vehicle: Saline, sterile; Route: SC; Species: Mice; Pump: 1004; Duration: 4 weeks;
ALZET Comments: Dose (0.3 mg/kg/day); Controls received mp w/ vehicle; animal info (16-week-old db/db female mice); Compound 21 aka C21; diabetes;

Agents: Ang (1-7) Vehicle: Saline; Route: x; Species: Mice; Pump: 1002; Duration: 3 weeks;
ALZET Comments: Dose (25 ug/kg/hour); Controls received mp w/ vehicle; animal info (Col4a3−/− mice, 4 weeks); diabetes;

Agents: [Leu31, Pro34]-PYY Vehicle: PBS; Route: SC; Species: Mice; Pump: 1002; Duration: 14 days;
ALZET Comments: Dose (300 μg/Kg/day); Controls received mp w/ vehicle; animal info (Three-months-old male C57BL/6J mice); [Leu31, Pro34]-PYY aka NPYR1; diabetes;

Agents: 4-Cresol; 4-Methylcatechol Vehicle: Saline; Route: SC; Species: Mice; Pump: 2006; Duration: 6 weeks;
ALZET Comments: 0.9% NaCl used; Controls received mp w/ vehicle; animal info (six-week old C57BL/6J male mice); diabetes;

Agents: SHU9119 Vehicle: Saline; Route: CSF/CNS (lateral ventricle); Species: Mice; Pump: Not stated; Duration: 4 weeks;
ALZET Comments: Dose (5 nmol/day); Controls received mp w/ vehicle; animal info (male mice, 6-8 weeks old); SHU9119 aka melanocortin receptor antagonist; Brain coordinates (−0.7 mm posterior to bregma; 1.3 mm lateral, and 1.3 mm below the skull surface); diabetes;

Q8334: S. Aoyama, et al. Rubicon in pancreatic beta cells plays a limited role in maintaining glucose homeostasis following increased insulin resistance. Endocr J 2020;67(11):1119-1126
Agents: S961 Vehicle: Not stated; Route: SC; Species: Mice; Pump: Not stated; Duration: 1 week;
ALZET Comments: Dose (20 nmol per week); animal info (6 week old MIP-Cre-ERT mice); S961 aka insulin receptor antagonist; diabetes;

Agents: Exendin (9-39) Vehicle: Saline; Route: IP; Species: Mice; Pump: 2004; Duration: 28 days;
ALZET Comments: Dose (2 pmol/kg/min); 0.9% NaCl used; Controls received mp w/ vehicle; animal info (Twelve-week-old ob/ob mice); diabetes;
**Agents:** Nifedipine  **Vehicle:** PEG 400;  **Route:** SC;  **Species:** Mice;  **Pump:** 2001;  **Duration:** 5 days;  
**ALZET Comments:** Dose (20 mg/kg/day); animal info (Adult male C57BL6/J mice (age 19-week-old)); Nifedipine aka L-type CCB; diabetes;  

**Agents:** Nifedipine  **Vehicle:** PEG 400;  **Route:** SC;  **Species:** Mice;  **Pump:** 2001;  **Duration:** 5 days;  
**ALZET Comments:** Dose (20 mg/kg/day); animal info (Adult male C57BL6/J mice (age 19-week-old)); Nifedipine aka L-type CCB; diabetes;  

**Agents:** Insulin, recombinant human  **Vehicle:** Saline;  **Route:** SC;  **Species:** Mice (Pregnant);  **Pump:** 1007D;  **Duration:** 1 week;  
**ALZET Comments:** Dose (0.35 IU/day); Controls received mp w/ vehicle; animal info (6-8 weeks, female, ICR, 26-28g); diabetes; Pumps were implanted on day 14.5 or 15 of pregnancy. Pups were fostered by normal females until the age of 3 weeks. "To maintain stable glycemic levels, INS dams received another injection of 0.1 units of long-acting insulin (Levemir; Novo Nordisk) ~1h before the fed state (darkness) during late gestation." p.697;  

**Agents:** Fibroblast growth factor-21, recomb. human  **Vehicle:** Not Stated;  **Route:** IP;  **Species:** Mice;  **Pump:** Not Stated;  **Duration:** 10 days;  
**ALZET Comments:** "Dose (3 mg/kg/day); Controls were db/+ and received mp w/ vehicle; animal info (16 weeks, male, db/db); FGF21 is a robust regulator of metabolism through interactions with FGF receptor 1c and co-factor beta-Klotho.; diabetes; Therapeutic indication (obesity-induced reducing cognitive dysfunction and anxiety-like behavior through reducing glucose tolerance, insulin resistance, and hyperlipidemia); "  

**Agents:** Metformin  **Vehicle:** CSF, artificial;  **Route:** CSF/CNS (lateral ventricle);  **Species:** Rat;  **Pump:** Not Stated;  **Duration:** Not Stated;  
**ALZET Comments:** Dose (25 ug/day); animal info (Eight-week-old male Dahl salt-sensitive rats); Brain coordinates (0.5 mm posterior to bregma, 1.5 mm lateral to the midline, and 2.7 mm below the skull surface); diabetes;  

**Agents:** Peptide-1, recombinant human glucagon-like  **Vehicle:** Saline;  **Route:** IV;  **Species:** Rat;  **Pump:** Not Stated;  **Duration:** 12 weeks;  
**ALZET Comments:** "Dose (1.5 pmol/kg/min);Controls received mp w/ vehicle; animal info (Eight-week-old male/female Wistar rats weighing 300 – 10 g); diabetes; "  

**Agents:** Insulin; Melanotan  **Vehicle:** PBS;  **Route:** SC;  **Species:** Mice;  **Pump:** 2002; 1002;  **Duration:** 14 days;  
**ALZET Comments:** Dose (10 U/kg/day); Controls received mp w/ vehicle; Brain coordinates (bregma: anteroposterior, 0.70; mediolateral, 0.22; dorsoventral, 4.80 mm); bilateral cannula used; diabetes; BIK: Plastics1, 3280PD/V/SPC;  

**Agents:** Insulin receptor antagonist S961  **Vehicle:** Saline;  **Route:** SC;  **Species:** Mice;  **Pump:** 2001;  **Duration:** 7 days;  
**ALZET Comments:** Dose (10 nmol); Controls received mp w/ vehicle; animal info (8 weeks old, ); diabetes;
**Agents:** Exendin-4 **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Pump:** 1004; **Duration:** 4 weeks
**ALZET Comments:** Dose (300 pmol/kg/day or 24 nmol/kg/day); Controls received mp w/ vehicle; animal info (7 weeks old, Male, 129X1/SvJ); Exendin-4 aka Ex-4; diabetes;

**Agents:** angiotensin II **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice; **Pump:** 1004; **Duration:** 4 weeks
**ALZET Comments:** Dose (1,000 ng/kg/min); Controls contained functional AT1aR (pancreatic angiotensin type 1 receptor) gene; animal info (8-10 weeks, male, AT1aR(fl/fl) or AT1aR(pdx) transgenic); diabetes; All transgenic mice were of C57BL/6 origin. Mice were fed HF diet throughout this portion of the study;

**Agents:** Leptin **Vehicle:** Saline; **Route:** CSF/CNS; **Species:** Mice; **Pump:** 1004; **Duration:** 10 days
**ALZET Comments:** Dose (227 ng/µL); 0.9% Saline used; Controls received mp w/ vehicle; animal info (Male); Brain coordinates (−0.34 mm from the bregma, ±1mm lateral, −2.5mm from the skull); bilateral cannula used; diabetes;

**Agents:** CL-316,243 **Vehicle:** PBS; **Route:** Not Stated; **Species:** Mice; **Pump:** 1004; **Duration:** 4 weeks
**ALZET Comments:** Dose (1 mg/kg/day); Controls received mp w/ vehicle; animal info (Six-week-old C57Bl6J and db/db mice); diabetes;

**Agents:** Corticosterone **Vehicle:** Saline; **Route:** CNS/CSF; **Species:** Mice; **Pump:** Not stated; **Duration:** 14 days
**ALZET Comments:** Dose (0.75 mg/d or 2.0 mg/d); 0.9% Saline used; animal info (8-12 weeks old, C57BL/6); diabetes;

**Agents:** Recombinant Murine Leptin **Vehicle:** Not stated; **Route:** SC; **Species:** Mice; **Pump:** Not stated; **Duration:** 8 days
**ALZET Comments:** Dose (20 µg/day); Controls received mp w/ vehicle; animal info (8-12 weeks old); diabetes;

**Agents:** Recombinant adiponectin **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Pump:** 1003D; **Duration:** 3 days
**ALZET Comments:** Dose (0.62 µg/g); Controls received mp w/ vehicle; animal info (Female, 12 weeks old, CS7BL/6); Recombinant adiponectin aka Recombinant ADN; diabetes;

**Agents:** Compound A **Vehicle:** DMSO; **Route:** SC; **Species:** Mice; **Pump:** Not Stated; **Duration:** 2 weeks
**ALZET Comments:** Controls received mp w/ vehicle; animal info (4 weeks old, CS7BL/6, Male); Compound A aka selective p38 inhibitor and PKD activator; enzyme inhibitor (p38 inhibitor); diabetes;

Q8924: H. Oshima, et al. Empagliflozin, an SGLT2 Inhibitor, Reduced the Mortality Rate after Acute Myocardial Infarction with Modification of Cardiac Metabolomes and Antioxidants in Diabetic Rats. The Journal of Pharmacology and Experimental Therapeutics 2019;368(3):524-534
**Agents:** Empagliflozin **Vehicle:** DMSO; **Route:** SC; **Species:** Rat; **Pump:** Not Stated; **Duration:** 2 weeks
**ALZET Comments:** Dose (10 mg/kg/day); animal info (Male, 25-30 weeks); Empagliflozin aka SGLT2 inhibitor; enzyme inhibitor (SGLT2 inhibitor); diabetes;

**Agents:** Dexmedetomide  **Vehicle:** Not Stated;  **Route:** SC;  **Species:** Rat;  **Pump:** 2ML4, 2002;  **Duration:** 28 days;  
**ALZET Comments:** Dose (1 ug/kg/hr); animal info (Sprague Dawley, 8-10 weeks old); Dexmedetomide aka DEX; diabetes;


**Agents:** Angiotensin II  **Vehicle:** Not stated;  **Route:** SC;  **Species:** Mice;  **Pump:** 2004;  **Duration:** 28 days;  
**ALZET Comments:** Dose (1000 ng/kg/min); animal info (ApoE -/-, C57BL/6, Male, 8-10 weeks old, 20-30g); diabetes;


**Agents:** Canagliflozin  **Vehicle:** DMSO; PEG;  **Route:** SC;  **Species:** Rat;  **Pump:** Not Stated;  **Duration:** 2 weeks;  
**ALZET Comments:** Dose (1 mg/kg/day); Controls received mp w/ vehicle; animal info (Male LETO and OLETF rats, 25–30 weeks old); Blood pressure measured via tail-cuff method;76 mmHg - 119 mmHg; diabetes;


**Agents:** Angiotensin II, Nitroglycerin  **Vehicle:** NaCl, Citrate Buffer;  **Route:** Not stated;  **Species:** Rat;  **Pump:** 2001;  **Duration:** 7 days, 4 days;  
**ALZET Comments:** Dose (1.0 mg/kg/d or 6.6 ug/kg/min); 0.9% NaCl used; Controls received mp w/ vehicle; animal info (male Wistar Rats, 6 weeks, 300 g); Angiotensin II aka AT-II, Nitroglycerin aka GTN; diabetes;


**Agents:** Rapamycin; LY294002; Interleukin-1 beta receptor antagonist; SC144; etanercept  **Vehicle:** CSF, Artificial;  **Route:** CSF/CNS (dorsolateral striatum);  **Species:** Rat;  **Pump:** 1003D;  **Duration:** Not stated;  
**ALZET Comments:** “Controls received mp w/ vehicle; animal info (Adult male Sprague-Dawley rats, 200-250 g); behavioral testing (Mechanical paw withdrawal threshold; Thermal Place Preference System); Interleukin-1 beta receptor antagonist aka IL-1b receptor antagonist; ALZET brain infusion kit used; Brain coordinates (7.6 mm posterior to the bregma, 0.65 mm lateral to the midline, and 4.2 mm ventral to the brain surface); diabetes;”


**Agents:** C-peptide, human  **Vehicle:** Not stated;  **Route:** SC;  **Species:** Mice;  **Pump:** 2004;  **Duration:** 4 weeks;  
**ALZET Comments:** Dose (35 pmol/min/kg); animal info (Six-week-old male C57BL/6 mice); peptides; diabetes;


**Agents:** Exenatide  **Vehicle:** Saline;  **Route:** Not stated;  **Species:** Mice;  **Pump:** 1004;  **Duration:** 8 weeks;  
**ALZET Comments:** Dose (10 ug/kg/day); Controls received mp w/ vehicle; animal info (Seven week-old C57Bl/6J female mice); diabetes;


**Agents:** EX-527; 10068-F4  **Vehicle:** Not Stated;  **Route:** SC;  **Species:** Mice;  **Pump:** 1002;  **Duration:** 4 weeks;  
**ALZET Comments:** Dose ( EX-527 5 mg/kg/day, 10068-F4 30mg/kg/day ); Controls received mp w/ vehicle; animal info (BKS.Cg-Dock7mC=CLeprdb=J mice, 8 weeks old); enzyme inhibitor (EX-527 is an SIRT1 inhibitor, 10058-F$ is a c-Myc inhibitor); diabetes;

Agents: Insulin Glargine, Pancreastatin Inhibitor Vehicle: Saline; Route: SC; Species: Mice; Pump: 2004; Duration: 4 weeks;
ALZET Comments: Dose (1 mg/kg/day or 30 U/kg/day); Controls received mp w/ vehicle; animal info (male C57BL/6 male mice (20 ± 2 g)); Pancreastatin Inhibitor aka PSTi8; diabetes;


Agents: Aldosterone, d- Vehicle: Ethanol; Propylene Glycol; Distilled Water; Route: Not Stated; Species: Rat; Pump: 2004; Duration: 4 weeks;
ALZET Comments: Dose (2.9 mg/mL); 9% ethanol, 87% propylene glycol, 4% dH2Oused; Controls received mp w/ vehicle; animal info (Male Sprague-Dawley rats); diabetes;


Agents: Anti-GCGR monoclonal antibody Vehicle: Saline; Route: SC; Species: Mice; Pump: 2002; Duration: 2 weeks;
ALZET Comments: Dose (3 mg/ml); Controls received mp w/ vehicle; animal info (2-4 months old); diabetes;


Agents: Prolactin Vehicle: Saline; Route: SC; Species: Mice; Pump: 1002; Duration: 14 days;
ALZET Comments: Dose (18 ug/day); Controls received mp w/ vehicle; animal info (5 months old, ob/ob, 56 g); Prolactin aka Prl ; diabetes;


Agents: Angiotensin II Vehicle: saline, sterile; Route: SC; Species: Mice; Pump: 1004; Duration: 4 weeks;
ALZET Comments: Dose (700 ng/min/kg); Controls received mp w/ agent; animal info (129S6 Akita); diabetes; mp used to accelerate kidney damage;


Agents: Mitochondrial DNA Vehicle: Not Stated; Route: SC; Species: Mice; Pump: Not Stated; Duration: 28 Days;
ALZET Comments: Dose (30 ug/kg/day); animal info (Male, CD-1, 18-22 g); diabetes;


Agents: Exendin-4 Vehicle: Not stated; Route: SC; Species: Mice; Pump: Not stated; Duration: 2 weeks;
ALZET Comments: Dose (24 nmol/kg/day); Controls received sham surgery; animal info (10 weeks, male, C57BL/6J and db/db); ischemia (coronary artery occlusion); cardiovascular; diabetes; “As there has been no published protocol for long-term EX administration in mice, we followed the initial EX injection with prolonged Exendin-4 administration via osmotic pump for 2 weeks” p.35-36;

Q7977: F. Adel, et al. Insulin Therapy in a Rat Model of Diabetic Cardiomyopathy Is Associated with Attenuation of the Cgmp System. Journal of the American College of Cardiology 2019;73(9);

Agents: insulin Vehicle: saline; Route: SC; Species: Rat; Pump: Not stated; Duration: 1 month;
ALZET Comments: Dose (11.5 μg/kg/day); Controls received mp w/ vehicle; animal info (male, Wistar); cardiovascular; diabetes;