References on the Administration of Interleukin Using ALZET® Osmotic Pumps

1. Interleukin-1

Agents: Interleukin-1 beta Vehicle: Saline, pyrogen-free; Route: CSF/CNS (lateral ventricle); Species: Rat; Pump: 1002; Duration: 14 days; ALZET Comments: Dose (10 ng/7uL/rat/day); Controls received mp w/ vehicle; animal info (Male Sprague Dawley rats (220–260 g)); behavioral testing (open field, elevated plus maze and sucrose preference); ALZET brain infusion kit used; Brain coordinates (AP=−1 mm, ML=+1.4 mm, DV=−1 mm); Therapeutic indication (depression);

Agents: Interleukin-1 beta Vehicle: Saline; Route: CSF/CNS (lateral ventricle); Species: Rat; Pump: 1002; Duration: 14 days; ALZET Comments: Dose (10 ng/7uL/rat/day); animal info (Male Sprague Dawley rats (220–260 g)); behavioral testing (open field, elevated plus maze and sucrose preference); functionality of mp verified by residual volume; ALZET brain infusion kit used; Brain coordinates (AP=−1 mm, ML=+1.4 mm, DV=−1 mm); Cannula placement verified via sectioning the brains coronally;

Agents: Interleukin-1 beta, mouse recomb. Vehicle: PBS; Route: SC; Species: Mice; Pump: 1002; Duration: 14 days; ALZET Comments: Dose (10 ng/h); 0.1% bovine serum albumin used; animal info (12-week-old male C57Bl/6 mice);

Agents: Placenta growth factor, recombinant human; antibody, interleukin-1B Vehicle: PBS; Route: SC; Species: Mice; Pump: 1007D; Duration: 7 days; ALZET Comments: Controls received mp w/ vehicle or control antibody; animal info (male, C57BL6, 8 weeks old, STZ); immunology; diabetes; Dose (PlGF 10 ug/mouse; anti-IL-1B 1 ug/day);

Q6636: C. S. Nunemaker. Considerations for Defining Cytokine Dose, Duration, and Milieu That Are Appropriate for Modeling Chronic Low-Grade Inflammation in Type 2 Diabetes. J Diabetes Res 2016;2016(2846570
Agents: Interleukin-1beta, Interleukin-6 Vehicle: Saline; Route: SC; Species: Mice; Pump: 1007D; Duration: 7 days; ALZET Comments: Dose (32

2. Interleukin-2

Agents: Interleukin-1 beta; Interleukin-6; Interleukin-10; Interleukin-12; Interleukin-17; Interleukin-23; Interferon, gamma; Tumor Necrosis Factor, alpha; Interleukin-1 beta, anti; Transforming Growth Factor-B, anti Vehicle: Saline; Route: SC; Species: Mice; Pump: 1007D; Duration: Not stated; ALZET Comments: Dose (IL-1B- 83 ug/ml, IL-6-83 ug/ml, IL-10-166 ug/ml, IL-12-166 ug/ml, IL-17-125 ug/ml, IL-23- 126 ug/ml, IFNy-83 ug/ml, TNFa-166 ug/ml, anti-TGF-B1-166 ug/ml, or anti-IL-1B-150 ug/ml); Controls received mp w/ vehicle; animal info (8-12 weeks old, Female, C57BL/6); immunology;

Agents: Interleukin-1 beta; Interleukin-6; Interleukin-10; Interleukin-12; Interleukin-17; Interleukin-23; Interferon, gamma; Tumor Necrosis Factor, alpha; Interleukin-1 beta, anti; Transforming Growth Factor-B1, anti Vehicle: PBS; Route: SC; Species: Mice; Pump: 1007D; Duration: 10 Days;
ALZET Comments: Dose (IL-1b (83μg/ml); IL-6 (83μg/ml); IL-10 (166μg/ml); IL-12 (83μg/ml); IL-17 (125μg/ml); IL-23 (166μg/ml); IFNγ (83μg/ml); TNFa (166μg/ml); anti-TGF-b1 (166μg/ml); anti-IL-1b (150μg/ml)); Controls received mp w/ vehicle; animal info (Eight- to twelve-week-old female C57BL/6 mice); Immunology (“evaluate the suitability of osmotic pumps as a model for biofilms in implant associated infections, we implanted osmotic pumps pre-colonized with bioluminescent Staphylococcus aureus”);

Agents: Interleukin-25, recombinant mouse Vehicle: Not Stated; Route: SC; Species: Mice; Pump: 1004; Duration: 4 weeks;
ALZET Comments: Controls received mp w/ control medium; animal info (Apoe -/-, 9-10 or 21 weeks old); cardiovascular; brain tissue distribution; pumps removed after 4 weeks in young mice;

Agents: Interleukin-2, murine; antibody, anti-interleukin-2 Vehicle: PBS; Route: SC; Species: Mice (transgenic); Pump: Not Stated; Duration: 10 days;
ALZET Comments: Controls received mp w/ vehicle; animal info (HLA-DR3); comparison of injection vs mp; immunology;

Agents: Interleukin-2 Vehicle: PBS; Route: CSF/CNS; SC; Species: Mice; Pump: Not Stated; Duration: 2 weeks;
ALZET Comments: Controls received mp w/ Interleukin 2 without HSV-1 infection; animal info (6 weeks) ; ALZET brain infusion kit 1 used; neurodegenerative (demyelination); Therapeutic indication (CNS demyelination; Herpes simplex virus 1; HSV); Dose (1 ug/24 h);

3. Interleukin-3

Agents: Interleukin-31, recombinant mouse Vehicle: Not stated; Route: SC; Species: Mice; Pump: Not stated; Duration: 3 weeks;
ALZET Comments: Dose (14 ug/day); animal info (BALB/c female mice, 10 weeks old); recombinant mouse Interleukin-31 aka IL-31; cancer (Breast Cancer);

Agents: Interleukin-31, recombinant mouse Vehicle: Not Stated; Route: SC; Species: Mice; Pump: Not Stated; Duration: 14 days;
ALZET Comments: animal info (6 – 8 week old, C57BL/6 and Trpv1 knockout mice); functionality of mp verified by observation of skin phenotype; dose-response (pg. 508.e5); Dose (20 mg/day);

Agents: Interleukin-3 Vehicle: Not Stated; Route: SC; Species: Mice; Pump: Not Stated; Duration: Not Stated;
ALZET Comments: Animal info (C57BL/6:SV129 IK/-);

P9822: T. Yoshimoto, et al. Basophils contribute to Th2-IgE responses in vivo via IL-4 production and presentation of peptide-MHC class II complexes to CD4+ T cells. NATURE IMMUNOLOGY 2009;10(7):706-US4
Agents: Interleukin-3 Vehicle: PBS; Route: SC; Species: Mice; Pump: Not Stated; Duration: Not Stated;
ALZET Comments: Animal info (DO11.10, IL-4 deficient)

Q0809: S. Kim, et al. Basophils Can Directly Present or Cross-Present Antigen to CD8 Lymphocytes and Alter CD8 T Cell Differentiation into IL-10-Producing Phenotypes. Journal of Immunology 2009;183(5):3033-3039
Agents: Interleukin-3 Vehicle: Not Stated; Route: Not Stated; Species: Mice (transgenic); Pump: Not Stated; Duration: 7 days;
ALZET Comments: Animal info (C57BL/6, OT-I TCR-transgenic, IL-4KO B6); immunology

Agents: Interleukin-3 Vehicle: Not Stated; Route: Not Stated; Species: Mice; Pump: Not Stated; Duration: Not Stated;
ALZET Comments: Animal info (BALB/c, IL-3 deficient)

4. Interleukin-4

Agents: Interleukin-4 Vehicle: Not Stated; Route: IP; Species: Rat (pregnant); Pump: Not Stated; Duration: 19 days;
ALZET Comments: Dose (600 ng/day); animal info (pregnant Sprague-Dawley rats; pumps implanted on gestational day 14); ischemia (placental);

Agents: Ultra-high molecular weight polyethylene particles; interleukin-4, mouse recombinant Vehicle: BSA; PBS; Route: Bone (femur); Species: Mice; Pump: 2006; Duration: 4 weeks;
ALZET Comments: Controls received mp w/ vehicle; animal info (male, BALB/cByJ, 10-12 weeks old); 1% BSA used; post op. care (buprenorphine injection SC); used vinyl tubing to connect pumps to titanium rods;

Agents: Interleukin-4 Vehicle: Saline; Route: CSF/CNS (ventricle); Species: Mice (knockout); Pump: 2001; Duration: 7 days;
ALZET Comments: Controls received mp w/ vehicle; animal info (C57/BL6 mice; 8-10 weeks, 25-30 g); ischemia (cerebral; stroke model); behavioral testing (Rotarod, corner, foot fault, and Morris water maze tests); healing, recovery; learning, memory; Therapeutic indication (Cerebral ischemia); Dose (60 ng/day); Brain coordinates: −0.20 mm anterior and 1.00 mm lateral to bregma;

Agents: Interleukin-4, mouse recombinant Vehicle: BSA; PBS; Route: In vitro (cell culture); Species: Cell culture; Pump: 2006; Duration: 4 weeks;
ALZET Comments: 1% BSA used; immunology; "Osmotic pumps delivered IL-4 at a rate that closely followed the expected delivery rate." pg 1343; used vinyl tubing; pumps lead into mouse bone marrow macrophage augmented media; incubated at 37C

Agents: Antibody, interleukin-4Ra Vehicle: Not Stated; Route: CSF/CNS (hippocampus); Species: Mice; Pump: 1004; Duration: 28 days;
5. Interleukin-5


ALZET Comments: Interleukin-5, recombinant rat; Rat (pregnant); 2002; 5 days; Controls received mp w/ vehicle; animal info (pregnant, 14-19 days gestation); cardiovascular; bp measured using catheter; preeclampsia.


ALZET Comments: Interleukin-5; PBS; BSA; IP; Mice (transgenic); 2001; 8 days; Controls received mp w/ vehicle; Immunology; peptides; human IL-5 used.

6. Interleukin-6


Agents: Interleukin-6 Vehicle: Saline; Route: CNS/CSF; Species: Mice; Pump: 1002; Duration: 14 days;

ALZET Comments: Dose (100 ng/day); Controls received mp w/ vehicle; animal info (Male, C57BL/6N); neurodegenerative (Alzheimer’s Disease);


Agents: Interleukin-1 beta; Interleukin-6; Interleukin-10; Interleukin-12; Interleukin-17; Interleukin-23; Interferon, gamma; Tumor Necrosis Factor, alpha; Interleukin-1 beta, anti; Transforming Growth Factor-B1, anti Vehicle: Saline; Route: SC;

Species: Mice; Pump: 1007D; Duration: Not stated;

ALZET Comments: Dose (IL-1β-83 μg/ml; IL-6-83 μg/ml; IL-10-166 μg/ml, IL-12-83 μg/ml, IL-17-125 μg/ml, IL-23-126 μg/ml, IFNy-83 μg/ml, TNFa-166 μg/ml, anti-TGF-B1-166 μg/ml, or anti-IL-1B-150 μg/ml); Controls received mp w/ vehicle; animal info (Eight- to twelve-week old, Female, C57BL/6); Immunology;


Agents: Interleukin-1 beta; Interleukin-6; Interleukin-10; Interleukin-12; Interleukin-17; Interleukin-23; Interferon, gamma; Tumor Necrosis Factor, alpha; Interleukin-1 beta, anti; Transforming Growth Factor-B1, anti Vehicle: PBS; Route: SC;

Species: Mice; Pump: 1007D; Duration: 10 Days;

ALZET Comments: Dose (IL-1b [83μg/ml]; IL-6 [83μg/ml]; IL-10 [166μg/ml]; IL-12 [83μg/ml]; IL-17 [125μg/ml]; IL-23 [166μg/ml]; IFNg [83μg/ml]; TNFa [166μg/ml]; anti-TGF-b1 [166μg/ml]; anti-IL-1b [150μg/ml]); Controls received mp w/ vehicle; animal info (Eight- to twelve-week-old female C57BL/6 mice); Immunology (“evaluate the suitability of osmotic pumps as a model for biofilms in implant associated infections, we implanted osmotic pumps pre-colonized with bioluminescent Staphylococcus aureus”);


Agents: Interleukin-6 Vehicle: Not Stated; Route: SC; Species: Mice; Pump: Not Stated; Duration: 15 days;

ALZET Comments: Dose (1.0 mg/ml); Dose (1.0 mg/ml); Interleukin-6 aka IL-6; spinal cord injury;

Agents: Interleukin-6, human Vehicle: NaCl; BSA; Route: Not Stated; Species: Mice; Pump: Not Stated; Duration: 14 days; ALZET Comments: animal info (male, mINDY KO); 0.1% BSA used; immunology;

Agents: Transforming growth factor-β1; SJN2511; Interleukin-6; Bovine serum albumin Vehicle: CSF; artificial; dextran; Route: CSF/CNS; Species: Mice; Pump: Not Stated; Duration: 7 days;
ALZET Comments: Dose (0.4mM BSA, 100 ng/ml (TGF) - β1, 300μM SJN2511); Controls received mp w/ vehicle; animal info (2- to 3-month-old FVB/N and C57BL/6 mice); SJN2511 is a selective blocker of the TGF-B type I receptor/ALK5; Brain coordinates (0.5 mm posterior, 1 mm lateral to bregma);

7. Interleukin-7

Agents: Interleukin-7 Vehicle: PBS; Route: SC; Species: Mice; Pump: Not Stated; Duration: 5 days;
ALZET Comments: Controls received mp w/ vehicle; immunology;

Agents: Interleukin-2; interleukin-7; interleukin-15 Vehicle: Not Stated; Route: SC; Species: Mice; Pump: 2001; Duration: 7 days;
ALZET Comments: Controls received mp w/ PBS; animal info (6-12 wks old, gender, age matched); immunology

Agents: Interleukin-7 Vehicle: Not Stated; Route: SC; Species: Mice; Pump: Not Stated; Duration: 7 days;
ALZET Comments: Controls received mp w/ PBS; animal info (C57BL/6, 6-16 wks old); wound clips used; post op. care (betadine)

P9932: J. H. Park, et al. Signaling by intrathymic cytokines, not T cell antigen receptors, specifies CD8 lineage choice and promotes the differentiation of cytotoxic-lineage T cells. NATURE IMMUNOLOGY 2010;11(3):257-U10
Agents: Interleukin-7, recomb, mouse Vehicle: Not Stated; Route: SC; Species: Mice; Pump: Not Stated; Duration: 2 weeks;
ALZET Comments: Animal info (79Z); immunology

Agents: Interleukin-7, recomb. mouse Vehicle: Not Stated; Route: SC; Species: Mice; Pump: Not Stated; Duration: 7 days;
ALZET Comments: Controls received mp w/ PBS; animal info (C57BL/6)

8. Interleukin-8

ALZET Comments: Interleukin-8; BSA; IA (renal); Rat; 2ML1; 5 days; controls received mp w/BSA; good methods (pg. 275); peptides; used PE-10 catheter stretched to further reduce its diameter.
**ALZET Comments:** Interleukin-1 receptor antagonist; Interleukin-6; Interleukin-1, beta heat inactivated; Interleukin-8; Interleukin-1, beta; Tumor necrosis factor-a; Saline, sterile physiological; BSA; CSF/CNS; Rat; 2001; 7 days; controls received mp w/vehicle; guide cannula was used, and a sterile 29 g stainless steel obturator was used to ensure cannula patency during at least a 10 day recovery period after surgery; BSA added as stabilizing agent and carrier protein for cytokines; recomb. human IL-6 & 8 used.

9. Interleukin-10

**Agents:** Interleukin-10
**Vehicle:** Not stated; **Route:** SC; **Species:** Rat; **Pump:** 2002; **Duration:** 2 weeks;
**ALZET Comments:** Dose (3.5 ug/kg/day); animal info (11-wk-old male and female spontaneously hypertensive rats); Blood pressure measured via tail-cuff method;160 mmHg - 220 mmHg;Resultant plasma level (8 pg/mL IL-10); Interleukin-10 aka IL-10; cardiovascular;

**Agents:** Angiotensin II; Interleukin-10, recomb. human
**Vehicle:** PBS; **Route:** SC; **Species:** Mice; **Pump:** 1002; **Duration:** 14 days;
**ALZET Comments:** Dose (Angiotensin II (1000 ng/kg/min); IL-10 (60ng/day)); Controls received mp w/ vehicle; animal info (Eight- to 10-week-old C57BL/6 male mice); cardiovascular;

**Agents:** Interleukin-1 beta; Interleukin-6; Interleukin-10; Interleukin-12; Interleukin-17; Interleukin-23; Interferon, gamma; Tumor Necrosis Factor, alpha; Interleukin-1 beta, anti; Transforming Growth Factor-B1, anti
**Vehicle:** Saline; **Route:** SC;
**Species:** Mice; **Pump:** 1007D; **Duration:** Not stated;
**ALZET Comments:** Dose (IL-1B (83μg/ml); IL-6 (83μg/ml); IL-10 (166μg/ml); IL-12 (83μg/ml); IL-17 (125μg/ml); IL-23 (166μg/ml); IFNg (83μg/ml); TNFa (166μg/ml); anti-TGF-B1 (166μg/ml), or anti-IL-1B-150 μg/ml)); Controls received mp w/ vehicle; animal info (8-12 weeks old, Female, C57BL/6); Immunology;  

**Agents:** Interleukin-1 beta; Interleukin-6; Interleukin-10; Interleukin-12; Interleukin-17; Interleukin-23; Interferon, gamma; Tumor Necrosis Factor, alpha; Interleukin-1 beta, anti; Transforming Growth Factor-B1, anti
**Vehicle:** PBS; **Route:** SC;
**Species:** Mice; **Pump:** 1007D; **Duration:** 10 Days;
**ALZET Comments:** Dose (IL-1b (83μg/ml); IL-6 (83μg/ml); IL-10 (166μg/ml); IL-12 (83μg/ml); IL-17 (125μg/ml); IL-23 (166μg/ml); IFNg (83μg/ml); TNFa (166μg/ml); anti-TGF-B1 (166μg/ml); anti-IL-1b (150μg/ml)); Controls received mp w/ vehicle; animal info (Eight to twelve-week-old female C57BL/6 mice); Immunology; ("evaluate the suitability of osmotic pumps as a model for biofilms in implant associated infections, we implanted osmotic pumps pre-colonized with bioluminescent Staphylococcus aureus");

**Agents:** Angiotensin II, Interleukin-10
**Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Pump:** 1002; **Duration:** 14 days;
**ALZET Comments:** Dose (90 ng/min- Ang II, 0.5 ng/min- IL10); Controls received mp w/ vehicle; animal info (10-12 weeks old, male, C57BL/6, IL10 knockout); enzyme inhibitor (IL-10-immune-regulatory cytokine); cardiovascular;

**Agents:** Angiotensin II, Interleukin-10  
**Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Pump:** 1002; **Duration:** 14 days;  
**ALZET Comments:** Dose (90 ng/min- Ang II, 0.5 ng/min- IL10); Controls received mp w/ vehicle; animal info (10-12 weeks old, male, C57BL/6, IL10 knockout); enzyme inhibitor (IL-10-immune-regulatory cytokine); cardiovascular;  

10. Interleukin-11

Q4341: J. N. Buzzelli, et al. IL-1RT1 signaling antagonizes IL-11 induced STAT3 dependent cardiac and antral stomach tumor development through myeloid cell enrichment. ONCOTARGET 2015;6(679 -695  

**ALZET Comments:** Interleukin-11, recombinant human; SC; Mice; 1007D; 7 days; Controls received mp w/ saline; animal info (WT or IL-1RT1, 12-14 weeks old); immunology.  


**ALZET Comments:** Interleukin-11; Saline; IV (jugular); Rat; 1003D; 48 hours; Controls received mp w/ vehicle; peptides; IL-11 was human recomb; ischemia (intestinal).  


**ALZET Comments:** Interleukin-11; Saline; IV (jugular); Rat; 1003D; 3 days; controls received mp w/ vehicle; peptides; ischemia (bowel).  


**ALZET Comments:** Interleukin-11; Stem cell factor; Granulocyte-colony stimulating factor, PEGylated; Erythropoietin;; SC; mice.; 2002; 1007D;; 7 days;; controls received mp w/ saline; functionality of mp verified by pilot studies; no stress (see pg. 3223); peptides; recomb. human interleukin-11, EPO, & G-CSF used; recombat. rat stem cell factor used (pegylated);agents were given in every combination;  


**ALZET Comments:** Interleukin-11; Antibody, anti-interleukin-1 receptor; Serum, mouse; Saline, sterile; SC; mice; 3, 7, 10, 13 days; controls received mp w/vehicle; comparison of sc injections vs. mp; immunology; peptides; cardiovascular; "Compared to SC injection, both the magnitude and duration of the platelet increase were significantly enhanced following continuous SC infusion." (pg. 270).  

12. Interleukin-12


**Agents:** Interleukin-1 beta; Interleukin-6; Interleukin-10; Interleukin-17; Interleukin-23; Interferon, gamma; Tumor Necrosis Factor, alpha; Interleukin-1 beta, anti; Transforming Growth Factor-B1, anti  
**Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Pump:** 1007D; **Duration:** Not stated;  
**ALZET Comments:** Dose (IL-18- 83 ug/ml, IL-6-83 ug/ml, IL-10-166 ug/ml, IL-12-83 ug/ml, IL-17-125 ug/ml, IL-23- 126 ug/ml, IFNγ-83 ug/ml, TNFa-166 ug/ml, anti-TGF-B1-166 ug/ml, or anti-IL-1B-150 ug/ml); Controls received mp w/ vehicle; animal info (8-12 weeks old, Female, C57BL/6); immunology;  

Agents: Interleukin-1 beta; Interleukin-6; Interleukin-10; Interleukin-12; Interleukin-17; Interleukin-23; Interferon, gamma; Tumor Necrosis Factor, alpha; Interleukin-1 beta, anti; Transforming Growth Factor-B1, anti Vehicle: PBS; Route: SC, Species: Mice; Pump: 1007D; Duration: 10 Days; ALZET Comments: Dose (IL-1b (83μg/ml); IL-6 (83μg/ml); IL-10 (166μg/ml); IL-12 (83μg/ml); IL-17 (125μg/ml); IFNγ (83μg/ml); TNFa (166μg/ml); anti-TGF-b1 (166μg/ml); anti-IL-1b (150μg/ml)); Controls received mp w/ vehicle; animal info (Eight- to twelve-week-old female C57BL/6 mice); Immunology: “evaluate the suitability of osmotic pumps as a model for biofilms in implant associated infections, we implanted osmotic pumps pre-colonized with bioluminescent Staphylococcus aureus”;

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

 Agents: Interleukin-12, murine Vehicle: PBS; Route: CSF/CNS (intratumoral); Species: Mice; Pump: 1004; 2004; Duration: 28 days;
ALZET Comments: Controls received mp w/ vehicle; animal info (C57BL6); cancer (glioma); tissue perfusion (tumor; glioma); immunology; pumps primed at 37°C; pumps explanted after 28 days;

Agents: Colony-stimulating factor, GM, murine; interleukin-12 Vehicle: PBS; Route: SC; Species: Rat; Pump: Not Stated; Duration: 28 days;
ALZET Comments: Controls received mp w/ vehicle; dose-response (fig 1); no stress (see pg. 1209); cancer (upper aerodigestive tract carcinoma); peptides; animal info (Fisher 344, 125-150 g); good methods; "This latter method (mp) has several advantages. First, the use of minipumps obviates the cumbersome need to transfact tumor cells and completely characterize their cytokine repertoires. Second, it allows for independent and rigorous control over the kinetics of administration of cytokine and antigen dosages. Third, it may generate less controversy than those techniques requiring "gene therapy" IRB approval." (p. 1213).

13. Interleukin-13

Agents: Etoposide, Bevacizumab, IMCA12, Interleukin-13-PE38, Tetrakis Chlorin Vehicle: Not Stated; Route: CSF/CNS (intratumoral); Species: Mice, Rat; Pump: 2001D, 1003D, 1007D, 1004, 2004; Duration: 24 hours, 3, 7, 21, 28 days;
ALZET Comments: ALZET brain infusion kit 1,2, and 3 used; cancer (Glioblastoma);

Agents: Interleukin-13 Pseudomonas exotoxin Vehicle: PBS; HSA; Route: CSF/CNS (intracranial); Species: Mice; Pump: 1003D; Duration: 3 days;
ALZET Comments: Controls received mp w/ vehicle; animal info (tumor-bearing mice); cancer (glioblastoma multiforme); brain tissue distribution; HSA aka human serum albumin; CED model, convection-enhanced delivery; orthotopic mouse model of human glioma; Dose (3,700 kBq);

Agents: Interleukin-13-Pseudomonas exotoxin, recomb. Vehicle: Not Stated; Route: IP; Species: Mice (nude); Pump: Not Stated; Duration: 14 days;

ALZET Comments: Animal info (nu/nu, 5-6 wks old); comparison of IP injections vs IP mp; IL-13-PE is a recombinant immunotoxin; "Mice receiving continuous IL-13-PE exhibited better tumor response compared to bolus administration" pg 1224


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

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

Q0583: J. D. Milner, et al. Sustained IL-4 exposure leads to a novel pathway for hemophagocytosis, inflammation, and tissue macrophage accumulation. Blood 2010;116(14):2476-2483

Agents: Interleukin-4, recomb. mouse; interleukin-13 recomb. mouse Vehicle: Not Stated; Route: SC; Species: Mice; Pump: Not Stated; Duration: 3 days;

ALZET Comments: Controls received mp w/ PBS; animal info (C57BL6, b6 Rag2 -/-, b6 Stat6 -/-); 100 ul sized pump used; immunology

14. Interleukin-15


ALZET Comments: Interleukin-15; brain-derived neurotrophic factor; PBS; CSF/CNS (striatum); Mice; 1007D; 7 days; Controls received mp w/ vehicle; animal info (male, C57BL6, 3 weeks or 2 months old); ALZET brain infusion kit 3 used; cancer (glioma, U87MG human); tissue perfusion (right striatum); immunology; pumps primed in 37C saline overnight;


ALZET Comments: Interleukin-2; interleukin-7; interleukin-15; SC; Mice; 2001; 7 days; Controls received mp w/ PBS; animal info (6-12 wks old, gender, age matched); immunology.


ALZET Comments: Interleukin-15, murine; Mice; 14 days; Animal info (Thy 1.1 C57BL/6).


ALZET Comments: Interleukin-15, recomb. human; SC; Rat; 2002; 14 days; Peptides; animal info (Fischer Brown Norway).


ALZET Comments: Interleukin-15, recomb. human; interleukin-2, recomb. human; PBS; albumin, human; SC; Mice (SCID); 1007D; 10 days; Controls received mp w/ vehicle; immunology; animal info (female, CB17, hu-PBL-SCID, 8-12 weeks old).
15. Interleukin-31

Agents: Interleukin-31, recombinant mouse Vehicle: Not stated; Route: Not stated; Species: Mice; Pump: Not stated;
Duration: 3 weeks;
ALZET Comments: Dose (14 ug/day); animal info (BALB/c female mice, 10 weeks old); recombinant mouse Interleukin-31 aka IL-31; cancer (Breast Cancer);

ALZET Comments: Interleukin-31, recombinant mouse; SC; Mice; 14 days; animal info (6 – 8 week old, C57BL/6 and Trpv1 knockout mice); functionality of mp verified by observation of skin phenotype; dose-response (pg. 508.e5); Dose (20 mg/day);

ALZET Comments: Interleukin-31, mouse; PBS; BSA; SC; Mice; 7-14 days; Controls received mp w/ vehicle; immunology.