References on the Administration of Protein Kinase inhibitors
Using ALZET® Osmotic Pumps

1. Calphostin C

Q3801: P. Almela, et al. Crosstalk between G protein-coupled receptors (GPCRs) and tyrosine kinase receptor (TXR) in the heart after morphine withdrawal. FRONTIERS IN PHARMACOLOGY 2013;4(U1547-U1559HA-1004; calphostin c
Agents: HA-1004; calphostin c Vehicle: Water, sterile; DMSO; Route: SC; Species: Rat; Pump: 2001; Duration: 7 days;
ALZET Comments: Controls received mp w/ vehicle; animal info (male, Sprague Dawley, 220-240g); 0.06% DMSO used; dependence; cardiovascular; pumps primed for 5 hours in 37C saline;

Agents: Calphostin C; chelerythrine Vehicle: Not Stated; Route: SC; Species: Rat; Pump: Not Stated; Duration: 7 days;
ALZET Comments: Animal info (Sprague Dawley, male, 220-240 g); enzyme inhibitor (PKC, protein kinase C)

Agents: Calphostin C Vehicle: Not Stated; Route: SC; Species: Rat; Pump: Not Stated; Duration: 7 days;
ALZET Comments: Controls received mp w/ saline; animal info (male, Sprague-Dawley, 220-240 g); enzyme inhibitor (PKA, PKC); 0.6% DMSO used

Agents: HA-1004; calphostin C Vehicle: Water; DMSO; Route: SC; Species: Rat; Pump: 2001; Duration: 7 days;
ALZET Comments: Animal info (male, Sprague Dawley, 220-240 g); dependence; enzyme inhibitor (PKA, PKC); 0.6% DMSO used

Agents: HA-1004; calphostin C Vehicle: Water; Route: SC; Species: Rat; Pump: 2001; Duration: 7 days;
ALZET Comments: Controls received mp w/ vehicle; animal info (male, Sprague Dawley, 220-240 g); enzyme inhibitor (protein kinase C, protein kinase A); pumps were primed for 5 hours prior to implantation

2. Cediranib

ALZET Comments: Cediranib; DMSO; IP; Mice; 1003D; 72 hours; Animal info (wt, Mdr1a/b-/-, Bcrp1 -/-, and Mdr1a/b -/-, Bcrp1 -/-); cancer (glioma); enzyme inhibitor (tyrosine kinase); chemotherapeutic.

3. Cetuximab

ALZET Comments: Cetuximab; CSF/CNS (intratumoral); Rat (nude); 2ML4; 4 weeks; Control animals received mp w/ PBS; animal info (mu/mnu Rowett); ALZET brain infusion kit 2 used; convection enhanced delivery (CED); tissue perfusion (intratumoral).

**ALZET Comments**: Cetuximab; CSF/CNS (intratumoral); Mice (nude); 2004; Controls received mp w/ vehicle; tissue perfusion (tumor); cancer (glioblastoma); ALZET brain infusion kit 2 used; animal info (NMRI- nu/nu, 6-8 wks old); cetuximab is a monoclonal antibody against EGFR.

4. Chelerythrine


**ALZET Comments**: Calcitonin gene-related peptide, SP600125, chelerythrine, CGRP8-37 receptor antagonist; Saline; DMSO; IP, Kidney (cortical region); Mice; Dose (30 ng/kg/d); 10% DMSO used; Controls received mp w/ vehicle; animal info (Male C57BL/6 mice aged 8 to 10 weeks); CGRP is a 37-amino acid neuropeptide; enzyme inhibitor (SP600125 is a c-Jun Nterminal protein kinase (JNK), and chelerythrine is a specific protein kinase C (PKC) inhibitor); CGRP infused to the cortical region of the denervated kidney via an ALZET intrathecal catheter. The catheter was anchored to the obstructed ureter, and osmotic pump placed SC; some mice were given CGRP8-37 (120 μg/kg/d), SP600125 (30 mg/kg/d), chelerythrine (5 mg/kg/d) or vehicle (0.9% saline or 10% DMSO in 0.9% saline) via IP pump.


**ALZET Comments**: Peptide, zeta-inhibitory; chelerythrine; CSF, artificial; PBS; CSF/CNS (third ventricle); Mice; 1002; 2 days; 6 days; Controls received mp w/ vehicle; animal info (C57BL/6Jx129T2SvEms/J, adult); ALZET brain infusion kit 3 used; post op. care (buprenorphine injection); behavioral testing (locomotion, locomotor sensitization); pulsatile delivery; dependence; peptides; zeta-inhibitory peptide aka ZIP; Lynch coil of ZIP administration for 14.5 hours; used mineral oil; Schematic of pump implantation pg.3 Fig 1A;.


**ALZET Comments**: Chelerythrine; Saline; CSF/CNS (intrathecal); Rat; 2001; 7 days; Controls received mp w/ vehicle; animal info (Sprague Dawley, male, 200-300 g); enzyme inhibitor (protein kinase C gamma).


**ALZET Comments**: Calphostin C; chelerythrine; SC; Rat; 7 days; Animal info (Sprague Dawley, male, 220-240 g); enzyme inhibitor (PKC, protein kinase C).


**ALZET Comments**: Phorbol 12, 13-didecanoate; chelerythrine; apamin; iberiotoxin; CSF/CNS (thalamus); Mice; Controls received mp w/ vehicle; animal info (male, C57BL/6, 129S4/SvJae, WT, PLCB4 -/-); cannula position confirmed by post mortem histology; behavioral testing (visceral pain test).

5. Dasatinib


**ALZET Comments**: Dasatinib; everolimus; DMSO; ethanol anhydrous; CSF, artificial; CSF/CNS (brain stem); Rat; 2001; 7 days; Control animals received mp w/ aCSF and coomassie blue; animal info (Sprague-Dawley, 188-250 g); convection-enhanced...
delivery; Plastics One cannula used; "an Elizabethan collar was placed on animals to prevent disturbance of cannula" pg 222; "brainstem targeting using pCED to infuse single and multi-drug therapy was well tolerated in these rats" pg 221.

enzyme inhibitor (receptor tyrosine kinase).


ALZET Comments: Dasatinib; DMSO; saline; IP; Mice; 1004; 4 weeks; Controls received mp w/ vehicle; animal info (male, C57BL6, 3 months old); 50% DMSO used; no stress (see pg. 4); cardiovascular;

Q2412: G. Dhawan, et al. Amyloid-beta oligomers stimulate microglia through a tyrosine kinase dependent mechanism. NEUROBIOLOGY OF AGING 2012;33(10):2247-2261

ALZET Comments: Dasatinib; oligomer, amyloid beta (1-42); HEPES; CSF/CNS; Mice; 1004; 14 days; Control animals received mp w/ vehicle; animal info (C57BL/6, female, 12 mo old); ALZET brain infusion kit used; neurodegenerative (Alzheimer’s disease); peptide; enzyme inhibitor (tyrosine kinase).


ALZET Comments: Dasatinib; DMSO; HEPES; SC; Mice; 1004; 28 days; Controls received mp w/ vehicle; animal info (female, APP/PS1, 13 mo old); neurodegenerative (Alzheimer’s disease).

6. Fasudil


Agents: Fasudil Vehicle: Not stated; Route: CNS/CSF; Species: Mice; Pump: 2001; Duration: 7 days;

ALZET Comments: Dose (25 gm/kg/day); Controls received mp w/ vehicle; animal info (CD1, Male, 25-30 g); Fasudil aka selective ROCK inhibitor; enzyme inhibitor (Rho kinase inhibitor); neurodegenerative (Traumatic Brain Injury);


Agents: Fasudil Vehicle: Saline; Route: CSF/CNS (intrathecal); Species: Rat; Pump: 1007D; Duration: 3 days; 7 days; 14 days;

ALZET Comments: Controls received mp w/ vehicle; animal info (male, Dprague Dawley, adult, 260-300g); animal info (male, Dprague Dawley, adult, 260-300g); behavioral testing (BBB behavioral testing); Dose (180 ug/day);

Q4644: M. Wermke, et al. RNAi profiling of primary human AML cells identifies ROCK1 as a therapeutic target and nominates fasudil as an antileukemic drug. Blood 2015;125(3760-3768

Agents: Fasudil Vehicle: Not Stated; Route: SC; Species: Mice (NSG); Pump: Not Stated; Duration: 2 weeks;

ALZET Comments: Animal info (female, NSG, 4-6 weeks old); cancer (acute myeloid leukemia); immunology;


Agents: Y-27632; dimethylfasudil Vehicle: DMSO; saline; Route: IP; Species: Mice; Pump: Not Stated; Duration: Not Stated;

ALZET Comments: Controls received mp w/ vehicle; animal info (C57BL6j, adult); pumps replaced every 4 weeks; behavioral testing (static rod test); enzyme inhibitor (Rho-associated protein kinase; ROCK);


Agents: Fasudil Vehicle: Not Stated; Route: Not Stated; Species: Rat; Pump: Not Stated; Duration: 28 days;

ALZET Comments: Animal info (EAN); neurodegenerative (Guillain-Barr syndrome);
7. H89


**ALZET Comments:** H89; U73122; U73343; Saline; DMSO; CSF/CNS (motor cortex); Rat; 1002; 5 days; 9 days; Controls received mp w/ vehicle; animal info (male, Long-Evans 8-10 weeks old, 250-350g); post op. care (buprenorphin 0.01 mg/kg IP); behavioral testing (motor skill); Cannula placement verified via Nissl staining; "double-loaded" vehicle and agent solution for vehicle only during recovery; enzyme inhibitor (protein kinase A); enzyme inhibitor (phospholipase A).


**ALZET Comments:** H89; CSF/CNS; Mice; 1002; 8 days; Controls received mp w/ saline; animal info (8 wks old, male, AM+-/-, C57BL/6 Wt); enzyme inhibitor (PKA, protein kinase A); middle cerebral artery occlusion (MCAO).


**ALZET Comments:** Bortezomib; cyclic AMP; H89; SC; Mice (nude); mice (transgenic); 1, 3, 6, 7 days; Controls received no treatment; enzyme inhibitor (PKA); cancer (acute promyelocytic leukemia); animal info (nude, PLZF-RARA-RARA-PLZF; PML-RARA5873A Tg); Bortezomib is a proteasom inhibitor; chemotherapeutic.

**P5269:** J. Qiu, *et al.* Spinal axon regeneration induced by elevation of cyclic AMP. Neuron 2002;34(6):895-903

**ALZET Comments:** H89; Saline; CSF/CNS (intrathecal); Rat; 1 week; Controls received mp w/ vehicle; 1 week stability verified (results not shown); enzyme inhibitor; H89 is a protein kinase A inhibitor.

8. HA1004

**Q3801:** P. Almela, *et al.* Crosstalk between G protein-coupled receptors (GPCRs) and tyrosine kinase receptor (TXR) in the heart after morphine withdrawal. FRONTIERS IN PHARMACOLOGY 2013;4(U1547-U1559HA-1004; calphostin c

**ALZET Comments:** HA-1004; calphostin c; Water, sterile; DMSO; SC; Rat; 2001; 7 days; Controls received mp w/ vehicle; animal info (male, Sprague Dawley, 220-240g); 0.06% DMSO used; dependence; cardiovascular; pumps primed for 5 hours in 37C saline;

**P9333:** P. Almela, *et al.* Tyrosine hydroxylase phosphorylation after naloxone-induced morphine withdrawal in the left ventricle. Basic Research In Cardiology 2009;104(4):366-376

**ALZET Comments:** HA-1004; Water, sterile; SC; Rat; 2001; 7 days; Controls received mp w/ vehicle; enzyme inhibitor (protein kinase); dependence; animal info (male, Sprague Dawley, 220-240 g.); HA-1004 is a protein kinase selective inhibitor; pumps primed for 5 hours.


**ALZET Comments:** HA-1004; calphostin C; Water; DMSO; SC; Rat; 2001; 7 days; Animal info (male, Sprague Dawley, 220-240 g); dependence; enzyme inhibitor (PKA, PKC); 0.6% DMSO used.

**P9085:** P. Almela, *et al.* The PKs PKA and ERK 1/2 are involved in phosphorylation of TH at Serine 40 and 31 during morphine withdrawal in rat hearts. British Journal of Pharmacology 2008;155(1):73-83

**ALZET Comments:** HA-1004; calphostin C; DMSO; water; SC; Rat; 2001; 7 days; Controls received mp w/ vehicle; animal info (male, Sprague Dawley, 220-240 g.); enzyme inhibitor (protein kinase C, protein kinase A); pumps were primed for 5 hours prior to implantation.
P8249: P. Almela, et al. Differential involvement of 3',5'-cyclic adenosine monophosphate-dependent protein kinase in regulation of Fos and tyrosine hydroxylase expression in the heart after naloxone induced morphine withdrawal. 

NAUNYN-SCHMIEDEBERGS ARCHIVES OF PHARMACOLOGY 2007;374(4):293-303

**ALZET Comments:** HA-1004; Water, sterile; SC; Rat; 2001; 7 days; Controls received mp w/ vehicle; enzyme inhibitor (protein kinase A); cardiovascular; tolerance; dependence; animal info (male, Sprague-Dawley, 220-240g).

9. **Imatinib**


**Agents:** PKC inhibitor, Imatinib, or both. **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Pump:** 2002; **Duration:** 14 days;

**ALZET Comments:** Dose (PKC inhibitor- 0.5 mM, Imatinib-1 mM ); Controls received mp w/ vehicle; gene therapy;


**Agents:** Ro-31-8220; imatinib. **Vehicle:** PBS; **Route:** SC; **Species:** Mice (transgenic); **Pump:** 2002; **Duration:** 14 days;

**ALZET Comments:** Dose (Ro-31-8220 (1 mM); imatinib (0.5 mM)); Controls received mp w/ vehicle; animal info (6-12 week old transgenic mice); enzyme inhibitor (Protein Kinase C);


**Agents:** Angiotensin II; Imatinib mesylate. **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Pump:** 1002; **Duration:** 2 weeks;

**ALZET Comments:** Dose (Angiotensin II: 3 mg/kg/day; Angiotensin II + Imatinib mesylate: 60 mg/kg per day); 0.9% saline used; Controls received mp w/ vehicle; animal info (12-30 week old C57BL/6 male mice weighing 25-35g); enzyme inhibitor (tyrosine kinase, c-Abl); cardiovascular; Pump incorrectly noted as model #1014D


**Agents:** Imatinib mesylate. **Vehicle:** Saline; **Route:** SC; **Species:** Mice (pregnant); **Pump:** 2001; **Duration:** 5 days;

**ALZET Comments:** Controls received mp w/ vehicle; animal info (10 weeks old); cancer (Breast); Imatinib mesylate a.k.a Gleevec; Therapeutic indication (Mammary gland development, Breast cancer); Dose (21 mg/mouse/week); enzyme inhibitor (tyrosine kinase);


**Agents:** Imatinib mesylate. **Vehicle:** Water; **Route:** SC; **Species:** Mice; **Pump:** 1007D; 2002; **Duration:** 28 days;

**ALZET Comments:** Controls received mp w/ vehicle; animal info (male, C57BL6, 6 weeks old); functionality of mp verified by serum levels; dose-response (pg.9); immunology; enzyme inhibitor (tyrosine kinase);

10. **KN92 or KN93**


**Agents:** Bisindolylmaleimide; 3-chloroacetyl-indole; U0126; KN-93; PJ-34; SC79. **Vehicle:** Not stated; **Route:** CSF/CNS (lateral ventricle); **Species:** Rat; **Pump:** 1007D; **Duration:** 3 days;

**ALZET Comments:** Dose (25 uM Bisindolylmaleimide; 25 uM 3-chloroacetyl-indole; 25 uM U0126; 25 uM KN-93; 3 uM PJ-34; 25 uM SC79); Controls received mp w/ vehicle; animal info (adult male Sprague-Dawley rats, 250-280 g); Bisindolylmaleimide aka BIM; 3-chloroacetyl-indole aka 3CAI; U0126 aka ERK1/2 inhibitor; KN-93 aka CaMKII inhibitor; PJ-34
aka PARP inhibitor VIII; SC79 aka AKT activator; ALZET brain infusion kit 1 used; Brain coordinates (1 mm posterior; 1.5 mm lateral; -3.5 mm depth); neurodegenerative (Epilepsy);

**Q4601:** K. Tagawa, *et al.* Comprehensive phosphoproteome analysis unravels the core signaling network that initiates the earliest synapse pathology in preclinical Alzheimer’s disease brain. HUMAN MOLECULAR GENETICS 2015;24(540-558)

**ALZET Comments:** Go6976; MLLR1023; KN-93; DMSO; PBS; Mice (transgenic); 1003D; Animal info (male, APP770 human double mutant); 0.1% DMSO used; neurodegenerative (Alzheimer's); behavioral testing (morris water maze, rotarod test, fear-conditioning, light-dark box, elevated plus maze).


**ALZET Comments:** KN-93; CBO-P11; Saline; SC; Mice; 1002; 2 weeks; Controls received mp w/ vehicle; animal info (male, Foxn1 nu, 6 weeks old); cancer (osteosarcoma).

**Q0651:** N. Shioda, *et al.* Aberrant Calcium/Calmodulin-Dependent Protein Kinase II (CaMKII) Activity Is Associated with Abnormal Dendritic Spine Morphology in the ATRX Mutant Mouse Brain. Journal of Neuroscience 2011;31(1):346-358

**ALZET Comments:** KN-93; Krebs-Ringer HEPES; CSF/CNS; Mice; 1004; 2 weeks; Controls received mp w/ vehicle; animal info (ATRX-delta E2, adult, 12 wks old, male); enzyme inhibitor (Calcium/Calmodulin-Dependent Protein Kinase II, CaMKII).

**P7485:** S. R. Reeves, *et al.* Calcium/calmodulin-dependent kinase II mediates critical components of the hypoxic ventilatory response within the nucleus of the solitary tract in adult rats. American Journal of Physiology-Regulatory Integrative and Comparative Physiology 2005;289(3):R871-R876

**ALZET Comments:** Dose (0.11 uL/hr); animal info (Male, 2 months old, 22-25 g, KM); Pan-PKC inhibitor aka Go6983; enzyme inhibitor (PKC inhibitor); ALZET brain infusion kit 2 used; Brain coordinates (0.5 mm posterior to bregma, 3 mm below the surface of the cranium); neurodegenerative (Motor and cognitive deficit); "

**11. Other**

**Q8264:** P. Liu, *et al.* Protein kinase C is involved in the neuroprotective effect of berberine against intra striatal injection of quinolinic acid-induced biochemical alteration in mice. J Cell Mol Med 2019;23(9):6343-6354

**Agents:** Pan-PKC inhibitor **Vehicle:** Not stated; **Route:** CSF/CNS; **Species:** Mice; **Pump:** 1004; **Duration:** 4 weeks;

**ALZET Comments:** "Dose (0.11 uL/hr); animal info (Male, 2 months old, 22-25 g, KM); Pan-PKC inhibitor aka Go6983; enzyme inhibitor (PKC inhibitor); ALZET brain infusion kit 2 used; Brain coordinates (0.5 mm posterior to bregma, 3 mm below the surface of the cranium); neurodegenerative (Motor and cognitive deficit); "

**Q7815:** F. Garcia-Bernal, *et al.* Protein Kinase C Inhibition Mediates Neuroblast Enrichment in Mechanical Brain Injuries. Front Cell Neurosci 2018;12(462

**Agents:** Bisindolylmaleimide I **Vehicle:** PBS, sterile; DMSO, buffered; **Route:** CSF/CNS (cortex); **Species:** Mice; **Pump:** 1004; **Duration:** 14 days;

**ALZET Comments:** Dose (0.5 μM); PBS with 0.4% DMSO used; Controls received mp w/ vehicle; animal info (2 months, male, CD1); Go-6850 AKA Bisindolylmaleimide I, is a broad-spectrum PKC inhibitor,; enzyme inhibitor (protein kinase C); ALZET brain infusion kit 2 used; Therapeutic indication (facilitates the generation of neuroblasts);


**Agents:** Go6976 **Vehicle:** PBS; **Route:** CSF/CNS (intrathecal); **Species:** Mouse; **Pump:** 2006; **Duration:** 2 weeks;

**ALZET Comments:** Dose (0.15 ul/h); animal info (PGRN-KI and C57BL/6J, 10-12 weeks old); behavioral testing (Morris water maze test, Fear-conditioning test, Probe test, Rotarod test, Open-field test, Light-dark box test ); enzyme inhibitor (PKC inhibitor); gene therapy;

Agents: 8-Br-cAMP; H-89 Vehicle: Not Stated; Route: CSF/CNS (basolateral amygdala); Species: Mice; Pump: 1002; Duration: 10 days;

ALZET Comments: Controls received mp w/ saline; animal info (male, C57BL6J, 8 weeks old); ALZET brain infusion kit 2 used; behavioral testing (social defeat stress; social interaction; open field; elevated plus maze; rotarod test); bilateral infusion; pumps removed after 10 days; H-89 is an enzyme inhibitor (protein kinase A); Dose (8-Br-cAMP 2 ug/day; H-89 0.3 ug/day); brain coordinates;


Agents: Fluoroacetate, Propionamide diti- Vehicle: PEG 400, PBS; Route: SC; Species: Rat, mice; Pump: 1003D, 1007D; Duration: 1 day, 2 days;

ALZET Comments: Controls received mp w/ vehicle; animal info (Male Sprague-Dawley (SD) rats 10 wks, plasma prekallikrein gene-deficient mice (KLKB1-/-)); functionality of mp verified by enzyme activity assays; 10% PEG 400 used; dose-response (pg 2394, 2398); stability verified by (single bolus subcutaneous injection); Fluoroacetate, Propionamide diti- aka VA999272; enzyme inhibitor (PKal inhibitor); enzyme inhibitor (PKal inhibitor); Resultant plasma level (pg 2394);

12. PD98059


Agents: PD98059 Vehicle: DMSO, Saline; Route: Csf/cns (intracisternal); Species: Rat; Pump: 2004; Duration: 7 days;

ALZET Comments: Dose (0.1 μg/μl); 10% DMSO used; Controls received mp w/ vehicle; animal info (Male Sprague-Dawley rats); post op. care (penicillin G potassium); enzyme inhibitor (Mitogen-activated protein kinase kinase 1 inhibitor);


Agents: PD-98059 Vehicle: CSF, artificial; Route: CSF/CNS; Species: Rat; Pump: 2006; Duration: 6 weeks;

ALZET Comments: Controls received mp w/ vehicle; animal info (8 weeks old); Controls received mp w/ vehicle; animal info (8 weeks old); Therapeutic indication (Oral drug delivery, Pharmacokinetics); Dose (.025 ug/hr);

Q4903: Y. Y. Shun-Guang Wei, Robert M. Weiss, Robert B. Felder. Inhibition of Brain Mitogen-Activated Protein Kinase Signaling Reduces Central Endoplasmic Reticulum Stress and Inflammation and Sympathetic Nerve Activity in Heart Failure Rats. Hypertension 2016;67(229-236

Agents: PD98059; SB203580; SP600125 Vehicle: CSF, artificial; DMSO; Route: CSF/CNS; Species: Rat; Pump: 2004; Duration: 4 weeks;

ALZET Comments: Controls received mp w/ vehicle; animal info (male, Sprague Dawley, adult, 275-325g); 5% DMSO used; cardiovascular;


Agents: PD98059; SB203580; SP600125 Vehicle: CSF, artificial; DMSO; Route: CSF/CNS; Species: Rat; Pump: 2004; Duration: 28 days;

ALZET Comments: Controls underwent median nerve CCI or sham operation; functionality of mp verified by residual volume; ALZET brain infusion kit used; <1% DMSO; behavioral testing; Compound AKA: 2-amino-3-methoxyflavone; Therapeutic indication (Neuropathic pain); Dose (2, 2.5, 3.0 mM);


Agents: PD98059 Vehicle: Not Stated; Route: CSF/CNS (intrathecal); Species: Rat; Pump: 2001; Duration: 7 days;
13. **Ruxolitinib**

**Q6403:** J. Chen, *et al.* Cytokine receptor signaling is required for the survival of ALK-anaplastic large cell lymphoma, even in the presence of JAK1/STAT3 mutations. Proc Natl Acad Sci U S A 2017;114(15):3975-3980

**ALZET Comments:** Ruxolitinib; Mice; 7 days; Dose (50 mg/kg/d); cancer (lymphoma).


**ALZET Comments:** Ruxolitinib; PEG 300; SC; Mice; 2 weeks; Dose (50 mg/kg/d); Controls received mp w/ vehicle; enzyme inhibitor (JAK1/2 inhibitor); cancer (Hodgkin’s lymphoma).

**Q2729:** K. G. Roberts, *et al.* Genetic Alterations Activating Kinase and Cytokine Receptor Signaling in High-Risk Acute Lymphoblastic Leukemia. CANCER CELL 2012;22(2):153-166

**ALZET Comments:** Ruxolitinib; Dimethylacetamide; propylene glycol; SC; Mice; 4 weeks; Control animals received mp w/ vehicle; animal info (BCR-JAK2); enzyme inhibitor (JAK2, janus kinase 2); cancer; chemotherapeutic; 40% DMA used; 60% propylene glycol used.

**Q2314:** S. L. Maude, *et al.* Targeting JAK1/2 and mTOR in murine xenograft models of Ph-like acute lymphoblastic leukemia. Blood 2012;120(17):3510-3518

**ALZET Comments:** Ruxolitinib; Dimethylacetamide; propylene glycol; SC; Mice (NSG); 3-4 weeks; Control animals received mp w/ vehicle; animal info (FVB wild-type, Mdr1a/b -/-, Bcrp1 -/-, Mdr1a/b -/-, Bcrp1 -/-); half-life pg 3512; cancer (leukemia); chemotherapeutic; 40% DMA used; 60% propylene glycol used.

14. **Sorafenib**


**ALZET Comments:** Sorafenib; sunitinib; DMSO; saline; IP; 1003D; Animal info (Friend virus B-type (FVB) wild type, and Abcb1a/b knockout mice); cancer (renal carcinoma and brain metastases); cancer; enzyme inhibitor (tyrosine kinase); chemotherapeutic.


**ALZET Comments:** Sorafenib; DMSO; IP; Mice; 1003D; 48 hours; Animal info (FVB wild-type, Mdr1a/b -/-, Bcrp1 -/-, Mdr1a/b -/-, Bcrp1 -/-); half-life pg 226 "Sorafenib half-life in plasma and brain after an intravenous dose was determined to be 1.6 and 0.9 h, respectively. Therefore an infusion lasting 48 h was considered to be sufficiently long to attain steady state in both plasma and brain."; good methods, pg 226 "In the intraperitoneal infusion studies, the apparent plasma clearance (Clapp) was calculated by using the equation, Clapp = k0/Css, where, k(0) is the rate of infusion into the peritoneal cavity normalized to body weight (ng/h/kg), and Css is the plasma concentration at steady state (ng/ml)."; enzyme inhibitor (biaryl-urea RAF kinase, tyrosine kinase); cancer (glioma); chemotherapeutic.

15. **SU6656**
**ALZET Comments:** SU6656; SC; Mice; 17 days; Animal info (AGT KO, 8-10 weeks old); cardiovascular; SU6656 is a selective Src family kinase inhibitor;.

16. Sunitinib

**ALZET Comments:** Sunitinib malate; DMSO; CSF/CNS (intrathecal); Mice; 1002; 2 weeks; enzyme inhibitor (tyrosine kinase);Animal info (female, 8 weeks old); functionality of mp verified by use of eulav blue dye; 2.5% DMSO used; spinal cord injury; immunology; used ALZET mouse IT catheter;.

**ALZET Comments:** Sunitinib; DMSO; IP; Mice (transgenic); mice (knockout); 1003D; 48 hours; Dose (30 µg/h); animal info (8-10 week old wild-type and transgenic mice in which the gene for P-gp [Mdr1a/b(2/2) knockout mice], Bcrp [Bcrp1(2/2) knockout mice], and both P-gp and Bcrp [Mdr1a/b(2/2) Bcrp1(2/2) or “triple knockout” mice was knocked out); enzyme inhibitor (tyrosine kinase);.

**ALZET Comments:** Sorafenib; sunitinib; DMSO; saline; IP; 1003D; Animal info (Friend virus B-type (FVB) wild type, and Abcb1a/b knockout mice); cancer (renal carcinoma and brain metastases); cancer; enzyme inhibitor (tyrosine kinase); chemotherapeutic.

17. TAT(47-57)

Q7189: A. U. Joshi, et al. Inhibition of Drp1/Fis1 interaction slows progression of amyotrophic lateral sclerosis. EMBO Molecular Medicine 2018;10(3):
**Agents:** P110-TAT (47-57) **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice; **Pump:** 28 day pump; **Duration:** 60 days;
**ALZET Comments:** Dose (3 mg/kg/day); animal info (4–6 weeks old AdultB6SJL Tg (SOD1G93A) 1 Gur/J male mice); behavioral testing (Activity chamber); pumps replaced after 30 days; long-term study; P110 is a selective peptide inhibitor of Drp1/Fis1; neurodegenerative (amyotrophic lateral sclerosis); neurodegenerative (amyotrophic lateral sclerosis); stress/adverse reaction: (see pg. 14 );

**Agents:** P110-TAT (47-57) **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice; **Pump:** Not Stated; **Duration:** 1 week, 8 weeks;
**ALZET Comments:** Dose (3 mg/Kg/d); Controls received mp w/ vehicle; animal info (5 week old Hemizygous R6/2 HD mice); pumps replaced every 4 weeks; neurodegenerative (Huntington’s);

**Agents:** TAT 47-57, beta IIV5-3, peptide; TAT 47-57, beta IV5-3, peptide; TAT 47-57, epsilon V1-2, peptide; TAT 47-57, carrier peptide **Vehicle:** Not Stated; **Route:** SC; **Species:** Rat; **Pump:** Not Stated; **Duration:** Not Stated;
**ALZET Comments:** Controls received mp w/ carrier peptide; animal info (Wistar, normotensive, 12 wks old, male, Dahl, 6 wks old); peptides; pumps replaced every 2 weeks; enzyme inhibitor (protein kinase C, PKC)
Q1288: X. Qi, et al. Aberrant mitochondrial fission in neurons induced by protein kinase Cdelta under oxidative stress conditions in vivo. MOLECULAR BIOLOGY OF THE CELL 2011;22(2):256-265
Agents: TAT 47-57, peptide; TAT; TAT 47-57, delta conjugated, peptide Vehicle: Not Stated; Route: SC; Species: Rat; Pump: Not Stated; Duration: Not Stated;
ALZET Comments: Controls received mp w/ control peptide; animal info (DS, 11-15 wks old, male); peptides

Agents: RACK7, psi epsilon; V1–2,10, epsilon; TAT (47-57) Vehicle: Not Stated; Route: SC; Species: Rat; Pump: Not Stated; Duration: 4, 6 weeks;
ALZET Comments: Controls received mp w/saline; animal info (male, Sprague-Dawley, 550-600 g); pumps replaced every second week; peptides; long-term study; enzyme inhibitor (epsilon PKC); epsilon V1-2 is a selective epsilon PKC inhibitor; psi epsilon RACK7 is a selective epsilon PKC activator psi epsilon receptor for activated protein kinase C

18. Trametinib

ALZET Comments: GSK2126458; trametinib, dabrafenib; DMSO; IP; Mice; 48 hours; animal info (WT, Mdr1a/b -/-, Bcrp1 -/-); functionality of mp verified by plasma concentration; pumps primed overnight in 37C saline;

Q4147: S. Vaidhyanathan, et al. Factors Influencing the CNS Distribution of a Novel MEK-1/2 Inhibitor: Implications for Combination Therapy for Melanoma Brain Metastases. Drug Metabolism and Disposition 2014;42(1292-1300
ALZET Comments: Trametinib; DMSO; IP; Mice; 48 hours; Animal info (WT, Mdr1 a/b -/-, Bcrp1 -/-); functionality of mp verified by plasma levels; cancer (melanoma); post op. care (heating pad for recovery); pumps primed overnight in 37C sterile saline; enzyme inhibitor(mitogen-activated protein kinase kinase-1 (MEK)-1/2 inhibitor); good methods (p. 1294).

19. Vemurafenib

ALZET Comments: Vemurafenib; DMSO; propylene glycol; saline; IP; Mice; 48 hours; Animal info (wt, Mdr1a/b -/-, Bcrp1 -/-); infusion rate of 1 ul/hr; wound clips used; brain tissue distribution; cancer (breast); vemurafenib also known as PLX4032; 40% DMSO used; chemotherapeutic.