Recent References (2012-2020) Using the ALZET® Osmotic Pumps In Xenograft Models

Q8447: G. Dolgormaa*, et al.* Mac-2-binding protein glycan isomer enhances the aggressiveness of hepatocellular carcinoma by activating mTOR signaling. Br J Cancer 2020;123(7):1145-1153
Agents: M2BPGI **Vehicle:** PBS; **Route:** SC; **Species:** Mice; **Pump:** 2002; **Duration:** 14 days;
ALZET Comments: Dose (3.6 ug/ml/day); Controls received mp w/ vehicle; animal info (female NOD-SCID mice, 7 weeks old, 19-20 g); M2BPGI aka Mac-2-binding protein; cancer (Carcinoma);

Q8404: H. Castillo-Ecija*, et al.* Treatment-driven selection of chemoresistant Ewing sarcoma tumors with limited drug distribution. J Control Release 2020;324(440-449
Agents: Irinotecan **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Pump:** 2001D; **Duration:** 10 days;
ALZET Comments: Dose (130 ug/h); Controls received mp w/ vehicle; animal info (athymic nude mice); cancer (ewing sarcoma);

Q7425: X. Zhi*, et al.* Adrenergic modulation of AMPKdependent autophagy by chronic stress enhances cell proliferation and survival in gastric cancer. Int J Oncol 2019;54(5):1625-1638
Agents: Propranolol Hydrochloride **Vehicle:** PBS; **Route:** SC; **Species:** Mice; **Pump:** Not stated; **Duration:** Not stated;
ALZET Comments: Dose (2 mg/kg/day); Controls received mp w/ vehicle; animal info (Male BALB/c nude mice (5weeks old, weighing ~20 g)); cancer (gastric cancer);

Q7038: G. Zadra*, et al.* Inhibition of de novo lipogenesis targets androgen receptor signaling in castration-resistant prostate cancer. Proc Natl Acad Sci U S A 2019;116(2):631-640
Agents: IPI-9119 **Vehicle:** 1-methyl-2-pyrrolidinone; sodium phosphate buffer; **Route:** SC; **Species:** Mice; **Pump:** 2002; **Duration:** 4 weeks;
ALZET Comments: Dose (100 mg/mL); 20% 1-methyl-2-pyrrolidinone used; enzyme inhibitor (fatty acid synthase); cancer (prostate); no stress: Mice did not show any signs of toxicity, stress, weight loss, or changes in feeding behavior. (see pg. 635);

Q7039: X. Yu*, et al.* Synergistic antitumor effects of 9.2.27-PE38KDEL and ABT-737 in primary and metastatic brain tumors. PLoS One 2019;14(1):e0210608
Agents: 9.2.27-PE38KDEL immunotoxin, ABT-737 **Vehicle:** PBS, captisol, mouse serum albumin; **Route:** CSF/CNS (intratumoral); **Species:** Mice (nude); **Pump:** 1007D; **Duration:** 3 days;
ALZET Comments: 5% Captisol and 2% mouse serum albumin used; animal info (Nude mice (22–30 g, 6–8 weeks); ALZET brain infusion kit 3 used; cancer (glioblastoma); "Convection-enhanced delivery (CED), utilizing osmotic pumps, has been successfully used to bypass the blood-brain barrier and to deliver ITs directly into brain tumors" pg.12 ;

Q7630: H. Y. Jang*, et al.* Schedule-dependent synergistic effects of 5-fluorouracil and selumetinib in KRAS or BRAF mutant colon cancer models. Biochemical Pharmacology 2019;160(110-120
Agents: fluorouracil, 5- **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Pump:** Not Stated; **Duration:** 7 days;
ALZET Comments: Dose (10, 30 mg/kg/day); Controls received mp w/ vehicle; animal info (5.5 weeks, male, athymic, Balb-c/nu); cancer (colorectal); "An equivalent dose of 5-FU (JW Pharmaceutical, Seoul, Korea) was continuously delivered by osmotic pumps (Durect, Cupertino, CA, USA) over 7 days, to minimize possible side effects of severe weight loss by repeated bolus injections of 5-FU [26]." pg.112; Therapeutic indication (improved effectiveness of capecitabine (5-FU precursor) monotherapy due to synergistic effect with MEK inhibitor);

Q7957: Z. Chen*, et al.* USP9X deubiquitinates ALDH1A3 and maintains mesenchymal identity in glioblastoma stem cells. J Clin Invest 2019;129(5):2043-2055
Agents: WP1130 **Vehicle:** Not stated; **Route:** CSF/CNS (caudate nucleus); **Species:** Mice; **Pump:** Not stated; **Duration:** 7 days;

ALZET Comments: Dose (25 mg/kg at 0.5 µl/h); Controls received mp w/ vehicle; animal info (NOD/SCID); WP1130 is a USP9X inhibitor; enzyme inhibitor (USP9X); Brain coordinates (2 mm anterior, 2 mm lateral, 3 mm depth from the dura); Cannula placement verified via MRI after removal of the pump system.; cancer (glioblastoma); MRI; vehicle use stated but identity not listed in paper.; Therapeutic indication (promotes robust polyubiquitylation of ALDH1A3, which results in a marked reduction in ALDH1A3 protein levels and functional activity, leading to attenuation of the tumor-initiating ability of MES GSCs);

Q6915: K. Mitsuoka*, et al.* Predicting response to sepantronium bromide (YM155), a survivin suppressant, by PET imaging with [(11)C]YM155. Nucl Med Biol 2018;64-65(41-46
Agents: YM155 **Vehicle:** DMSO; Saline; **Route:** SC; **Species:** Mice (nude); **Pump:** 1003D; 1007D; **Duration:** 2 weeks;
ALZET Comments: animal info (5-6 week old Male athymic nude mice); YM155 aka Sepantronium bromide; cancer (tumor);

Q7079: B. Kuhn*, et al.* Anti-inflammatory nitro-fatty acids suppress tumor growth by triggering mitochondrial dysfunction and activation of the intrinsic apoptotic pathway in colorectal cancer cells. Biochemical Pharmacology 2018;155(48-60
Agents: Nitrooleate, 9- **Vehicle:** PEG 400, ethanol; **Route:** SC; **Species:** Mice (SCID); **Pump:** 2001; **Duration:** 5 days;
ALZET Comments: Dose (16 mg/kg/day); 10% ethanol and 90% PEG400 used; animal info (5–6 week old SCID mice); pumps replaced after 7 days; 9-NOA is a Nitro-fatty acids; cancer (colorectal); “we have chosen a continuous application of NFAs via ALZET® osmotic pumps giving the advantage of a reduction of interindividual variations in mice due to a diverse oral chow consumption behavior and therefore kept the number of animals needed as low as possible.” pg. 57; Due to poor solubility of 9-NOA and limited pump size in consequence of the weight of the mice, pumps were surgically removed and replaced with new ones on day 8 of the experiment;

Q7195: H. Koblish*, et al.* Preclinical characterization of INCB053914, a novel pan-PIM kinase inhibitor, alone and in combination with anticancer agents, in models of hematologic malignancies. PLoS One 2018;13(6):e0199108
Agents: INCB053914 **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice; **Pump:** 2001, 2002; **Duration:** 7-19 days;
ALZET Comments: Dose (0.5 ul/h/day); animal info (female, 5-9 weeks old); comparison of twice daily oral gavage vs mp; INCB053914 is a Pan-PIM kinase inhibitor; enzyme inhibitor (pan-PIM kinase); Therapeutic indication (cancer);

Q7757: K. Iizuka*, et al.* Analysis of the prolonged infusion of DFP-10917, a deoxycytidine analog, as a therapeutic strategy for the treatment of human tumor xenografts in vivo. Int J Oncol 2018;52(3):851-860
Agents: DFP-10917 **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice; **Pump:** Not Stated; **Duration:** 1, 3, 14 days;
ALZET Comments: Dose (4.5, 8, 30 mg/kg/day); Controls received no treatment; animal info (5 weeks, male, BALB/cA Jcl-nu, 17.2-24.6g); comparison of bolus injection vs mp; DFP-10917 AKA
2'-C-cyano-2'-deoxy-1-beta-D-arabino-pentofranocylcytosine is a 2'-deoxycytidine analog with antitumor activity; cancer (tumor xenografts); Infusion of agent occured on three regimens: 24 consecutive hours on days 1 and 8, for 3 consecutive days on days 1 and 15, or for 14 consecutive days (p.852); Therapeutic indication ("regression of tumor growth without any toxicities on human solid and hematological tumor xenografts compared to clinically available deoxycytidine analogs." p.858);

Q7021: H. Hvid*, et al.* Activation of insulin receptors and IGF-1 receptors in COLO-205 colon cancer xenografts by insulin and insulin analogue X10 does not enhance growth under normo- or hypoglycaemic conditions. Diabetologia 2018;61(11):2447-2457
Agents: Insulin, human; X10 **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice (nude); **Pump:** Not Stated; **Duration:** Not Stated;
ALZET Comments: Dose (insulin at 27 nmol/kg/d; X10 at 41 nmol/kg/d); Controls received mp w/ vehicle; animal info (male BALB/c nude mice); X10 is an insulin analog; cancer (colon); diabetes;

Q7762: C. R. Chitambar*, et al.* Gallium Maltolate Disrupts Tumor Iron Metabolism and Retards the Growth of Glioblastoma by Inhibiting Mitochondrial Function and Ribonucleotide Reductase. Mol Cancer Ther 2018;17(6):1240-1250
Agents: gallium, (tris-hydroxy-2-methyl-4H-pyran-4-onato) **Vehicle:** Not Stated; **Route:** IV (Jugular); **Species:** Rat; **Pump:** Not Stated; **Duration:** 10 days;

ALZET Comments: Dose (50 mg/kg/day); animal info (Male athymic rats 250g); (tris-hydroxy-2-methyl-4H-pyran-4-onato)gallium aka GaM; cancer (glioblastoma);

Q6557: J. Zhou*, et al.* Targeting 3-phosphoinositide-dependent protein kinase 1 associated with drug-resistant renal cell carcinoma using new oridonin analogs. Cell Death & Disease 2017;8(3):e2701
Agents: CYD-6-17 **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice; **Pump:** Not Stated; **Duration:** 7 days;
ALZET Comments: Dose (10 mg/kg); Controls received mp w/ vehicle; cancer (renal cell carcinoma); Therapeutic indication (tumor);

Q5934: D. Yu*, et al.* Multiplexed RNAi therapy against brain tumor-initiating cells via lipopolymeric nanoparticle infusion delays glioblastoma progression. Proc Natl Acad Sci U S A 2017;114(30):E6147-E6156
Agents: RNA, small interfering **Vehicle:** Not Stated; **Route:** CSF/CNS (intratumoral); **Species:** mice (nude); **Pump:** 1002, 2002; **Duration:** 14 days;
ALZET Comments: animal info (athymic nude, 6-8 weeks old); ALZET brain infusion kit 3 used; cancer (glioblastoma); "Because repeated surgery introduces stress and pain that may impact the survival of the experimental animals, we opted for the convection-enhanced delivery (CED) strategy using an Alzet osmotic pump to deliver a continuous supply of the nano RNAi combination..." pg E6151;

Q6341: G. Pascual-Pasto*, et al.* Increased delivery of chemotherapy to the vitreous by inhibition of the blood-retinal barrier. J Control Release 2017;264(34-44
Agents: Topotecan **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice (nude); **Pump:** 2001D; **Duration:** Not Stated;
ALZET Comments: cancer;

Q5357: F. Muller*, et al.* Paclitaxel synergizes with exposure time adjusted CD22-targeting immunotoxins against B-cell malignancies. ONCOTARGET 2017;1-12
Agents: HA22- PE24 recombinant immunotoxin **Vehicle:** Citrate buffer; **Route:** IP; **Species:** Mice; **Pump:** 1007D; **Duration:** 7 days;
ALZET Comments: Controls received mp w/ vehicle; animal info (6-8-week-old NSG mice); JeKo-1 xenograft model; Citrate buffer: 32 mM citrate, 0.65% Tween80, 5 mM EDTA; comparison of 3 times IV bolus injections vs mp; cancer (Mantle Cell Lymphoma); half-life: 15 minutes in mice (p. 4); To enable continuous drug delivery in vivo, the rIT-formulation buffer was optimized to ensure protein stability. Stability for 7-days with citrate buffer verified using WST-8 cell proliferation assay; "Continuous infusion substantially increased efficacy of LR compared to bolus dose administration." pg 4; "a well-tolerated total amount of 84 µg LR given by continuous infusion is substantially more active than the 120 µg LR given as three bolus doses QOD." (P. 5); Because rITs have a short plasma half-life in mice and men, blood levels fall quickly after a bolus dose; Dose (1 mg/ml); Immunotoxin plasma concentration was on average 45 ng/ml, correlating with an AUC of 350 ng x day/mlPlasma. This steady state plasma concentration was higher than the IC50 of any of the MCL cell lines tested.

Q6474: Y. Kojima*, et al.* YM155 induces apoptosis through proteasome-dependent degradation of MCL-1 in primary effusion lymphoma. Pharmacol Res 2017;120(242-251
Agents: YM155 **Vehicle:** DMSO; **Route:** SC; **Species:** Mice; **Pump:** Not Stated; **Duration:** 20 days;
ALZET Comments: Dose (5 mg/kg/day); Controls received mp w/ vehicle; animal info (7-week-old male NOD/SCID IL-2RYc−/−); cancer (Primary effusion lymphoma);

Q7414: L. Federico*, et al.* A murine preclinical syngeneic transplantation model for breast cancer precision medicine. 2017;3(e1600957
Agents: MSC2285264 **Vehicle:** Ethanol, PEG 400, DMSO, PBS; **Route:** SC; **Species:** Mice; **Pump:** 2004; **Duration:** 4 weeks;
ALZET Comments: Dose (300 mg/ml at 0.25 ul/hr); 15% ethanol, 30% polyethylene glycol 400, 50% DMSO, and 5% PBS (pH 7.4) used; cancer (breast);

Q6018: J. Cornillie*, et al.* In Vivo Antitumoral Efficacy of PhAc-ALGP-Doxorubicin, an Enzyme-Activated Doxorubicin Prodrug, in Patient-Derived Soft Tissue Sarcoma Xenograft Models. Mol Cancer Ther 2017;16(8):1566-1575
Agents: Doxorubicin hydrochloride **Vehicle:** PBS; **Route:** IP; **Species:** Mice; **Pump:** 1007D; **Duration:** 7 days;
ALZET Comments: Controls received mp w/ vehicle; cancer (Sarcoma); Therapeutic indication (Cancer; soft tissue sarcoma; xenograft model);

Q6103: S. Y. Cho*, et al.* A Novel Combination Treatment Targeting BCL-XL and MCL1 for KRAS/BRAF-mutated and BCL2L1-amplified Colorectal Cancers. Mol Cancer Ther 2017;16(10):2178-2190
Agents: YM155 **Vehicle:** Saline; **Route:** SC; **Species:** Mice; **Pump:** 1007D; **Duration:** 21 days;
ALZET Comments: 0.9% saline used; Controls received mp w/ vehicle; animal info (4-week-old NSG female mice); cancer (colorectal);

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
Agents: Ruxolitinib **Vehicle:** Not Stated; **Route:** Not Stated; **Species:** Mice; **Pump:** Not Stated; **Duration:** 7 days;
ALZET Comments: Dose (50 mg/kg/d); cancer (lymphoma);

Q5765: N. Chaudary*, et al.* Plerixafor Improves Primary Tumor Response and Reduces Metastases in Cervical Cancer Treated with Radio-Chemotherapy. Clinical Cancer Research 2017;23(5):1242-1249
Agents: Plerixafor **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice; **Pump:** Not Stated; **Duration:** 3 weeks, 24 days;
ALZET Comments: animal info (6-8 weeks old) ; cancer (Cervical); Therapeutic indication (Cervical cancer); Dose (5 mg/kg/day);

Q5111: W. Zhang*, et al.* Targeting of Survivin Pathways by YM155 Inhibits Cell Death and Invasion in Oral Squamous Cell Carcinoma Cells. Cellular Physiology and Biochemistry 2016;38(6):2426-37
Agents: YM155 **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice (nude); **Pump:** 1007D; **Duration:** 7 days;
ALZET Comments: Controls received mp w/ vehicle; animal info (female, nude, 5 weeks old); cancer (Oral squamous cell carcinoma SCC9); Dose (5 mg/kg/day); xenograph model;

Q6665: P. Sini*, et al.* Pharmacological Profile of BI 847325, an Orally Bioavailable, ATP-Competitive Inhibitor of MEK and Aurora Kinases. Mol Cancer Ther 2016;15(10):2388-2398
Agents: BI 847325 **Vehicle:** Cyclodextrin, 2-hydroxypropyl-b-; **Route:** SC; **Species:** Mice (transgenic); **Pump:** Not Stated; **Duration:** Not Stated;
ALZET Comments: Dose (20 mg/kg/day); 25% Cyclodexins used ; animal info (Eight- to 10-week-old female BomTac:NMRI-Foxn1nu mice); enzyme inhibitor (ATP-competitive dual inhibitor of MEK and Aurora kinases); cancer (melanoma);

Q4883: E. S. Shinya Sento, Tetsuya Yamamoto. Application of a Persistent Heparin Treatment Inhibits the Malignant Potential of Oral Squamous Carcinoma Cells Induced by Tumor Cell-Derived Exosomes. PLoS One 2016;11(2):
Agents: Heparin **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice; **Pump:** 2004; **Duration:** 27 days;
ALZET Comments: Controls received mp w/ saline; animal info (BALB/c nude, 5 weeks old); cancer (oral squamous carcinoma OSC-4);

Q6659: Z. Segaoula*, et al.* Synthesis and Biological Evaluation of N-[2-(4-Hydroxyphenylamino)-pyridin-3-yl]-4-methoxy-benzenesulfonamide (ABT-751) Tricyclic Analogues as Antimitotic and Antivascular Agents with Potent in Vivo Antitumor Activity. J Med Chem 2016;59(18):8422-40
Agents: Sulfonamide ABT-751; N-[2(4-Methoxyphenyl)ethyl]-1,2-dihydropyrimidino[2,1-b]quinazolin-6-one **Vehicle:** Saline; PEG 400; Tween 80; **Route:** SC; **Species:** Mice; **Pump:** 2002; **Duration:** 14 days;
ALZET Comments: Dose (5 mg/kg/day, 25mg/kg/day, 50 mg/kg/day); 0.9% NaCl containing; 5% polyethylene glycol 400; 0.5% Tween 80) used; Controls received mp w/ vehicle; animal info (B16F10 mice);

N-[2(4-Methoxyphenyl)ethyl]-1,2-dihydropyrimidino[2,1-b]quinazolin-6-one aka 16a; cancer (melanoma); Compounds are tricyclic quinazolinone or benzothiadiazine derivatives; Therapeutic indication (tumor);

Q6626: F. Muller*, et al.* Wide Variability in the Time Required for Immunotoxins to Kill B Lineage Acute Lymphoblastic Leukemia Cells: Implications for Trial Design. Clinical Cancer Research 2016;22(19):4913-4922
Agents: HA22 **Vehicle:** PBS; **Route:** IP; **Species:** Mice; **Pump:** Not Stated; **Duration:** 7 days;
ALZET Comments: Dose (0.5 ug/hr); Controls received mp w/ vehicle; animal info (6- to 8-week-old NSG mice); HA22 aka CAT-8015 aka Moxetumomab pasudotox; cancer (leukemia);

Q6623: T. Morishita*, et al.* The photosensitizer verteporfin has light-independent antileukemic activity for Ph-positive acute lymphoblastic leukemia and synergistically works with dasatinib. ONCOTARGET 2016;7(35):56241-56252
Agents: Verteporfin **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice; **Pump:** Not Stated; **Duration:** 7 days;
ALZET Comments: Dose (140 mg/kg/day); Controls received mp w/ vehicle; animal info (NOG mice); Resultant plasma level (654 nM); cancer (leukemia);

Q5313: M. Cadamuro*, et al.* Low-Dose Paclitaxel Reduces S100A4 Nuclear Import to Inhibit Invasion and Hematogenous Metastasis of Cholangiocarcinoma. Cancer Research 2016;76(16):4775-84
Agents: Paclitaxel **Vehicle:** Cremophor EL, Ethanol; **Route:** IP; **Species:** Mice (SCID); **Pump:** 1004; **Duration:** 2 weeks;
ALZET Comments: Controls received mp w/ vehicle; animal info (SCID mice 6–8 weeks old); functionality of mp verified by bioluminescence imaging to check metastatic spread; 50% Cremophor, 50% ethanol used; cancer (Cholangiocarcinoma); Xenograft model; Dose (2.6 mg/kg/d);

Q5317: D. C. Borcherding*, et al.* Expression and therapeutic targeting of dopamine receptor-1 (D1R) in breast cancer. Oncogene 2016;35(24):3103-13
Agents: Fenoldopam **Vehicle:** PBS; **Route:** SC; **Species:** mice; **Pump:** 1004; **Duration:** 1 week, 3 weeks;
ALZET Comments: Controls received mp w/ vehicle; animal info (Eight-week-old female athymic nu/nu mice; inoculated with MDA-MB-231 cells or SUM159 cells); functionality of mp verified by measurement of tumor volumes; cancer (breast cancer); dose-response (pg. 3109); Xenograft models; Dose (400 ng/kg/min or 133 ng/kg/min);

Q5318: A. L. Bigley*, et al.* Using Automated Image Analysis Algorithms to Distinguish Normal, Aberrant, and Degenerate Mitotic Figures Induced by Eg5 Inhibition. Toxicol Pathol 2016;44(5):663-72
Agents: Eg5 inhibitor **Vehicle:** DMSO, captisol; **Route:** SC; **Species:** Rat (Nude); **Pump:** Not Stated; **Duration:** 1 day, 2 days, 3 days;
ALZET Comments: Controls received mp w/ vehicle; animal info (human transitional cell carcinoma (TCC) cell line MGHU3 in nude rats); 50% DMSO, 60% captisol used; cancer (bladder); dose-response (pg 667-669); enzyme inhibitor (kinesin-5 inhibitor); human transitional cell carcinoma (TCC) cell line MGHU3; xenograft model; Dose (1.375 mg/kg/d, 2.75 mg/kg/d, 4.6 mg/kg/d);

Q5321: D. M. Beauvais*, et al.* Syndecan-1 (CD138) Suppresses Apoptosis in Multiple Myeloma by Activating IGF1 Receptor: Prevention by SynstatinIGF1R Inhibits Tumor Growth. Cancer Research 2016;76(17):4981-93
Agents: Synstatin(IGF1R), Synstatin(IGF1R-T) **Vehicle:** PBS; **Route:** SC; **Species:** Mice (NUDE); **Pump:** 2004; **Duration:** 4 weeks;
ALZET Comments: Controls received mp w/ vehicle; animal info (6- to 8-week-old female, athymic Foxn1nu outbred nude mice); functionality of mp verified by tumor volume measurements; cancer (Multiple Myeloma); dose-response (pg. 4989-4990); Xenograft model; Dose (3.6 mg/kg/d); Resultant plasma level (30 umol/L); Interesting (Evidence of tumor elimination);

Q5592: S. Ando*, et al.* Tofacitinib induces G1 cell-cycle arrest and inhibits tumor growth in Epstein-Barr virus-associated T and natural killer cell lymphoma cells. Oncotarget 2016;7(47):76793-76805

Agents: Tofacitinib **Vehicle:** DMSO, PEG, Saline; **Route:** SC; **Species:** Mice (NOG); **Pump:** Not Stated; **Duration:** 4 weeks;
ALZET Comments: Controls received mp w/ vehicle; 50% DMSO, 10% PEG, 40% Saline used; cancer (Lymphoma); Therapeutic indication (lymphoma); Dose (30 mg/kg/day); enzyme inhibitor (JAK3)

Q4653: H. Yamazaki*, et al.* Survivin suppressor (YM155) enhances chemotherapeutic efficacy against canine histiocytic sarcoma in murine transplantation models. RESEARCH IN VETERINARY SCIENCE 2015;99(137-144
Agents: YM155; lomustine **Vehicle:** Saline; **Route:** SC; IP; **Species:** Mice (nude); **Pump:** 1003D; 1007D; **Duration:** 3 days;
ALZET Comments: Controls received mp w/ vehicle; animal info (female, nude, 4 weeks old); pumps replaced every week; cancer (canine histiocytic sarcoma); 3 days of continuous infusion per week for 3 weeks; lomustine aka CCNU;

Q4636: W. J. Wang*, et al.* Effects of convection-enhanced delivery of bevacizumab on survival of glioma-bearing animals. Neurosurgical Focus 2015;38(U112-U119
Agents: Bevacizumab **Vehicle:** Saline; **Route:** CSF/CNS (intratumoral); **Species:** Mice (nude); **Pump:** 1004; **Duration:** 28 days;
ALZET Comments: Controls received mp w/ vehicle; animal info (athymic, nu/nu); ALZET brain infusion kit used; cancer (glioma); immunology; "Bevacizumab was delivered into the tumor using chronic pump-mediated delivery, defined as “convection-enhanced delivery” or CED. This CED method was used because it has the advantage of achieving the desirable drug concentration in the microenvironment of the glioma while avoiding the use of high initial doses." pg 2;

Q4581: K. Shakushiro*, et al.* Formulation Design and Evaluation of Liposomal Sepantronium Bromide (YM155), a Small-Molecule Survivin Suppressant, Based on Pharmacokinetic Modeling and Simulation. PHARMACEUTICAL RESEARCH 2015;32(238-247
Agents: YM155 **Vehicle:** Saline; **Route:** Not Stated; **Species:** Mice (nude); **Pump:** 1007D; **Duration:** 3 days; 1007D;
ALZET Comments: Controls received mp w/ vehicle; animal info (male, BALB/c nu/nu, 5 weeks old); cancer (prostate; malignant melanoma; lung);

Q4570: S. Prasad*, et al.* Effective Eradication of Glioblastoma Stem Cells by Local Application of an AC133/CD133-Specific T-cell-Engaging Antibody and CD8 T Cells. Cancer Research 2015;75(2166-2176
Agents: Antibody, AC133xCD3 bispecific **Vehicle:** PBS; **Route:** CSF/CNS; **Species:** Mice (nude); **Pump:** 1007D; **Duration:** 7 days;
ALZET Comments: Controls received mp w/ control antibody; animal info (NMR I nude, 6-8 weeks old); ALZET brain infusion kit 3 used; cancer (glioblastoma multiforme); immunology; cyanoacrylate adhesive;

Q4564: L. A. Pitt*, et al.* CXCL12-Producing Vascular Endothelial Niches Control Acute T Cell Leukemia Maintenance. Cancer Cell 2015;27(755-768
Agents: AMD3465 **Vehicle:** PBS; **Route:** SC; **Species:** Mice (NOD/SCID); **Pump:** 2002; **Duration:** 2 weeks;
ALZET Comments: Controls received mp w/ vehicle; animal info (female, C57BL6, 6-8 weeks old); cancer (leukemia); immunology;

Q5246: K. E. Parrish*, et al.* Efflux transporters at the blood-brain barrier limit delivery and efficacy of cyclin-dependent kinase 4/6 inhibitor palbociclib (PD-0332991) in an orthotopic brain tumor model. J Pharmacol Exp Ther 2015;355(2):264-71
Agents: Palbociclib **Vehicle:** DMSO, saline; **Route:** IP; **Species:** Mice; **Pump:** 1003D; **Duration:** 2 days;
ALZET Comments: Controls received mp w/ vehicle; animal info (wild-type, Mdr1a/b2/2, Bcrp12/2, and Mdr1a/b2/2Bcrp12/2 mice); functionality of mp verified by brain and plasma level; cancer (brain tumor); good methods (pg 265); Wound clips used; Resultant brain-to-plasma ratios (pg 268); Dose (10 mg/ml);

Q5247: K. E. Parrish*, et al.* Efficacy of PARP Inhibitor Rucaparib in Orthotopic Glioblastoma Xenografts Is Limited by Ineffective Drug Penetration into the Central Nervous System. Mol Cancer Ther 2015;14(12):2735-43
Agents: rucaparib **Vehicle:** DMSO; **Route:** IP; **Species:** mice; **Pump:** 1003D; **Duration:** 2 days;

ALZET Comments: animal info (triple knockout (TKO: Mdr1a/1b-/-;Bcrp1-/-) mice); functionality of mp verified by Steady-state concentrations in brain and plasma; cancer (glioblastoma); brain tissue distribution; Resultant brain and plasma level (pg 2738); Dose (5 ug/hour);

Q4515: C. Monterrubio*, et al.* Combined Microdialysis-Tumor Homogenate Method for the Study of the Steady State Compartmental Distribution of a Hydrophobic Anticancer Drug in Patient-Derived Xenografts. Pharm Res 2015;32(9):2889-900
Agents: Irinotecan **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice (nude); **Pump:** 2001D; **Duration:** 24 hours;
ALZET Comments: animal info (athymic, nude)); functionality of mp verified by plasma levels; cancer (neuroblastoma; HSJD-NB-003 or HSJD-NB-004); xenograft model; Dose (130 ug/h);

Q4456: R. E. Hurst*, et al.* Identification of novel drugs to target dormant micrometastases. BMC Cancer 2015;15(U1-U12
Agents: DT310; DT320 **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice; **Pump:** 2004; **Duration:** 4 weeks;
ALZET Comments: Animal info (female, BALB/c, 8 weeks old); cancer (metastatic tumor);

Q5407: J. Huang*, et al.* A novel brain metastasis xenograft model for convectionenhanced delivery of targeted toxins via a microosmotic pump system enabled for realtime bioluminescence imaging. Mol Med Rep 2015;12(4):5163-8
Agents: DTATEGF, immunotoxin **Vehicle:** Not Stated; **Route:** CSF/CNS; **Species:** Mice; **Pump:** 1007D; **Duration:** 7 days;
ALZET Comments: Controls received mp w/ T cell targeting control toxin (BIC3KDEL); animal info (Six week old female athymic mice weighing 17-19 g); ALZET brain infusion kit 3 used; cancer; "CED was performed via a micro osmotic pump system, to provide a continuous positive pressure microinfusion... a drug may be continuously delivered at a constant rate for days without the need for anesthesia or the frequent handling of small animals... the small, flexible pump system may be fixed to the skull and therefore will not interfere with the normal activities of the mice. The system does not require an external syringe or shunt catheter, thus decreasing the chance for infection... the pump is fully biocompatible and the infusion volume is well tolerated. Therefore, the model used in the present study is a simple and effective tool for performing CED treatment experiments in small animals with brain tumors." pg 5167; DTATEGF TT is a novel recombi¬nant bispecific TT consisting of a truncated diphtheria toxin (DT), an aminoterminal (AT) fragment of the urokinase type plasminogen activator, and a fragment of human epidermal growth factor (EGF); no stress: "…no morbidity or mortality was observed in response to the pump system or the surgical procedure. The mice implanted with pumps showed no evidence of clinical side effects over the study period. No mice experienced irritation at the wound site or attempted to remove the pump system. No neurological deficits were observed immediately following cell inoculation, pump implantation, or drug delivery. The pump system never migrated from its implanted position, and all mice tolerated the device well." (see pg. 5165); Therapeutic indication (cancer); Bioluminescence imaging

Q5163: A. J. Hesketh*, et al.* The Macrophage Inhibitor CNI-1493 Blocks Metastasis in a Mouse Model of Ewing Sarcoma through Inhibition of Extravasation. PLoS One 2015;10(12):e0145197
Agents: Semapimod **Vehicle:** Not Stated; **Route:** IP; **Species:** mice; **Pump:** Not Stated; **Duration:** 6 weeks;
ALZET Comments: Controls received mp w/ vehicle; animal info: Six week-old female nude NCr mice; cancer (sarcoma); dose-response (pg. 12); Semapimod aka CNI-1493; Dose: 5 mg/kg/day

Q3877: C. C. Faria*, et al.* Foretinib Is Effective Therapy for Metastatic Sonic Hedgehog Medulloblastoma. Cancer Research 2015;75(134-146
Agents: Foretinib **Vehicle:** Cremophor; **Route:** CSF/CNS; **Species:** Mice; **Pump:** 2004; **Duration:** 28 days;
ALZET Comments: Controls received mp w/ vehicle; animal info (Ptch +/- Sleeping Beauty transposition, PD30-PD35); functionality of mp verified by MALDI-TOF imagining; 10% cremophor used; cancer (medulloblastoma); "To explore the potential use of foretinib for intrathecal therapy in neuro-oncology, we used osmotic pumps to deliver the drug into the lateral ventricles of mice... these studies demonstrate for the first time, to our knowledge, that foretinib crosses the blood–brain barrier and can be safely administered as intrathecal therapy." pg 139;

Q4354: K. C. Chan*, et al.* Therapeutic targeting of CBP/beta-catenin signaling reduces cancer stem-like population and synergistically suppresses growth of EBV-positive nasopharyngeal carcinoma cells with cisplatin. SCIENTIFIC REPORTS 2015;5(U18-U29
Agents: ICG-001 **Vehicle:** PBS; **Route:** SC; **Species:** Mice (nude); **Pump:** 1004; **Duration:** 26 days;
ALZET Comments: Controls received mp w/ vehicle; animal info (female, athymic BALB/c, nu/nu, 6-8 weeks old); cancer (nasopharyngeal carcinoma);

Q4346: J. S. Carew*, et al.* Targeting Survivin Inhibits Renal Cell Carcinoma Progression and Enhances the Activity of Temsirolimus. MOLECULAR CANCER THERAPEUTICS 2015;14(1404-1413
Agents: YM155 **Vehicle:** Not Stated; **Route:** Not Stated; **Species:** Mice (nude); **Pump:** Not Stated; **Duration:** 7 days;
ALZET Comments: Animal info (female, nude BALB/c); cancer (renal);

Q4344: V. Cardinale*, et al.* Profiles of Cancer Stem Cell Subpopulations in Cholangiocarcinomas. American Journal of Pathology 2015;185(1724-1739
Agents: Cyclosporine **Vehicle:** Not Stated; **Route:** IP; **Species:** Mice; **Pump:** 1004; **Duration:** 4 weeks;
ALZET Comments: Animal info (male, BALB/c, 13 weeks old); cancer (cholangiocarcinoma);

Q4752: X. H. Yu*, et al.* Chemosensitization of Solid Tumors by Inhibition of Bcl-xL Expression Using DNAzyme. ONCOTARGET 2014;5(9039-9048
Agents: DNAzyme oligonucleotide **Vehicle:** Saline; **Route:** IP; **Species:** Mice (nude); **Pump:** 1002; **Duration:** 14 days;
ALZET Comments: Animal info (female, Balb/C, 4 weeks old); functionality of mp verified by plasma levels and residual volumes; cancer (prostate adenocarcinoma); “Analysis showed that the DNAzyme was stable over the treatment period and the Alzet osmotic pump provided a consistent delivery of the DNAzyme in vivo ” pg 9044;

Q3365: M. J. Walters*, et al.* Inhibition of CXCR7 extends survival following irradiation of brain tumours in mice and rats. British Journal of Cancer 2014;110(5):1179-1188
Agents: CCX662 **Vehicle:** Not Stated; **Route:** SC; **Species:** Rat (pregnant); **Pump:** 2004; **Duration:** 2 weeks; 4 weeks;;
ALZET Comments: Controls received mp w/ vehicle; animal info (Sprague Dawley, 115 days old); functionality of mp verified by plasma levels sampled at 9 and 16 days post implantation; pumps replaced every 7 days; cancer (glioblastoma); stability verified by (IC90 value after 16 days); CCX662 is a CXCR7 inhibitor

Q3190: C. S. Velu*, et al.* Therapeutic antagonists of microRNAs deplete leukemia-initiating cell activity. Journal of Clinical Investigation 2014;124(1):222-236
Agents: Antagomir, miR-21; antagomir, miR-196b **Vehicle:** Not Stated; **Route:** Not Stated; **Species:** Mice; **Pump:** 2006;
Duration: 6 weeks;
ALZET Comments: Controls received mp w/control antagomirs; functionality of mp verified by analysis of peripheral white blood cells; cancer (leukemia); gene therapy; immunology; "Antagomir-treated mice did not show alteration in their normal behavior or vital organ function, as evidenced by serum chemistry panels and metabolites" pg. 226;

Q5438: N. Tanaka*, et al.* Repeated oral dosing of TAS-102 confers high trifluridine incorporation into DNA and sustained antitumor activity in mouse models. Oncol Rep 2014;32(6):2319-26
Agents: TAS-102 **Vehicle:** Saline; **Route:** SC; **Species:** Mice (nude); **Pump:** 1002; **Duration:** Not Stated;
ALZET Comments: Controls received no treatment; animal info (5 week old, male nude mice, BALB/cA); functionality of mp verified by tumor volume measurements; cancer (colorectal cancer; xenograft model); Cell lines used: CRC cell lines DLD-1, HT-29, HCT116, KM20C and SW480; small cell lung cancer
cells Lu-134; breast cancer cells MC-2 and MX-1; TAS-102 is a novel nucleoside antitumor agent containing trifluoridine (FTD) and tipiracil hydrochloride (TPI); Therapeutic indication (colorectal cancer);

Q3727: S. Murasawa*, et al.* Inhibitory effects of SOM230 on adrenocorticotropic hormone production and corticotroph tumor cell proliferation in vitro and in vivo. MOLECULAR AND CELLULAR ENDOCRINOLOGY 2014;394(37-46

Agents: SOM230 **Vehicle:** Ethanol; saline; **Route:** SC; **Species:** Mice (nude); **Pump:** Not Stated; **Duration:** 14 days;
ALZET Comments: Control animals received mp w/ vehicle; animal info (male, 8 wks old, 22-24 g); 200 ul; sized pump used; cancer

Q4731: R. Mir*, et al.* YM155 sensitizes ovarian cancer cells to cisplatin inducing apoptosis and tumor regression. GYNECOLOGIC ONCOLOGY 2014;132(1):211-220
Agents: YM155 **Vehicle:** DMSO; saline; **Route:** Not Stated; **Species:** Mice (nude); **Pump:** 1007D; **Duration:** 7 days;
ALZET Comments: Controls received mp w/ vehicle; animal info (female, Nude-Foxn1nu, 5 weeks old); 1% DMSO used; cancer (ovarian);

Q3548: F. Li*, et al.* Sphingosine-1-phosphate prevents chemotherapy-induced human primordial follicle death. Human Reproduction 2014;29(1):107-113
Agents: Sphingosine-1-phosphate **Vehicle:** Not Stated; **Route:** Not Stated; **Species:** Mice (SCID); **Pump:** Not Stated; **Duration:** 4 days;
ALZET Comments: Controls received mp w/ vehicle; animal info (SCID, xenograph); cancer (ovarian); "Mini-osmotic pumps were used because of the very short plasma half-life of S1P." pg 108;

Q3527: N. Kaneko*, et al.* Combination of YM155, a Survivin Suppressant, with Bendamustine and Rituximab: A New Combination Therapy to Treat Relapsed/Refractory Diffuse Large B-cell Lymphoma. Clinical Cancer Research 2014;20(1814-1822
Agents: YM155 **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice (nude); **Pump:** 1007D; **Duration:** 7 days;
ALZET Comments: Animal info (male, nu/nu, 4 weeks old); cancer (lymphoma); YM155 aka sepantronium bromide

Q3338: W. H. Gmeiner*, et al.* Selective anti-tumor activity of the novel fluoropyrimidine polymer F10 towards G48a orthotopic GBM tumors. Journal of Neuro-oncology 2014;116(3):447-454
Agents: F10 **Vehicle:** PBS; **Route:** CSF/CNS (thalamus); **Species:** Mice (nude); **Pump:** 1007D; **Duration:** 7 days;
ALZET Comments: Controls received mp w/ vehicle; animal info (nu/nu, 7 weeks old); ALZET brain infusion kit 3 used; cancer (human glioblastoma G48a); dose-response (pg.451-452, fig.3b and fig.4); no stress (see pg. 451); tissue perfusion (posterior thalamus); immunology; "F10 does not penetrate the BBB in healthy mice (data not shown), thus intra-cranial (i.c.) administration of F10 results in high local concentrations that may be therapeutically beneficial. Dose-finding studies in nude mice demonstrate that F10 administered i.c. using an Alzet osmotic mini-pump at doses up to 200 mg/kg administered over 7 days are well-tolerated and do not cause damage to normal brain (Fig. 2b)." pg 451; Pumps primed in 37C saline overnight; F10 is a novel antitumor agent;

Q3474: H. Fukushima*, et al.* 3'-Ethynylcytidine, an RNA polymerase inhibitor, combined with cisplatin exhibits a potent synergistic growth-inhibitory effect via Vaults dysfunction. BMC Cancer 2014;14(U1-U12
Agents: Cytidine, 3'-ethynyl **Vehicle:** Not Stated; **Route:** Not Stated; **Species:** Mice (nude); **Pump:** Not Stated; **Duration:** Not Stated;
ALZET Comments: animal info (male, BALBC cAJcI-nu nude); cancer (KB cells, nasopharyngeal carcinoma; A549, lung carcinoma); 3'-ethynylcytidine aka ECyd akd TAS-106; ECyd is an RNA polymerase inhibitor;

Q3184: G. H. Deng*, et al.* Exogenous norepinephrine attenuates the efficacy of sunitinib in a mouse cancer model. JOURNAL OF EXPERIMENTAL & CLINICAL CANCER RESEARCH 2014;33(;):U1-U12
Agents: Norepinephrine; propranolol **Vehicle:** Ascorbic acid; saline; **Route:** SC; **Species:** Mice; **Pump:** 1004; **Duration:** 14 days;
ALZET Comments: Controls received mp w/ vehicle; animal info (Female, C57BL6, 4-6 weeks old); cancer (melanoma; adenocarcinoma); immunology; "Seeing that microosmotic pumps (1004 type) are of the ability of pumping drugs contained incessantly for up to 4 weeks and exhibit reliable effects in mouse models, the pumps were taken into account in our research to deal with the short half life period of NE." pg 7; Primed pumps in 37C saline for 48 hours; Picture on pg 6 of pump and tumor on mouse.

Q3421: A. Bouchekioua*, et al.* JAK3 deregulation by activating mutations confers invasive growth advantage in extranodal nasal-type natural killer cell lymphoma. LEUKEMIA 2014;28(2):338-348
Agents: CP-690550 **Vehicle:** PEG 300; saline; **Route:** SC; **Species:** Mice (NSG); **Pump:** 2002; **Duration:** 14 days;
ALZET Comments: Controls received mp w/ vehicle; animal info (female, NSG, 6-8 weeks old); 50% PEG 300 used; cancer (extranodal, nasal-type natural killer lymphoma); CP-690550 is a JAK3 inhibitor; enzyme inhibitor (JAK);

Q4321: A. Barone*, et al.* Combined VEGF and CXCR4 antagonism targets the GBM stem cell population and synergistically improves survival in an intracranial mouse model of glioblastoma. ONCOTARGET 2014;5(9811-9822
Agents: POL5551 **Vehicle:** PBS; **Route:** SC; **Species:** Mice (nude); **Pump:** 2004; **Duration:** 28 days;
ALZET Comments: Controls received mp w/ vehicle; animal info (NCR nude); cancer (glioblastoma);

Q3271: T. Zhuang*, et al.* Involvement of nitric oxide synthase in matrix metalloproteinase-9- and/or urokinase plasminogen activator receptor-mediated glioma cell migration. BMC Cancer 2013;13(;):U1-U11
Agents: Plasmid, MMP-9; plasmid, uPAR; plasmid, MMP-9-uPAR **Vehicle:** Medium, serum free; **Route:** CSF/CNS; **Species:** Mice (nude); **Pump:** Not Stated; **Duration:** 5 weeks;
ALZET Comments: Animal info (nude); cancer (glioma);

Q2878: N. Zhidkov*, et al.* Continuous Intraperitoneal Carboplatin Delivery for the Treatment of Late-Stage Ovarian Cancer. MOLECULAR PHARMACEUTICS 2013;10(9):3315-3322
Agents: Carboplatin **Vehicle:** PBS; **Route:** IP; **Species:** Mice (SCID); **Pump:** 1002; **Duration:** 14 days;
ALZET Comments: Controls received mp w/ saline; toxicology; animal info (6-8 week old female SCID); comparison of bolus injection vs mp; cancer (ovarian)

Q2462: F. M. Uckun*, et al.* Rational design of an immunoconjugate for selective knock-down of leukemia-specific E2A-PBX1 fusion gene expression in human Pre-B leukemia. Integrative Biology 2013;5(1):122-132
Agents: Oligonucleotide, alpha CD 19 **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice (SCID); **Pump:** 1002; **Duration:** 14 days;
ALZET Comments: Control animals received mp w/ control oligonucleotide; antisense (E2A-PBX1 with mAb specific for CD 19 receptor); cancer (leukemia)

Q2875: Q. Lin*, et al.* Effect of Chronic Restraint Stress on Human Colorectal Carcinoma Growth in Mice. PLoS One 2013;8(4):U1127-U1137
Agents: Epinephrine; atenolol; ICI-118,551 **Vehicle:** PBS; Ascorbic acid; **Route:** SC; **Species:** Mice (nude); **Pump:** 1002; **Duration:** 2 weeks;
ALZET Comments: Controls received mp w/ PBS, PHE (2mg/kg/d) and PRO (2mg/kg/d), CRS PBS, CRS PHE (2mg/kg/d) and PRO (2mg/kg/d); animal info (nude); cancer (colorectal); dose-response (Fig.4, S5); ICI 118,551 is a specific B2-AR antagonist; "Considering the critical role of stress in regulating tumor growth and the fact that stress hormones and their antagonists could be quickly metabolized, we used microosmotic pumps instead of repeated injection to administer the stress hormones and antagonists to reduce the stress response as much as possible during manipulations of the animals." pg 9

Q2574: A. Kogame*, et al.* Pharmacokinetic and Pharmacodynamic Modeling of Hedgehog Inhibitor TAK-441 for the Inhibition of Gli1 messenger RNA Expression and Antitumor Efficacy in Xenografted Tumor Model Mice. Drug Metabolism and Disposition 2013;41(4):727-734
Agents: TAK-441 **Vehicle:** DMSO; PEG; **Route:** SC; **Species:** Mice (nude); **Pump:** 1003D; **Duration:** 3 days;
ALZET Comments: Animal info (female, athymic, nu/nu, Balb/c, 8 wks old, 18-26 g); TAK-441 is a potent, selective hedgehog signaling pathway inhibitor; cancer; pk study

Q2986: D. Kesanakurti*, et al.* Essential role of cooperative NF-kappaB and Stat3 recruitment to ICAM-1 intronic consensus elements in the regulation of radiation-induced invasion and migration in glioma. ONCOGENE 2013;32(43):5144-5155

Agents: Oligonucleotide, antisense; plasmid, scrambled vector, pSV; PBS **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice (nude); **Pump:** 2004; **Duration:** Not Stated;
ALZET Comments: Cancer (glioblastoma); animal info (nu/nu mice)

Q3092: N. Kaneko*, et al.* Synergistic Antitumor Activities of Sepantronium Bromide (YM155), a Survivin Suppressant, in Combination with Microtubule-Targeting Agents in Triple-Negative Breast Cancer Cells. Biological and Pharmaceutical Bulletin 2013;36(12):1921-1927
Agents: YM155 **Vehicle:** Saline; **Route:** SC; **Species:** Mice (nude); **Pump:** 1007D; **Duration:** 7 days;
ALZET Comments: Controls received mp w/ vehicle; animal info (female); cancer (breast); immunology; YM155 aka sepantronium bromide; Pumps used in conjunction with docetaxel IV bolus injections (20 mg/kg)

Q5645: P. N. Harter*, et al.* Anti-tissue factor (TF9-10H10) treatment reduces tumor cell invasiveness in a novel migratory glioma model. Neuropathology 2013;33(5):515-25
Agents: mAb TF9-10H10; monoclonal antibody anti tissue factor; **Vehicle:** PBS; **Route:** SC; **Species:** Mice (nude); **Pump:** 1002; **Duration:** 2 weeks;
ALZET Comments: Controls received mp w/ IgG diluted to equal concentration; animal info (20-25g); ALZET brain infusion kit 3 used; cancer (Glioma); “Since it has been shown that osmotic pumps are able to deliver molecules up to 2 cm from the injection site in the brain, this system appeared to be most suitable for our purposes.” pg 517 ; Therapeutic indication (Glioma, p53); Dose (500 ug/mL);

Q3340: C. Grommes*, et al.* The PPARgamma agonist pioglitazone crosses the blood-brain barrier and reduces tumor growth in a human xenograft model. Cancer Chemotherapy and Pharmacology 2013;71(4):929-936
Agents: Pioglitazone **Vehicle:** Dulbecco's modified eagle medium; **Route:** CSF/CNS; **Species:** Mice (SCID); **Pump:** 2004; **Duration:** 21 days;
ALZET Comments: Controls received mp w/ vehicle; animal info (Balb/CJHanHsd-Prkdc-SCID, 6 weeks old); ALZET brain infusion kit used; comparison of oral dosing vs mp; cancer (tumors); dose-response (CNS); stability verified by (p.934 - incubation at 37C for 21 days); "Intracerebral treatment with 1 lM pio prolonged survival significantly from 49 to 68 days... This defines the minimal effective dose for oral pio treatment at 240 PPM (20.2 mg/kg) and for intracerebral pio treatment at 1 lM (0.11 ug/kg)." pg 932;

Q2915: C. Commisso*, et al.* Macropinocytosis of protein is an amino acid supply route in Ras-transformed cells. Nature 2013;497(7451):633-U180
Agents: EIPA, 5- **Vehicle:** DMSO; PBS; **Route:** Not Stated; **Species:** Mice; **Pump:** 1004; **Duration:** Not Stated;
ALZET Comments: Controls received mp w/ DMSO in PBS; animal info (KPC mice); dose-response (Fig 1c,d); cancer;
5-(N-ethyl-Nisopropyl)
amiloride;

Q3059: V. Chandramohan*, et al.* Construction of an Immunotoxin, D2C7-(scdsFv)-PE38KDEL, Targeting EGFRwt and EGFRvIII for Brain Tumor Therapy. Clinical Cancer Research 2013;19(17):4717-4727
Agents: Immunotoxin, D2C7-(scdsFv)-PE38KDEL **Vehicle:** PBS-HSA; **Route:** CSF/CNS; **Species:** Mice (NSG); **Pump:** Not Stated; **Duration:** 3 days; 5 days;
ALZET Comments: Controls received mp w/ vehicle or P588-(scdsFv)-PE38KDEL; animal info (male, NOD SCID gamma, 30 g, 8-12 weeks old); cancer (gliomas); toxicology; immunology; "This method of continuous intracranial delivery will aid in achieving elevated concentrations and uniform distribution of D2C7-(scdsFv)-PE38KDEL at the tumor site, which would be expected to optimize its antitumor activity. By this method, we were able to achieve significant increase in survival at a very low dose of 1 mg of D2C7-(scdsFv)-PE38KDEL" pg.4725;

Q2463: V. Chandramohan*, et al.* Recombinant anti-podoplanin (NZ-1) immunotoxin for the treatment of malignant brain tumors. International Journal of Cancer 2013;132(10):2339-2348

Agents: Immunotoxin, NZ-1; immunotoxin, P588 **Vehicle:** PBS-HSA; **Route:** CSF/CNS (intratumoral); **Species:** Mice; **Pump:** 1003D; **Duration:** 3 days;
ALZET Comments: Control animals received mp w/ vehicle; tissue perfusion (intratumoral); cancer (brain)

Q7211: V. Chandramohan*, et al.* Recombinant anti-podoplanin (NZ-1) immunotoxin for the treatment of malignant brain tumors. Int J Cancer 2013;132(10):2339-48
Agents: Immunotoxin, NZ-1-(scdsFv)-PE38KDELImmunotoxin, P588-(scdsFv)-PE38KDEL **Vehicle:** PBS, human serum albumin; **Route:** CSF/CNS (intratumoral); **Species:** Mice (NSG); **Pump:** 1003D; **Duration:** 3 days;
ALZET Comments: 0.2% PBS-HSA used; Controls received mp w/ vehicle; animal info (Male NOD scid gamma (NSG) mice (20–30 g; 12 weeks)); cancer (glioblastoma, medulloblastoma);

Q2768: W. S. Carbonell*, et al.* beta1 Integrin Targeting Potentiates Antiangiogenic Therapy and Inhibits the Growth of Bevacizumab-Resistant Glioblastoma. Cancer Research 2013;73(10):3145-3154
Agents: Antibody, OS2966 **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice; **Pump:** 1004; **Duration:** 28 days;
ALZET Comments: Control animals received mp w/ immunoglobulin G; animal info (female, athymic, 5-8 wks old); OS2966 is a beta 1 antibody; cancer (glioblastoma); dose-response (Fig. 6); mp were used to block B1 integrin, and found that this can inhibit the ability of tumor cells to bind a broad spectrum of ECM ligands like fibronectin, collagen IV, and laminin

Q3328: L. Biddlestone-Thorpe*, et al.* ATM Kinase Inhibition Preferentially Sensitizes p53-Mutant Glioma to Ionizing Radiation. Clinical Cancer Research 2013;19(12):3189-3200
Agents: KU-60019 **Vehicle:** PBS; **Route:** CSF/CNS (intratumoral); **Species:** Mice (nude); **Pump:** 1007D; 1002; 2002; **Duration:** 7 days; 19 days;
ALZET Comments: Controls received mp w/ vehicle; animal info (female, nude, athymic, 15-20g, 5-6 weeks old); ALZET brain infusion kit 3 used; cancer (glioma); tissue perfusion (glioma); "To reach meaningful drug concentrations of KU-60019 within the tumor, the BBB/BTB need to be bypassed or drugs administered locally. Both osmotic pumps, as well as clinically used CED, partially bypass the BBB/BTB and deliver drugs directly to the tumor to improve efficacy and reduce potential systemic toxicity" pg3194; KU-60019 is a kinase inhibitor

Q2576: S. Agarwal*, et al.* Function of the Blood-Brain Barrier and Restriction of Drug Delivery to Invasive Glioma Cells: Findings in an Orthotopic Rat Xenograft Model of Glioma. Drug Metabolism and Disposition 2013;41(1):33-39
Agents: Erlotinib **Vehicle:** DMSO; **Route:** IP; **Species:** Mice; **Pump:** 1003D; **Duration:** 48 hours;
ALZET Comments: Animal info (Mdr1ab -/-, Bcrp1 -/-, 8-10 wks old); wound clips used; half-life ("approximately 1 hour") pg 34; cancer (glioma); "Erlotinib half-life in mice has been reported to be approximately 1 hour (Marchetti et al., 2008), so an infusion lasting 48 hours was considered to be sufficient to attain steady state in both the brain and plasma." pg 34; chemotherapeutic; enzyme inhibitor (tyrosine kinase);

Q1796: H. Y. Zou*, et al.* Sensitivity of Selected Human Tumor Models to PF-04217903, a Novel Selective c-Met Kinase Inhibitor. MOLECULAR CANCER THERAPEUTICS 2012;11(4):1036-1047
Agents: PF-04217903 **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice (nude); **Pump:** Not Stated; **Duration:** 14 days;
ALZET Comments: Controls received mp w/ vehicle; animal info (female, athymic, nu/nu); cancer; dose response (Fig 2C); enzyme inhibitor (c-Met kinase)

Q2255: D. H. Yoon*, et al.* The Survivin Suppressant YM155 Potentiates Chemosensitivity to Gemcitabine in the Human Pancreatic Cancer Cell Line MiaPaCa-2. Anticancer Research 2012;32(5):1681-1688
Agents: YM155 **Vehicle:** Not Stated; **Route:** Not Stated; **Species:** Mice (nude); **Pump:** 1003D; **Duration:** 3 days;
ALZET Comments: Animal info (5 wks old, female, BALB/c, nu/nu); infusion for 3-days a week for two weeks; cancer (pancreatic)

Q1924: K. K. Veeravalli*, et al.* Integrin alpha-9-beta1-mediated cell migration in glioblastoma via SSAT and Kir4.2 potassium channel pathway. Cellular Signalling 2012;24(1):272-281

Agents: Plasmid, MMP-9/uPAR; plasmid, MMP-9/cathepsin B **Vehicle:** Not Stated; **Route:** CSF/CNS; **Species:** Mice (nude); **Pump:** Not Stated; **Duration:** Not Stated;
ALZET Comments: Pump infusion rate of 0.2 ul/hr; MMP-9/uPAR plasmid also known as MU-sh; MMP-9/cathepsin B plasmid also known as MC-sh; cancer (glioma)

Q2013: Y. S. Na*, et al.* YM155 Induces EGFR Suppression in Pancreatic Cancer Cells. PLoS One 2012;7(6):U422-U431
Agents: YM155 **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice (nude); **Pump:** 1003D; **Duration:** 2 weeks;
ALZET Comments: Controls received mp w/ vehicle; animal info (athymic, nu/nu, 5 wks old, female); cancer (pancreatic)

Q2434: J. Menon*, et al.* A Novel Interplay between Rap1 and PKA Regulates Induction of Angiogenesis in Prostate Cancer. PLoS One 2012;7(11):U770-U779
Agents: 8CPT; H-89 **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice; **Pump:** 2004; **Duration:** 28 days;
ALZET Comments: Control animals received mp w/ PBS; animal info (male, athymic, 15-20 g, 4-6 wks old); 8CPT also known as 8-pCPT-2'-O-Me-cAMP; enzyme inhibitor (PKA); cancer (prostate)

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
Agents: Ruxolitinib **Vehicle:** Dimethylacetamide; propylene glycol; **Route:** SC; **Species:** Mice (NSG); **Pump:** Not Stated; **Duration:** 3-4 weeks;
ALZET Comments: Control animals received mp w/ vehicle; animal info (NOD SCID, nonobese); ruxolitinib also known as INCB018424; stress/adverse effects "One ruxolitinib-treated mouse... experienced a wound dehiscence at the subcutaneous pump surgical site" pg 3512; cancer (leukemia); chemotherapeutic; 40% DMA used; 60% propylene glycol used;

Q2313: H. S. Kim*, et al.* Carbohydrate restriction and lactate transporter inhibition in a mouse xenograft model of human prostate cancer. Blood 2012;110(7):1062-1069
Agents: Cyano-4-hydroxycinnamate, alpha **Vehicle:** DMSO; PEG; **Route:** SC; **Species:** Mice (nude); **Pump:** Not Stated; **Duration:** 42 days;
ALZET Comments: Control animals received mp w/ vehicle; animal info (athymic, male, 6-8 wks old); cancer (prostate); 9 mm wound clips used; post op. care (triple antibiotic ointment); long-term study;

Q2975: J. Huang*, et al.* Intracerebral infusion of the bispecific targeted toxin DTATEGF in a mouse xenograft model of a human metastatic non-small cell lung cancer. Journal of Neuro-oncology 2012;109(2):229-238
Agents: DTATEGF, immunotoxin **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice; **Pump:** 1007D; **Duration:** 7 days;
ALZET Comments: Controls received mp w/ DT; animal info (human metastatic non-small cell lung cancer (NSCLC) brain tumor mouse xenograft model.); functionality of mp verified by BLI; cancer (PC9-BrM3 intracranial tumor); advantage of using mp (In this study we performed CED via a micro-osmotic pump system in a mouse model and showed that there are several advantages of this delivery technique: (1) the infusion pressure can allow continuous infusion of a solution at a constant rate; (2) it delivers solutions continuously for several days without the need for an external connection or frequent handling of animals; (3) the pump caused less stress to the mice and was well tolerated; and (4) humans are immunized to DT, so that immunotoxins given by CED to the CNS are immunologically privileged

Q2324: C. Holmberg*, et al.* Release of TGF beta ig-h3 by gastric myofibroblasts slows tumor growth and is decreased with cancer progression. Carcinogenesis: Integrative Cancer Research 2012;33(8):1553-1562
Agents: Transforming growth factor-beta-induced gene h3 **Vehicle:** Not Stated; **Route:** Not Stated; **Species:** Mice (SCID); **Pump:** Not Stated; **Duration:** Not Stated;
ALZET Comments: Animal info (SCID, 6-8 wks old); cancer

Q2168: M. Germann*, et al.* Stem-Like Cells with Luminal Progenitor Phenotype Survive Castration in Human Prostate Cancer. Stem Cells 2012;30(6):1076-1086

Agents: Uridine, bromodeoxy **Vehicle:** NaCl; **Route:** SC; **Species:** Mice (SCID); **Pump:** Not Stated; **Duration:** 2 weeks;
ALZET Comments: Animal info (male, SCID); 14-day pump used; labeling of CR BM18 cancer cells; cancer (prostate)

Q2063: A. Dubrovska*, et al.* CXCR4 activation maintains a stem cell population in tamoxifen-resistant breast cancer cells through AhR signalling. British Journal of Cancer 2012;107(1):43-52
Agents: AMD 3100 **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice (nude); **Pump:** Not Stated; **Duration:** Not Stated;
ALZET Comments: Controls received mp w/ saline; animal info (athymic, nu/nu, 5-6 wks old, ovariectomized); cancer (breast)

Q1832: A. Dubrovska*, et al.* CXCR4 Expression in Prostate Cancer Progenitor Cells. PLoS One 2012;7(2):U454-U466
Agents: AMD 3100 **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice (NOD/SCID); **Pump:** Not Stated; **Duration:** Not Stated;
ALZET Comments: Animal info (NOD.CB17-Prkdc, 5-8 wks old); 0.5 ul/hr pump used; cancer