

**Recent References (2013-2019) on the Administration of Antibodies
Using ALZET® Osmotic Pumps**

Q6798: B. Smith, L. Christodoulou, A. Clargo, A. Eddleston, K. Greenslade, D. Lightwood, A. Shock, K. Tyson and F. R. Brennan. Generation of two high affinity anti-mouse FcRn antibodies: Inhibition of IgG recycling in wild type mice and effect in a mouse model of immune thrombocytopenia. *Int Immunopharmacol* 2019;66(362-365

ALZET Comments: Antibody, anti CD41; PBS; SC; Mice; 3 days; Dose (1 µg/day); animal info (male BALB/c mice (> 8 weeks of age)); 4470 and 4464 are anti-CD41 antibodies; immunology; Therapeutic indication (immune thrombocytopenia);.

Q7065: G. Mastrella, M. Hou, M. Li, V. M. Stoecklein, N. Zdouc, M. N. M. Volmar, H. Miletic, S. Reinhard, C. C. Herold-Mende, S. Kleber, K. Eisenhut, G. Gargiulo, M. Synowitz, A. L. Vescovi, P. N. Harter, J. M. Penninger, E. Wagner, M. Mittelbronn, R. Bjerkvig, D. Hambardzumyan, U. Schuller, J. C. Tonn, J. Radke, R. Glass and R. E. Kalin. Targeting APLN/APLNR improves anti-angiogenic efficiency and blunts pro-invasive side effects of VEGFA/VEGFR2-blockade in glioblastoma. *Cancer Res* 2019;

ALZET Comments: apelin-F13A, DC101, Antibody, anti-VEGFR2; CSF, artificial; CSF/CNS (tumor); Mice; 1002; 2004; 14 and 28 days; Dose (30 or 60 µg of apelin-F13A, 0.8 mg of DC101); apelin-F13A is a mutant APLNR ligand, DC101 is a VEGFR2-blocking antibody; ALZET brain infusion kit 3 used; cancer (glioblastoma);.

Q7163: Y. Zhang, K. Tian, H. Jiang, B. Wang and S. Han. Combination Treatment of C16 Peptide and Angiopoietin-1 Alleviates Neuromyelitis Optica in an Experimental Model. *Mediators Inflamm* 2018;2018(4187347

ALZET Comments: Antibody, NMO-IgG; Complement, human; CSF/CNS (intrathecal); CSF/CNS (lateral ventricle); Rat; 1003D; 3 days; Dose (10 µg NMO-IgG and 50 µL (5µg/µL) human complement); NMO aka Neuromyelitis optica;.

Q7243: N. Tanabe, T. Kuboyama and C. Tohda. Matrine Directly Activates Extracellular Heat Shock Protein 90, Resulting in Axonal Growth and Functional Recovery in Spinal Cord Injured-Mice. *Front Pharmacol* 2018;9(446

ALZET Comments: Anti-HSP90a/b monoclonal antibody, mouse IgG; CSF, artificial; CSF/CNS (right lateral ventricle); Mice; 1004; 14 days; Dose (164 ng/mL-HSP90, IgG); aCSF: 148.3mM NaCl, 3mM KCl, 1.4mM CaCl2, 0.8mM MgCl2, 0.75mMNa2HPO4, and 0.195mMNaH2PO4 used; animal info (8 wanimal info (8 weeks old, 28-33 g, female, ddY); eeks old, 28-33 g, female, ddY); ALZET brain infusion kit 3 used; Brain coordinates (anteroposterior: -0.22mm, mediolateral: +1mm, dorsoventricular:-2.5mm); bilateral cannula used; cyanoacrylate adhesive; spinal cord injury; .

Q7045: N. Shimizu, N. Wada, T. Shimizu, T. Suzuki, E. I. Takaoka, A. J. Kanai, W. C. de Groat, A. Hirayama, M. Hashimoto, H. Uemura and N. Yoshimura. Effects of nerve growth factor neutralization on TRP channel expression in laser-captured bladder afferent neurons in mice with spinal cord injury. *Neurosci Lett* 2018;683(100-103

ALZET Comments: Antibody, anti Nerve growth factor; SC; Mice; 1002; 2 weeks; Dose (10 µg/Kg/hour); Controls received mp w/ vehicle; animal info (9-10-week-old female C57BL/6 N mice weighing 18-22 g); spinal cord injury;.

Q6919: Y. Liu, L. N. Li, S. Guo, X. Y. Zhao, Y. Z. Liu, C. Liang, S. Tu, D. Wang, L. Li, J. Z. Dong, L. Gao and H. B. Yang. Melatonin improves cardiac function in a mouse model of heart failure with preserved ejection fraction. *Redox Biol* 2018;18(211-221

ALZET Comments: CTRP3 antibody; Immunoglobulin G; SC; Mice; 4 weeks; Dose (2.5 ug/g/day); animal info (Male C57/B6 mice wieghing 10-12g); cardiovascular;.

Q7015: S. A. Kahn, X. Wang, R. T. Nitta, S. Gholamin, J. Theruvath, G. Hutter, T. D. Azad, L. Wadi, S. Bolin, V. Ramaswamy, R. Esparza, K. W. Liu, M. Edwards, F. J. Swartling, D. Sahoo, G. Li, R. J. Wechsler-Reya, J. Reimand, Y. J. Cho, M. D. Taylor, I. L. Weissman, S. S. Mitra and S. H. Cheshier. Notch1 regulates the initiation of metastasis and self-renewal of Group 3 medulloblastoma. *Nat Commun* 2018;9(1):4121

ALZET Comments: Antibody, anti-NRR1; PBS; CNS/CSF (lateral ventricle); Mice; 1004; 10-50 days; Dose (1 µg/µL); Controls received mp w/ vehicle; anti-NRR1 is a NOTCH1 blocking antibody; ALZET brain infusion kit used; Brain coordinates (coronal suture, 2mm right lateral to midline, 4mm into the lateral ventricle); cancer (medulloblastoma);.



Q7031: M. Fregosi, A. Contestabile, S. Badoud, S. Borgognon, J. Cottet, J. F. Brunet, J. Bloch, M. E. Schwab and E. M. Rouiller. Changes of motor corticobulbar projections following different lesion types affecting the central nervous system in adult macaque monkeys. *Eur J Neurosci* 2018;48(4):2050-2070

ALZET Comments: Antibody, anti-Nogo-A; CSF/CNS (Intrathecal), SC; Monkey (Macaca fascicularis); 2ML2; 4 weeks; Dose (3 mg/ml); One pump administered the treatment intrathecally to the cervical spinal cord, whereas the other pump delivered the antibody close to the lesioned site in M1 below the dura; Multiple pumps per animal (2);.

Q7123: D. Cui, Y. Peng, C. Zhang, Z. Li, Y. Su, Y. Qi, M. Xing, J. Li, G. E. Kim, K. N. Su, J. Xu, M. Wang, W. Ding, M. Piecychna, L. Leng, M. Hirasawa, K. Jiang, L. Young, Y. Xu, D. Qi and R. Bucala. Macrophage migration inhibitory factor mediates metabolic dysfunction induced by atypical antipsychotic therapy. *J Clin Invest* 2018;128(11):4997-5007

ALZET Comments: Antibody, anti-Macrophage migration inhibitory factor; Antibody, anti-Macrophage migration inhibitory factor; CSF/CNS (third ventricle); Mice; 2002; Dose (2 µg/day); animal info (8-week old female C57BL/6 mice); Brain coordinates (1.8 mm caudal to bregma, 5.0 mm ventral to the sagittal sinus); Therapeutic indication (antipsychotic therapy.);.

Q7104: E. S. Calipari, A. Godino, E. G. Peck, M. Salery, N. L. Mervosh, J. A. Landry, S. J. Russo, Y. L. Hurd, E. J. Nestler and D. D. Kiraly. Granulocyte-colony stimulating factor controls neural and behavioral plasticity in response to cocaine. *Nat Commun* 2018;9(1):9

ALZET Comments: Antibody, anti-GCSF neutralizing antibody, Immunoglobulin G, pre-immune; Saline; CSF/CNS (nucleus accumbens); Mice; 1007D; 7 days; Dose (1 µg/day); animal info (Male, C57BL/6 J, 7 weeks old, 20–25 g); Multiple pumps per animal (2); Brain coordinates (From bregma: anteroposterior, +1.5; mediolateral, + 1.0; dorsoventral, -4.5); bilateral cannula used; The cannulae were permanently fixed to the skull with Loctite adhesive; dependence;

Q7094: I. Ali, U. Avdic, D. Chugh and C. T. Ekdahl. Decreased post-synaptic density-95 protein expression on dendrites of newborn neurons following CX3CR1 modulation in the epileptogenic adult rodent brain. *Cell Mol Immunol* 2018;15(4):414-417

ALZET Comments: Antibody, rabbit anti-CX3CR1; PBS; SC; Rat; 2006; 6 weeks; Dose (0.15 µl/h); Controls received mp w/ vehicle; animal info (Adult male, 200–250 g, Sprague–Dawley rats); neurodegenerative (Epilepsy);.

Q5917: D. J. Wilkinson, A. Habgood, H. K. Lamb, P. Thompson, A. R. Hawkins, A. Desilets, R. Leduc, T. Steinmetzer, M. Hammami, M. S. Lee, C. S. Craik, S. Watson, H. Lin, J. M. Milner and A. D. Rowan. Matriptase Induction of Metalloproteinase-Dependent Aggrecanolytic In Vitro and In Vivo: Promotion of Osteoarthritic Cartilage Damage by Multiple Mechanisms. *Arthritis Rheumatol* 2017;69(8):1601-1611

ALZET Comments: Antibody A11; compound 59; Saline; IP, SC; Mice; 1004, 2004; 4 weeks, 8 weeks; Controls received mp w/ vehicle; animal info (male, C57BL/6J, 25-30g); pumps replaced every 4 weeks; Dose (Antibody: 1.5 µg/day; Compound 59: 5, 25, or 50 mg/kg/day);.

Q6270: A. S. Wahl, U. Buchler, A. Brandli, B. Brattoli, S. Musall, H. Kasper, B. V. Ineichen, F. Helmchen, B. Ommer and M. E. Schwab. Optogenetically stimulating intact rat corticospinal tract post-stroke restores motor control through regionalized functional circuit formation. *Nat Commun* 2017;8(1):1187

ALZET Comments: Antibody, anti-Nogo-A; CSF/CNS (intrathecal); Rat; 2ML2; 2 weeks; animal info (adult female Long-Evans rats); post op. care (animals received analgesics and antibiotics);.

Q5892: J. Tang, H. Miao, B. Jiang, Q. Chen, L. Tan, Y. Tao, J. Zhang, F. Gao, H. Feng, G. Zhu and Z. Chen. A selective CB2R agonist (JWH133) restores neuronal circuit after Germinal Matrix Hemorrhage in the preterm via CX3CR1(+) microglia. *Neuropharmacology* 2017;119(157-169)

ALZET Comments: shRNA, NM_133534.1; antibody, CX3CR1; NaCl; CSF/CNS; Rat; 1003D; 3 days; Controls received mp w/ vehicle; animal info (male, Sprague Dawley, P7); ALZET brain infusion kit 3 used; ALZET brain infusion kit 3 used; Brain coordinates;

Q5982: D. J. Shepherd, S. Y. Tsai, S. P. Cappucci, J. Y. Wu, R. G. Farrer and G. L. Kartje. The Subventricular Zone Response to Stroke Is Not a Therapeutic Target of Anti-Nogo-A Immunotherapy. *J Neuropathol Exp Neurol* 2017;76(8):683-696



ALZET Comments: Antibody, anti-nogo-A 11C7; CSF/CNS (Ipsilesional lateral ventricle); Rat; 2ML2; 14 days; Controls received mp with IgG1; animal info (Long evans) ischemia (stroke); Therapeutic indication (stroke);.

Q5828: K. Matoba, R. Muramatsu and T. Yamashita. Leptin sustains spontaneous remyelination in the adult central nervous system. *Sci Rep* 2017;7(40397)

ALZET Comments: Antibody, leptin neutralizing; leptin, recombinant mouse; PBS; CSF/CNS (intrathecal); Mice; 1007D, 1002; Controls received mp w/ vehicle; animal info (7-8 weeks old) ; ALZET brain infusion kit used; neurodegenerative (Demyelination); Therapeutic indication (Demyelination); Dose ((12 µ g/kg body weight per day, 10 ug/kg of body weight per day));.

Q6213: R. L. Lowery, M. E. Tremblay, B. E. Hopkins and A. K. Majewska. The microglial fractalkine receptor is not required for activity-dependent plasticity in the mouse visual system. *Glia* 2017;65(11):1744-1761

ALZET Comments: Antibody, anti-CX3CR1; CSF/CNS (right lateral ventricle); Mice; 1007D; 7 days; Controls received mp w/ rabbit IgG isotype; animal info (p25 C57Bl/6 mice); ALZET brain infusion kit 3 used; Brain coordinates (AP, 20.70; ML, 21.25; DV, 22.15);.

Q6216: S. Liu, H. Hasegawa, E. Takemasa, Y. Suzuki, K. Oka, T. Kiyoi, H. Takeda, T. Ogasawara, T. Sawasaki, M. Yasukawa and K. Maeyama. Efficiency and Safety of CRAC Inhibitors in Human Rheumatoid Arthritis Xenograft Models. *J Immunol* 2017;199(5):1584-1595

ALZET Comments: Antibody (hCRACM1-IgG); YM-58483; Saline; Intralipose; SC; Mice; 1004; 28 days; hCRACM1-IgG Dose (1 or 10 mg/kg), YM058483 Dose (1.5mg/kg); YM-58483 was mixed with 10% Intralipose, which is an i.v. lipid emulsion containing 10% soybean oil, 1.2% egg yolk phospholipids, and 2.2% glycerin; Controls received mp w/ vehicle; hCRACM1-IgG is a neutralizing monoclonal antibody targeting human CRACM1; YM-58483 is a small molecular CRAC blocker; Immunology (transplant);.

Q6154: Y. Li, X. Z. Shen, L. Li, T. V. Zhao, K. E. Bernstein, A. K. Johnson, P. Lyden, J. Fang and P. Shi. Brain Transforming Growth Factor-beta Resists Hypertension Via Regulating Microglial Activation. *Stroke* 2017;48(9):2557-2564

ALZET Comments: Antibody, anti-TGF ; Angiotensin II; CSF/CNS (left ventricle); Mice; 1002; 1004; 2 weeks; Dose (TGF neutralizing antibody: 50 µg/d; Ang II: 500 ng/kg/min); animal info (8-10 week old male adult wild-type, Tg, 34Lan, and B6.129P-Cx3cr1tm1Litt/J mice); Multiple pumps per animal (second pump with angiotensin II implanted 3 or 7 days after first pump); antihypertensive; ALZET brain infusion kit 3used; Brain coordinates (0.5 mm caudal to Bregma; 1 mm lateral to the midline; 2 mm ventral to the dura); cardiovascular;.

Q6082: N. Kourdougli, C. Pellegrino, J. M. Renko, S. Khirug, G. Chazal, T. K. Kukko-Lukjanov, S. E. Lauri, J. L. Gaiarsa, L. Zhou, A. Peret, E. Castren, R. K. Tuominen, V. Crepel and C. Rivera. Depolarizing gamma-aminobutyric acid contributes to glutamatergic network rewiring in epilepsy. *Ann Neurol* 2017;81(2):251-265

ALZET Comments: Bumetanide; Antibody, anti-pan-neurotrophin receptor p75; Ethanol; PBS; CSF/CNS; Rat; 2002; 3 days; Dose (bumetanide: 86ng/24 hours, p75NTR antibody: 6.67 ug/mL); 0.3% of ethanol in 1M PBS; Controls received mp w/ vehicle or rabbit IgG; animal info (adult male Wistar rats); post op. care (0.03 mg/kg buprenorphine administered SC); ALZET brain infusion kit used; Brain coordinates (anterior/posterior, -3.8; lateral/medial, +2.5; dorsal/ventral,+3.0);.

Q6324: K. Fujiu, M. Shibata, Y. Nakayama, F. Ogata, S. Matsumoto, K. Noshita, S. Iwami, S. Nakae, I. Komuro, R. Nagai and I. Manabe. A heart-brain-kidney network controls adaptation to cardiac stress through tissue macrophage activation. *Nat Med* 2017;23(5):611-622

ALZET Comments: Antibody, anti-mouse-GM-CSF, Antibody, rat isotype (IgG2a); PBS; SC; Mice; 1007D; 8 weeks; Dose (2.5 µg/d); Controls received mp w/ vehicle; pumps replaced every 4 weeks; long-term study;.

Q5811: L. Feng, Y. Shu, Q. Wu, T. Liu, H. Long, H. Yang, Y. Li and B. Xiao. EphA4 may contribute to microvessel remodeling in the hippocampal CA1 and CA3 areas in a mouse model of temporal lobe epilepsy. *Mol Med Rep* 2017;15(1):37-46

ALZET Comments: unclustered ephrin A5 Fc, clustered (C) ephrin A5 Fc, antibody, IgG; CSF, artificial; CSF/CNS; Mice; 1007D; Controls received mp w/ vehicle; animal info (C57BL/6, 5-6 weeks old) ALZET brain infusion kit 3 used; no stress "All mice



survived, and no apparent behavioral discomfort was observed. “ (see pg. 41); Therapeutic indication (angiogenesis, Temporal lobe epilepsy); Dose (50 ug/mL);.

Q5810: J. L. Faulkner, L. M. Amaral, D. C. Cornelius, M. W. Cunningham, T. Ibrahim, A. Heep, N. Campbell, N. Usry, K. Wallace, F. Herse, R. Dechend and B. LaMarca. Vitamin D supplementation reduces some AT1-AA-induced downstream targets implicated in preeclampsia including hypertension. *Am J Physiol Regul Integr Comp Physiol* 2017;312(1):R125-R131
ALZET Comments: Angiotensin II; antibody, Angiotensin II type 1-Receptor Autoantibody; Saline; Rat; 2002; Controls received mp w/ vehicle; animal info (250 g) Infusion began on GD 12-19 ; Therapeutic indication (Hypertension, inflammation, pregnancy); Dose (50 ng/kg/min);.

Q6321: S. C. Chen, M. Huang, Q. W. He, Y. Zhang, E. N. Opoku, H. Yang, H. J. Jin, Y. P. Xia and B. Hu. Administration of sonic hedgehog protein induces angiogenesis and has therapeutic effects after stroke in rats. *Neuroscience* 2017;352(285-295)
ALZET Comments: Sonic hedgehog protein, Cyclopamine, antibody, anti-VEGF; PBS; CSF/CNS; Rat; 1007D; 7 days; Dose (1 mg/mL Shh, 20 µM Shh plus Cyc, 25 µg/ml Shh plus VEGF antibody); animal info (Male Sprague–Dawley rats); Cyclopamine is a sonic hedgehog protein inhibitor; Brain coordinates (bregma -0.8 mm anteroposterior, ±1.5 mm mediolateral, and -4.5 mm dorsoventral);.

Q6402: K. Chen, B. C. Marsh, M. Cowan, Y. D. Al'Joboori, S. Gigout, C. C. Smith, N. Messenger, N. Gamper, M. E. Schwab and R. M. Ichiyama. Sequential therapy of anti-Nogo-A antibody treatment and treadmill training leads to cumulative improvements after spinal cord injury in rats. *Exp Neurol* 2017;292(135-144)
ALZET Comments: Immunoglobulin G1, anti-Nogo-A antibody 11C7; Immunoglobulin G1, anti-cyclosporin A; CSF/CNS; Rat; 2ML2; 2 weeks; animal info (female Sprague–Dawley rats weighing 200-250 g); Therapeutic indication (spinal cord injury);.

Q5499: T. Xu, Z. Zhang, T. Liu, W. Zhang, J. Liu, W. Wang and J. Wang. Salusin-beta contributes to vascular inflammation associated with pulmonary arterial hypertension in rats. *J Thorac Cardiovasc Surg* 2016;152(4):1177-87
ALZET Comments: Antibody, salusin-beta; Saline; SC; Rat; 2004; 4 weeks; Controls received mp w/ control IgG; animal info (male, Sprague Dawley, 220-250g); cardiovascular; immunology; used wound clips; Dose (1 ug/kg/hr); see video with implantation procedure;.

Q5497: J. Xu, C. V. Bishop, M. S. Lawson, B. S. Park and F. Xu. Anti-Mullerian hormone promotes pre-antral follicle growth, but inhibits antral follicle maturation and dominant follicle selection in primates. *Hum Reprod* 2016;31(7):1522-30
ALZET Comments: Antibody, anti-Mullerian hormone; PBS; Intraovarian; Monkey (macaque); 2ML2; 4 weeks; animal info (female, hemi-ovariectomized, adult); pumps replaced; Dose (500 ng/h);.

R0341: S. K. Schroeder, A. Joly-Amado, M. N. Gordon and D. Morgan. Tau-Directed Immunotherapy: A Promising Strategy for Treating Alzheimer's Disease and Other Tauopathies. *J Neuroimmune Pharmacol* 2016;11(1):9-25
ALZET Comments: Antibody, anti-tau; MC-1; Tau 5; TOMA; CSF/CNS (lateral ventricle); Mice; 28 days; Controls received mp w/IgG1; animal info (10–12 month-old); neurodegenerative (Alzheimer's); behavioral testing (open field; water maze); immunotherapy; MC-1, Tau 5 and TOMA are an anti-tau antibodies; This route of administration allowed for behavioral testing as well as pathology evaluation; Dose (1 mg/ml);.

Q6177: A. Sajadi, C. Provost, B. Pham and J. Brouillette. Neurodegeneration in an Animal Model of Chronic Amyloid-beta Oligomer Infusion Is Counteracted by Antibody Treatment Infused with Osmotic Pumps. *J Vis Exp* 2016;114):
ALZET Comments: Oligomer, amyloid-beta, Antibody, anti-amyloid-beta oligomer; CSF, artificial; CSF/CNS (hippocampus); Rat; Controls received mp w/ vehicle and IgG1 antibody; Guide cannula used for injection and infusion; neurodegenerative (Alzheimer's); Schematic of guide cannula and osmotic pump (p. 4).

Q4876: R. R. Reimann, T. Sonati, S. Hornemann, U. S. Herrmann, M. Arand, S. Hawke and A. Aguzzi. Differential Toxicity of Antibodies to the Prion Protein. *PLoS Pathog* 2016;12(1):1-19
ALZET Comments: Antibody, 31C6; antibody, POM1; PBS; CSF/CNS; Mice; 2004; 21 days; animal info (BL6.129-Prnp); post op. care (SC injections of buprenorphinum, funixin, and 5% glucose; Sulfadoxinum and sugar were added into water for 1 week post op); MRI; pumps primed in 37C PBS for 24 hours; used PEEK tubing;.



Q5171: S. Okizaki, Y. Ito, K. Hosono, K. Oba, H. Ohkubo, K. Kojo, N. Nishizawa, M. Shibuya, M. Shichiri and M. Majima. Vascular Endothelial Growth Factor Receptor Type 1 Signaling Prevents Delayed Wound Healing in Diabetes by Attenuating the Production of IL-1beta by Recruited Macrophages. *Am J Pathol* 2016;186(6):1481-98

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

Q6088: A. Herring, Y. Munster, T. Akkaya, S. Moghaddam, K. Deinsberger, J. Meyer, J. Zahel, E. Sanchez-Mendoza, Y. Wang, D. M. Hermann, T. Arzberger, S. Teuber-Hanselmann and K. Keyvani. Kallikrein-8 inhibition attenuates Alzheimer's disease pathology in mice. *Alzheimers Dement* 2016;12(12):1273-1287

ALZET Comments: Antibody, anti-KLK8; Saline; CSF/CNS (lateral ventricle); Mice; 2004; 4 weeks; Dose: (62 mg/kg/d); Controls received mp w/ vehicle and mp w/ rat IgG; animal info (transgenic and wild type mice); ALZET brain infusion kit 3 used; Brain coordinates (20.2 Bregma, 10.9 parasagittal); neurodegenerative (Alzheimer's);.

Q4830: M. Gravel, L.-C. Beland, G. Soucy, E. Abdelhamid, R. Rahimian, C. Gravel and J. Kriz. IL-10 Controls Early Microglial Phenotypes and Disease Onset in ALS Caused by Misfolded Superoxide Dismutase 1. *The Journal of Neuroscience* 2016;36(3):1031-1048

ALZET Comments: Antibody, Interleukin-10 receptor; CSF/CNS; Mice; 2006; 42 days; Controls received mp w/ saline; animal info (SOD1 G93A, 60 days old); neurodegenerative (amyotrophic lateral sclerosis); behavioral testing (hindlimb reflex); pumps primed overnight in 37C saline; used dental cement; Dose (3.6 ug/day);.

Q5776: M. W. Cunningham, Jr., J. M. Williams, L. Amaral, N. Ustry, G. Wallukat, R. Dechend and B. LaMarca. Agonistic Autoantibodies to the Angiotensin II Type 1 Receptor Enhance Angiotensin II-Induced Renal Vascular Sensitivity and Reduce Renal Function During Pregnancy. *Hypertension* 2016;68(5):1308-1313

ALZET Comments: Angiotensin II, Angiotensin II Type 1 Receptor Autoantibodies; IP; Rat (pregnant); 2001; animal info (13 days pregnant) ; Therapeutic indication (Preeclampsia, pregnancy, hypertension); Dose (50 ng/kg; AT1-AA 1:40 dilution);.

Q4809: J. Chen, C.-R. Li, H. Yang, J. Liu, T. Zhang, S.-S. Jiao, Y.-J. Wang and Z.-Q. Xu. proBDNF Attenuates Hippocampal Neurogenesis and Induces Learning and Memory Deficits in Aged Mice. *NEUROTOXICITY RESEARCH* 2016;29):47-53

ALZET Comments: Brain-derived neurotrophic factor, pro; antibody brain-derived neurotrophic factor, anti-pro;; BSA; CSF/CNS (hippocampus); Mice; 1002; 6 days; Controls received mp w/ vehicle; Controls received mp w/ vehicle; neurodegenerative (Alzheimer's Disease); behavioral testing (morris water maze); Cannula placement verified postmortem;

Q5750: M. L. Bertolaccini, G. Contento, R. Lennen, G. Sanna, P. J. Blower, M. T. Ma, K. Sunassee and G. Girardi. Complement inhibition by hydroxychloroquine prevents placental and fetal brain abnormalities in antiphospholipid syndrome. *J Autoimmun* 2016;75(30-38)

ALZET Comments: Antibody, beta-2-glycoprotein, hydroxychloroquine; Water, distilled; mice (pregnant); 1002; animal info (Age 2-3 months old; pump inserted day 8 of pregnancy); Multiple pumps per animal (2); A group of pregnant mice received hydroxychloroquine administered by a second microosmotic pump (Alzet model 1002) on day 8 of pregnancy.; peptides; "Administration through microosmotic pumps ensures constant antibody concentrations are maintained throughout pregnancy to closely resemble the clinical condition." Pg 32 ; Therapeutic indication (Pregnancy, antiphospholipid syndrome); Dose (200 ug/mouse/day);.

Q5275: M. Ahl, U. Avdic, C. Skoug, I. Ali, D. Chugh, U. E. Johansson and C. T. Ekdahl. Immune response in the eye following epileptic seizures. *J Neuroinflammation* 2016;13(1):155

ALZET Comments: Antibody, CX3CR1; saline; CSF/CNS (ventricle); Rat; 1 week, 6 weeks; Controls were Electrode- and cannulae-implanted nonstimulated rats; animal info (Adult male Sprague Dawley rats, 200-250 g); functionality of mp verified by EEG; functionality of mp verified by EEG; brain tissue distribution; Cannula placement verified via expression of antibody; Dose (1 mm posterior and 1.5 mm lateral to the bregma and 3.5 mm ventral to the flat skull position (with the bregma as reference)); Interesting "Our results are the first evidence that epileptic seizures induce an immune response in the retina. It has a potential to become a novel non-invasive tool for detecting brain inflammation through the eyes" pg. 1;.



Q4647: C. L. Wilson, D. Jurk, N. Fullard, P. Banks, A. Page, S. Luli, A. M. Elsharkawy, R. G. Gieling, J. B. Chakraborty, C. Fox, C. Richardson, K. Callaghan, G. E. Blair, N. Fox, A. Lagnado, J. F. Passos, A. J. Moore, G. R. Smith, D. G. Tiniakos, J. Mann, F. Oakley, D. A. Mann and F. Oakley. NFκB1 is a suppressor of neutrophil-driven hepatocellular carcinoma. *Nature Communications* 2015;6(U1-U13)

ALZET Comments: Antibody, Ly6G; immunoglobulin G2a, rat; SC; Mice; 2004; 8 weeks; Animal info (male, DEN-injured nfkb1 -/- or WT, 22 weeks old); cancer (hepatocellular carcinoma);

Q3737: E. S. Smith, A. Jonason, C. Reilly, J. Veeraraghavan, T. Fisher, M. Doherty, E. Klimatcheva, C. Mallow, C. Cornelius, J. E. Leonard, N. Marchi, D. Janigro, A. T. Argaw, T. Pham, J. Seils, H. Bussler, S. Torno, R. Kirk, A. Howell, E. E. Evans, M. Paris, W. J. Bowers, G. John, M. Zauderer and M. Zauderer. SEMA4D compromises blood-brain barrier, activates microglia, and inhibits remyelination in neurodegenerative disease. *NEUROBIOLOGY OF DISEASE* 2015;73(254-268)

ALZET Comments: Antibody, anti-SEMA 4D, monoclonal; CSF/CNS (intrathecal, subarachnoid space); Rat; 2002; 14 days; Control animals received mp w/ control IgG; animal info (Sprague Dawley, male, 8 wks old).

Q4942: Y. Sato, W. Sato, S. Maruyama, C. S. Wilcox, J. R. Falck, T. Masuda, T. Kosugi, H. Kojima, K. Maeda, K. Furuhashi, M. Ando, E. Imai, S. Matsuo and K. Kadomatsu. Midkine Regulates BP through Cytochrome P450-Derived Eicosanoids. *J Am Soc Nephrol* 2015;26(8):1806-15

ALZET Comments: Antibody, anti-MK; Mice; 1007D; 1 day; Controls received mp w/ control antibody; animal info (male, Mdk +/-, 10-14 weeks old, 25-35g); cardiovascular; bp measured using radiotelemetry; Dose (5.0 ug/hr);

Q5255: P. Rabinovich-Toidman, I. Rabinovich-Nikitin, A. Ezra, B. Barbiro, H. Fogel, I. Slutsky and B. Solomon. Mutant SOD1 Increases APP Expression and Phosphorylation in Cellular and Animal Models of ALS. *PLoS One* 2015;10(11):e0143420

ALZET Comments: Antibody, monoclonal, BBS; CSF/CNS (right lateral ventricle); mice; 2006; 42 days; Controls received mp w/ isotype-matched non relevant MAb; animal info (male Hemizygous B6SJLTgN (SOD1G93A) 1 Gur mice); brain infusion cannula used; neurodegenerative (ALS); immunology; antibodies infused; MAb aka Monoclonal antibody; Ketamine and Xylazine anesthesia; Dose (1.5 mg/mL); Brain coordinates; l-2mm [Bregma] in the antero-posterior direction, 2.8mm in mediolateral direction and 3mm depth.

Q4570: S. Prasad, S. Gaedicke, M. Machein, G. Mittler, F. Braun, M. Hettich, E. Firat, K. Klingner, J. Schueler, D. Wider, R. M. Waesch, C. Herold-Mende, U. Elsaesser-Beile, G. Niedermann and G. Niedermann. 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)

ALZET Comments: Antibody, AC133xCD3 bispecific; PBS; CSF/CNS; Mice (nude); 1007D; 7 days; 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;

Q3979: C. P. Lin, K. H. Kang, T. H. Lin, M. Y. Wu, H. C. Liou, W. J. Chuang, W. Z. Sun, W. M. Fu and W. M. Fu. Role of Spinal CXCL1 (GROα) in Opioid Tolerance A Human-to-rodent Translational Study. *Anesthesiology* 2015;122(666-676)

ALZET Comments: CXCL1; antibody, CXCL1; CXCR2 antileukine hexapeptide; morphine; CSF/CNS (intrathecal); Rat; 5 days; 2 days; Controls received mp w/ saline; animal info (male, Sprague Dawley, 250-275g, adult); behavioral testing (tail flick response); dependence; used PE10 intrathecal catheter tubing;

Q4463: W. D. Ito, N. Lund, Z. Y. Zhang, F. Buck, H. Lellek, A. Horst, H. G. Machens, H. Schunkert, W. Schaper, T. Meinertz and W. D. Ito. Activation of Cell Surface Bound 20S Proteasome Inhibits Vascular Cell Growth and Arteriogenesis. *BIOMED RESEARCH INTERNATIONAL* 2015;;(U1-U11)

ALZET Comments: Antibody, CTA 157-2; Rat; 7 days; Controls received mp w/ vehicle; animal info (male, Sprague Dawley, 200g); cardiovascular;

Q3861: C. L. Dai, X. Chen, S. F. Kazim, F. Liu, C. X. Gong, I. Grundke-Iqbal, K. Iqbal and K. Iqbal. Passive immunization targeting the N-terminal projection domain of tau decreases tau pathology and improves cognition in a transgenic mouse model of Alzheimer disease and tauopathies. *Journal of Neural Transmission* 2015;122(607-617)



ALZET Comments: Antibody, HJ9.4; antibody, HJ8.5; antibody, HJ9.3; CSF/CNS; Mice (transgenic); 3 months; Animal info (P301S tau transgenic, 6 months old); neurodegenerative (Alzheimer's disease); behavioral testing (fear conditioning); pumps mentioned in intro;.

Q4370: J. D. Cherry, J. A. Olschowka, M. K. O'Banion and M. K. O'Banion. Arginase 1+ microglia reduce Abeta plaque deposition during IL-1beta-dependent neuroinflammation. *Journal of Neuroinflammation* 2015;12(U14-U26)

ALZET Comments: Antibody, interleukin-4Ra; CSF/CNS (hippocampus); Mice; 1004; 28 days; Controls received mp w/ control antibody; animal info (APPswe/SP1dE9, 7-5 months old); ALZET brain infusion kit 3 used; neurodegenerative (Alzheimer's disease); immunology; pumps primed 48 hours in 37C saline;.

Q3834: A. L. Chelakkot-Govindalayathil, R. Mifuji-Moroka, C. N. Alessandro-Gabazza, M. Toda, Y. Matsuda, P. Gil-Bernabe, Z. Roeeen, T. Yasuma, Y. Yano, E. C. Gabazza, M. Iwasa, Y. Takei and E. C. Gabazza. Protein S exacerbates alcoholic hepatitis by stimulating liver natural killer T cells. *JOURNAL OF THROMBOSIS AND HAEMOSTASIS* 2015;13(142-154)

ALZET Comments: Antibody, Protein S PS-IgG; SC; Mice; 1003D; Controls received mp w/ control antibody; animal info (male, C57BL6, 22-25g); immunology;.

Q4300: I. Ali, D. Chugh, C. T. Ekdahl and C. T. Ekdahl. Role of fractalkine-CX3CR1 pathway in seizure-induced microglial activation, neurodegeneration, and neuroblast production in the adult rat brain. *NEUROBIOLOGY OF DISEASE* 2015;74(194-203)

ALZET Comments: Antibody, CX3CR1 rabbit; fractalkine, recombinant rat; PBS; CSF/CNS; Rat; 1007D; 7 days; Controls received mp w/ vehicle; animal info (male, Sprague-Dawley, adult, 200-250g); ALZET brain infusion kit 1 used;.

Q4237: B. Zoerner, L. C. Bachmann, L. Filli, S. Kapitzka, M. Gullo, M. Bolliger, M. L. Starkey, M. Rothlisberger, R. R. Gonzenbach, M. E. Schwab and B. Zoerner. Chasing central nervous system plasticity: the brainstem's contribution to locomotor recovery in rats with spinal cord injury. *Brain* 2014;137(1716-1732)

ALZET Comments: Antibody, anti-Nogo-A; CSF/CNS (intrathecal); Rat; 2ML2; 2 weeks; Animal info (female, Lewis, 10 weeks old, 200-250g); spinal cord injury; behavioral testing (locomotor tasks);.

Q4229: H. Zhang, A. S. Verkman and A. S. Verkman. Longitudinally extensive NMO spinal cord pathology produced by passive transfer of NMO-IgG in mice lacking complement inhibitor CD59. *Journal of Autoimmunity* 2014;53(67-77)

ALZET Comments: Antibody, neuromyelitis optica; PBS; CSF/CNS; Mice; 1003D; 3 days; Controls received mp w/ control IgG; animal info (BALB/c an CD59 -/-, 8-10 weeks old); neurodegenerative (neuromyelitis optica); behavioral testing (motor function);.

Q3648: A. Zemmar, O. Weinmann, Y. Kellner, X. Z. Yu, R. Vicente, M. Gullo, H. Kasper, K. Lussi, Z. Ristic, A. R. Luft, M. Rioult-Pedotti, Y. Zuo, M. Zagrebelsky, M. E. Schwab and A. Zemmar. Neutralization of Nogo-A Enhances Synaptic Plasticity in the Rodent Motor Cortex and Improves Motor Learning in Vivo. *Journal of Neuroscience* 2014;34(8685-8698)

ALZET Comments: Antibody, anti-Nogo-A; CSF/CNS (intrathecal); Rat; 2ML1; 7 days; Controls received sham surgery; animal info (male, Sprague Dawley, 5-6 weeks old, 190-220g); functionality of mp verified by immunohistochemistry and Western blotting; behavioral testing (motor skill task); brain tissue distribution; learning;.

Q3650: B. Yegla and V. Parikh. EFFECTS OF SUSTAINED PRONGF BLOCKADE ON ATTENTIONAL CAPACITIES IN AGED RATS WITH COMPROMISED CHOLINERGIC SYSTEM. *Neuroscience* 2014;261(:):118-132

ALZET Comments: Antibody, pro-nerve growth factor; PBS; CSF/CNS; Rat; 1004; 4 weeks; Controls received mp w/ vehicle; animal info (male, Wistar, 23 months old); ALZET brain infusion kit used; good methods (cannula placement pg.124, fig.2); post op. care (triple antibiotic cream on wound; Baytril injected; buprenorphine); behavioral testing (sustained attention task, performance measures); Cannula placement verified via Nissl staining; used dental cement and bone screws; pumps and cannula removed after 4 weeks;.

Q4140: A. Y. Tilahun, V. R. Chowdhary, C. S. David, G. Rajagopalan and G. Rajagopalan. Systemic Inflammatory Response Elicited by Superantigen Destabilizes T Regulatory Cells, Rendering Them Ineffective during Toxic Shock Syndrome. *Journal of Immunology* 2014;193(2919-2930)



ALZET Comments: Interleukin-2, murine; antibody, anti-interleukin-2; PBS; SC; Mice (transgenic); 10 days; Controls received mp w/ vehicle; animal info (HLA-DR3); comparison of injection vs mp; immunology;.

Q4135: E. Tavares, R. Maldonado, F. J. Minano and F. J. Minano. Immunoneutralization of Endogenous Aminoprocaltitonin Attenuates Sepsis-Induced Acute Lung Injury and Mortality in Rats. *American Journal of Pathology* 2014;184(3069-3083

ALZET Comments: Antibody, anti-aminoprocaltitonin; Saline; IP; Rat; 2001D; 18 hours; Controls received mp w/ control antibody; animal info (male, Wistar, 280-300g); tissue perfusion (peritoneum); immunology; peptides; Catheter used to cannulate peritoneum;.

Q4075: C. B. Rygh, J. Wang, M. Thuen, A. G. Navarro, E. M. Huuse, F. Thorsen, A. Poli, J. Zimmer, O. Haraldseth, S. A. Lie, P. O. Enger, M. Chekenya and C. B. Rygh. Dynamic Contrast Enhanced MRI Detects Early Response to Adoptive NK Cellular Immunotherapy Targeting the NG2 Proteoglycan in a Rat Model of Glioblastoma. *PLoS One* 2014;9(U981-U992

ALZET Comments: Antibody, mAb9.2.27; PEG; CSF/CNS; Rat (nude); 2001D; Controls received mp w/ vehicle; animal info (rnu/rnu, 8-10 weeks old); 24% PEG used; cancer (glioblastoma);.

Q4063: R. Reshef, T. Kreisel, D. B. Kay, R. Yirmiya and R. Yirmiya. Microglia and their CX3CR1 signaling are involved in hippocampal- but not olfactory bulb-related memory and neurogenesis. *BRAIN BEHAVIOR AND IMMUNITY* 2014;41(239-250

ALZET Comments: Antibody, CX3CR1; CSF, artificial; CSF/CNS; Mice; 14 days; Controls received mp w/ vehicle; animal info (WT, adult); vehicle pumps replaced after 7 days with pumps filled with test agent; behavioral testing (Morris Water Maze; contextual and auditory-cued fear conditioning; olfactory memory); used guide cannula; used three stainless-steel screws and dental cement;.

Q3604: E. Porlan, B. Marti-Prado, J. M. Morante-Redolat, A. Consiglio, A. C. Delgado, R. Kypta, C. Lopez-Otin, M. Kirstein, I. Farinas and I. Farinas. MT5-MMP regulates adult neural stem cell functional quiescence through the cleavage of N-cadherin. *NATURE CELL BIOLOGY* 2014;16(629-+

ALZET Comments: Antibody, N-cadherin extracellular domain; Ara-C; CSF/CNS; Mice; 6 days; 7 days; Controls received mp w/ control antibody; animal info (Mmp24 knockout); good methods (picture of pump infusion pg.635); AraC pumps removed after 6 days;.

Q3599: E. Picarda, S. Bezie, V. Venturi, K. Echasserieau, E. Merieau, A. Delhumeau, K. Renaudin, S. Brouard, K. Bernardeau, I. Anegon, C. Guillonneau and C. Guillonneau. MHC-derived allopeptide activates TCR-biased CD8(+) Tregs and suppresses organ rejection. *Journal of Clinical Investigation* 2014;124(2497-2512

ALZET Comments: DU51; antibody, anti-MHC-1; antibody, anti-CD8; DMSO; PBS; IP; Rat; 14 days; 28 days;; Controls received mp w/ control peptide; animal info (male, LEW.1W and LEW.1A); pumps replaced every 7 days; 0.4% DMSO used; peptides; "... to improve the efficacy of the treatment and because such small peptides are rapidly eliminated from the recipient's body, we tested mini-osmotic pumps with a constant i.p. delivery of 20.8 µg/hour of peptide for 28 days, starting on day 7 before transplantation." pg 2507;.

Q3598: L. M. E. Pettersson, N. M. Geremia, Z. X. Ying, V. M. K. Verge and L. M. E. Pettersson. Injury-Associated PACAP Expression in Rat Sensory and Motor Neurons Is Induced by Endogenous BDNF. *PLoS One* 2014;9(U629-U640

ALZET Comments: Antibody, brain-derived neurotrophic factor; CSF/CNS (intrathecal); Rat; 2001; 3 days; Controls received mp w/ control IgG; animal info (male, Wistar, 250-300tg); post op. care (buprenorphine 0.05-0.1 mg/kg SC); peripheral nerve injury;.

Q4038: K. Pajer, G. A. Feichtinger, G. Marton, S. Sabitzer, D. Klein, H. Redl, A. Nogradi and A. Nogradi. Cytokine signaling by grafted neuroectodermal stem cells rescues motoneurons destined to die. *Experimental Neurology* 2014;261(180-189

ALZET Comments: Antibody, anti-interleukin-1a; antibody, anti-interleukin-6; antibody, tumor necrosis factor-alpha; antibody, macrophage inflammatory protein-1 alpha; CSF/CNS (intrathecal); Rat; 1002; 2 weeks; Controls received mp w/ control antibody; animal info (female, Sprague Dawley, adult); functionality of mp verified by decreased activity of targets; used silicone tubing 0.3 mm ID for catheter; catheter was fixed to surrounding muscle with 8-0 sutures; pumps removed after 2 weeks;.



Q5465: B. Otsmane, J. Aebischer, A. Moumen and C. Raoul. Cerebrospinal fluid-targeted delivery of neutralizing anti-IFN γ antibody delays motor decline in an ALS mouse model. *Neuroreport* 2014;25(1):49-54

ALZET Comments: Antibody, Rat monoclonal antagonistic anti-IFN γ ; Antibody, irrelevant rat IgG1 monoclonal; PBS; CSF/CNS (lateral ventricle); mice; 2004; 4 weeks; animal info (Hb9::GFP mice, 13-week); ALZET brain infusion kit 3 used; neurodegenerative (Amyotrophic lateral sclerosis); Glue and dental cement used to secure cannula to skull; Dose (300 μ g/mL); Brain coordinates (0.3mm anterior and 1mm lateral relative to bregma; 2.6mm below the surface of the skull);

Q3731: M. L. Orostica, J. Lopez, L. M. Zuniga, D. Utz, P. Diaz, P. Reuquen, A. Parada-Bustamante, H. Cardenas, P. A. Orihuela and P. A. Orihuela. Mating Decreases Plasma Levels of TGF β 1 and Regulates Myosalpinx Expression of TGF β 1/TGFBR3 in the Rat. *MOLECULAR REPRODUCTION AND DEVELOPMENT* 2014;81(1053-1061

ALZET Comments: Antibody, TGF β 1; Saline; SC; Rat; 2ML1; Control animals received mp w/ vehicle; animal info (Sprague Dawley, 200-260 g).

Q3557: J. Macas, M. C. Ku, C. Nern, Y. Z. Xu, H. Buehler, M. Remke, M. Synowitz, K. Franz, V. Seifert, K. H. Plate, H. Kettenmann, R. Glass, S. Momma and S. Momma. Generation of Neuronal Progenitor Cells in Response to Tumors in the Human Brain. *Stem Cells* 2014;32(244-257

ALZET Comments: Antibody, anti-VEGFR-2; CSF/CNS; Mice; 1007D; 1 week; Controls received mp w/ control antibody; animal info (C57BL6, 8 weeks old); cancer (brain tumor);

Q3305: N. T. Lindau, B. J. Baenninger, M. Gullo, N. A. Good, L. C. Bachmann, M. L. Starkey and M. E. Schwab. Rewiring of the corticospinal tract in the adult rat after unilateral stroke and anti-Nogo-A therapy. *Brain* 2014;137(7):739-756

ALZET Comments: Antibody, mouse monoclonal anti-Nogo-A 11C7; uridine, anti-bromodeoxy; CSF/CNS (intrathecal); Rat; 2ML2; 2 weeks; Controls received mp w/control antibody; animal info (female, Long Evans, 3-7 months, 230-400g); ischemia (photothrombic); post op. care (Rimadyl 2.5mg/kg, Baytril 5mg/kg for 3 days; mannitol 20% injection 17 mg/kg; heating pad for 24h); behavioral testing (pellet grasping); pump and catheter removed after 2 weeks; used 32 gauge intrathecal catheter;

Q3482: P. Giacobini, J. Parkash, C. Campagne, A. Messina, F. Casoni, C. Vanacker, F. Langlet, B. Hobo, G. Cagnoni, S. Gallet, N. K. Hanchate, D. Mazur, M. Taniguchi, M. Mazzone, J. Verhaagen, P. Ciofi, S. G. Bouret, L. Tamagnone and V. Prevot. Brain Endothelial Cells Control Fertility through Ovarian-Steroid-Dependent Release of Semaphorin 3A. *PLOS BIOLOGY* 2014;12(3):U102-U119

ALZET Comments: Antibody, neuropilin-1; PBS, Dulbecco's; CSF/CNS; Rat; 1007D; 7 days; Controls received mp w/ vehicle; animal info (female, Sprague Dawley, 190-200g); Neuropilin-1 aka Nrp1; used Plastics One cannula; pumps primed overnight in 37C saline;

Q3185: J. J. Donegan, M. Girotti, M. S. Weinberg and D. A. Morilak. A Novel Role for Brain Interleukin-6: Facilitation of Cognitive Flexibility in Rat Orbitofrontal Cortex. *Journal of Neuroscience* 2014;34(3):953-962

ALZET Comments: Antibody, anti-IL-6; Saline; CSF/CNS (orbitofrontal cortex); Rat; 1004; Controls received mp w/ goat IgG; animal info (male, Sprague Dawley, adult, 220-240g); behavioral testing (learning); tissue perfusion (orbitofrontal cortex); immunology; Cannula placement verified via histology; Used dual-injection, osmotic pump compatible cannulae from Plastics One.

Q3180: N. Asavapanumas, J. Ratelade, M. C. Papadopoulos, J. L. Bennett, M. H. Levin and A. S. Verkman. Experimental mouse model of optic neuritis with inflammatory demyelination produced by passive transfer of neuromyelitis optica-immunoglobulin G. *Journal of Neuroinflammation* 2014;11(1):U1-U11

ALZET Comments: Antibody, rAb-53; complement, human; CSF/CNS (optic chiasm); Mice; 1003D; 3 days; Controls received mp w/ non-NMO control IgG and complement; animal info (AQP4 $^{+/+}$ and AQP4 $^{-/-}$, 8-10 weeks old); tissue perfusion (optic chiasm); immunology; Cannula placement verified via Evan's blue dye; rAb-53 aka NMO-IgG;



Q3119: R. R. Zhao, M. R. Andrews, D. F. Wang, P. Warren, M. Gullo, L. Schnell, M. E. Schwab and J. W. Fawcett. Combination treatment with anti-Nogo-A and chondroitinase ABC is more effective than single treatments at enhancing functional recovery after spinal cord injury. *European Journal of Neuroscience* 2013;38(6):2946-2961

ALZET Comments: Antibody, anti-Nogo-A 11C7; CSF/CNS (intrathecal); Mice; 2ML2; 2 weeks; Controls received mp w/ control antibody (anti cyclosporin A); animal info (male, Lister hooded, adult, 150-200g); good methods (pg 2947, schematic of positioning of pumps p2948); spinal cord injury; neurodegenerative (spinal cord injury); behavioral testing (staircase task, ladder walking, gait analysis, grip strength, heat sensation, von Frey hair test); used 32 gauge catheter from ReCathco.

Q4955: K. Yanamandra, N. Kfoury, H. Jiang, T. E. Mahan, S. Ma, S. E. Maloney, D. F. Wozniak, M. I. Diamond and D. M. Holtzman. Anti-tau antibodies that block tau aggregate seeding in vitro markedly decrease pathology and improve cognition in vivo. *Neuron* 2013;80(2):402-14

ALZET Comments: Antibodies, anti-tau; PBS; CSF/CNS (lateral ventricle); mice; 2006; 3 months; long-term study; controls received mp w/ vehicle anti-AB HJ3.4 and PBS; P301S, tau pathology, 5 months old; long-term study; pumps replaced every 6 weeks; neurodegenerative (tau pathology);.

Q3656: A. F. Wyss, A. Hamadjida, J. Savidan, Y. Liu, S. Bashir, A. Mir, M. E. Schwab, E. M. Rouiller and A. Belhaj-Saif. Long-term motor cortical map changes following unilateral lesion of the hand representation in the motor cortex in macaque monkeys showing functional recovery of hand functions. *RESTORATIVE NEUROLOGY AND NEUROSCIENCE* 2013;31(6):733-760

ALZET Comments: Antibody, anti-Nogo-A 11C7; CSF/CNS; CSF/CNS (intrathecal); Monkey (macaque); 2ML2; 4 weeks; Controls received no pump treatment; animal info (macaca fascicularis, 1 female, 7 male, 4-6 years old, 3.5-6.5 kg); Multiple pumps per animal (2); behavioral testing (modified Brinkman board task, rotative Brinkman board task, Brinkman box task); One pump delivered IT, other delivered CSF/CNS using catheter; no cannula used, see pg.741; pumps removed after 4 weeks; used antibody concentration of 3 mg/ml;.

Q2933: C. Tohda, Y. A. Lee, Y. Goto and I. Nemere. Diosgenin-induced cognitive enhancement in normal mice is mediated by 1,25D(3)-MARRS. *SCIENTIFIC REPORTS* 2013;3(:):U24-U31

ALZET Comments: Antibody, anti-1.25D3-MARRS; CSF, artificial; SC; Mice; 1007D; 6 days; Animal info (6 weeks old, ddY, male); cyanoacrylate adhesive; Brain infusion kit (3) used; behavioral testing (object recognition memory test, open field test); 1,25D3-MARRS has many synonyms including Pdia3, ERp57, and GRP58;.

Q2971: F. Sun, X. O. Mao, L. Xie, M. P. Ding, B. Shao and K. L. Jin. Notch1 signaling modulates neuronal progenitor activity in the subventricular zone in response to aging and focal ischemia. *AGING CELL* 2013;12(6):978-987

ALZET Comments: Antibody, notch1-activating; Jagged 1-Fc-anti-Fc complex; CSF, artificial; CSF/CNS; Rat; 1003D; 3 days; Controls received mp w/ aCSF; animal info (male, Fisher); behavioral testing (ladder rung walking test, limb placing test, elevated body swing test, cylinder test); Neuroscience paper; ischemia.

Q2925: J. H. Seo, J. H. Yu, H. Suh, M. S. Kim and S. R. Cho. Fibroblast Growth Factor-2 Induced by Enriched Environment Enhances Angiogenesis and Motor Function in Chronic Hypoxic-Ischemic Brain Injury. *PLoS One* 2013;8(9):U184-U194

ALZET Comments: Antibody, fibroblast growth factor-2;; CSF/CNS; Mice; 1002; 8 weeks; Animal Info. (Hypoxic-ischemic mice, 6 weeks old, CD-1); Pumps replaced (every 2 weeks); Ischemia (hypoxic ischemic brain injury); Behavior testing (Rotarod performance, forelimb-use asymmetry test, grip strength test).

Q3623: H. Sawada, T. Saito, N. P. Nickel, T. P. Alastalo, J. P. Glotzbach, R. Chan, L. Haghghat, G. Fuchs, M. Januszyk, A. Q. Cao, Y. J. Lai, V. D. Perez, Y. M. Kim, L. L. Wang, P. I. Chen, E. Spiekerkoetter, Y. Mitani, G. C. Gurtner, P. Sarnow and M. Rabinovitch. Reduced BMP2 expression induces GM-CSF translation and macrophage recruitment in humans and mice to exacerbate pulmonary hypertension. *Journal of Experimental Medicine* 2013;211(2):263-280

ALZET Comments: Antibody, rat anti-mouse IgG macrophage colony-stimulating factor; SC; Mice; 1002; 2 weeks; Controls received mp w/ control antibody IgG2a; animal info (C57BL6, 8 weeks old); cardiovascular; immunology;.



Q3167: A. Poli, J. Wang, O. Domingues, J. Planaguma, T. Yan, C. B. Rygh, K. O. Skaftnesmo, F. Thorsen, E. McCormack, F. Hentges, P. H. Pedersen, J. Zimmer, P. O. Enger and M. Chekenya. Targeting glioblastoma with NK cells and mAb against NG2/CSPG4 prolongs animal survival. *ONCOTARGET* 2013;4(9):1527-1546

ALZET Comments: Antibody, mAB9.2.27; PEG; CSF/CNS; Rat (nude); 2001D; 1 day; Controls received mp w/ IgG2a control isotype; animal info (Hsd:RH-Foxn1 rnu, 8-10 weeks old); 24% PEG used; cancer (U251-NG2 tumors, glioblastoma); immunology;.

Q2843: H. A. Petrosyan, A. S. Hunanyan, V. Alessi, L. Schnell, J. Levine and V. L. Arvanian. Neutralization of Inhibitory Molecule NG2 Improves Synaptic Transmission, Retrograde Transport, and Locomotor Function after Spinal Cord Injury in Adult Rats. *Journal of Neuroscience* 2013;33(9):4032-4043

ALZET Comments: Antibody, 69, mouse monoclonal; antibody, 147, mouse monoclonal; CSF/CNS (intrathecal); Rat; 2ML2; 2 weeks; Control animals received mp w/ control antibody; animal info (Sprague Dawley, female, wks old, 210 g); spinal cord injury; post op care (baytril, buprenorphine).

Q4815: Luis M. Craveiro, Oliver Weinmann, Bernd Roschitzki, Roman R. Gonzenbach, Björn Zörner, Laura Montani, Benjamin K. Yee, Joram Feldon, Roman Willi and Martin E. Schwaba. Infusion of anti-Nogo-A antibodies in adult rats increases growth and synapse related proteins in the absence of behavioral alterations. *Experimental Neurology* 2013;250):52-68

ALZET Comments: Antibody, anti-Nogo-A 11C7; PBS; CSF/CNS (intrathecal); Rat; 2ML2; 2ML4; 2 weeks; 4 weeks; Controls received mp w/ control antibody or PBS; animal info (male, Long Evans, 2-3 months old, 300g); post op. care (Rimadyl 5 mg/kg injection SC, Baytril 5 mg/kg injection SC for 72 hours at 12 hour intervals); behavioral testing (locomotor activity, anxiety, open field test, elevated plus maze); toxicology; "This procedure ensured antibody delivery into the CSF at a constant flow rate for 2 or 4 weeks." pg 53;.

Q6718: C. Laterza, A. Merlini, D. De Feo, F. Ruffini, R. Menon, M. Onorati, E. Fredrickx, L. Muzio, A. Lombardo, G. Comi, A. Quattrini, C. Taveggia, C. Farina, E. Cattaneo and G. Martino. iPSC-derived neural precursors exert a neuroprotective role in immune-mediated demyelination via the secretion of LIF. *Nat Commun* 2013;4(2597

ALZET Comments: Antibody, leukemia inhibitory factor neutralizing; PBS; CSF/CNS (lateral ventricle); Mice; 1007D; 7 days; Dose (2 micrograms per day); Controls received mp w/ vehicle; animal info (E2.5 pseudo-pregnant CD1 females,); ALZET brain infusion kit 3 used; Brain coordinates ((from bregma, 0.3mm anterior, 0.8 lateral);.

Q3095: M. Kiyomoto, M. Shinoda, A. Okada-Ogawa, N. Noma, K. Shibuta, Y. Tsuboi, B. J. Sessle, Y. Imamura and K. Iwata. Fractalkine Signaling in Microglia Contributes to Ectopic Orofacial Pain following Trapezius Muscle Inflammation. *Journal of Neuroscience* 2013;33(18):7667-7680

ALZET Comments: Antibody, anti CX3CRI; Fractalkine; Antibody, anti interleukin-beta; Saline; CSF/CNS (cisterna magna); Rat; 2001; 4 days; Controls received mp w/ vehicle; animal info (male, Sprague Dawley, 210-260g); post op. care (benzyl penicillin potassium, 20000U); behavioral testing (Rota-rod performance, Water tap reaching performance); immunology; peptides.

Q3343: H. Ishii, S. Tanabe, M. Ueno, T. Kubo, H. Kayama, S. Serada, M. Fujimoto, K. Takeda, T. Naka and T. Yamashita. ifn-gamma-dependent secretion of IL-10 from Th1 cells and microglia/macrophages contributes to functional recovery after spinal cord injury. *Cell Death & Disease* 2013;4(;):U100-U108

ALZET Comments: Antibody, anti interleukin-10; CSF/CNS; Mice; 1007D; 7 days; Controls received mp w/ control IgG; animal info (female, C57BL6, 7-9 weeks old); ALZET brain infusion kit 3 used; spinal cord injury; behavioral testing (open field, grid walk, inclined plane);.

Q5645: P. N. Harter, S. Dutzmann, U. Drott, C. Zachskorn, E. Hattingen, D. Capper, F. Gessler, C. Senft, V. Seifert, K. H. Plate, D. Kogel and M. Mittelbronn. Anti-tissue factor (TF9-10H10) treatment reduces tumor cell invasiveness in a novel migratory glioma model. *Neuropathology* 2013;33(5):515-25

ALZET Comments: mAb TF9-10H10; monoclonal antibody anti tissue factor; PBS; SC; Mice (nude); 1002; 2 weeks; 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);.

Q2966: M. Girotti, J. J. Donegan and D. A. Morilak. Influence of hypothalamic IL-6/gp130 receptor signaling on the HPA axis response to chronic stress. *Psychoneuroendocrinology* 2013;38(7):1158-1169

ALZET Comments: Antibody, interleukin-6; SC; Rat; 1004; 28 days; Controls received mp w/ IgG; immunology; animal info (male, 220-240g); functionality of mp verified by IL-6 protein levels (western blot, high-sensitivity ELISA).

Q5528: S. Y. Gil, B. S. Youn, K. Byun, H. Huang, C. Namkoong, P. G. Jang, J. Y. Lee, Y. H. Jo, G. M. Kang, H. K. Kim, M. S. Shin, C. U. Pietrzik, B. Lee, Y. B. Kim and M. S. Kim. Clusterin and LRP2 are critical components of the hypothalamic feeding regulatory pathway. *Nat Commun* 2013;4(1862)

ALZET Comments: Antibody; anticlusterin-a/b; Immunoglobulin G, anti-rabbit; ICV; Mice; 6 days; Controls received mp w/anti-rabbit IgG; animal info (8-12 weeks); Dose (2 ug per day);.

Q4777: J. D. P. Ghanashyam D. Ghadge, Sujatha P. Koduvayur, Brian K. Kay and R. P. Roos. Single chain variable fragment antibodies block aggregation and toxicity induced by familial ALS-linked mutant forms of SOD1. *NEUROBIOLOGY OF DISEASE* 2013;56(74-78)

ALZET Comments: anti-SOD1 monoclonal antibodies (mAbs); CSF/CNS (lateral ventricle); mice; not specified; not specified; FALS transgenic mice; anti SOD1 monoclonal antibody; neurodegenerative (Amyotrophic Lateral Sclerosis); paper does not mention ALZET much, or pump model.

Q5045: G. D. Ghadge, J. D. Pavlovic, S. P. Koduvayur, B. K. Kay and R. P. Roos. Single chain variable fragment antibodies block aggregation and toxicity induced by familial ALS-linked mutant forms of SOD1. *Neurobiol Dis* 2013;56(74-8)

ALZET Comments: antibody, monoclonal anti-SOD1; CSF/CNS (ventricles); mice; animal info: FALS transgenic mice; anti SOD1 monoclonal antibody; neurodegenerative (Amyotrophic Lateral Sclerosis); paper does not mention ALZET much, or pump model;.

Q2415: N. Fainstein, M. E. Cohen and T. Ben-Hur. Time associated decline in neurotrophic properties of neural stem cell grafts render them dependent on brain region-specific environmental support. *NEUROBIOLOGY OF DISEASE* 2013;49(;):41-48

ALZET Comments: Antibody, anti-beta 1 integrin; CSF/CNS (striatum); Mice; 28 days; Control animals received mp w/ isotype control; animal info (C57BL/6, female).

Q2635: G. S. Cho, J. C. Lee, C. Ju, C. Kim and W. K. Kim. N-Methyl-D-aspartate receptor antagonists memantine and MK-801 attenuate the cerebral infarct accelerated by intracorpore callosum injection of lipopolysaccharides. *Neuroscience Letters* 2013;538(;):9-14

ALZET Comments: Antibody, interleukin-1 beta; CSF/CNS; Rat; 1003D; Animal info (Sprague Dawley, male, 260-270 g); ischemia.

Q2768: W. S. Carbonell, M. Delay, A. Jahangiri, C. C. Park and M. K. Aghi. beta1 Integrin Targeting Potentiates Antiangiogenic Therapy and Inhibits the Growth of Bevacizumab-Resistant Glioblastoma. *Cancer Research* 2013;73(10):3145-3154

ALZET Comments: Antibody, OS2966; SC; Mice; 1004; 28 days; 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.

Q2899: T. J. Broering, H. Y. Wang, N. K. Boatright, Y. Wang, K. Baptista, G. Shayan, K. A. Garrity, C. Kayatekin, D. A. Bosco, C. R. Matthews, D. M. Ambrosino, Z. S. Xu and G. J. Babcock. Identification of Human Monoclonal Antibodies Specific for Human SOD1 Recognizing Distinct Epitopes and Forms of SOD1. *PLoS One* 2013;8(4):U413-U425



ALZET Comments: Antibody, monoclonal, human; CSF/CNS; Mice; 2006; 50 days; Animal info (>20g, 65-115 days old); functionality of mp verified by measuring residual volume; measurement of tissue and serum HuMabs levels; pumps replaced every 50 days; good methods; long-term study.

Q3055: N. Brazda, C. Voss, V. Estrada, H. Lodin, N. Weinrich, K. Seide, J. Mueller and H. W. Mueller. A mechanical microconnector system for restoration of tissue continuity and long-term drug application into the injured spinal cord. *Biomaterials* 2013;34(38):10056-10064

ALZET Comments: Antibody, human IgG; Saline; CSF/CNS (intrathecal); Rat; 2001; 3 days; 7 days; Controls received mp w/ vehicle; animal info (Female, Wistar, 200-230g); spinal cord injury; post op. care (Baytril for one week, manual bladder emptying twice per day); behavioral testing (locomotor behavior); tissue perfusion (spinal cord); pump attached to mechanical microconnector system (mMS).