



References on the Administration of Corticotropin Releasing Factor Using ALZET® Osmotic Pumps

Q9070: A. K. Short, *et al.* Short-term block of CRH receptor in adults mitigates age-related memory impairments provoked by early-life adversity. *BioRxiv* 2019;

Agents: Corticotropin-releasing factor receptor type 1 antagonist; **Vehicle:** Not stated; **Route:** SC; **Species:** Rat; **Pump:** 2001; **Duration:** 7 days;

ALZET Comments: Dose (4 mg/kg/day); Controls received mp w/ vehicle; animal info (Sprague Dawley, 2 months old); behavioral testing (Object Recognition Test, Object Location Test); CRFR1 antagonist aka Corticotropin-releasing factor receptor type 1 antagonist; enzyme inhibitor (CRFR1 inhibitor); Brain coordinates (AP-1.3, L 2.0, V 3.5 mm); dependence;

Q7285: X. F. Li, *et al.* Role of the posterodorsal medial amygdala in predator odour stress-induced puberty delay in female rats. *J Neuroendocrinol* 2019;e12719

Agents: Corticotropin-releasing factor **Vehicle:** CSF, artificial; **Route:** CSF/CNS (posterodorsal medial amygdala); **Species:** Rat; **Pump:** 1002; **Duration:** 14 Days;

ALZET Comments: Dose (0.2 nmol/day); Controls received mp w/ vehicle; animal info (Sprague-Dawley prepubertal rats); Brain coordinates (2.5 mm posterior to bregma (AP), 3.2 mm lateral (ML) and 7.8 mm below the surface of the dura (DV)); Cannula placement verified via histological verification;

Q3356: A. J. Park, *et al.* Altered colonic function and microbiota profile in a mouse model of chronic depression. *NEUROGASTROENTEROLOGY AND MOTILITY* 2013;25(9):733-E575

Agents: Corticotropin releasing hormone **Vehicle:** Saline; **Route:** CSF/CNS; **Species:** Mice; **Pump:** Not Stated; **Duration:** 28 days;

ALZET Comments: Controls received mp w/ vehicle; animal info (female, C57BL/6, 8-10 weeks old); behavioral testing (Step down test, tail suspension test, open field); peptides; cyanoacrylate adhesive; Corticotropin-rel. factor aka Corticotropin releasing hormone; Plastics 1 cannula, DURECT PE 60 tubing.

Q0128: J. S. Kinsey-Jones, *et al.* Corticotropin-Releasing Factor Alters the Timing of Puberty in the Female Rat. *Journal of Neuroendocrinology* 2010;22(2):102-109

Agents: Corticotropin-releasing factor; astressin-B **Vehicle:** CSF, artificial; **Route:** CSF/CNS; **Species:** Rat; **Pump:** 2002; **Duration:** 14, 14 days;

ALZET Comments: Controls received no treatment/surgery; peptides; no stress (see pg. 105); animal info (female, Sprague-Dawley, 28 days old); dose-response (fig. 1); neuroendocrinology

P9948: O. J. Bosch, *et al.* The CRF System Mediates Increased Passive Stress-Coping Behavior Following the Loss of a Bonded Partner in a Monogamous Rodent. *Neuropsychopharmacology* 2009;34(6):1406-1415

Agents: Corticotropin-releasing factor, d-phe; CP-154526; astressin-2b; **Route:** CSF/CNS; **Species:** Prairie vole; **Pump:** 1007D; **ALZET Comments:** ALZET brain infusion kit 3 used; cyanoacrylate adhesive; animal info (naive, adult, male, female, 70-100 g); catheter contained ringers solution for delayed delivery of 44 hours

P9144: A. A. Teitelbaum, *et al.* Chronic peripheral administration of corticotropin-releasing factor causes colonic barrier dysfunction similar to psychological stress. *American Journal of Physiology Gastrointestinal and Liver Physiology* 2008;295(3):G452-G459

Agents: Corticotropin-releasing factor; Stressin1; sauvagine, anti-; urocortin III **Vehicle:** Saline; **Route:** SC; **Species:** Rat; **Pump:** 2002; **Duration:** 12 days;

ALZET Comments: Controls received mp w/ vehicle; peptides; multiple pumps per animal (2); animal info (mast cell-deficient, +/+, 10 wks old, 200-250 g.); "The use of the minipump avoids daily interactions with the animals, possibly causing less variability in the results." pg G458; stressin1 is a selective CFR-R1 agonist; urocortin III is a CFR-R2 agonist; antisauvagine is a CRF-R2 antagonist



P3582: M. Clark, *et al.* Chronic low dose ovine corticotropin releasing factor or urocortin II into the rostral dorsal raphe alters exploratory behavior and serotonergic gene expression in specific subregions of the dorsal raphe. *Neuroscience* 2007;146(4):1888-1905

Agents: Urocortin II, Corticotropin releasing factor, ovine **Vehicle:** CSF, artificial; **Route:** CSF/CNS; **Species:** Rat; **Pump:** 1007D; **Duration:** 6 days;

ALZET Comments: Dose: ovine CRF (100ng/hr), urocortin II (2ng/μL); Controls received mp w/ vehicle; animal info (male Sprague-Dawley rats (250 g)); post op. care (surgical methylacrylate glue (VetBond) used to close incision, 25 ug of buprenorphine once after surgery for pain control); functionality of mp verified by determining residual volume in the pump at the termination of the experiment; stability verified by HPLC analysis of samples taken at filing and after 6 days; peptides; Brain coordinates (AP -7.5, lateral -0.2, and depth -6.4);

P7890: N. Boyadjieva, *et al.* Role of beta-endorphin, corticotropin-releasing hormone, and autonomic nervous system in mediation of the effect of chronic ethanol on natural killer cell cytolytic activity. *Alcoholism Clinical and Experimental Research* 2006;30(10):1761-1767

Agents: Endorphin, B; corticotropin releasing hormone **Vehicle:** CSF, artificial; **Route:** CSF/CNS (paraventricular nucleus of hypothalamus); **Species:** Rat; **Pump:** 2002; **Duration:** 16 hours;

ALZET Comments: Controls received mp w/ vehicle; peptides; animal info (male, Fischer, 160-175g)

P7604: N. J. Bernier, *et al.* CRF-related peptides contribute to stress response and regulation of appetite in hypoxic rainbow trout. *American Journal of Physiology Regulatory, Integrative, and Comparable Physiology* 2005;289(4):R982-R990

Agents: Corticotropin-releasing factor, a helical (9-41) **Vehicle:** Saline, physiological; NaOH; **Route:** CSF/CNS; **Species:** Fish (rainbow trout); **Pump:** 1003D; **Duration:** 8 days;

ALZET Comments: Controls received mp w/ vehicle; no stress (see pg. R984); peptides; animal info (male, female, hypoxia); CRF receptor antagonist; x-ray radiography; mp encased in a layer of dialysis tubing; cannula placement confirm; mp at 14C

P6607: Y. Kagamiishi, *et al.* Detrimental role of corticotropin-releasing factor on the decrease of CA1 field potential induced by in vitro ischemia in rat hippocampal slices. *JOURNAL OF PHARMACOLOGICAL SCIENCES* 2004;94(1):39-44

Agents: Corticotropin-releasing factor; astressin **Vehicle:** Saline; BSA; Ascorbic acid; **Route:** CSF/CNS; **Species:** Rat; **Pump:** 2002; **Duration:** 7 days;

ALZET Comments: Controls received mp w/ vehicle; ALZET brain infusion kit 1 used; 2 week recovery period by filling tubing and cannula with sterile saline; pump connected to catheter after recovery period; astressin is a novel CRF antagonist; BSA and ascorbic acid was 0.1%; ischemia (cerebral)

P6851: K. H. Jeong, *et al.* Impaired leptin expression and abnormal response to fasting in corticotropin-releasing hormone-deficient mice. *Endocrinology* 2004;145(7):3174-3181

Agents: Corticotropin-releasing hormone, human/rat **Vehicle:** BSA; acetic acid; Ascorbic acid; **Route:** SC; **Species:** Mice; **Pump:** 1002; **Duration:** 9 days;

ALZET Comments: Controls received mp w/ vehicle; peptides

Q6823: M. J. CULLEN, *et al.* Urocortin, Corticotropin Releasing Factor-2 Receptors and Energy Balance. *Endocrinology* 2001;142(3):992-999

Agents: Urocortin; Corticotropin-releasing factor **Vehicle:** Not Stated; **Route:** CSF/CNS (lateral ventricle); **Species:** Rat; **Pump:** 2001; **Duration:** 13 days;

ALZET Comments: Dose (0.01-1.0 nmol/day); Controls received mp w/ vehicle; animal info (Male Long-Evans rats: 300-347 g); pumps replaced every 7 days; Urocortin, Corticotropin are CRF-related peptide; peptides; Silicone catheter used to connect pump to cannula; Brain coordinates (AP=-0.8 mm, ML=+1.2mm, and DV=-4.5mm); Cannula placement verified via cresyl violet dye injection post mortem;

P3228: V. Jain, *et al.* In vivo effects of corticotropin-releasing factor in pregnant rats. *American Journal of Obstetrics & Gynecology* 1998;178(186-191)

Agents: Corticotropin-rel. factor; Corticotropin-rel. factor, 9-41 **Vehicle:** Saline, normal; **Route:** SC; **Species:** Rat (pregnant); **Pump:** 2ML1; **Duration:** no duration posted;

ALZET Comments: controls received mp w/vehicle; peptides; cardiovascular



P4165: A. Gerth, *et al.* Corticotropin releasing hormone antagonist does not prevent adrenalectomy-induced apoptosis in the dentate gyrus of the rat hippocampus. *Stress* 1998;2(159-169)

Agents: Corticotropin-rel. hormone antagonist **Vehicle:** Not Stated; **Route:** Not Stated; **Species:** Rat; **Pump:** Not Stated; **Duration:** no duration posted;

ALZET Comments: no comment posted

P5261: L. J. Muglia, *et al.* Impaired diurnal adrenal rhythmicity restored by constant infusion of corticotropin-releasing hormone in corticotropin-releasing hormone-deficient mice. *J Clin. Invest* 1997;99(12):2923-2929

Agents: Corticotropin-rel. hormone **Vehicle:** Acetic Acid; Ascorbate; Albumin, bovine serum; **Route:** SC; **Species:** Mice (knockout); **Pump:** Not Stated; **Duration:** 2-6 days;

ALZET Comments: Controls received mp w/ vehicle; replacement therapy (adrenalectomy); dose-response (p.2926); peptides

P3744: A. C. E. Linthorst, *et al.* Long-term intracerebroventricular infusion of corticotropin-releasing hormone alters neuroendocrine, neurochemical, autonomic, behavioral, and cytokine responses to a systemic inflammatory challenge. *J. Neurosci* 1997;17(11):4448-4460

Agents: Corticotropin-rel. hormone **Vehicle:** Saline, pyrogen-free; Ascorbic acid; **Route:** SC; CSF/CNS; **Species:** Rat; **Pump:** 2001; **Duration:** 7 days;

ALZET Comments: controls received mp w/ vehicle; no stress (see pg. 4452); ALZET brain infusion kit used

P3832: T.-S. Huang. Concomitant infusion of ovine corticotropin-releasing hormone does not prevent suppression of the hypothalamus-pituitary-adrenal axis by dexamethasone in male rats. *J. Endocrinol. Invest* 1997;20(393-396)

Agents: Dexamethasone; Corticotropin-rel. factor, ovine **Vehicle:** Not Stated; **Route:** SC; **Species:** Rat; **Pump:** 1003D; 2001; **Duration:** 3,7 days;

ALZET Comments: replacement therapy; peptides

P3927: B. Buwalda, *et al.* Physiological and behavioral effects of chronic intracerebroventricular infusion of corticotropin-releasing factor in the rat. *Psychoneuroendocrinology* 1997;22(5):297-309

Agents: Corticotropin-rel. factor, ovine **Vehicle:** Saline; BSA; Ascorbic acid; **Route:** CSF/CNS; **Species:** Rat; **Pump:** 2002; **Duration:** 10 days;

ALZET Comments: controls received mp w/ vehicle; peptides; ALZET brain infusion kit used; catheter filled w/ saline to delay agent delivery; delayed delivery;

P4268: S. C. Heinrichs, *et al.* Corticotropin-releasing factor-binding protein ligand inhibitor blunts excessive weight gain in genetically obese Zucker rats and rats during nicotine withdrawal. *Proc. Natl. Acad. Sci. USA* 1996;93(15475-15480)

Agents: Nicotine tartrate salt; Corticotropin-rel. factor, 6-33; **Vehicle:** Saline; **Route:** SC; CSF/CNS;; **Species:** Rat; **Pump:** 2001; 2002;; **Duration:** 14 days;

ALZET Comments: controls received mp w/ vehicle; functionality of mp verified by plasma levels; peptides; ALZET brain infusion kit used; recomb. human corticotropin releasing factor used; dummy cannula maintained cannula patency during one week recovery period; after 14 day SC nicotine infusion, r/h CRF (6-33) was infused ICV

P2719: M. S. Labeur, *et al.* Long-term intracerebroventricular corticotropin-releasing hormone administration induces distinct changes in rat splenocyte activation and cytokine expression. *Endocrinology* 1995;136(6):2678-2688

Agents: Corticotropin-rel. factor **Vehicle:** Saline, sterile; Ascorbic acid; **Route:** CSF/CNS; **Species:** Rat; **Pump:** 2001; **Duration:** 1 week;

ALZET Comments: controls received mp w/ vehicle; replacement therapy (adrenalectomy); peptides

P2287: S. Rivest, *et al.* CRF alters the infundibular LHRH secretory system from the medial preoptic area of female rats: possible involvement of opioid receptors. *Neuroendocrinology* 1993;57(236-246)

Agents: Corticotropin-rel. factor **Vehicle:** Ascorbic acid; Albumin, bovine serum; Saline; **Route:** CSF/CNS (hypothalamic medial preoptic area); **Species:** Rat; **Pump:** 2001; **Duration:** 7 days;

ALZET Comments: two pumps connected to double internal cannula; animals were ovariectomized



P3197: R. L. Hauger, *et al.* Regulation of pituitary corticotropin releasing hormone (CRH) receptors by CRH: interaction with vasopressin. *Endocrinology* 1993;133(1708-1714

Agents: Corticotropin-rel. factor; Vasopressin; Vasopressin antagonist **Vehicle:** Not Stated; **Route:** SC; **Species:** Rat; **Pump:** 2001; **Duration:** 48 hours;

ALZET Comments: controls received inactive mp or silastic tubing; peptides; the vasopressin antagonist was (mercapto cyclopenta-methylene propionic acid)-[methyl-tyrosine]arginine VP; agents given singly or together

P3122: Y. Tizabi, *et al.* Desensitization of the hypothalamic-pituitary-adrenal axis following prolonged administration of corticotropin-releasing hormone or vasopressin. *Neuroendocrinology* 1992;56(611-618

Agents: Corticotropin-rel. factor; Vasopressin **Vehicle:** Not Stated; **Route:** SC; **Species:** Rat; **Duration:** 48-50 hours;

ALZET Comments: controls received silastic tubing; peptides; animals given CRF or CRF + vasopressin

P1829: F. C. Iturriza, *et al.* Transplantation of the pituitary pars distalis induces the corticotrophs to store melanocyte-stimulating hormone, an effect reversed by the administration of corticotropin-releasing factor. *Neuroendocrinology* 1991;53(75-78

Agents: Corticotropin-rel. factor **Vehicle:** Albumin, bovine serum; Saline; **Route:** SC; **Species:** Rat; **Pump:** 2001; **Duration:** 24 hours;

ALZET Comments: no comment posted

P1416: F. Rohner-Jeanraud, *et al.* Central corticotropin-releasing factor administration prevents the excessive body weight gain of genetically obese rats. *Endocrinology* 1989;124(2):733-739

Agents: Corticotropin-rel. factor, ovine **Vehicle:** Ascorbic acid; Albumin, bovine serum; Saline; **Route:** CSF/CNS; **Species:** Rat; **Pump:** 2001; **Duration:** 1 week;

ALZET Comments: peptides

P1731: S. Rivest, *et al.* Effects of corticotropin-releasing factor on energy balance in rats are sex dependent. *American Journal of Physiology Regulatory, Integrative, and Comparable Physiology* 1989;257(R1417-R1422

Agents: Corticotropin-rel. factor, human; Corticotropin-rel. factor, rat **Vehicle:** Ascorbic acid; Albumin, bovine serum; Saline; **Route:** CSF/CNS; **Species:** Rat; **Pump:** 2002; **Duration:** 14 days;

ALZET Comments: infusion delayed about 4 days by 10.6 cm saline-filled catheter; delayed delivery;

P1460: K. Arase, *et al.* Effects of intraventricular infusion of corticotropin-releasing factor on VMH-lesioned obese rats. *American Journal of Physiology Regulatory, Integrative, and Comparable Physiology* 1989;256(R751-R756

Agents: Corticotropin-rel. factor **Vehicle:** Sodium chloride; **Route:** CSF/CNS; **Species:** Rat; **Pump:** 2001; **Duration:** 6 days;

ALZET Comments: ICV cannula capped to prevent scratching; peptides

P1175: N. Levin, *et al.* Corticosterone acts on the brain to inhibit adrenalectomy-induced adrenocorticotropin secretion. *Endocrinology* 1988;122(2):694-701

Agents: Corticotropin-rel. factor **Vehicle:** Acetic acid; Ascorbate; Albumin, bovine serum; **Route:** SC; **Species:** Rat; **Duration:** 5 days;

ALZET Comments: controls received sham-op; mp primed overnight in saline; pump inserted sc adjacent to wax or cort pellet; varying doses of agent infused; replacement therapy (hypothalamic lesions); peptides

P1328: K. Arase, *et al.* Effects of corticotropin-releasing factor on food intake and brown adipose tissue thermogenesis in rats. *American Journal of Physiology Endocrinology and Metabolism* 1988;255(E255-E259

Agents: Corticotropin-rel. factor **Vehicle:** Saline; **Route:** CSF/CNS; **Species:** Rat; **Pump:** 2001; **Duration:** 7 days;

ALZET Comments: mp connected to cannula; dose-response (text); functionality of mp verified by serum levels; peptides

P0903: L. Lima, *et al.* Effect of corticotropin-releasing factor on adrenal DBH and PNMT activity. *Peptides* 1987;8(3):437-441

Agents: Corticotropin-rel. factor, ovine **Vehicle:** Saline; **Route:** CSF/CNS; **Species:** Rat; **Pump:** Not Stated; **Duration:** 7 days;

ALZET Comments: mp model not stated; controls received mp with vehicle; peptides



P1162: M. C. Holmes, *et al.* Involvement of vasopressin in the down-regulation of pituitary corticotropin-releasing factor receptors after adrenalectomy. *Endocrinology* 1987;121(6):2093-2098

Agents: Dye, Trypan blue; Corticotropin-rel. factor; Vasopressin **Vehicle:** Saline; **Route:** SC; **Species:** Rat; **Pump:** Not Stated; **Duration:** 48 hours;

ALZET Comments: Pump model not stated; concomitant and simultaneous infusion of agents; functionality of mp verified; replacement therapy (vasopressin deficiency); peptides

P0975: B. J. Gertz, *et al.* Chronic administration of corticotropin-releasing factor increases pituitary corticotroph number. *Endocrinology* 1987;120(1):381-388

Agents: Corticotropin-rel. factor, rat **Vehicle:** Ascorbic acid; Albumin, bovine serum; Saline; **Route:** SC; **Species:** Rat; **Pump:** 2002; **Duration:** 52 days;

ALZET Comments: controls received mp w/vehicle; pumps replaced at 10-14 day intervals; long-term study; peptides

P0558: K. N. Westlund, *et al.* Quantification of morphological changes in pituitary corticotropes produced by in vivo corticotropin-releasing factor stimulation and adrenalectomy. *Endocrinology* 1985;116(1):439-445

Agents: Corticotropin-rel. factor **Vehicle:** Not Stated; **Route:** IP; **Species:** Rat; **Pump:** 2001; **Duration:** 2 days;

ALZET Comments: comparison of adrenal excision vs. mp infusion; sham pump used in controls to determine stress of abdominal surgery p. 440; dose-response data, 2 doses of CRF

P0684: M. F. Dallman, *et al.* Corticotrope response to removal of releasing factors and corticosteroids in vivo. *Endocrinology* 1985;117(5):2190-2197

Agents: Corticotropin-rel. factor, rat **Vehicle:** Acetic acid; Ascorbate; Albumin, bovine serum; **Route:** SC; **Species:** Rat; **Pump:** 2001; **Duration:** 5 days;

ALZET Comments: replacement therapy (adrenalectomy); mp primed in saline 4-12 h prior to implant

P0427: C. Rivier, *et al.* Influence of corticotropin-releasing factor on reproductive functions in the rat. *Endocrinology* 1984;114(3):914-921

Agents: Corticotropin-rel. factor, 7-14; Corticotropin-rel. factor; Corticotropin-rel. factor, ovine **Vehicle:** Ascorbic acid; Albumin, bovine serum; PBS; **Route:** IV (jugular); **Species:** Rat; **Pump:** Not Stated; **Duration:** 1 week;

ALZET Comments: comparison of acute iv injec vs. multiple icv injec vs. iv mp infusion; comparison of agents effects

P1227: V. Hollt, *et al.* Corticotropin-releasing factor differentially regulates proopiomelanocortin messenger ribonucleic acid levels in anterior as compared to intermediate pituitary lobes of rats. *Biochemical and Biophysical Research Communications* 1984;124(2):407-415

Agents: Corticotropin-rel. factor **Vehicle:** Water; **Route:** SC; **Species:** Rat; **Pump:** 2001; **Duration:** 8 days;

ALZET Comments: controls received mp w/ water; peptides

P1647: T. O. Bruhn, *et al.* Corticotropin-releasing factor regulates proopiomelanocortin messenger ribonucleic acid levels in vivo. *Neuroendocrinology* 1984;39(170-175)

Agents: Corticotropin-rel. factor **Vehicle:** Ascorbic acid; Saline; **Route:** IV (jugular); **Species:** Rat; **Pump:** 2001; **Duration:** 3-15 days;

ALZET Comments: peptides