



References on the Administration of Follicle Stimulating Hormone Using ALZET® Osmotic Pumps

Q6885: H. Kaneko, *et al.* Developmental ability of oocytes retrieved from Meishan neonatal ovarian tissue grafted into nude mice. *Anim Sci J* 2019;

ALZET Comments: Follicle stimulating hormone, porcine; Saline; Mice (nude); 2004; 13 days; Dose (porcine FSH (62.5 or 125 U/ml); animal info (Female nude mice (Crlj:CD1-Foxn1nu));

Q7663: G. Shetty, *et al.* Effect of hormone modulations on donor-derived spermatogenesis or colonization after syngeneic and xenotransplantation in mice. *Andrology* 2019;7(2):257-265

Agents: Follicle stimulating hormone, recomb. human **Vehicle:** Not Stated; **Route:** SC; **Species:** Mice; **Pump:** 2002;

Duration: 2 weeks;

ALZET Comments: Dose (5 IU/day); Controls received sham surgery; animal info (7-9 weeks, male, C57BL/6Law and nude); replacement therapy (FSH);

Q5653: H. Kaneko, *et al.* Growth and fertilization of porcine fetal oocytes grafted under the renal capsules of nude mice. *Theriogenology* 2016;86(7):1740-8

ALZET Comments: Follicle stimulating hormone, porcine; mice; 2004; 13 days; Controls were non-grafted; replacement therapy (Estradiol); Therapeutic indication (Follicular development, oocyte maturation, fertilization); Dose (62.5 U/mL);

Q2679: J. Lopez-Saucedo, *et al.* Superovulation, in vivo embryo recovery and cryopreservation for Aoudad (*Ammotragus lervia*) females using osmotic pumps and vitrification: a preliminary experience and its implications for conservation. *TROPICAL CONSERVATION SCIENCE* 2013;6(1):149-157

ALZET Comments: Follicle stimulating hormone, porcine; SC; Sheep; 1003D; Animal info (aoudad, aka Barbary, female); multiple pumps used (2); "the traditional procedures for superovulation in domestic ruminants are complicated and difficult to perform in wild females because the procedure requires many physical contact and repetitive procedures, i.e., the administration of FSH two times per day. Thus, we choose to deliver FSH using osmotic pumps to minimize such manipulations... and we considered that it was the best approach for wild ruminant females and most likely represents a more "physiological" delivery method, with the continuous administration of FSH rather than blood level spikes." pg 152-153.

Q5652: H. Kaneko, *et al.* Improved developmental ability of porcine oocytes grown in nude mice after fusion with cytoplasmic fragments prepared by centrifugation: a model for utilization of primordial oocytes. *Theriogenology* 2013;80(8):887-92

ALZET Comments: Follicle stimulating hormone, porcine; Mice; 2004; 2 weeks; animal info (5-6 weeks); Therapeutic indication (xenografting); Dose (62.5 U/mL);

Q0281: W. Zhou, *et al.* Changes in Gene Expression in Somatic Cells of Rat Testes Resulting from Hormonal Modulation and Radiation-Induced Germ Cell Depletion. *Biology of Reproduction* 2010;82(1):54-65

ALZET Comments: Follicle stimulating hormone, human, recomb.; SC; Rat; 2001; 2 weeks; Animal info (LBNF1, male); pumps replaced after 1 week.

Q5567: J. Cozzi, *et al.* Procedures for somatic cell nuclear transfer in the rat. *Methods Mol Biol* 2010;597(137-50

ALZET Comments: Follicle stimulating hormone; Saline; SC; Rat; 1003D; animal info (60–70 g immature female rats); post op. care (Buprenorphine analgesic); "We achieved the best results using immature females and continuous diffusion of FSH by Alzet osmotic minipumps implanted sub-cutaneously." Pg. 142;

Q0454: C. Agca, *et al.* Development of a Novel Transgenic Rat Overexpressing the P2Y(2) Nucleotide Receptor Using a Lentiviral Vector. *JOURNAL OF VASCULAR RESEARCH* 2009;46(5):447-458

ALZET Comments: Follicle stimulating hormone; SC; Rat; Animal info (Sprague-Dawley, female, 28-30 days old).



P9677: V. Ritter, *et al.* Follicle-stimulating hormone does not impact male bone mass in vivo or human male osteoclasts in vitro. *Calcified Tissue International* 2008;82(5):383-391

ALZET Comments: Follicle stimulating hormone; Saline; SC; Mice; 2004; 30 days; Controls received mp w/ vehicle; post op. care (buprenorphine); animal info (male, C57BL/6J, 16 wks old).

P7504: G. Shetty, *et al.* Both testosterone and follicle-stimulating hormone independently inhibit spermatogonial differentiation in irradiated rats. *Endocrinology* 2006;147(1):472-482

ALZET Comments: Follicle stimulating hormone, recomb. human; PBS; SC; Rat; 2001; 2 weeks; Controls received sham implant; pumps replaced every week; animal info (male LBNF1, 9-12 wk old); testes irradiated.

P8120: W. E. Filipiak, *et al.* Advances in transgenic rat production. *TRANSGENIC RESEARCH* 2006;15(6):673-686

ALZET Comments: Follicle stimulating hormone, porcine; SC; Rat; 1003D; Comparison of SC injections vs. mp; peptides; animal info (female, Sprague-Dawley CD, 4-6 wk old).

P7567: E. Popova, *et al.* Strain differences in superovulatory response, embryo development and efficiency of transgenic rat production. *TRANSGENIC RESEARCH* 2005;14(5):729-738

ALZET Comments: Follicle stimulating hormone; SC; Rat; 2001; Comparison of PMSG by IP injections vs. mp; peptides; animal info (female Lewis, Wistar-Kyoto, SHRSP, Sprague-Dawley, 28-35 days old).

P5321: E. Popova, *et al.* Comparison between PMSG- and FSH-induced superovulation for the generation of transgenic rats. *MOLECULAR REPRODUCTION AND DEVELOPMENT* 2002;63(2):177-182

ALZET Comments: Follicle stimulating hormone; SC; Rat; 2001;

P5251: L. J. Mullins, *et al.* Transgenesis in the rat. *Methods Mol. Biol* 2002;180(255-270

ALZET Comments: Follicle stimulating hormone; Saline; SC; Rat; 1003D; 3 days; Detailed procedures for priming and surgery.

P5095: P. S. Duggal, *et al.* Effects of leptin administration and feed restriction on thecal leucocytes in the preovulatory rat ovary and the effects of leptin on meiotic maturation, granulosa cell proliferation, steroid hormone and PGE(2) release in cultured rat ovarian follicles. *REPRODUCTION* 2002;123(891-898

ALZET Comments: Follicle stimulating hormone; Saline; SC; Rat; 3 days; human FSH used; endocrinology.

P5284: T. J. Corbin, *et al.* Strain variation of immature female rats in response to various superovulatory hormone preparations and routes of administration. *Contemp. Top. Lab Anim Sci* 2002;41(2):18-23

ALZET Comments: Follicle stimulating hormone; SC; Rat; 54-60 hours; Comparison of ip injections vs. mp; endocrinology.

Q6839: C. J. P. Jones, *et al.* Ultrastructure of epithelial plaque formation and stromal cell transformation by post-ovulatory chorionic gonadotropin treatment in the baboon (*papio anubis*). *Human Reproduction* 2001;16(12):2680-2690

ALZET Comments: Chorionic gonadotropin hormone, human; follicle stimulating hormone; Monkey (baboon); 5 days; animal info (normally cycling adult female baboon);

P4725: P. S. Duggal, *et al.* The *in vivo* and *in vitro* effects of exogenous leptin on ovulation in the rat. *Endocrinology* 2000;141(6):1971-1976

ALZET Comments: Follicle stimulating hormone, human;; Saline;; SC;; Rat;; 3 days;; Controls received mp w/ vehicle; functionality of mp verified by plasma progesterone and estradiol levels (result of FSH administration); peptides;.

P3531: A. F. Treloar, *et al.* Superovulation of New Zealand white rabbits by continuous infusion of follicle-stimulating hormone, using a micro-osmotic pump. *Lab. Anim. Sci* 1997;47(3):313-316

ALZET Comments: Follicle stimulating hormone; SC; rabbit; 1003D; 3 days; functionality of mp verified by serum levels; peptides.



P3670: K.-P. Brussow, *et al.* Aspects of follicular development and intrafollicular oocyte maturation in gilts. *Reprod. Dom. Anim* 1996;31(555-563

ALZET Comments: Follicle stimulating hormone, porcine; pig; 2ML1; 7 days; controls received mp w/ saline.

P3259: T. Matikainen, *et al.* Effects of recombinant human FSH in immature hypophysectomized male rats: evidence for leydig cell-mediated action on spermatogenesis. *J. Endocrinol* 1994;141(449-457

ALZET Comments: Follicle stimulating hormone, recomb. human; PBS; Rat; 7 days; controls received mp w/saline; replacement therapy (hypophysectomy); peptides.

P3133: J. S. Tapanainen, *et al.* Induction of ovarian follicle luteinization by recombinant follicle-stimulating hormone. *Endocrinology* 1993;133(6):2875-2880

ALZET Comments: Follicle stimulating hormone, recomb.; Rat; 48 hours; replacement therapy (hypophysectomy); peptides.

P2321: M. Ishimatsu, *et al.* Continuous luteinizing hormone infusion prevents atretic changes of the follicles during superovulation in hamsters. *Endocrine J* 1993;40(665-671

ALZET Comments: Follicle stimulating hormone, human; Luteinizing hormone; PBS; Albumin, bovine serum; SC; hamster; 2001; 4 days; controls received mp w/ vehicles only; agents infused alone and in combination; human LH used.

P2359: A. Meseguer, *et al.* Effects of pituitary hormones on the cell-specific expression of the KAP gene. *Mol. and Cellular Endocrin* 1992;89(153-162

ALZET Comments: Luteinizing hormone; ACTH, human; Thyroid-stimulating hormone, rat; Follicle stimulating hormone, rat; Growth hormone, rat; Prolactin, ovine; SC; mice; 2001; 7 days; controls received mp w/ vehicles; replacement therapy (hypophysectomy); peptides.

P3254: P. S. LaPolt, *et al.* Gonadotropin-induced up- and down-regulation of ovarian follicle-stimulating hormone (FSH) receptor gene expression in immature rats: effects of pregnant mare's serum gonadotropin, human chorionic gonadotropin, and recombinant FSH. *Endocrinology* 1992;130(3):1289-1295

ALZET Comments: Follicle stimulating hormone; SC; Rat; no duration posted; replacement therapy (hypophysectomy); peptides.

P1763: A. Wubishet, *et al.* Preovulatory LH profiles of superovulated cows and progesterone concentrations at embryo recovery. *Theriogenology* 1991;35(2):451-457

ALZET Comments: Follicle stimulating hormone; SC; cattle; 7 days; no comment posted.

P2046: K. K. Vihko, *et al.* Stimulatory effects of recombinant follicle-stimulating hormone on leydig cell function and spermatogenesis in immature hypophysectomized rats. *Endocrinology* 1991;129(4):1926-1932

ALZET Comments: Follicle stimulating hormone; PBS; SC; Rat; 7 days; replacement therapy (hypophysectomy).

P1951: G. S. Hamilton, *et al.* The superovulation of synchronous adult rats using follicle-stimulating hormone delivered by continuous infusion. *Biol. Reprod* 1991;44(851-856

ALZET Comments: Follicle stimulating hormone; Gonadotrophin, human chorionic; SC; Rat; 2001; 3, 4, 7 days; peptides.

P1859: J. A. Carnegie. Immunolocalization of fibronectin and laminin within rat blastocysts cultured under serum-free conditions. *J. Reprod. Fertil* 1991;91(423-434

ALZET Comments: Follicle stimulating hormone; Gonadotrophin, human chorionic; Saline; SC; Rat; 2001; 1 day; pumps removed and reimplanted into different animals.

P1698: D. S. Keeney, *et al.* Reversal of long-term LH deprivation on testosterone secretion and Leydig cell volume, number and proliferation in adult rats. *J. Endocrinol* 1990;127(47-58

ALZET Comments: Luteinizing HRH; Follicle stimulating hormone, ovine; SC; Rat; 2002; 2 weeks; peptides; ovine LHRH used.



P1755: K. M. Henderson, *et al.* Oocyte production and ovarian steroid concentrations of immature rats in response to some commercial gonadotrophin preparations. *Reprod. Fertil. Dev* 1990;2(671-682

ALZET Comments: Luteinizing hormone; Follicle stimulating hormone; SC; Rat; 2001; 72 hours; FSH-P, Folltropin, Oragen, Folligon; horse and porcine LH used.

P1805: A. B. Galway, *et al.* Recombinant follicle-stimulating hormone induces ovulation and tissue plasminogen activator expression in hypophysectomized rats. *Endocrinology* 1990;127(6):3023-3028

ALZET Comments: Follicle stimulating hormone; SC; Rat; 76 hours; no comment posted.

P1519: C. Rivier, *et al.* Immunoneutralization of endogenous inhibin modifies hormone secretion and ovulation rate in the rat. *Endocrinology* 1989;125(1):152-157

ALZET Comments: Follicle stimulating hormone, ovine; Albumin, bovine serum; PBS; IP; Rat; 2001; no duration posted; dose-response; functionality of mp verified by plasma levels.

P3801: M.-C. Leveille, *et al.* Preimplantation embryo development and serum steroid levels in immature rats induced to ovulate or superovulate with pregnant mares' serum gonadotropin injection of follicle-stimulating hormone infusions. *Gamete Res* 1989;23(127-138

ALZET Comments: Follicle stimulating hormone, porcine; Gonadotrophin, human chorionic; Saline, sterile; SC; Rat; 2001; 72 hours; comparison of sc PMSG injections vs. mp; peptides.

P1238: J. J. Milette, *et al.* The importance of follicle-stimulating hormone in the initiation of testicular growth in photostimulated djungarian hamsters. *Endocrinology* 1988;122(1060-1066

ALZET Comments: Follicle stimulating hormone, ovine; Luteinizing hormone; Saline; IP; hamster; 2001; 8 days; controls left untreated; dose-response (graph); peptides; ovine LH used.

P1815: D. T. Armstrong, *et al.* Superovulation of immature rats by continuous infusion of follicle-stimulating hormone. *Biol. Reprod* 1988;39(511-518

ALZET Comments: Follicle stimulating hormone; Rat; 2001; 60 hours; comparison of bid sc injections vs. mp; 'short half-life of FSH-A requires...continuous infusion...results establish the efficacy of FSH in causing superovulation when infused continuously.' (p.517).

P0858: A. Wubishet, *et al.* Continuous subcutaneous infusion of follicle stimulating hormone as a method of superovulating dairy cows. *Theriogenology* 1986;25(6):809-812

ALZET Comments: Follicle stimulating hormone; Saline; SC; cattle; 2ML1; 7 days; comparison of im injections vs. mp infusion; peptides.

P0520: F. Garza, *et al.* Luteinizing hormone increases the number of ova shed in the cyclic hamster and guinea-pig. *J. Endocrinol* 1984;101(289-298

ALZET Comments: Gonadotrophin, pregnant mare serum; Luteinizing hormone; Follicle stimulating hormone, ovine; Gonadotrophin, human chorionic; Albumin, bovine serum; PBS; SC; Guinea pig; hamster; mice; Rat; 2001; 2-5 days; comparison of agents effects; replacement therapy (hypophysectomy); agents admin. singly; peptides; bovine, ovine, & human LH used.

P0322: L. L. Ewing, *et al.* Effect of luteinizing hormone on Leydig cell structure and testosterone secretion. *Endocrinology* 1983;112(5):1763-1769

ALZET Comments: Follicle stimulating hormone; Growth hormone, ovine; Luteinizing hormone; Prolactin, ovine; Thyroid-stimulating hormone; Borate; Peanut oil; SC; Rat; 5 days; replacement therapy (hypophysectomy); simultaneous infusion of testosterone & estradiol implants w/ mp infusion of polypeptides; pulsed delivery of agents (intermittent w/ vehicle); peptides; ovine LH used.



R0046: P. Skett, *et al.* The effect of pituitary hormones on hepatic drug metabolism. In 'Biochemistry, Biophysics and Regulation of Cytochrome P-450,' J. -A. Gustafsson, J. Carlstedt-Duke, A. Mode, and J. Rafter (eds.), Elsevier/North-Holland, Amsterdam 1980;195-198

ALZET Comments: Enkephalin analog DADLE; Follicle stimulating hormone; Growth hormone, bovine; Growth hormone, rat; Pituitary extract; Prolactin, bovine; Prolactin, rat; Thyroid-stimulating hormone; Water; SC; Rat; 1701; 1 week; peptides.