

Selected bibliography from the CNR - The Jackson Laboratory Course on Cryopreservation of Mouse Germplasm

compiled by Stanley P. Leibo, New Orleans, USA

Embryo Cryopreservation, Mouse

Abas Mazni, O., C. A. Valdez, et al. (1990). "Quick freezing of mouse embryos using ethylene glycol with lactose or sucrose." *Anim Reprod Sci* 22: 161-169.

Ali, J. and J. N. Shelton (1993). "Vitrification of preimplantation stages of mouse embryos." *J Reprod Fertil* 98: 459-65.

Balakier, H., M. Zenzes, et al. (1991). "The effect of cryopreservation on the development of S- and G6 2-phase mouse embryos." *J In Vitro Fert Embryo Transf* 8: 89-95.

Capron, C. (1995). "Preserving embryos [letter]." *Nature* 375(6533): 626.

Chedid, S., E. Van den Abbeel, et al. (1992). "Effects of cryopreservation on survival and development of interphase- and mitotic-stage 1-cell mouse embryos." *Hum Reprod* 1992(7).

Cseh, S., W. Horlacher, et al. (1999). "Vitrification of mouse embryos in two cryoprotectant solutions." *Theriogenology* 52(1): p103-13.

Desai, N., J. Lawson, et al. (2000). "Assessment of growth factor effects on post-thaw development of cryopreserved mouse morulae to the blastocyst stage." *Hum Reprod* 15(2): p410-8.

Dinnyes, A., G. A. Wallace, et al. (1995). "Effect of genotype on the efficiency of mouse embryo cryopreservation by vitrification or slow freezing methods." *Mol Reprod Dev* 40(4): 429-35.

Dumoulin, J. C., J. M. Bergers-Janssen, et al. (1994). "The protective effects of polymers in the cryopreservation of human and mouse zonae pellucidae and embryos." *Fertil Steril* 62: 793-798.

Edashige, K., A. Asano, et al. (1999). "Restoration of resistance to osmotic swelling of vitrified mouse embryos by short-term culture." *Cryobiology* 38(4): p273-80.

- Emiliani, S., d. B. M. Van, et al. (2000). "Comparison of ethylene glycol, 1,2-propanediol and glycerol for cryopreservation of slow-cooled mouse zygotes, 4-cell embryos and blastocysts." *Hum Reprod* 15(4): p905-10.
- Fuku, E., P. S. Fiser, et al. (1993). "Development of whole and demi-embryos of mice in culture and in vivo after supercooled storage." *Cryobiology* 30: 604-608.
- Garrisi, G. J., B. E. Talansky, et al. (1992). "An intact zona pellucida is not necessary for successful mouse embryo cryopreservation." *Fert Steril* 57(3): 677-681.
- Glenister, P. and C. Thornton (2000). "Cryoconservation--archiving for the future." *Mamm Genome* 11(7): p565-71.
- Ishida, G., H. Saito, et al. (1997). "The optimal equilibration time for mouse embryos frozen by vitrification with trehalose." *Hum Reprod* 12(6): p1259-62.
- Ishimori, H., Y. Takahashi, et al. (1992). "Viability of vitrified mouse embryos using various cryoprotectant mixtures." *Theriogenology* 37: 481.
- Joly, T., M. Nibart, et al. (1992). "Hyaluronic acid as a substitute for proteins in the deep-freezing of embryos from mice and sheep: an in vitro investigation." *Theriogenology* 37: 473-480.
- Karanova, M. V., L. M. Mezhevnikina, et al. (1995). "[Study of cryoprotective properties of antifreeze glycoproteins from the white sea cod *Gadus morhua* on low temperature freezing of mouse embryos]." *Biofizika* 40(6): 1341-7.
- Kasai, M. (1986). "Nonfreezing technique for short-term storage of mouse embryos." *J in Vitro Fert Emb Trans* 3(1): 10-14.
- Kasai, M. (1995). "Cryopreservation of mammalian embryos. Vitrification." *Methods Mol Biol* 38: 211-9.
- Kasai, M. (1997). "Cryopreservation of mammalian embryos." *Mol Biotechnol* 7(2): p173-9.
- Kasai, M., J. H. Komi, et al. (1990). "A simple method for mouse embryo cryopreservation in a low toxicity vitrification solution, without appreciable loss of viability." *J Reprod Fert* 89(1): 91-97.
- Kasai, M., M. Nishimori, et al. (1992). "Survival of mouse morulae vitrified in an ethylene glycol-based solution after exposure to the solution at various temperatures." *Biol Reprod* 47: 1134-1139.
- Kasai, M., K. Niwa, et al. (1980). "Survival of mouse embryos frozen and thawed rapidly." *J Reprod Fert* 59: 51-56.
- Keskintepe, L., Y. Agca, et al. (2001). "Use of cryopreserved pronuclear embryos for the production of transgenic mice." *Biol Reprod* 65(2): p407-11.
- Kong, I., S. Lee, et al. (2000). "Comparison of open pulled straw (OPS) vs glass micropipette (GMP) vitrification in mouse blastocysts." *Theriogenology* 53(9): p1817-26.
- Kuleshova, L., D. MacFarlane, et al. (1999). "Sugars exert a major influence on the vitrification properties of ethylene glycol-based solutions and have low toxicity to embryos and oocytes." *Cryobiology* 38(2): p119-30.

- Kuleshova, L. and J. Shaw (2000). "A strategy for rapid cooling of mouse embryos within a double straw to eliminate the risk of contamination during storage in liquid nitrogen." *Hum Reprod* 15(12): p2604-9.
- Lane, M. and D. Gardner (2001). "Vitrification of mouse oocytes using a nylon loop." *Mol Reprod Dev* 58(3): p342-7.
- Lane, M., W. Schoolcraft, et al. (1999). "Vitrification of mouse and human blastocysts using a novel cryoloop container-less technique." *Fertil Steril* 72(6): p1073-8.
- Lee, R. K., J. T. Su, et al. (1997). "A comparison of the effects of different degrees of zona pellucida damage followed by cryopreservation on the postthaw development of mouse embryos." *J Assist Reprod Genet* 14(3): 170-3.
- Leibo, S. P. (1986). *Cryobiology: preservation of mammalian embryos*. Genetic Engineering of Animals. J. W. Evans and A. Hollaender. New York, Plenum Publishing Corporation: 251-272.
- Leibo, S. P. (1992). "Techniques for preservation of mammalian germ plasm." *Anim Biotechnol* 3(1): 139-153.
- Leibo, S. P. and K. Oda (1993). "High survival of mouse zygotes and embryos cooled rapidly or slowly in ethylene glycol plus polyvinylpyrrolidone." *Cryo - Letters* 14(3): 133-144.
- Li, R. L. and A. Trounson (1991). "Rapid freezing of the mouse blastocyst - effects of cryoprotectants and of time and temperature of exposure to cryoprotectant before direct plunging into liquid nitrogen." *Reprod Fert Dev* 3(2): 175-183.
- Liu, J., E. Van den Abbeel, et al. (1993). "Assessment of ultrarapid and slow freezing procedures for 1-cell and 4-cell mouse embryos." *Hum Reprod* 8: 1115-1119.
- Liu, J., E. Van den Abbeel, et al. (1993). "The in-vitro and in-vivo developmental potential of frozen and non-frozen biopsied 8-cell mouse embryos." *Hum Reprod* 8: 1481-1486.
- Ludwig, M., H. Muschalla, et al. (1998). "The effect of multiple cryopreservation procedures and blastomere biopsy on the in-vitro development of mouse embryos." *Hum Reprod* 13(11): p3165-8.
- Macas, E., M. Xie, et al. (1991). "Developmental capacities of two-cell mouse embryos frozen by three methods." *J In Vitro Fert Embryo Transf* 8: 208-212.
- Mahadevan, M. and M. Miller (1997). "Deleterious effect of equilibration temperature on the toxicity of propanediol during cryopreservation of mouse zygotes." *J Assist Reprod Genet* 14(1): p51-4.
- Marti, M., M. Grossmann, et al. (1997). "Characteristics of actin fibers and ultrastructure of the contact regions involved in the separation of blastomeres of two-cell mouse embryos, frozen-thawed without the zona pellucida." *Cryobiology* 34(2): p94-106.
- Marti, M., C. Nogues, et al. (1995). "Freezing of zona-free mouse embryos: characteristics of the plasma membrane and subsequent development of the embryos." *J Exp Zool* 272(3): 227-34.
- Massip, A., P. Van Der Zwalm, et al. (1984). "Effect of stage of development on survival of mouse embryos frozen-thawed rapidly." *Cryobiology* 21: 574-577.

- Matson, P. L., J. Graefling, et al. (1997). "Cryopreservation of oocytes and embryos: use of a mouse model to investigate effects upon zona hardness and formulate treatment strategies in an in-vitro fertilization programme." *Hum Reprod* 12(7): 1550-3.
- Mazur, P. (1990). "Equilibrium, quasi-equilibrium, and nonequilibrium freezing of mammalian embryos." *Cell Biophys* 17: 53-92.
- Mazur, P. and U. Schneider (1986). "Osmotic responses of preimplantation mouse and bovine embryos and their cryobiological implications." *Cell Biophys* 8: 259-284.
- Miyake, T., M. Kasai, et al. (1993). "Vitrification of mouse oocytes and embryos at various stages of development in an ethylene glycol-based solution by a simple method." *Theriogenology* 40: 121-134.
- Miyamoto, H. and T. Ishibashi (1977). "Survival of frozen-thawed mouse and rat embryos in the presence of ethylene glycol." *J Reprod Fert* 50: 373-375.
- Miyamoto, H. and T. Ishibashi (1978). "The protective action of glycols against freezing damage of mouse and rat embryos." *J Reprod Fert* 54: 427-432.
- Mukaida, T., S. Wada, et al. (1998). "Vitrification of human embryos based on the assessment of suitable conditions for 8-cell mouse embryos." *Hum Reprod* 13(10): p2874-9.
- Nagashima, H., K. Kobayashi, et al. (1991). "Cryopreservation of mouse half-morulae and chimeric embryos by vitrification." *Mol Reprod Dev* 30: 220-225.
- Nakagata, N. (1990). "Cryopreservation of mouse strains by ultrarapid freezing." *Jikken Dobutsu* 39(2): 299-301.
- Nakagata, N. (1995). "Studies on cryopreservation of embryos and gametes in mice." *Jikken Dobutsu* 44(1): 1-8.
- Nakao, K., N. Nakagata, et al. (1997). "Simple and efficient vitrification procedure for cryopreservation of mouse embryos." *Exp Anim* 46(3): 231-4.
- Nematollahi, N. and M. Valojerdi (1999). "Effect of Vero cell coculture on the development of frozen-thawed two-cell mouse embryos." *J Assist Reprod Genet* 16(7): p380-4.
- Oda, K., W. E. Gibbons, et al. (1992). "Osmotic shock of fertilized mouse ova." *J Reprod Fert* 95: 737-747.
- Palasz, A., J. Thundathil, et al. (2000). "Effect of reduced concentrations of glycerol and various macromolecules on the cryopreservation of mouse and cattle embryos." *Cryobiology* 41(1): p35-42.
- Pedro, P. B., S. E. Zhu, et al. (1997). "Effects of hypotonic stress on the survival of mouse oocytes and embryos at various stages." *Cryobiology* 35(2): 150-8.
- Rall, W., P. Schmidt, et al. (2000). "Factors affecting the efficiency of embryo cryopreservation and rederivatoin of rat and mouse models." *ILAR J* 41(4): p221-7.
- Rall, W. F. (1987). "Factors affecting the survival of mouse embryos cryopreserved by vitrification." *Cryobiology* 24: 387-402.

- Rall, W. F. and G. M. Fahy (1985). "Ice-free cryopreservation of mouse embryos at -196 degrees C by vitrification." *Nature* 313(6003): 573-575.
- Rall, W. F. and M. J. Wood (1994). "High in vitro and in vivo survival of day 3 mouse embryos vitrified or frozen in a non-toxic solution of glycerol and albumin." *J Reprod Fertil* 101: 681-688.
- Rayos, A. A., Y. Takahashi, et al. (1992). "Quick freezing of mouse two-, four-, and eight-cell embryos with ethylene glycol plus sucrose or lactose: effects of developmental stage and equilibration period on survival in vitro." *Anim Reprod Sci* 27: 239-245.
- Rayos, A. A., Y. Takahashi, et al. (1992). "Quick freezing of one-cell mouse embryos using ethylene glycol with sucrose." *Theriogenology* 37: 595-603.
- Renard, J.-P. and C. Babinet (1984). "High survival of mouse embryos after rapid freezing and thawing inside plastic straws with 1-2 propanediol as cryoprotectant." *J Exp Zool* 230: 443-448.
- Richa, J. (2000). "Cryopreservation of mouse embryos." *Methods Mol Biol* 135: 77-82.
- Scheffen, B., P. Van Der Zwalm, et al. (1986). "A simple and efficient procedure for preservation of mouse embryos by vitrification." *Cryo-Letters* 7: 260-269.
- Scott, L. F., S. G. Sundaram, et al. (1993). "The use of a liquid-phase controlled rate freezing system for the successful cryopreservation of mouse pre-embryos." *Fertil Steril* 60: 351-358.
- Shaw, J. M., L. Diotallevi, et al. (1991). "A simple rapid 4.5 M dimethylsulfoxide freezing technique for the cryopreservation of one-cell to blastocyst stage preimplantation mouse embryos." *Reprod Fertil Dev* 3: 621-626.
- Shaw, J. M., C. Ward, et al. (1995). "Evaluation of propanediol, ethylene glycol, sucrose and antifreeze proteins on the survival of slow-cooled mouse pronuclear and 4-cell embryos." *Hum Reprod* 10(2): 396-402.
- Snabes, M. C., J. Cota, et al. (1993). "Cryopreserved mouse embryos can successfully survive biopsy and refreezing." *J Assist Reprod Genet* 10: 513-516.
- Széll, A. and J. N. Shelton (1986). "Role of equilibration before rapid freezing of mouse embryos." *J Reprod Fert* 78: 699-703.
- Széll, A. and J. N. Shelton (1986). "Sucrose dilution of glycerol from mouse embryos frozen rapidly in liquid nitrogen vapour." *J Reprod Fert* 76: 401-408.
- Tada, N., M. Sato, et al. (1993). "A simple and rapid method for cryopreservation of mouse 2-cell embryos by vitrification: beneficial effect of sucrose and raffinose on their cryosurvival rate." *Theriogenology* 40: 333-344.
- Takahashi, Y. and H. Kanagawa (1985). "Quick freezing of mouse embryos by direct plunge into liquid nitrogen vapour: effects of sugars." *Jpn J Vet Res* 33: 141-144.
- Takahashi, Y. and H. Kanagawa (1990). "Effect of equilibration period on the viability of frozen-thawed mouse morulae after rapid freezing." *Mol Reprod Dev* 26(2): 105-110.
- Takeda, T., R. P. Elsdon, et al. (1984). "Cryopreservation of mouse embryos by direct plunging into liquid nitrogen." *Theriogenology* 21: 266 (Abstr).

- Thompson, L. A., A. Srikantharajah, et al. (1995). "A comparison of the effects of different biopsy strategies on the post-thaw survival of 8-cell-stage mouse embryos: implications for preimplantation diagnosis." *Hum Reprod* 10(3): 659-63.
- Titterton, J. L., J. Robinson, et al. (1995). "Synthetic and biological macromolecules: protection of mouse embryos during cryopreservation by vitrification." *Hum Reprod* 10(3): 649-53.
- Toner, M., E. G. Cravalho, et al. (1993). "Nonequilibrium freezing of one-cell mouse embryos - membrane integrity and development potential." *Biophys J* 64(6): 1908-1921.
- Trounson, A. O., A. Peura, et al. (1987). "Ultrarapid freezing: a new low-cost and effective method of embryo cryopreservation." *Fertil Steril* 48: 843-850.
- Uechi, H., O. Tsutsumi, et al. (1997). "Cryopreservation of mouse embryos affects later embryonic development possibly through reduced expression of the glucose transporter GLUT1." *Mol Reprod Dev* 48(4): p496-500.
- Uechi, H., Tsutsumi(3)O, et al. (1999). "Comparison of the effects of controlled-rate cryopreservation and vitrification on 2-cell mouse embryos and their subsequent development." *Hum Reprod* 14(11): p2827-32.
- Valdez, C. A., O. Abas Mazani, et al. (1990). "Effects of equilibration time, precooling and developmental stage on the survival of mouse embryos cryopreserved by vitrification." *Theriogenology* 33: 627-636.
- Valdez, C. A., O. Abas Mazni, et al. (1992). "Successful cryopreservation of mouse blastocysts using a new vitrification solution." *J Reprod Fertil* 96: 793-802.
- Valdez, C. A., M. Hishinuma, et al. (1991). "Effect of trehalose dilution on the survival of vitrified-thawed mouse morulae." *Jpn J Vet Res* 39: 23-26.
- Van der Elst, J., E. Van den Abbeel, et al. (1995). "The effect of equilibration temperature and time on the outcome of ultrarapid freezing of 1-cell mouse embryos." *Hum Reprod* 10(2): 379-83.
- Vitale, N. J., M. W. Myers, et al. (1997). "In-vitro development of refrozen mouse embryos." *Hum Reprod* 12(2): 310-6.
- Wakayama, T., D. Whittingham, et al. (1998). "Production of normal offspring from mouse oocytes injected with spermatozoa cryopreserved with or without cryoprotection." *J Reprod Fertil* 112(1): p11-7.
- Whittingham, D. G. (1974). "The viability of frozen-thawed mouse blastocysts." *J Reprod Fert* 37: 159-162.
- Whittingham, D. G., S. P. Leibo, et al. (1972). "Survival of mouse embryos frozen to -196 °C and -269 °C." *Science* 178: 411-414.
- Wiggins, P., J. Rowlandson, et al. (1999). "Preservation of murine embryos in a state of dormancy at 4 degreesC." *Am J Physiol* 276(2 Pt 1): pC291-9.
- Wilmot, I. (1972). "The effect of cooling rate, warming rate of cryoprotective agent, and stage of development on survival of mouse embryos during freezing and thawing." *Life Sci* 11: 1071-9.

Wilmut, I. and L. E. Rowson (1973). "The successful low-temperature preservation of mouse and cow embryos." *J Reprod Fertil* 33(2): 352-3.

Zhu, S. E., M. Kasai, et al. (1993). "Cryopreservation of expanded mouse blastocysts by vitrification in ethylene glycol-based solutions." *J Reprod Fertil* 98(1): 139-145.

Embryo Cryopreservation, Other Species

Auroux, M. (2000). "Long-term effects in progeny of paternal environment and of gamete/embryo cryopreservation." *Hum Reprod Update* 6(6): p550-63.

Berthelot, F., F. Martinat-Botte, et al. (2000). "Piglets born after vitrification of embryos using the open pulled straw method." *Cryobiology* 41(2): p116-24.

Chupin, D., B. Florin, et al. (1984). "Comparison of two methods for one-step in-straw thawing and direct transfer of cattle blastocysts." *Theriogenology* 21: 455-459.

Dobrinsky, J., V. Pursel, et al. (2000). "Birth of piglets after transfer of embryos cryopreserved by cytoskeletal stabilization and vitrification." *Biol Reprod* 62(3): p564-70.

Edgar, D., H. Bourne, et al. (2000). "A quantitative analysis of the impact of cryopreservation on the implantation potential of human early cleavage stage embryos." *Hum Reprod* 15(1): p175-9.

Fair, T., P. Lonergan, et al. (2001). "Ultrastructure of bovine blastocysts following cryopreservation: effect of method of blastocyst production." *Mol Reprod Dev* 58(2): p186-95.

Freedman, M., M. Farber, et al. (1988). "Pregnancy resulting from cryopreserved human embryos using a one-step in situ dilution procedure." *Obstet Gynecol* 72: 502-505.

Hirabayashi, M., R. Takahashi, et al. (1997). "Viability of transgenic rat embryos after freezing and thawing." *Exp Anim* 46(2): 111-5.

Hsieh, Y., H. Tsai, et al. (1999). "Ultrarapid cryopreservation of human embryos: experience with 1,582 embryos." *Fertil Steril* 72(2): p253-6.

Hunter, J. E. (1995). "Cryopreservation of human gametes." *Methods Mol Biol* 38: 221-34.

Hunter, J. E. (1995). "Cryopreservation of mammalian embryos. Slow cooling." *Methods Mol Biol* 38: 199-209.

Isachenko, V. V., E. F. Isachenko, et al. (1997). "Ultrarapid freezing of rat embryos with rapid dilution of permeable cryoprotectants." *Cryobiology* 34(2): 157-64.

Jones, H. W., Jr., H. J. Out, et al. (1997). "Cryopreservation: the practicalities of evaluation." *Hum Reprod* 12(7): 1522-4.

Kobayashi, S., M. Takei, et al. (1998). "Piglets produced by transfer of vitrified porcine embryos after stepwise dilution of cryoprotectants." *Cryobiology* 36(1): p20-31.

Kuwayama, M., P. Holm, et al. (1997). "Successful cryopreservation of porcine embryos by vitrification." *Vet Rec* 141(14): 365.

- Lazar, L., J. Spak, et al. (2000). "The vitrification of in vitro fertilized cow blastocysts by the open pulled straw method." *Theriogenology* 54(4): p571-8.
- Leibo, S. P. (1984). "A one-step method for direct nonsurgical transfer of frozen-thawed bovine embryos." *Theriogenology* 21: 767-790.
- Lim, J., J. Ko, et al. (1999). "Development of in vitro matured bovine oocytes after cryopreservation with different cryoprotectants." *Theriogenology* 51(7): p1303-10.
- Liu, J., E. Woods, et al. (2000). "Cryobiology of rat embryos II: A theoretical model for the development of interrupted slow freezing procedures." *Biol Reprod* 63(5): p1303-12.
- Magli, M., L. Gianaroli, et al. (1999). "Impact of blastomere biopsy and cryopreservation techniques on human embryo viability." *Hum Reprod* 14(3): p770-3.
- Martinez, A. and M. Matkovic (1998). "Cryopreservation of ovine embryos: slow freezing and vitrification." *Theriogenology* 49(5): p1039-49.
- Menoret, S., M. Jean, et al. (1999). "Optimization of cryopreservation procedures for rat embryos." *Transplant Proc* 31(3): p1531-2.
- Mtango, N., M. Varisanga, et al. (2001). "The effect of prefreezing the diluent portion of the straw in a step-wise vitrification process using ethylene glycol and polyvinylpyrrolidone to preserve bovine blastocysts." *Cryobiology* 42(2): p135-8.
- Peura, T., M. Lane, et al. (1999). "Cloning of bovine embryos from vitrified donor blastomeres." *J Reprod Fertil* 116(1): p95-101.
- Pfaff, R., Y. Agca, et al. (2000). "Cryobiology of rat embryos I: determination of zygote membrane permeability coefficients for water and cryoprotectants, their activation energies, and the development of improved cryopreservation methods." *Biol Reprod* 63(5): p1294-302.
- Renard, J. P., Y. Heyman, et al. (1982). "Congelation de d'embryon bovin: Une nouvelle method de decongelation pour transfert cervical d'embryons conditionnes uneseule fois en paillettes." *Ann Med Vet* 126: 23-32.
- Selick, C. E., G. E. Hofmann, et al. (1995). "Embryo quality and pregnancy potential of fresh compared with frozen embryos--is freezing detrimental to high quality embryos?" *Hum Reprod* 10(2): 392-395.
- Shenfield, F., G. Pennings, et al. (2001). "II. The cryopreservation of human embryos." *Hum Reprod* 16(5): p1049-50.
- Sommerfeld, V. and H. Niemann (1999). "Cryopreservation of bovine in vitro produced embryos using ethylene glycol in controlled freezing or vitrification." *Cryobiology* 38(2): p95-105.
- Stein, A., B. Fisch, et al. (1993). "Cryopreservation of rat blastocysts: a comparative study of different cryoprotectants and freezing/thawing methods." *Cryobiology* 30(2): 128-34.
- Tachikawa, S., T. Otoi, et al. (1993). "Successful vitrification of bovine blastocysts, derived by in vitro maturation and fertilization." *Mol Reprod Dev* 34: 266-271.
- Tada, N., M. Sato, et al. (1995). "Efficient cryopreservation of hairless mutant (bald) and normal Wistar rat embryos by vitrification." *Lab Anim Sci* 45(3): 323-325.

- Tao, J., R. Tamis, et al. (2001). "Pregnancies achieved after transferring frozen morula/compact stage embryos." *Fertil Steril* 75(3): p629-31.
- Tucker, M. J., H. I. Kort, et al. (1995). "Effect of coculture on subsequent survival and implantation of cryopreserved human embryos." *J Assist Reprod Genet* 12(10): 689-92.
- Tucker, M. J., P. C. Morton, et al. (1995). "Cryopreservation of human embryos and oocytes." *Curr Opin Obstet Gynecol* 7(3): 188-92.
- Van, D. A. E. and S. A. Van (2000). "Zona pellucida damage to human embryos after cryopreservation and the consequences for their blastomere survival and in-vitro viability." *Hum Reprod* 15(2): p373-8.
- Van den Abbeel, E., M. Camus, et al. (1997). "A randomized comparison of the cryopreservation of one-cell human embryos with a slow controlled-rate cooling procedure or a rapid cooling procedure by direct plunging into liquid nitrogen." *Hum Reprod* 12(7): 1554-60.
- Van den Abbeel, E., M. Camus, et al. (1997). "Viability of partially damaged human embryos after cryopreservation." *Hum Reprod* 12(9): 2006-10.
- Van Voorhis, B. J., C. H. Syrop, et al. (1995). "The efficacy and cost effectiveness of embryo cryopreservation compared with other assisted reproductive techniques." *Fertil Steril* 64(3): 647-50.
- Van Wagtendonk-De Leeuw, A. M., J. H. Den Daas, et al. (1995). "Comparison of the efficacy of conventional slow freezing and rapid cryopreservation methods for bovine embryos." *Cryobiology* 32(2): 157-67.
- Vincent, C., G. Pruliere, et al. (1987). "Comparative effect of cryoprotectants rabbit embryos cytoskeleton." *Cryo-Letters* 8: 356-361.

Oocyte Cryopreservation

- Aigner, S., J. Van der Elst, et al. (1992). "The influence of slow and ultra-rapid freezing on the organization of the meiotic spindle of the mouse oocyte." *Hum Reprod* 7: 857-864.
- Albertini, D. F. (1992). "Regulation of meiotic maturation in the mammalian oocyte: interplay between exogenous cues and the microtubule cytoskeleton." *BioEssays* 14: 97-.
- Ali, J., W. K. Whitten, et al. (1993). "Effect of culture systems on mouse early embryo development in oocytes using 1,2-propanediol and the configuration of the meiotic spindle." *Hum Reprod* 8: 1101-1109.
- Bos-Mikich, A., M. Wood, et al. (1995). "Cytogenetical analysis and developmental potential of vitrified mouse oocytes." *Biol Reprod* 53(4): p780-5.
- Bos-Mikich, A., M. J. Wood, et al. (1995). "Cytogenetical analysis and developmental potential of vitrified mouse oocytes." *Biol Reprod* 53(4): 780-5.
- Bouquet, M., J. Selva, et al. (1992). "The incidence of chromosomal abnormalities in frozen-thawed mouse oocytes after in-vitro fertilization." *Hum Reprod* 7: 76-80.

- Bouquet, M., J. Selva, et al. (1995). "Effects of cooling and equilibration in DMSO, and cryopreservation of mouse oocytes, on the rates of in vitro fertilization, development, and chromosomal abnormalities." *Mol Reprod Dev* 40(1): 110-5.
- Carroll, J., H. Depypere, et al. (1990). "Freeze-thaw-induced changes of the zona pellucida explains decreased rates of fertilization in frozen-thawed mouse oocytes." *J Reprod Fert* 90(2): 547-553.
- Chen, S., Y. Lien, et al. (2000). "Open pulled straws for vitrification of mature mouse oocytes preserve patterns of meiotic spindles and chromosomes better than conventional straws." *Hum Reprod* 15(12): p2598-603.
- Cleary, M., M. Snow, et al. (2001). "Cryopreservation of mouse ovarian tissue following prolonged exposure to an Ischemic environment." *Cryobiology* 42(2): p121-33.
- Cooper, A., S. Paynter, et al. (1998). "Differential effects of cryopreservation on nuclear or cytoplasmic maturation in vitro in immature mouse oocytes from stimulated ovaries." *Hum Reprod* 13(4): p971-8.
- Cortvrindt, R., J. Smitz, et al. (1996). "A morphological and functional study of the effect of slow freezing followed by complete in-vitro maturation of primary mouse ovarian follicles." *Hum Reprod* 11(12): 2648-55.
- Cox, S. L., J. Shaw, et al. (1996). "Transplantation of cryopreserved fetal ovarian tissue to adult recipients in mice." *J Reprod Fert* 107(2): 315-22.
- del, P. E., Y. Takahashi, et al. (2001). "Vitrification of mouse oocytes in ethylene glycol-raffinose solution: effects of preexposure to ethylene glycol or raffinose on oocyte viability." *Cryobiology* 42(2): p103-11.
- Eroglu, A., M. Toner, et al. (1998). "Cytoskeleton and polyploidy after maturation and fertilization of cryopreserved germinal vesicle-stage mouse oocytes." *J Assist Reprod Genet* 15(7): p447-54.
- Eroglu, A., T. Toth, et al. (1998). "Alterations of the cytoskeleton and polyploidy induced by cryopreservation of metaphase II mouse oocytes." *Fertil Steril* 69(5): p944-57.
- Frydman, N., J. Selva, et al. (1997). "Cryopreserved immature mouse oocytes: a chromosomal and spindle study." *J Assist Reprod Genet* 14(10): p617-23.
- George, M. A. and M. H. Johnson (1993). "Cytoskeletal organization and zona sensitivity to digestion by chymotrypsin of frozen - thawed mouse oocytes." *Hum Reprod* 8(4): 612-620.
- George, M. A., M. H. Johnson, et al. (1992). "Use of fetal bovine serum to protect against zona hardening during preparation of mouse oocytes for cryopreservation." *Hum Reprod* 7: 408-412.
- Gook, D. A., S. M. Osborn, et al. (1993). "Cryopreservation of mouse and human oocytes using 1,2-propanediol and the configuration of the meiotic spindle." *Hum Reprod* 8: 1101-1109.
- Hunter, J. E., B. J. Fuller, et al. (1995). "The effect of cooling and hypertonic exposure on murine oocyte function, fertilization, and development." *Cryobiology* 23(4): 318-26.

- Inagaki, N., S. Suzuki, et al. (1996). "Egg activation induced by osmotic pressure change and the effects of amiloride on the cryopreservation of mouse oocytes." *Mol Hum Reprod* 2(11): p835-43.
- Johnson, M. H. (1989). "The effect on fertilization of exposure of mouse oocytes to dimethylsulphoxide: An optimal protocol." *J In Vitro Fert Embryo Trans* 6: 168-175.
- Johnson, M. H. and S. J. Pickering (1987). "The effect of dimethylsulphoxide on the microtubular system of the mouse oocyte." *Development* 100: 313-324.
- Karlsson, J., A. Eroglu, et al. (1996). "Fertilization and development of mouse oocytes cryopreserved using a theoretically optimized protocol." *Hum Reprod* 11(6): p1296-305.
- King, W. W., L. G. St Amant, et al. (1994). "A technique for serial spermatozoa collection in mice." *Lab Anim Sci* 44(3): 295-6.
- Kola, I., C. Kirby, et al. (1988). "Vitrification of mouse oocytes results in aneuploid zygotes and malformed fetuses." *Teratology* 38(5): 467-74.
- Kono, T., O. Y. Kwon, et al. (1991). "Development of vitrified mouse oocytes after in vitro fertilization." *Cryobiology* 28(1): 50-54.
- Kuleshova, L., D. MacFarlane, et al. (1999). "Sugars exert a major influence on the vitrification properties of ethylene glycol-based solutions and have low toxicity to embryos and oocytes." *Cryobiology* 38(2): p119-30.
- Kuretake, S., Y. Kimura, et al. (1996). "Fertilization and development of mouse oocytes injected with isolated sperm heads." *Biol Reprod* 55(4): 789-95.
- Lane, M. and D. Gardner (2001). "Vitrification of mouse oocytes using a nylon loop." *Mol Reprod Dev* 58(3): p342-7.
- Leibo, S. P., F. J. DeMayo, et al. (1991). "Production of transgenic mice from cryopreserved fertilized ova." *Mol Reprod Dev* 30(4): 313-319.
- Levron, J., S. Willadsen, et al. (1998). "Cryopreservation of activated mouse oocytes and zygote reconstitution after thaw." *Hum Reprod* 13 Suppl 4: 109-16.
- Litkouhi, B., D. Marlow, et al. (1997). "The influence of cryopreservation on murine oocyte water permeability and osmotically inactive volume." *Cryobiology* 34(1): p23-35.
- Litkouhi, B., D. Marlow, et al. (1997). "The influence of cryopreservation on murine oocyte water permeability and osmotically inactive volume." *Cryobiology* 34(1): 23-35.
- Liu, J., d. E. J. Van, et al. (2001). "Live offspring by in vitro fertilization of oocytes from cryopreserved primordial mouse follicles after sequential in vivo transplantation and in vitro maturation." *Biol Reprod* 64(1): p171-8.
- Matson, P., J. Graefling, et al. (1997). "Cryopreservation of oocytes and embryos: use of a mouse model to investigate effects upon zona hardness and formulate treatment strategies in an in-vitro fertilization programme." *Hum Reprod* 12(7): p1550-3.
- Matson, P. L., J. Graefling, et al. (1997). "Cryopreservation of oocytes and embryos: use of a mouse model to investigate effects upon zona hardness and formulate treatment strategies in an in-vitro fertilization programme." *Hum Reprod* 12(7): 1550-3.

- McWilliams, R. B., W. E. Gibbons, et al. (1995). "Osmotic and physiological responses of mouse zygotes and human oocytes to mono- and disaccharides." *Hum Reprod* 10(5): 1163-71.
- Nakagata, N. (1989). "High survival rate of unfertilized mouse oocytes after vitrification." *J Reprod Fert* 87(2): 479-483.
- O'Neil, L., S. Paynter, et al. (1998). "Vitrification of mature mouse oocytes in a 6 M Me2SO solution supplemented with antifreeze glycoproteins: the effect of temperature." *Cryobiology* 37(1): p59-66.
- O'Neil, L., S. J. Paynter, et al. (1997). "Vitrification of mature mouse oocytes: improved results following addition of polyethylene glycol to a dimethyl sulfoxide solution." *Cryobiology* 34(3): 295-301.
- Ogura, A., J. Matsuda, et al. (1996). "Mouse oocytes injected with cryopreserved round spermatids can develop into normal offspring." *J Assist Reprod Genet* 13(5): 431-4.
- Park, S., H. Chung, et al. (2001). "Cryopreservation of ICR mouse oocytes: improved post-thawed preimplantation development after vitrification using Taxol, a cytoskeleton stabilizer." *Fertil Steril* 75(6): p1177-84.
- Parks, J. E. and N. A. Ruffing (1992). "Factors affecting low temperature survival of mammalian oocytes." *Theriogenology* 37(1): 59-73.
- Paynter, S., B. Fuller, et al. (1999). "Temperature dependence of Kedem-Katchalsky membrane transport coefficients for mature mouse oocytes in the presence of ethylene glycol." *Cryobiology* 39(2): p169-76.
- Paynter, S. J., B. J. Fuller, et al. (1997). "Temperature dependence of mature mouse oocyte membrane permeabilities in the presence of cryoprotectant." *Cryobiology* 34(2): 122-30.
- Pedro, P. B., S. E. Zhu, et al. (1997). "Effects of hypotonic stress on the survival of mouse oocytes and embryos at various stages." *Cryobiology* 35(2): 150-8.
- Pickering, S. J., A. Cant, et al. (1990). "Transient cooling to room temperature can cause irreversible disruption of the meiotic spindle in the human oocyte." *Fertil Steril* 54: 102-108.
- Pickering, S. J. and M. H. Johnson (1987). "The influence of cooling on the organization of the meiotic spindle of the mouse oocyte." *Hum Reprod* 2: 207-216.
- Sathananthan, A. H., S. C. Ng, et al. (1988). "The effects of ultrarapid freezing on meiotic and mitotic spindles of mouse oocytes and embryos." *Gamete Res* 21(4): 385-401.
- Schroeder, A. C., A. K. Champlin, et al. (1990). "Developmental capacity of mouse oocytes cryopreserved before and after maturation in vitro." *J Reprod Fert* 89(1): 43-50.
- Schroeder, A. C., D. Johnston, et al. (1991). "Reversal of postmortem degeneration of mouse oocytes during meiotic maturation in vitro." *J Exp Zool* 258: 240-245.
- Shaw, J. M., J. Bowles, et al. (1996). "Fresh and cryopreserved ovarian tissue samples from donors with lymphoma transmit the cancer to graft recipients." *Hum Reprod* 11(8): 1668-73.
- Shaw, P. W., B. J. Fuller, et al. (1991). "Vitrification of mouse oocytes: Improved rates of survival, fertilization, and development to blastocysts." *Mol Reprod Dev* 29(4): 373-378.

- Smitz, J. and R. Cortvrindt (1998). "Follicle culture after ovarian cryostorage." *Maturitas* 30(2): p171-9.
- Spears, N., N. I. Boland, et al. (1994). "Mouse oocytes derived from in vitro grown primary ovarian follicles are fertile." *Hum Reprod* 9: 527-532.
- Stachecki, J., J. Cohen, et al. (1998). "Cryopreservation of unfertilized mouse oocytes: the effect of replacing sodium with choline in the freezing medium." *Cryobiology* 37(4): p346-54.
- Stachecki, J., J. Cohen, et al. (1998). "Detrimental effects of sodium during mouse oocyte cryopreservation." *Biol Reprod* 59(2): p395-400.
- Stachecki, J. and S. Willadsen (2000). "Cryopreservation of mouse oocytes using a medium with low sodium content: effect of plunge temperature." *Cryobiology* 40(1): p4-12.
- Surrey, E. S. and P. J. Quinn (1990). "Successful ultrarapid freezing of unfertilized oocytes." *J in Vitro Fert Emb Trans* 7(5): 262-266.
- Sztejn, J., M. O'Brien, et al. (2000). "Rescue of oocytes from antral follicles of cryopreserved mouse ovaries: competence to undergo maturation, embryogenesis, and development to term." *Hum Reprod* 15(3): p567-71.
- Van, d. E. J., Y. Amerijckx, et al. (1998). "Ultra-rapid freezing of mouse oocytes lowers the cell number in the inner cell mass of 5 day old in-vitro cultured blastocysts." *Hum Reprod* 13(6): p1595-9.
- Van der Auwera, I., F. Cornillie, et al. (1992). "The age of pronucleate mouse ova influences their development in vitro and survival after freezing." *Hum Reprod* 7: 660-664.
- Van der Elst, J., S. Nerinckx, et al. (1992). "In vitro maturation of mouse germinal vesicle-stage oocytes following cooling, exposure to cryoprotectants and ultrarapid freezing: limited effect on the morphology of the second meiotic spindle." *Hum Reprod* 7: 1440-1446.
- Van der Elst, J., S. Nerinckx, et al. (1993). "Association of ultrarapid freezing of mouse oocytes with increased polyploidy at the pronucleate stage, reduced cell numbers in blastocysts and impaired fetal development." *J Reprod Fertil* 99: 25-32.
- Van der Elst, J., E. Van den Abbeel, et al. (1988). "Effect of 1,2-propanediol and dimethylsulphoxide on the meiotic spindle of the mouse oocyte." *Hum Reprod* 3: 960-967.
- Van der Elst, J. C., X. X. Nerinckx, et al. (1993). "Slow and ultrarapid freezing of fully grown germinal vesicle-stage mouse oocytes: optimization of survival rate outweighed by defective blastocyst formation." *J Assist Reprod Genet* 10: 202-212.
- Vincent, C., V. Garnier, et al. (1989). "Solvent effects on cytoskeletal organization and in-vivo survival after freezing of rabbit oocytes." *J Reprod Fert* 87(2): 809-820.
- Vincent, C., S. J. Pickering, et al. (1990). "Dimethylsulphoxide affects the organisation of microfilaments in the mouse oocyte." *Mol Reprod Dev* 26(3): 227-235.
- Willoughby, C. E., P. Mazur, et al. (1996). "Osmotic tolerance limits and properties of murine spermatozoa." *Biol Reprod* 55(3): 715-27.
- Wood, M. J., D. G. Whittingham, et al. (1992). "Fertilization failure of frozen mouse oocytes is not due to premature cortical granule release." *Biol Reprod* 46: 1187-1195.

Ovary Cryopreservation

- Candy, C., M. Wood, et al. (1997). "Effect of cryoprotectants on the survival of follicles in frozen mouse ovaries." *J Reprod Fertil* 110(1): p11-9.
- Candy, C., M. Wood, et al. (2000). "Restoration of a normal reproductive lifespan after grafting of cryopreserved mouse ovaries." *Hum Reprod* 15(6): p1300-4.
- Cleary, M., M. Snow, et al. (2001). "Cryopreservation of mouse ovarian tissue following prolonged exposure to an Ischemic environment." *Cryobiology* 42(2): p121-33.
- Cooper, A., S. Paynter, et al. (1998). "Differential effects of cryopreservation on nuclear or cytoplasmic maturation in vitro in immature mouse oocytes from stimulated ovaries." *Hum Reprod* 13(4): p971-8.
- Gunasena, K., J. Lakey, et al. (1997). "Allogeneic and xenogeneic transplantation of cryopreserved ovarian tissue to athymic mice." *Biol Reprod* 57(2): p226-31.
- Gunasena, K., P. Villines, et al. (1997). "Live births after autologous transplant of cryopreserved mouse ovaries." *Hum Reprod* 12(1): p101-6.
- Gunasena, K. T., J. R. Lakey, et al. (1997). "Allogeneic and xenogeneic transplantation of cryopreserved ovarian tissue to athymic mice." *Biol Reprod* 57(2): 226-31.
- Gunasena, K. T., P. M. Villines, et al. (1997). "Live births after autologous transplant of cryopreserved mouse ovaries." *Hum Reprod* 12(1): 101-6.
- Kagabu, S. and M. Umezu (2000). "Transplantation of cryopreserved mouse, Chinese hamster, rabbit, Japanese monkey and rat ovaries into rat recipients." *Exp Anim* 49(1): p17-21.
- Liu, J., d. E. J. Van, et al. (2001). "Live offspring by in vitro fertilization of oocytes from cryopreserved primordial mouse follicles after sequential in vivo transplantation and in vitro maturation." *Biol Reprod* 64(1): p171-8.
- Newton, H. and P. Illingworth (2001). "In-vitro growth of murine pre-antral follicles after isolation from cryopreserved ovarian tissue." *Hum Reprod* 16(3): p423-9.
- Shaw, J., S. Cox, et al. (2000). "Evaluation of the long-term function of cryopreserved ovarian grafts in the mouse, implications for human applications." *Mol Cell Endocrinol* 161(1-2): p103-10.
- Shaw, J. M., J. Bowles, et al. (1996). "Fresh and cryopreserved ovarian tissue samples from donors with lymphoma transmit the cancer to graft recipients." *Hum Reprod* 11(8): 1668-73.
- Smits, J. and R. Cortvrindt (1998). "Follicle culture after ovarian cryostorage." *Maturitas* 30(2): p171-9.
- Sztejn, J., T. McGregor, et al. (1999). "Transgenic mouse strain rescue by frozen ovaries." *Lab Anim Sci* 49(1): p99-100.

Sztejn, J., M. O'Brien, et al. (2000). "Rescue of oocytes from antral follicles of cryopreserved mouse ovaries: competence to undergo maturation, embryogenesis, and development to term." *Hum Reprod* 15(3): p567-71.

Sztejn, J., H. Sweet, et al. (1998). "Cryopreservation and orthotopic transplantation of mouse ovaries: new approach in gamete banking." *Biol. Reprod.* 58: 1071-1074.

Takahashi, E., I. Miyoshi, et al. (2001). "Rescue of a transgenic mouse line by transplantation of a frozen-thawed ovary obtained postmortem." *Contemp Top Lab Anim Sci* 40(4): p28-31.

Sperm Cryopreservation

An, T., M. Iwakiri, et al. (2000). "Factors affecting the survival of frozen-thawed mouse spermatozoa." *Cryobiology* 40(3): p237-49.

Avarbock, M., C. Brinster, et al. (1996). "Reconstitution of spermatogenesis from frozen spermatogonial stem cells." *Nat Med* 2(6): p693-6.

Brinster, R. and M. Nagano (1998). "Spermatogonial stem cell transplantation, cryopreservation and culture." *Semin Cell Dev Biol* 9(4): p401-9.

Cohen, J., M. Alikani, et al. (1991). "Partial zona dissection or subzonal sperm insertion: microsurgical fertilization alternatives based on evaluation of sperm and embryo morphology." *Fertil Steril* 56: 696-706.

Critser, J. and L. Mobraaten (2000). "Cryopreservation of murine spermatozoa." *ILAR J* 41(4): p197-206.

Devireddy, R., D. Swanlund, et al. (1999). "Subzero water permeability parameters of mouse spermatozoa in the presence of extracellular ice and cryoprotective agents." *Biol Reprod* 61(3): p764-75.

Fuller, S. and D. Whittingham (1997). "Capacitation-like changes occur in mouse spermatozoa cooled to low temperatures." *Mol Reprod Dev* 46(3): p318-24.

Fuller, S. J. and D. G. Whittingham (1996). "Effect of cooling mouse spermatozoa to 4 degrees C on fertilization and embryonic development." *J Reprod Fertil* 108(1): 139-45.

Gunasena, K. T., P. M. Villines, et al. (1997). "Live births after autologous transplant of cryopreserved mouse ovaries." *Hum Reprod* 12(1): 101-6.

Holt, W. V. (1997). "Alternative strategies for the long-term preservation of spermatozoa." *Reprod Fertil Dev* 9(3): 309-19.

Karlsson, J., A. Eroglu, et al. (1996). "Fertilization and development of mouse oocytes cryopreserved using a theoretically optimized protocol." *Hum Reprod* 11(6): p1296-305.

Katkov, I., N. Katkova, et al. (1998). "Mouse spermatozoa in high concentrations of glycerol: chemical toxicity vs osmotic shock at normal and reduced oxygen concentrations." *Cryobiology* 37(4): p325-38.

- Marschall, S., U. Huffstadt, et al. (1999). "Reliable recovery of inbred mouse lines using cryopreserved spermatozoa." *Mamm Genome* 10(8): p773-6.
- Mazur, P., I. Katkov, et al. (2000). "The enhancement of the ability of mouse sperm to survive freezing and thawing by the use of high concentrations of glycerol and the presence of an *Escherichia coli* membrane preparation (Oxyrase) to lower the oxygen concentration." *Cryobiology* 40(3): p187-209.
- Mobraaten, L. E., A. K. Champlin, et al. (1991). "Cryopreservation and in vitro fertilization with mouse sperm." *Cryobiology* 28: 527-528.
- Nakagata, N. (1992). "Production of normal young following insemination of frozen-thawed mouse spermatozoa into fallopian tubes of pseudopregnant females." *Jikken Dobutsu* 41: 519-522.
- Nakagata, N. (1995). "Studies on cryopreservation of embryos and gametes in mice." *Jikken Dobutsu* 44(1): 1-8.
- Nakagata, N. (1996). "Use of cryopreservation techniques of embryos and spermatozoa for production of transgenic (Tg) mice and for maintenance of Tg mouse lines." *Lab Anim Sci* 46(2): 236-8.
- Nakagata, N. (2000). "Cryopreservation of mouse spermatozoa." *Mamm Genome* 11(7): p572-6.
- Nakagata, N., K. Matsumoto, et al. (1992). "Cryopreservation of spermatozoa of a transgenic mouse." *Jikken Dobutsu* 41: 537-540.
- Nakagata, N., M. Okamoto, et al. (1997). "Positive effect of partial zona-pellucida dissection on the in vitro fertilizing capacity of cryopreserved C57BL/6J transgenic mouse spermatozoa of low motility." *Biol Reprod* 57(5): 1050-5.
- Nakagata, N. and T. Takeshima (1992). "High fertilizing ability of mouse spermatozoa diluted slowly after cryopreservation." *Theriogenology* 37: 1283-1291.
- Nakagata, N. and T. Takeshima (1993). "Cryopreservation of mouse spermatozoa from inbred and F1 hybrid strains." *Jikken Dobutsu* 42: 317-320.
- Noiles, E. E., K. A. Thompson, et al. (1997). "Water permeability, L_p , of the mouse sperm plasma membrane and its activation energy are strongly dependent on interaction of the plasma membrane with the sperm cytoskeleton." *Cryobiology* 35(1): 79-92.
- Okamoto, M., N. Nakagata, et al. (2001). "Cryopreservation and transport of mouse spermatozoa at -79 degrees C." *Exp Anim* 50(1): p83-6.
- Okuyama, M., S. Isogai, et al. (1990). "In vitro fertilization (IVF) and artificial insemination (AI) by cryopreserved spermatozoa in mice." *J. Fertil. Implant. (Tokyo)* 8: 35-37.
- Pasteur, X., O. Sabido, et al. (1991). "Quantitative assessment of chromatin stability alteration in human spermatozoa induced by freezing and thawing. A flow cytometric study." *Anal Quant Cytol Histol* 13(6): 383-390.
- Penfold, L. M. and H. D. Moore (1993). "A new method for cryopreservation of mouse spermatozoa." *J Reprod Fertil* 99: 131-134.

- Pinkert, C. (1998). "Mouse sperm cryopreservation: a legacy in the making." *Lab Anim Sci* 48(3): p224.
- Quan, S., S. Yamano, et al. (2000). "Effects of preservation of mouse spermatozoa in electrolyte-free solution at 4 degrees C on the outcome of mouse in vitro fertilization." *J Assist Reprod Genet* 17(7): p388-92.
- Sherman, J. K. and K. C. Liu (1982). "Ultrastructure before freezing, while frozen, and after thawing in assessing cryoinjury of mouse epididymal spermatozoa." *Cryobiology* 19: 503-510.
- Songsasen, N., K. Betteridge, et al. (1997). "Birth of live mice resulting from oocytes fertilized in vitro with cryopreserved spermatozoa." *Biol Reprod* 56(1): p143-52.
- Songsasen, N., K. J. Betteridge, et al. (1997). "Birth of live mice resulting from oocytes fertilized in vitro with cryopreserved spermatozoa." *Biol Reprod* 56(1): 143-52.
- Songsasen, N. and S. Leibo (1997). "Cryopreservation of mouse spermatozoa. I. Effect of seeding on fertilizing ability of cryopreserved spermatozoa." *Cryobiology* 35(3): p240-54.
- Songsasen, N. and S. Leibo (1998). "Live mice from cryopreserved embryos derived in vitro with cryopreserved ejaculated spermatozoa." *Lab Anim Sci* 48(3): p275-81.
- Songsasen, N. and S. Leibo (1998). "Live mice from cryopreserved embryos derived in vitro with cryopreserved ejaculated spermatozoa [see comments]." *Lab Anim Sci* 48(3): p275-81.
- Songsasen, N. and S. P. Leibo (1997). "Cryopreservation of mouse spermatozoa. I. Effect of seeding on fertilizing ability of cryopreserved spermatozoa." *Cryobiology* 35(3): 240-54.
- Songsasen, N. and S. P. Leibo (1997). "Cryopreservation of mouse spermatozoa. II. Relationship between survival after cryopreservation and osmotic tolerance of spermatozoa from three strains of mice." *Cryobiology* 35(3): 255-69.
- Songsasen, N., J. Tong, et al. (1998). "Birth of live mice derived by in vitro fertilization with spermatozoa retrieved up to twenty-four hours after death." *J Exp Zool* 280(2): p189-96.
- Storey, B., E. Noiles, et al. (1998). "Comparison of glycerol, other polyols, trehalose, and raffinose to provide a defined cryoprotectant medium for mouse sperm cryopreservation." *Cryobiology* 37(1): p46-58.
- Sztein, J., J. Farley, et al. (2000). "In vitro fertilization with cryopreserved inbred mouse sperm." *Biol Reprod* 63(6): p1774-80.
- Sztein, J., K. Noble, et al. (2001). "Comparison of permeating and nonpermeating cryoprotectants for mouse sperm cryopreservation." *Cryobiology* 42(1): p28-39.
- Sztein, J. M., J. S. Farley, et al. (1997). "Motility of cryopreserved mouse spermatozoa affected by temperature of collection and rate of thawing." *Cryobiology* 35(1): 46-52.
- Sztein, J. M., P. M. Schmidt, et al. (1992). "Cryopreservation of mouse spermatozoa in a glycerol/raffinose solution." *Cryobiology* 29: 736-7.
- Tada, N., M. Sato, et al. (1990). "Cryopreservation of mouse spermatozoa in the presence of raffinose and glycerol." *J Reprod Fert* 89(2): 511-516.

- Takeshima, T., N. Nakagata, et al. (1991). "Cryopreservation of mouse spermatozoa." *Exp Anim* 40: 493-497.
- Tao, J., J. Du, et al. (1995). "The effect of collection temperature, cooling rate and warming rate on chilling injury and cryopreservation of mouse spermatozoa." *J Reprod Fertil* 104(2): 231-6.
- Tateno, H., T. Wakayama, et al. (1998). "Can alcohol retain the reproductive and genetic potential of sperm nuclei? Chromosome analysis of mouse spermatozoa stored in alcohol." *Zygote* 6(3): p233-8.
- Tesarik, J., M. Sousa, et al. (1994). "Human oocyte activation after intracytoplasmic sperm injection." *Hum Reprod* 9: 511-518.
- Thompson, K., J. Richa, et al. (2001). "Dialysis addition of trehalose/glycerol cryoprotectant allows recovery of cryopreserved mouse spermatozoa with satisfactory fertilizing ability as assessed by yield of live young." *J Androl* 22(2): p339-44.
- Thornton, C., S. Brown, et al. (1999). "Large numbers of mice established by in vitro fertilization with cryopreserved spermatozoa: implications and applications for genetic resource banks, mutagenesis screens, and mouse backcrosses." *Mamm Genome* 10(10): p987-92.
- Wakayama, T., D. Whittingham, et al. (1998). "Production of normal offspring from mouse oocytes injected with spermatozoa cryopreserved with or without cryoprotection." *J Reprod Fertil* 112(1): p11-7.
- Watson, P. F. (1995). "Recent developments and concepts in the cryopreservation of spermatozoa and the assessment of their post-thawing function." *Reprod. Fertil. Dev.* 7: 871-891.
- Willoughby, C. E., P. Mazur, et al. (1996). "Osmotic tolerance limits and properties of murine spermatozoa." *Biol Reprod* 55(3): 715-27.
- Yokoyama, M., H. Akiba, et al. (1990). "Production of normal young following transfer of mouse embryos obtained by in vitro fertilization using cryopreserved spermatozoa." *Exp Anim* 39(1): 125-128.

ICSI

- Ahmadi, A. and S. Ng (1997). "Fertilization and development of mouse oocytes injected with membrane-damaged spermatozoa." *Hum Reprod* 12(12): p2797-801.
- Akutsu, H., L. Tres, et al. (2001). "Offspring from normal mouse oocytes injected with sperm heads from the azh/azh mouse display more severe sperm tail abnormalities than the original mutant." *Biol Reprod* 64(1): p249-56.
- Burrue, V. R., R. Yanagimachi, et al. (1996). "Normal mice develop from oocytes injected with spermatozoa with grossly misshapen heads." *Biol Reprod* 55(3): 709-14.
- Cummins, J., T. Wakayama, et al. (1997). "Fate of microinjected sperm components in the mouse oocyte and embryo." *Zygote* 5(4): p301-8.

- Cummins, J., T. Wakayama, et al. (1998). "Fate of microinjected spermatid mitochondria in the mouse oocyte and embryo." *Zygote* 6(3): p213-22.
- Dozortsev, D., T. Wakaiama, et al. (1998). "Intracytoplasmic sperm injection in the rat." *Zygote* 6(2): p143-7.
- Huang, T., Y. Kimura, et al. (1996). "The use of piezo micromanipulation for intracytoplasmic sperm injection of human oocytes." *J Assist Reprod Genet* 13(4): 320-8.
- Kaplan, O. and A. Trounson (1995). "Mouse sperm fertilising capacity following subzonal microinjection is dependent on sperm washing and response to solubilised zonae pellucidae." *Zygote* 3(1): p9-16.
- Kasai, T., K. Hoshi, et al. (1999). "Effect of sperm immobilisation and demembration on the oocyte activation rate in the mouse." *Zygote* 7(3): p187-93.
- Kimura, Y., H. Tateno, et al. (1998). "Factors affecting meiotic and developmental competence of primary spermatocyte nuclei injected into mouse oocytes." *Biol Reprod* 59(4): p871-7.
- Kimura, Y. and R. Yanagimachi (1995). "Development of normal mice from oocytes injected with secondary spermatocyte nuclei." *Biol Reprod* 53(4): 855-62.
- Kimura, Y. and R. Yanagimachi (1995). "Intracytoplasmic injection in the mouse." *Biol. Reprod.* 52: 709-720.
- Kimura, Y. and R. Yanagimachi (1995). "Mouse oocytes injected with testicular spermatozoa or round spermatids can develop into normal offspring." *Development* 121(8): 2397-405.
- Kimura, Y., R. Yanagimachi, et al. (1998). "Analysis of mouse oocyte activation suggests the involvement of sperm perinuclear material." *Biol Reprod* 58(6): p1407-15.
- Kuretake, S., Y. Kimura, et al. (1996). "Fertilization and development of mouse oocytes injected with isolated sperm heads." *Biol Reprod* 55(4): 789-95.
- Kuretake, S., M. Maleszewski, et al. (1996). "Inadequate function of sterile tw5/tw32 spermatozoa overcome by intracytoplasmic sperm injection." *Mol Reprod Dev* 44(2): 230-3.
- Lee, J. D., Y. Kamiguchi, et al. (1996). "Analysis of chromosome constitution of human spermatozoa with normal and aberrant head morphologies after injection into mouse oocytes." *Hum Reprod* 11(9): 1942-6.
- Liow, S., A. Bongso, et al. (1996). "Fertilization, embryonic development and implantation of mouse oocytes with one or two laser-drilled holes in the zona, and inseminated at different sperm concentrations." *Hum Reprod* 11(6): p1273-80.
- Maleszewski, M., Y. Kimura, et al. (1996). "Sperm membrane incorporation into oolemma contributes to the oolemma block to sperm penetration: evidence based on intracytoplasmic sperm injection experiments in the mouse." *Mol Reprod Dev* 44(2): 256-9.
- Maleszewski, M., D. Kline, et al. (1995). "Activation of hamster zona-free oocytes by homologous and heterologous spermatozoa." *J Reprod Fertil* 105(1): 99-107.
- Maleszewski, M., S. Kuretake, et al. (1998). "Behavior of transgenic mouse spermatozoa with galline protamine." *Biol Reprod* 58(1): 8-14.

- Ogura, A., J. Matsuda, et al. (1996). "Mouse oocytes injected with cryopreserved round spermatids can develop into normal offspring." *J Assist Reprod Genet* 13(5): 431-4.
- Perry, A., T. Wakayama, et al. (1999). "Mammalian transgenesis by intracytoplasmic sperm injection [see comments]." *Science* 284(5417): p1180-3.
- Sasagawa, I., O. Ichiyanagi, et al. (1998). "Round spermatid transfer and embryo development." *Arch Androl* 41(3): p151-7.
- Sasagawa, I., S. Kuretake, et al. (1998). "Mouse primary spermatocytes can complete two meiotic divisions within the oocyte cytoplasm." *Biol Reprod* 58(1): p248-54.
- Sasagawa, I., S. Kuretake, et al. (1998). "Mouse primary spermatocytes can complete two meiotic divisions within the oocyte cytoplasm." *Biol Reprod* 58(1): 248-54.
- Sasagawa, I. and R. Yanagimachi (1996). "Comparison of methods for activating mouse oocytes for spermatid nucleus transfer." *Zygote* 4(4): 269-74.
- Sasagawa, I. and R. Yanagimachi (1997). "Spermatids from mice after cryptorchid and reversal operations can initiate normal embryo development." *J Androl* 18(2): 203-9.
- Sato, M., M. Yoshitomo, et al. (1999). "Spatiotemporal analysis of $[Ca^{2+}]_i$ rises in mouse eggs after intracytoplasmic sperm injection (ICSI)." *Cell Calcium* 26(1-2): p49-58.
- Shamanski, F., Y. Kimura, et al. (1999). "Status of genomic imprinting in mouse spermatids." *Hum Reprod* 14(4): p1050-6.
- Suzuki, K., K. Yanagida, et al. (1998). "Comparison of the media for isolation and storage of round spermatid nuclei before intracytoplasmic injection [published erratum appears in *J Assist Reprod Genet* 1998 Jul; 15(6):408]." *J Assist Reprod Genet* 15(3): p154-7.
- Suzuki, K. and R. Yanagimachi (1997). "Beneficial effect of medium with high concentration serum for direct sperm injection into mouse oocytes using a conventional pipette." *Zygote* 5(2): p111-6.
- Usui, N., A. Ogura, et al. (1997). "Sperm nuclear envelope: breakdown of intrinsic envelope and de novo formation in hamster oocytes or eggs." *Zygote* 5(1): 35-46.
- Wakayama, T., A. Ogura, et al. (1996). "Penetration by field vole spermatozoa of mouse and hamster zona pellucida without acrosome reaction." *J Reprod Fertil* 107(1): 97-102.
- Wakayama, T., D. Whittingham, et al. (1998). "Production of normal offspring from mouse oocytes injected with spermatozoa cryopreserved with or without cryoprotection." *J Reprod Fertil* 112(1): p11-7.
- Wakayama, T., D. G. Whittingham, et al. (1998). "Production of normal offspring from mouse oocytes injected with spermatozoa cryopreserved with or without cryoprotection." *J Reprod Fertil* 112(1): 11-7.
- Wakayama, T. and R. Yanagimachi (1998). "Development of normal mice from oocytes injected with freeze-dried spermatozoa." *Nat Biotechnol* 16(7): p639-41.
- Wakayama, T. and R. Yanagimachi (1998). "The first polar body can be used for the production of normal offspring in mice." *Biol Reprod* 59(1): p100-4.

- Wakayama, T. and R. Yanagimachi (1999). "Cloning of male mice from adult tail-tip cells [news]." *Nat Genet* 22(2): p127-8.
- Ward, W., Y. Kimura, et al. (1999). "An intact sperm nuclear matrix may be necessary for the mouse paternal genome to participate in embryonic development." *Biol Reprod* 60(3): p702-6.
- Ward, W., H. Kishikawa, et al. (2000). "Further evidence that sperm nuclear proteins are necessary for embryogenesis." *Zygote* 8(1): p51-6.
- Yamano, S., K. Nakagawa, et al. (2000). "Fertilization failure and oocyte activation." *J Med Invest* 47(1-2): p1-8.
- Yanagida, K., H. Katayose, et al. (1999). "Successful fertilization and pregnancy following ICSI and electrical oocyte activation." *Hum Reprod* 14(5): p1307-11.
- Yanagida, K., H. Yazawa, et al. (2000). "Oocyte activation induced by spermatids and the spermatozoa." *Int J Androl* 23 Suppl 2: 63-5.
- Yanagimachi, R. (1995). "Is an animal model needed for intracytoplasmic sperm injection (ICSI) and other assisted reproduction technologies?" *Hum Reprod* 10(10): 2525-6.
- Yanagimachi, R. (1998). "Intracytoplasmic sperm injection experiments using the mouse as a model." *Hum Reprod* 13 Suppl 1: 87-98.
- Yazawa, H., G. Radaelli, et al. (1995). "Comparison of the acrosome reaction-inducing ability of the outer and inner surfaces of the zona pellucida and oolemma: a study using the golden hamster." *Zygote* 3(4): 295-303.
- Yazawa, H., K. Yanagida, et al. (2001). "Oocyte activation and Ca²⁺ oscillation-inducing abilities of mouse round/elongated spermatids and the developmental capacities of embryos from spermatid injection." *Hum Reprod* 16(6): p1221-8.
- Ziyyat, A. and A. Lefevre (2001). "Differential gene expression in pre-implantation embryos from mouse oocytes injected with round spermatids or spermatozoa." *Hum Reprod* 16(7): p1449-56.

Miscellaneous

- Chatot, C. L., C. A. Ziomek, et al. (1989). "An improved culture medium supports development of random-bred 1-cell mouse embryos in vitro." *J Reprod Fert* 86(2): 679-688.
- Christian, C., N. Songsasen, et al. (1993). "Presence of motile sperm in mice 24 hours postmortem." *Theriogenology* 39: 201.
- Djerassi, C. and S. P. Leibo (1994). "A new look at male contraception." *Nature* 370(6484): 11-2.
- Dulioust, E., K. Toyama, et al. (1995). "Long-term effects of embryo freezing in mice." *Proc Natl Acad Sci U S A* 92(2): 589-93.

- Garcia, J., S. D. Kholkute, et al. (1993). "The efficacy of stored pregnant mares' serum gonadotropin and human chorionic gonadotropin on inducing ovulation in mice." *Lab Anim Sci* 43(2): 198-199.
- Handyside, A. H. H., S. (1984). "A rapid procedure for visualising the inner cell mass and trophoctoderm nuclei of mouse blastocysts in situ using polynucleotide-specific fluorochromes." *J Exp Zool* 231: 429-434.
- Harrison, K. L., D. A. Sherrin, et al. (1990). "Embryotoxicity of micropore filters used in liquid sterilization." *J In Vitro Fert Embryo Transf* 7: 347-350.
- Hill, A. C. and G. P. Stalley (1991). "Mycoplasma pulmonis infection with regard to embryo freezing and hysterectomy derivation." *Lab Anim Sci* 41: 563-566.
- Hogan, B., Beddington, R., Conastantini, F., Lacy, E. (eds.), *Manipulating the Mouse Embryo*. New York: Cold Springs Harbor Laboratory Press; 1994: 139, 175, 179.
- King, W. W., L. G. St Amant, et al. (1994). "A technique for serial spermatozoa collection in mice." *Lab Anim Sci* 44(3): 295-6.
- Kovacs, M. S., L. Lowe, et al. (1993). "Use of superovulated mice as embryo donors for ES cell injection chimeras." *Lab Anim Sci* 43: 91-93.
- Kuretake, S., Y. Kimura, et al. (1996). "Fertilization and development of mouse oocytes injected with isolated sperm heads." *Biol Reprod* 55(4): 789-95.
- Kuretake, S., M. Maleszewski, et al. (1996). "Inadequate function of sterile tw5/tw5 spermatozoa overcome by intracytoplasmic sperm injection." *Molecular Reprod. Develop.* 44: 230-3.
- Leibo, S. P., M. E. Semple, et al. (1994). "In vitro fertilization of oocytes by 37-year old cryopreserved bovine spermatozoa." *Theriogenology* 42: 1257-1262.
- Lovell-Badge, R. (1996). "Banking on spermatogonial stem cells: frozen assets and foreign investments." *Nat Med* 2(6): p638-9.
- Martell, G. (1996). "Frozen embryos to be stored for longer [news]." *Bmj* 312(7038): 1059.
- McWilliams, R. B., W. E. Gibbons, et al. (1995). "Osmotic and physiological responses of mouse zygotes and human oocytes to mono- and disaccharides." *Hum Reprod* 10(5): 1163-71.
- Miralles, A., J. C. Sacristan, et al. (1994). "Straw thermal stabilizer for embryo cryopreservation." *Cryobiology* 31: 171-179.
- Miyoshi, I., K. Ishikawa, et al. (1992). "A practical transport system for mouse embryos cryopreserved by simple vitrification." *Lab Anim Sci* 1992(42).
- Mobraaten, L. (1996). *Cryopreservation centres: a means to an archive. Novel Systems for the Study of Human Disease: From Basic Research to Applications*, Rome, Italy, Organisation for Economic Co-operation and Development, Paris.
- Mobraaten, L. E. (1986). "Mouse embryo cryobanking." *J in Vitro Fert Emb Transfer* 3(1): 28-32.
- Ogura, A., K. Inoue, et al. (2000). "Production of male cloned mice from fresh, cultured, and cryopreserved immature Sertoli cells." *Biol Reprod* 62(6): p1579-84.

- Papaioannou, V. E. and J. G. Fox (1993). "Efficacy of tribromoethanol anesthesia in mice." *Lab Anim Sci* 43(2): 189-192.
- Pinot, F., D. F. Grant, et al. (1995). "Differential regulation of soluble epoxide hydrolase by clofibrate and sexual hormones in the liver and kidneys of mice." *Biochem Pharmacol* 50(4): 501-8.
- Reetz, I. C., M. Wullenweber-Schmidt, et al. (1988). "Rederivation of inbred strains of mice by means of embryo transfer." *Lab Anim Sci* 38(6): 696-701.
- Sharp, J. J. and L. E. Mobraaten (1997). To save or not to save: the role of repositories in a period of rapidly expanding development of genetically engineered strains of mice. *Transgenic Animals: Generation and Use*. L.-M. Houdebine, Harwood Academic Publishers, Switzerland: 525-532.
- Smith, W. (1993). "Responses of laboratory animals to some injectable anaesthetics." *Lab Anim* 27: 30-39.
- Sugiyama, F., Y. Tanimoto, et al. (1997). "Speedy backcrossing through in vitro fertilization, using pre-pubertal superovulation and neonatal death dependent on genetic background in angiotensinogen-deficient mice." *Lab Anim Sci* 47(5): p545-8.
- Suzuki, H., N. Nakagata, et al. (1996). "Transport of wild mice genetic material by in vitro fertilization, cryopreservation, and embryo transfer." *Lab Anim Sci* 46(6): p687-8.
- Suzuki, H., K. Yoroazu, et al. (1996). "Rederivation of mice by means of in vitro fertilization and embryo transfer." *Exp Anim* 45(1): p33-8.
- Tyler, J. P., L. Kime, et al. (1996). "Temperature change in cryo-containers during short exposure to ambient temperatures." *Hum Reprod* 11(7): 1510-2.
- Vanderwolf, C. H., G. Buzsaki, et al. (1988). "Neocortical and hippocampal electrical activity following decapitation in the rat." *Brain Res* 45: 340-344.
- Wong, L., J. L. Spearow, et al. (1995). "Genetic variation in plasma androgens and ovarian aromatase activity during mouse pregnancy." *Proc Soc Exp Biol Med* 208(3): 277-82.

General Reading

- Ashwood-Smith, M. J. and J. Farrant (1980). *Low Temperature Preservation in Medicine and Biology*. Baltimore, University Park Press.
- Bowler, K. and B. J. Fuller (1987). *Temperature and Animal Cells*. Cambridge: The Company of Biologists Limited.
- Day, J. G. and M. R. McLellan, Eds. (1995). *Cryopreservation and Freeze-drying Protocols*. *Methods in Molecular Biology*. Totowa, NJ, Humana Press.
- Foundation, C., Ed. (1979). *The Freezing of Mammalian Embryos*. Ciba Foundation Symposium 52 (new series) Proceedings of symposium held January 18-20, 1977. Amsterdam, Excerpta Medica.

Grout, B. W. W. and G. J. Morris (1987). *The Effects of Low Temperatures on Biological Systems*. London, Edward Arnold Ltd.

Hogan, B., R. Beddington, et al. (1994). *Manipulating the Mouse Embryo: A Laboratory Manual*. Second Edition. New York, Cold Spring Harbor Laboratory Press.

Karow, A. M. and J. K. Critser, Eds. (1997). *Reproductive Tissue Banking*. New York, Academic Press.

Mühlbock, O. (1976). *Basic Aspects of Freeze Preservation of Mouse Strains*. Stuttgart, Gustav-Fischer Verlag.

Stringfellow, D. A. and S. M. Seidel, Eds. (1998). *Manual of the International Embryo Transfer Society*. Savoy, Illinois, International Embryo Transfer Society.

Zeilmaker, G. H. (1981). *Frozen Storage of Laboratory Animals*. Stuttgart, New York, Gustav Fischer.