



Figure 3. Imprint Acquisition and Erasure in Mammalian Development

Imprints are acquired by the gametes; thus, oocytes and sperm already carry imprinted chromosomes (1st generation imprints). After fertilization when the embryo is diploid, the imprint is maintained on the same parental chromosome after each cell division in cells of the embryo, membranes, placenta, and also in the adult. The germ cells are formed in the embryonic gonad, and the imprints are erased only in these cells prior to sex determination. As the embryo develops into a male, the gonads differentiate to testes that produce haploid sperm which acquire a paternal imprint on their chromosomes. Similarly, in developing females, chromosomes in the ovaries acquire maternal imprints (2nd generation imprints).