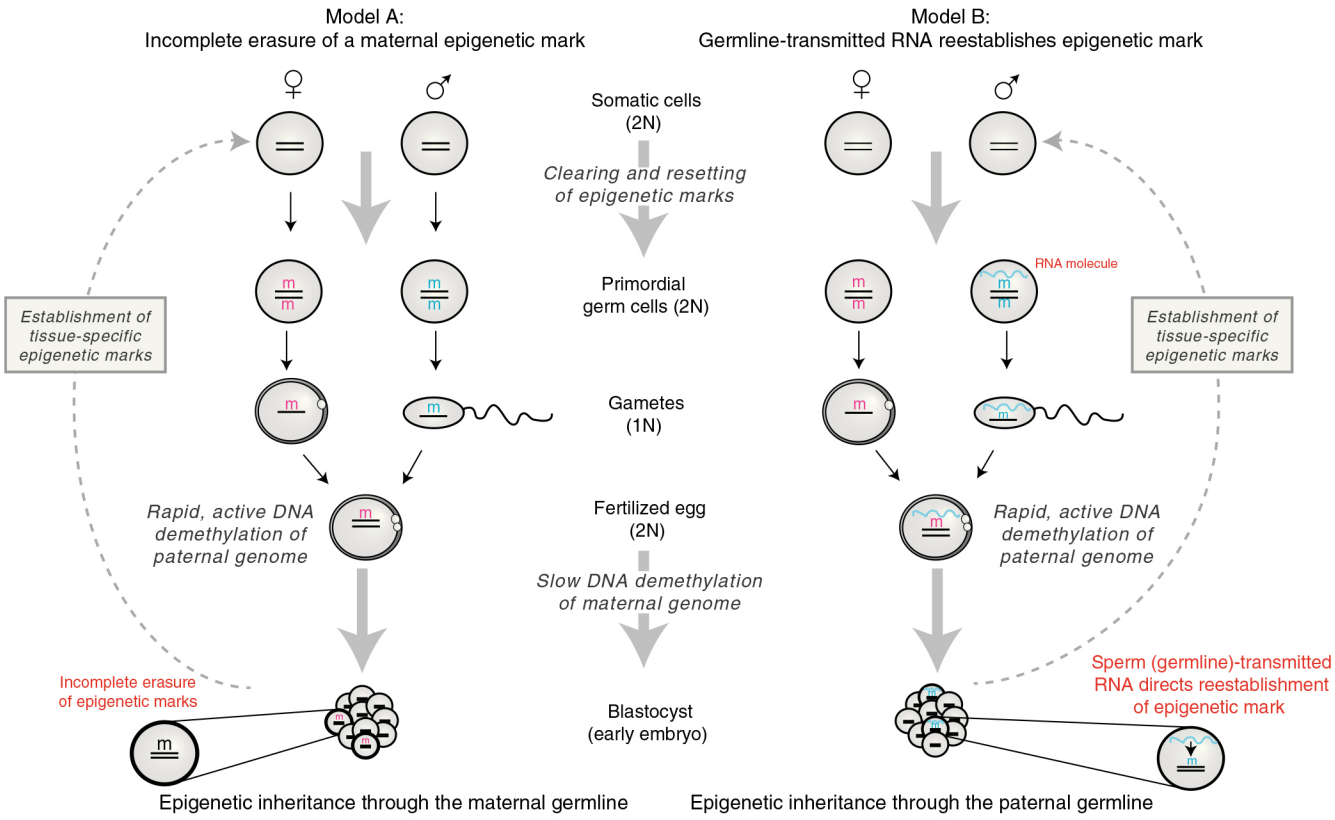


**Figure 8.** Models for transgenerational epigenetic inheritance. Only the gene showing transgenerational epigenetic inheritance is shown for simplicity. "m" denotes the epigenetic mark, in which pink shows the maternal mark and blue shows the paternal mark. Epigenetic reprogramming occurs in two phases (indicated by gray arrows): first, in primordial germ cell development and second, in preimplantation development. Model A: Incomplete erasure occurs of either a DNA methylation mark or histone mark. In a scenario in which transgenerational epigenetic inheritance is observed following maternal transmission (*left* gamete), some cells do not show complete removal of the epigenetic mark, and retain the inherited epigenetic mark when compared with other cells in the same blastocyst. In the instance in which there is complete erasure of epigenetic marks at a locus and transgenerational epigenetic inheritance does not occur all cells of the blastocyst would be unmarked (not shown). Model B: Germline RNA causes reestablishment of the inherited epigenetic mark. In a scenario in which transgenerational epigenetic inheritance is observed following paternal transmission, an RNA molecule is transmitted from the primordial germ cell to the mature sperm. This RNA is then transmitted to the fertilized egg and causes reestablishment of the paternal epigenetic mark in some cells that inherit the RNA molecule.