



Figure 8. Epigenetic regulation of the X chromosomes during germ cell development. In both sexes, germ cells progress through mitosis (*left*), enter meiosis in the transition zone, and progress through meiosis I prophase. Cells destined to form sperm in both sexes complete the meiotic divisions in the gonad. In hermaphrodites, cells destined to form oocytes progress through meiotic prophase in the gonad and complete the meiotic divisions after ovulation and fertilization. The presence of various histone modifications on the X chromosome(s) in germ cells is shown by red bars (for repressive modifications) and green bars (for activating modifications). As shown on the *right*, antibodies to particular histone modifications reveal that the X chromosomes in germ nuclei are marked differently than the autosomes and are repressed. H3K4me2 (green), a mark of actively expressed chromatin, is excluded from the Xs in XX pachytene nuclei. H3K9me2 (green), a mark of heterochromatin, is concentrated on the X in XO pachytene nuclei as part of MSUC (meiotic silencing of unsynapsed chromatin). DNA is stained red. Arrows indicate representative X chromosomes in each image.