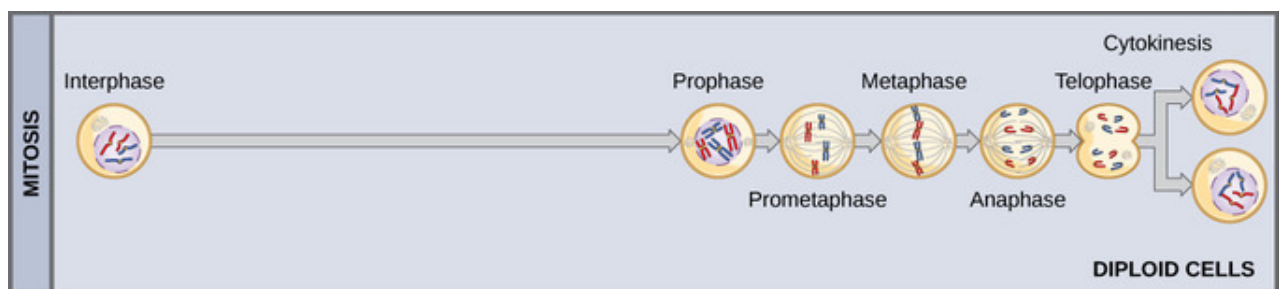


10.1.3

Mitosis and Meiosis

Germ cells (found in the testis or ovaries) are special in that they are the only cells that can divide in a way that causes the number of chromosomes to split in half. You may remember from a past biology course that humans have 23 pairs of chromosomes. Twenty-three pairs give us 46 individual chromosomes. We say pairs because we get 23 chromosomes from our father and 23 chromosomes from our mother. Each pair is basically a copy of the same chromosome. So, for each pair of chromosomes, there is a paternal and maternal copy. When normal cells in our body divide, each cell arising from the division maintains 23 pairs of chromosomes (46 individual chromosomes). We say that these cells have a **diploid** number of chromosomes and we call this type of division **mitosis**.

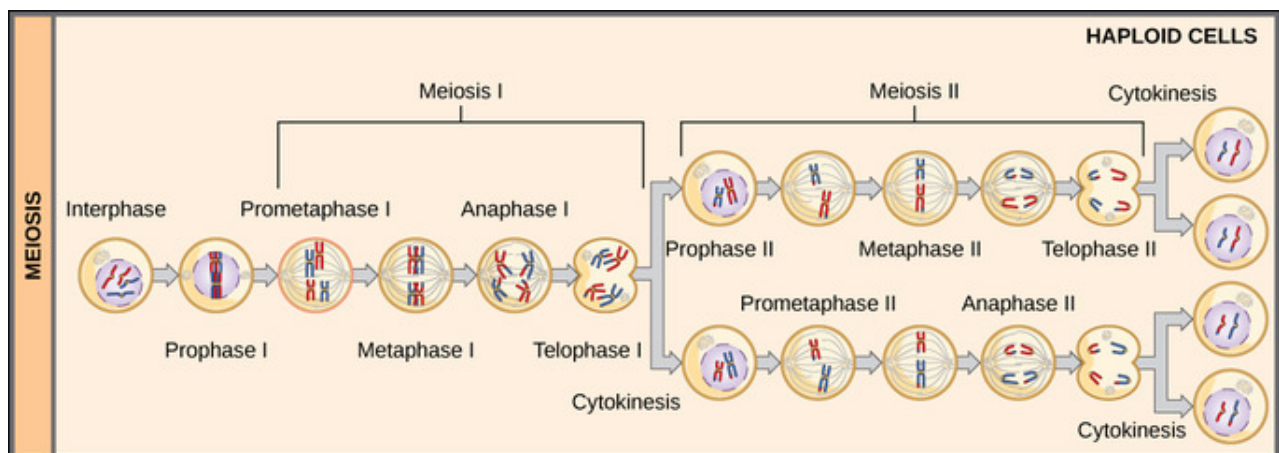


Mitosis: Two daughter cells resulting from mitosis are diploid and identical to the parent cell.

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Germ cells are different as they can divide in a different manner that we call **meiosis**. Each cell arising from meiosis has 23 individual chromosomes. These cells are called **gametes** and they have a **haploid** number of chromosomes.

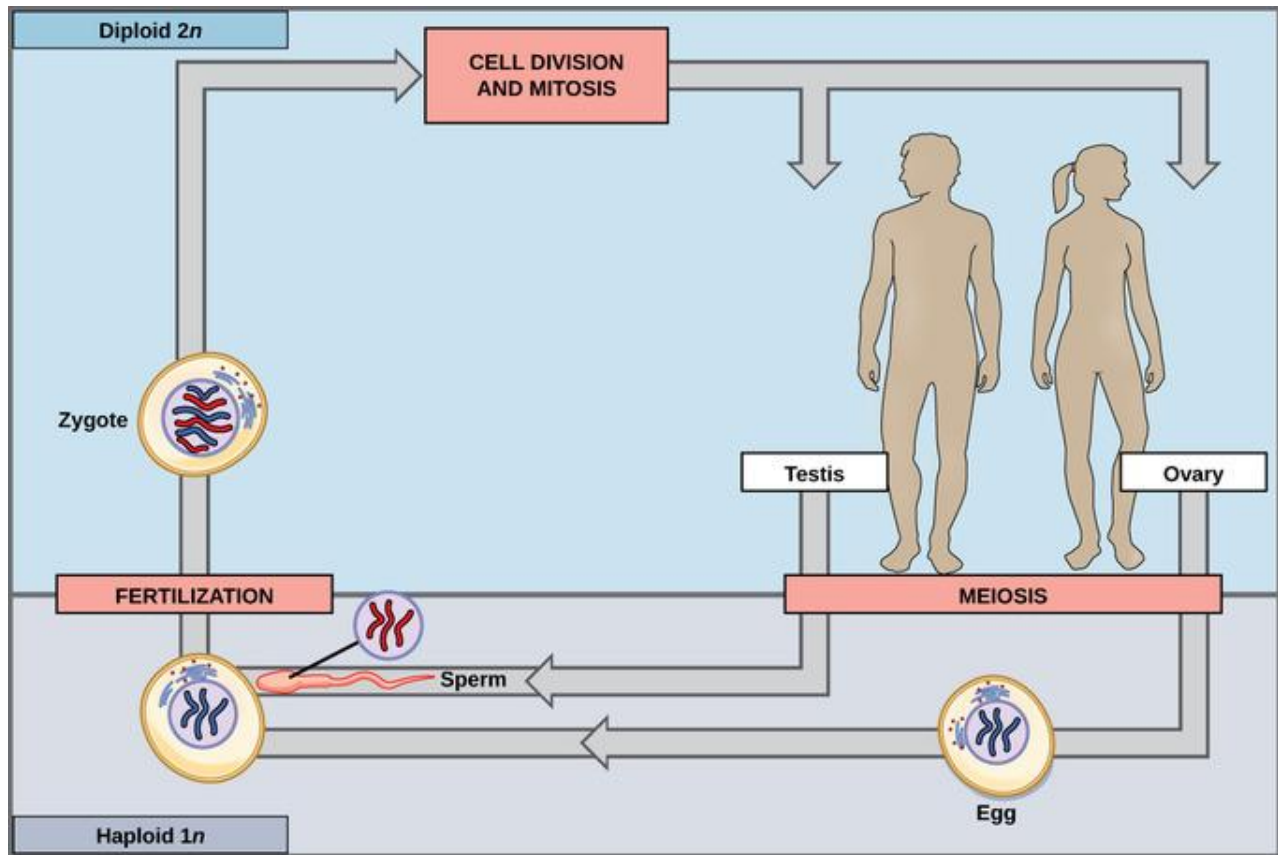


Meiosis: Four daughter cells resulting from meiosis are haploid and genetically distinct.

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This reduction in chromosome number is important because when a spermatozoon (spermatozoa, *pl.*) (sperm cell) from the male joins an ovum from the female and we create a new cell that again has 23 pairs of chromosomes (46 individual chromosomes). This new cell is called a **zygote**.



Zygote Formation: One haploid from each parent contained in the ovum from the mother, and spermatozoon from the father unite to create a new cell that is a unique combination of 23 pairs of chromosome.

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