Germ Cells and the Germ Cell Line Encyclopedia Article

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Germ cells are one of two fundamental **cell** types in the human body. Germ cells are responsible for the production of sex cells or gametes (in humans, **ovum** and spermatozoa). Germ cells also constitute a cell line through which genes are passed from generation to generation.

The vast majority of cells in the body are somatic cells. Indeed, the term somatic cell encompasses all of the differentiated cell types, (e.g., vascular, muscular, cardiac, etc.) In addition, somatic cells may also contain undifferentiated **stem cells** (cells that, with regard to **differentiation** are still multipotential). Regardless, while the mechanism of genetic **replication** and **cell division** is via **mitosis** in somatic cells, in germ cells a series of meiotic divisions during **gametogenesis** produces male and female gametes (i.e., ovum and spermatozoa that upon fusion (**fertilization**) are capable of creating a new organism (i.e., a single celled **zygote**).

While somatic cell divisions via mitosis maintain a **diploid** chromosomal content in the daughter cells produced, germ cells--in contrast-- through a series of mitotic divisions produce **haploid** gametes (i.e., cells with one-half the normal **chromosome** compliment s--one autosomal chromosome from each homologous pair and a **sex chromosome** (X in females, X or Y).

Although all humans start out as single cell zygotes, the germ cells for each individual are set-aside early in embryogenesis (development). If the cells comprising the germ cell line are subject to **mutation** or other impairments, those mutations may be passed down to offspring. It is from the germ cell line that all spermatogonia and all oogonia are derived.