Germ Cells 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 with one autosomal chromosome from each homologous pair and one sex chromosome.

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.