

- a. Every cell must receive a complete heredity. Any structural defect of a cell results in faulty function.
- b. Every cell must receive food, water, and free oxygen. With chemical bodies brought to it by the blood, it:
 - (1) Builds) - its own structure and supplies its functional
 - (2) Repairs) material.
- c. Every tissue cell must be relieved of its waste products.
- d. Every tissue cell must be functionally active.
- e. Every tissue cell must have periodic rest.

3. Specialized Cell Function

Cells have specialized functions in the body. An understanding of this is essential to a proper grasp of the laws of heredity and the applications of the principles of hygiene. Somatic or body cells are the specialized cells of various types that compose all of the organs and structures of the body. A small group, called germ cells, are set aside in the early stages of development for the single purpose of reproducing the next generation.

4. Cell Division

Cell division is the biological process going on within the cells upon which depends reproduction, the transmission of heredity, the development of organs, the growth of structures, and all of the possibilities of differentiated function.

The steps by which these units of life produce the individual can best be understood by a study of the two principal processes of cell division.

a. Mitosis or indirect division of nucleus.

- | | | |
|---------|--------------|--------------|
| Phases: | a. Prophase | c. Anaphase |
| | b. Metaphase | d. Telophase |

b. Meiosis is the term applied to the process by which the chromosome number in the germ cells is reduced by half, or from diploid to haploid.

- Phases: Reduction division
Equation division

These two divisions result in

- (1) Four sperms, or male gametes, all capable of participating in fertilization
- (2) Four ova, only one capable of fertilization. The other three ova thus formed are immature cells and are discarded by the body.

Meiosis is the physiological organization for the production of different assortments of hereditary factors in the chromosomes of the germ cells.