

(Note: Some types of cells undergo division by a process known as amitosis, which does not concern us here.)

- REFERENCES: *Storey--Principles of Hygiene, Chaps. 3 and 4.
*Burlingame and Martin--General Biology, Chap. 2.
Dorsey--Why We Behave Like Human Beings, Pp. 1-34.
Guyer--Being Well-Born, Chap. 3.
Conklin--Heredity and Environment, Pp. 6-32 (1922 ed.)
*Kirkpatrick and Huettnet--Fundamentals of Health, Pp. 16-33.

* Required reading.

III. THE NEW INDIVIDUAL

Cell division and multiplication becomes of more immediate interest when its relationship to the production of a new human being is seen. Every individual begins his existence as a single cell. This cell is formed by the union of a haploid germ cell from the father and one from the mother, a process designated as fertilization.

A. FERTILIZATION

The spermatozoon (a mature haploid male germ cell) meets and fuses with an ovum (a mature haploid female germ cell). In this fusion of sperm and ovum a new individual comes into being, or, to word it differently, conception takes place. It occurs in the Fallopian tube leading from an ovary to the uterus (womb).

Pregnancy is established if this fertilized ovum passes along the Fallopian tube and attaches itself to the wall of the uterus.

B. CLEAVAGE OF THE EGG

The process of mitosis begins in this fertilized ovum and cell division proceeds with great rapidity. This is the commencement of a long series of such divisions, lasting the 280 days of pregnancy and resulting in an increase of five million per cent.

Continued division of cells results in the formation, first, of a solid sphere which rapidly develops cavities in its interior. By means of infoldings and buddings of the cell layers, the growing embryo takes shape. Evolution of the race is recapitulated in the course of embryogenic development.

C. OUTLINE OF HUMAN EMBRYOLOGY

1. Passage of dividing egg from Fallopian tube into uterus.
2. Implantation of beginning embryo in uterine wall.
3. Formation of chorion, an outer layer of cells arising from a portion of the egg. This structure becomes highly vascular and connects with the circulatory system of the growing embryo. There is no direct connection between the blood vessels of the mother and those of the embryo, but an exchange of nutrient materials from the mother and of wastes from the embryo takes place through projections on the surface of the chorion.