Biological determinants of Gender

Sexual differentiation is the process of development of the differences between males and females from an undifferentiated zygote (fertilized egg). As male and female individuals develop from zygotes into fetuses, into infants, children, adolescents, and eventually into adults, sex and gender differences at many levels develop: genes, chromosomes, gonads, hormones, anatomy, and psyche.

The early stages of human differentiation appear to be quite similar to the same biological processes in other mammals and the interaction of genes, hormones and body structures is fairly well understood. In the first weeks of life, a fetus has no anatomic or hormonal sex, and only a karyotype distinguishes male from female. Specific genes induce gonadal differences, which produce hormonal differences, which cause anatomic differences, leading to psychological and behavioral differences, some of which are innate and some induced by the social environment.

Chromosomal differences

Humans have forty-six chromosomes, including two sex chromosomes. Chromosomes are threadlike structures that are structural carriers of heredity, play very important role in sex differentiation. In human beings there are 23 pairs of chromosomes. At the time of conception half amount of chromosomes is received from mother side and half from father side.23rd pair of chromosome is called sex chromosome XX in females and XY in males. The X-chromosome carries a larger number of genes in comparison to the Y-chromosome .Genes contain genetic information carried on chromosome. Researchers claim that XY chromosome make up may not be as stubble as XX and therefore play a role in higher mortality rates for men. XX chromosomal makeup and the hormone estrogen seem to make women less vulnerable to physical problems so women live longer lives.

Tissues and hormones

- Women generally have a higher body fat percentage than men.
- Women usually have lower blood pressure than men, and women's hearts beat faster, even when they are asleep.
- Men generally have more muscle tissue mass, particularly in the upper body.
- Men and women have different levels of certain hormones. Men have a higher concentration of androgens while women have a higher concentration of estrogens. The main male-associated hormone is testosterone.
- Adult men have approximately 5.2 million red blood cells per cubic millimeter of blood, whereas women have approximately 4.6 million.
- Females typically have more white blood cells additionally, they produce more antibodies at a faster rate than males.

Genital differentiation

Men and women have different sex organs. Women have two ovaries that stores the eggs, and uterus which is connected to a vagina. Men have testicles that produce sperm.Further sex differentiation of the external genitalia occurs at puberty.

Brain differentiation

As children develop, male or female hormones affect brain development and seem to determine the size and structure of different areas of the brain.Structural sex differences begin to be recognizable by 2 years of age. Both genes and hormones affect the formation of human brains before birth, as well as the behavior of adult individuals. Male and female brains are different even before birth.

Researches show that Male brains are about 8% larger than female ones. Women have more gray matter and less white: the opposite is true for men. In women, the two hemispheres of the brain look alike. In men, they are asymmetrical.

Women's brains are not only different from men's, they also work differently. The female brain is more decentralized. Women use a variety of parts of their brains when they do a single task. Yale professor Dr. Sally Shaywitz has shown that men use the left side of their brains when they listen to someone speaking, whereas women use both sides. This means that women process the information they hear from human speech in a different way than men do.