Chapter 3: Biological Foundations, Prenatal Development, and Birth

Age of Viability: the age at which a fetus born early first has a chance of survival, occurring sometime between 22 and 26 weeks.

Alcohol-related neurodevelopmental disorder (ARND): the least severe form of fetal alcohol spectrum disorder, involving brain injury but with typical physical growth and absence of facial abnormalities.

Allele: each of two or more forms of a gene located at the same place on the chromosomes.

Amnion: the inner membrane that encloses the prenatal organism in amniotic fluid, which helps keep temperature constant and provides a cushion against jolts caused by the mother's movement.

Apgar Scale: a rating system used to assess a newborn baby's physical condition immediately after birth on the basis of five characteristics: heart rate, respiratory effort, reflex irritability, muscle tone, and color.

Autosomes: the 22 matching chromosome pairs in each human cell.

Behavioral Genetics: a field devoted to uncovering the contributions of nature and nurture to the diversity of human traits an abilities.

Breech Position: a position of the baby in the uterus that would cause the buttocks or feet to be delivered first.

Canalization: the tendency of heredity to restrict the development of some characteristics to just one or a few outcomes.

Carrier: a heterozygous individual who can pass a recessive trait to his or her offspring.

Chorion: the outer membrane that forms a protective covering around the prenatal organism. It sends out tiny hair like villi, from which the placenta begins to develop.

Chromosomes: rodlike structures in the cell nucleus that store and transmit genetic information.

Crossing Over: during meiosis, the exchange of genes between chromosomes next to each other.

DNA: long, double stranded molecules that make up chromosomes.

Dominant-Recessive Inheritance: a pattern of inheritance in which, under heterozygous conditions, the influence of only one allele is apparent.

Embryo: the prenatal organism from 2 to 8 weeks after conception—the period when the groundwork is laid for all body structures and internal organs.

Epigenesis: development resulting from ongoing, bidirectional exchanges between heredity and all levels of the environment.

Fetal Alcohol Spectrum Disorder: a range of physical, mental, and behavioral outcomes caused by prenatal alcohol exposure.

Fetal Alcohol Syndrome: the most severe form of fetal alcohol spectrum disorder, distinguished by slow physical growth, facial abnormalities and brain injury; usually affects children whose mothers drank heavily throughout pregnancy.

Fetus: the prenatal organism from the ninth week to the end of pregnancy—the period in which body structures are complete and dramatic growth in size occurs.

Fraternal/Dizygotic Twins: twins resulting from the release and fertilization of two ova. Genetically, there are no more alike than ordinary siblings.

Gametes: sex cells, or sperm and ova, which contain half as many chromosomes as regular body cells.

Gene: a segment of a DNA molecule that contains instructions for production of various proteins that contribute to body growth and functioning.

Genetic Counseling: a communication process designed to help couples assess their chances of giving birth to a baby with a hereditary disorder and choose the best course of action in view of risks and family goals.

Gene-Environment correlation: the idea that heredity influences the environments to which individuals are exposed.

Gene-Environment interaction: the idea that individuals' genetic makeup influences their responsiveness to qualities in the environment.

Genomic imprinting: a pattern of inheritance in which alleles are imprinted, or chemically marked, in such a way that one pair member is activated, regardless of its makeup.

Genotype: an individual's genetic makeup.

Heritability estimate: a measure of the extent to which individual differences in complex traits, such as intelligence of personality in a specific population, are due to genetic factors.

Heterozygous: having two different alleles at the same place on a pair of chromosomes.

Homozygous: having two identical alleles at the same place on a pair of chromosomes.

Identical/Monozygotic twins: twins that result when a zygote, during early cell duplication, separates into two clusters of cells with the same genetic makeup.

Incomplete Dominance: a pattern of inheritance in which both alleles are expressed in the phenotype, resulting in a combined trait, or one that is intermediate between the two.

Infant mortality: the number of deaths in the first year of life per 1,000 live births.

Kinship Studies: studies comparing the characteristics of family members to estimate the importance of heredity in complex human characteristics.

Lanugo: white, downy hair that covers the entire body of the fetus, helping the vernix stick to the skin.

Meiosis: the process of cell division through which gametes are formed and in which the number of chromosomes in each cell is halved.

Mitosis: the process of cell duplication, in which each new cell receives an exact copy of the original chromosomes.

Modifier Genes: genes that enhance or dilute the effects of the other genes.

Mutation: a sudden but permanent chance in a segment of DNA.

Natural Childbirth: a group of techniques aimed at reducing pain and medical intervention and making childbirth as rewarding an experience as possible. Typically includes classes that provide information about the birth process, relaxation and breathing techniques to counteract the pain of uterine contractions, and a labor couch who provides encouragement and affection.

Neonatal mortality: the number of deaths within the first month of life per 1,000 live births

Niche-picking: a type of genetic-environmental correlation in which individuals actively choose environments that complement their heredity.

Partial fetal alcohol syndrome: a form of fetal alcohol spectrum disorder characterized by facial abnormalities and brain injury but less severe than fetal alcohol syndrome; usually seen in children whose mothers drank alcohol in smaller quantities during pregnancy.

Phenotype: an individual’s directly observable physical and behavioral characteristics, which are determined by both genetic and environmental factors.

Placenta: the organ that permits exchange of nutrients and waste products between the bloodstreams of the mother and the embryo, while also preventing the mother’s and embryo’s blood from mixing directly.

Polygenic Inheritance: a pattern of inheritance in which many genes determine a characteristic that varies on a continuum among people.

Prenatal Diagnostic Methods: medical procedures that permit detection of developmental problems before birth.

Preterm infants: infants born several weeks or more before their due date.

Rh Factor Incompatibility: a condition that arises when the Rh protein is present in the fetus’s blood but not in the mother’s, causing the mother to build up antibodies. If these