

# 18 Human Development and Birth

## *Chapter Summary*

Fertilization is the fusion of an egg nucleus and a sperm nucleus, and normally occurs in the upper third of the uterine tube. The fertilized egg, which is called a zygote, starts dividing as it travels down the oviduct toward the uterus. Upon implantation in the uterine lining, conception has occurred and the female is pregnant. Cells surrounding the embryo secrete human chorionic gonadotropin (HCG), which prevents menstruation. The presence of HCG serves as the basis for pregnancy tests. The gestation period for humans is approximately nine months. Pre-embryonic development occurs prior to conception and during the first week of pregnancy. Embryonic development occurs from the second through the eighth week, and establishes all of the organ systems. Fetal development occurs from the beginning of the third month through the ninth month. Extraembryonic membranes are established during early development. The extraembryonic membranes are the amnion, which provides a fluid environment for the development of the embryo and fetus; the yolk sac, which is the first site of red blood cell production; the allantois, which contributes to the circulatory system; and the chorion, which becomes part of the placenta. The placenta consists of a fetal portion composed of chorionic tissue and a maternal portion composed of uterine tissue. Gases, nutrients, and wastes are exchanged between maternal blood and fetal blood across the placental membrane. The umbilical cord transports blood between the developing fetus and the placenta. During fetal development the bones become ossified, the sex becomes distinguishable, and the fetus grows and gains weight. Parturition, which includes labor and the expulsion of the fetus, usually is considered to have three stages. During the first stage, the cervix dilates and uterine contractions commence; during the second stage, the baby is born; and during the third stage, the afterbirth is expelled.

## *Chapter Outline*

- I. Fertilization
  - A. Sperm and Egg Anatomy
  - B. Steps of Fertilization
- II. Development
  - A. Process of Development
  - B. Extraembryonic Membranes
  - C. Stages of Development
  - D. Pre-Embryonic Development
  - E. Embryonic Development
    1. Second Week
    2. Third Week
    3. Fourth and Fifth Weeks
    4. Sixth Through Eighth Weeks
  - F. Placenta
  - G. Fetal Development and Birth
    1. Third and Fourth Months
    2. Fifth Through Seventh Months
    3. Eighth Through Ninth Months
  - H. Development of Male and Female Sex Organs

### III. Birth

- A. Stage 1
- B. Stage 2
- C. Stage 3
- D. Effects of Pregnancy on the Mother

#### *Suggested Student Activities*

1. Discuss the effects of drugs and tobacco on the embryo or fetus.
2. Trace the pathway that sperm travel to fertilize the egg.

#### *Answers to Objective Questions*

- |                           |              |
|---------------------------|--------------|
| 1. sperm, egg             | 6. implant   |
| 2. extraembryonic, amnion | 7. organs    |
| 3. placenta               | 8. second    |
| 4. cleavage               | 9. head      |
| 5. differentiation        | 10. hormones |

#### *Answers to Medical Terminology Reinforcement Exercise*

1. morpho/genesis - the development of form
2. neo/nato/log/ist - one who studies/specializes in the newborn—art and science of diagnosis and treatment of the newborn infant
3. pre/nat/al - pertaining to before birth—existing before the birth of a fetus
4. hyper/emesis gravid/arum - excessive vomiting during pregnancy
5. dys/meno/rrhea - difficult or painful monthly flow (monthly cramps)
6. pseudo/cyesis - false pregnancy
7. primi/gravida - first pregnancy
8. crypt/orchid/ism - abnormal condition of hidden (undescended) testicle
9. oligo/spermia - condition of few (deficiency) sperm in semen
10. perine/orrhaphy - suturing the space between vagina or scrotum and rectum
11. ab/ruptio placentae - premature detachment of the placenta from the uterus, endangering the life of the fetus
12. dys/tocia - difficult labor
13. galacto/stasis - cessation of milk secretion
14. poly/hydr/amnios - excessive amniotic fluid during pregnancy
15. amnio/rrhea - escape of amniotic fluid
16. placenta pre/via - implantation of placenta in lower portion of the uterus

#### *Audiovisual Materials*

1. Video - Life before Birth (095-150-NU)(Career Aids)
2. Video - Life in the Womb (HR-770V-NU)(Career Aids)
3. Models - Pregnancy Series (9 Models)(S17-102-1E)(Fisher Scientific)