Reproduction

I. Asexual reproduction – reproduction that doesn't use sexual (without sexual)
   A. Types of asexual reproduction
      1. Reproduction by splitting (Fission)
      2. Reproduction by budding – when a bud grows out from the organism and drops off and grows into a new organism
         a. Vegetative reproduction is this type of reproduction in plants
      3. Fragmentation – when an organism is broken into pieces by something else and all the pieces can develop into a complete organism
      4. Regeneration – is the ability of an organism to re-grow broken off parts
      5. Spores & parthenogenesis
         a. Spores
            1) When an organism reproduces by that each spore can develop into an adult organism
         b. Parthenogenesis
            1) When an unfertilized egg can develop into an adult organism

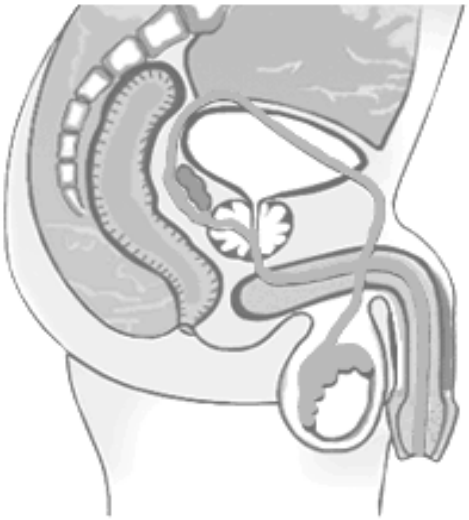
II. Sexual reproduction in animals
   A. In almost all animals sexual reproduction involves
   B. Gonads – the sex cell producing organs
      1. Females have ovaries that produce eggs
      2. Males have testes that produce sperm
   C. Organisms that have both testes and ovaries are call hermaphrodites
   D. Fertilization is when the sperm unites with the egg to form a zygote
   E. Fertilization is necessary for more organisms of variety to be produced
   F. There are four conditions necessary for fertilization to take place
      1. Egg & sperm must be present at the same time (*timing)*
      2. Egg & sperm must be *protected*
      3. *Path* must be present for the sperm to reach the egg
      4. Must be a *liquid medium* for the sperm to reach the egg
   G. Two types of fertilization
      1. External that takes place outside the females body (Fish, frogs)
         a. When the egg and the sperm are united outside the females body
         b. Timing is extremely important (courtship behavior in fish frogs and other organisms that fertilize externally is extremely important so that proper timing is insured)
         a. There must be water to protect, provide the pathway and the liquid medium so the sperm can swim to the egg
      2. Internal that takes place inside the females body
         a. All four conditions necessary for fertilization are required for fertilization to take place
         b. Courtship behaviors provides the proper timing
   H. Estrous Cycles – The period of time when the female animal will accept the male in mating

1. In many animal the females are only receptive to mating a few times each year
2. These receptive time are known as estrous or heat
3. Hormones are chemicals that cause the ovaries to produce the eggs and testes to produce the sperm
4. The hormones cause the female to be receptive to mating at certain times
5. When the female is receptive to the mating is also when the egg or eggs are released
6. The females release pheromones (scents) that attract the male along with other behaviors that attract the male for mating

III. Human Reproduction

A. Male reproductive system

1. Testes – produce the sperm
2. Scrotum – muscular sac that protects the testes and keeps them at the proper temperature for sperm production and virility (slightly lower than the body temperature)
3. Epididymis – is on the side of testes for sperm storage
4. Vas deferens – tubes from the testes to the urethra
5. Seminal vesicle – adds semen to the sperm.
6. Prostate gland – helps regulate the release of urine or sperm
7. Cowpers gland – adds fluids
8. Urethra – serves as a tube for both urine and semen
9. Penis – serves as a depositor of sperm and gets sperm to the cervix of the female



B. Female reproductive system

1. Ovaries – produce and release eggs
2. Fallopian tubes (oviducts) – are the tubes for the egg to get from the ovary to the uterus
3. Uterus – area for nourishment and development of the embryo
4. Cervix – a muscular opening between the uterus and vagina that opens to let the baby out during the birthing process
5. Vagina – receives the penis during sexual intercourse and is the birth canal for the baby

6. Urethra – serves only for release of urine
7. Endometrium – the lining of the uterus that breaks down and builds up during the menstrual cycle.

C. Conception
   1. During sexual intercourse
      a. Sperm is ejected into the vagina
      b. The sperm enter the cervix
      c. Sperm go through the uterus
      d. Fertilization takes place in the oviduct
      e. The zygote then implants in the uterus wall

D. The Human menstrual cycle
   1. The monthly cycle that the uterus goes through to prepare for a possible implanting of the zygote
      a. The Follicle Stage (7-10 days)
         1) The pituitary gland produces the hormone FSH (Follicle Stimulating Hormone)
         2) FSH causes the egg to develop in the ovary causing a follicle to form and the ovaries to produce estrogen
         3) The estrogen causes the lining of the uterus to thicken
      b. Ovulation Stage
         1) The increase in estrogen causes a decrease in FSH and an increase in Luteinizing Hormone (LH)
         2) LH causes ovulation (The follicle ruptures and releases the egg)
      c. The Corpus Luteum stage
         1) Where ovulation takes place on the ovary is a ruptured follicle which changes into the Corpus luteum due to the LH
         2) The corpus luteum produces estrogen and progesterone which causes the uterus lining to continue to thicken and FSH and LH to stop

d. The menstruation stage
    1) If the egg is not fertilized the Corpus Luteum heals over and progesterone decreases drastically.
    2) The uterine lining breaks down and bleeding results
    3) The egg and the uterine lining are released from the body through the cervix and the vagina
e. Pregnancy stage
    1) If the egg is fertilized the zygote embeds in the uterine lining and produces a hormone that causes the corpus luteum to continue to produce progesterone
    2) Progesterone inhibits ovulation from taking place
    3) This stage last
        a) 9 months, or 38 week, or 280 days