

GENERAL BIOLOGY Lecture 34 - Human Reproduction

- I. Sperm production, egg production, and sexual arousal**
 - A. Sperm production**
 - 1. Takes place in the testes
 - a) Inside testes are a bunch of lobes called seminiferous tubules
 - 1) Spermatogonia (diploid) cells are closest to tubule wall
 - 2) Spermatogonia eventually give rise to spermatocytes
 - 3) Spermatocytes undergo meiosis I to become secondary spermatocytes (haploid and duplicated)
 - 4) Secondary spermatocytes undergo meiosis II to become spermatids (haploid, non-duplicated), which become mature sperm
 - B. Egg (secondary oocyte) production**
 - 1. All oocytes present in ovaries at birth, but they are not mature
 - a) Oocytes have recombined, but have not completed meiosis I
 - b) This undeveloped oocyte finishes meiosis I to make two haploid and duplicated secondary oocytes
 - c) Secondary oocyte is released from the ovary during ovulation
 - d) Meiosis II is completed only if fertilization occurs
 - e) Only one (out of four total) oocytes mature to become a mature oocyte (ovum)
 - C. Sexual arousal**
 - 1. Male: blood flow faster into the penis faster than it flows out - the organ lengthens and hardens to facilitate vaginal penetration - during arousal, a mucus-rich fluid (from bulbourethral glands) is secreted through urethra to assist penetration
 - 2. Female: clitoris and labia minor become erect, breasts may enlarge up to 20%, nipples become erect, and fluids pass through the vagina to moisten the vaginal canal and entrance
 - 3. Male is stimulated by friction at the tip of the penis and female is stimulated by massaging action on the clitoris and labia
 - 4. Male orgasm encompasses involuntary muscle contractions, ejaculation, and sensations of release, warmth, and relaxation
 - 5. Female orgasm includes increased vaginal awareness, involuntary vaginal contractions, and sensations of relaxation and warmth - female orgasm is not required for fertilization
- II. Fertilization**
 - A. Pregnancy - a result of sperm and egg union**
 - 1. Pregnancy can result if sperm ejaculation into the vagina coincides with ovulation
 - a) Range of about three days before and three days after ovulation
 - 2. Fertilization usually occurs in the oviduct
- III. Development**
 - A. Union of sperm with secondary oocyte stimulates completion of meiosis II**
 - 1. Oocyte is now referred to as mature ovum
 - B. The fertilized egg (zygote) travels to the uterus and becomes a blastocyst**
 - C. The blastocyst then adheres to the uterine lining**
 - D. The embryo develops here (see movie)**