Sex
Thurs. October 13, 2016

I. Why Worry About Reproductive Behaviors?
   a. Sex/Love: At bases of many social interactions. At bases of art production (literature, painting)
   b. Sexual Behavior (sex) VS. Sexual Experience (emotion): Two different (interacting) neural systems. Consequences: Physical and Psychological
   c. Sexually Dimorphic Behavior: Some differences between male/female behavior are due at least in part to sex differences
   d. Sexual Orientation: How much is psychological?

II. Genetic Sex
   a. Genetic Factors
      i. Gametes: Ova and sperm. 23 chromosomes each for a total of 23 pairs
      ii. 1 pair of sex chromosomes
      iii. The X-rating: 3 X-only gametes but 50% XY
      iv. Genetic sex is determined by male gametes
   b. Gonads
      i. Testes and Ovaries: Produce sperm, ovum and hormones
      ii. 1 gene on Y chromosome that will trigger testes development (SRY gene)
      iii. Gonads are physically differentiated 6 weeks after conception, functionally differentiated after 3 months of gestation
      iv. After gonad development: Organizational vs. Activational hormonal effects
      v. SRY testing: gender verification
   c. Internal Sex Organs
      i. Mullerian and Wolffian Systems
      ii. Male gonad (testes) produce:
         1. Anti-Mullerian peptide hormones (defeminizing)
         2. Pro-Wolffian steroid hormones called androgens such as testosterone or dihydrotestosterone (masculinizing)
   d. Genetic Disorders
      i. Androgen Insensitivity Syndrome (XY: Look female but no female internal organs)
      ii. Persistent Mullerian Duct Syndrome (XY: look male but internally both male and female)
      iii. Turner Syndrome (X0: look female internally and externally but no gonads)
e. **External Sex Organs**
   i. Primary sex characteristics (birth): gonads, internal genitalia, external genitalia
   ii. Secondary sex characteristics (puberty): facial hairs, breasts

f. **Puberty: Hypothalamus- Anterior Pituitary Glands- Gonads**
   i. GnRH—(Kisspeptin)—Follicle Stimulating H. Lutenizing H:
      1. In Females
         a. Ovaries: Estradiol (estrogen)- breast/hips enlargement, fat redistribution, lining of uterus
      2. In Males
         a. Testes: Testosterone (androgen)- facial hair growth, muscle development, sperm production

g. **CNS/PNS Sex Controllers**
   i. Hypothalamus and amygdala: Sex and emotions

III. **Sex: Hormonal Control**
   a. Hormones have activational and organizational effects. Also act on nervous system: sexually dimorphic behaviors

b. **Hormonal cycles: Females**
   i. Estrous Cycle: lasts several days, only period of mating
      Mating at anytime
   iii. Progesterone: lining of uterus, inhibits further ovum production if there is no fertilization: decrease, loss of lining, menstruation

c. **Male Sexual Behavior**
   i. Intromission-- pelvic thrusting-- ejaculation—refractory period
   ii. Coolidge effect: decrease of refractory period with introduction of new females

d. **Female Sexual Behavior**
   i. Lordosis
   ii. 3 measures of Sexual Behaviors:
      1. Attractiveness: change in male behavior
      2. Proceptivity, Receptivity: change in female behavior
   iii. Androgens (testosterone) have organizational effects on behavior
   iv. Testosterone immediately after birth has behavioral defeminization and later behavioral masculinization effects


IV. Pheromones

a. Sexual communications between individual. VomeroNasal Organ

b. Animals
   i. VNO: sensitive to urine (rats)
   ii. Damage of VNO: poor discrimination between male and female (mice)
   iii. Single neurons in accessory olfactory bulb can selectively respond to male or female scents

c. Humans
   i. T-shirt smell- male/female discriminations in human
   ii. In humans: sweat carries sexually dimorphic molecule

d. Lee Boot Effect: groups of co-housed female mice stop estrous cycle

e. Whitten Effect: synchronization of estrous cycle if male odor is present

f. Vendenbergh Effect: early onset of female puberty upon exposure to male pheromones

g. Bruce effect: female mouse inseminated exposed to new male (intact testes) causes failed pregnancy