Male (XY) -> Primordial gonads develop into testes (by testis-determining factor, necessary teste development)

  -> Internal: Anti-mullerian hormone (defeminization); Mullerian system withers away
  -> Internal: Androgens (masculinization); Wolffian system develops into vas deferens, seminal vesicles, prostate
  -> External: Androgens; primordial genitalia develop into penis and scrotum

Female (XX) -> Primordial gonads develop into ovaries (NO testis-determining factor)

  -> Internal: Mullerian system develops into fimbriae, fallopian tubes, uterus and inner vagina (NO hormones)
  -> Internal: Wolffian system, without androgens, withers away (hormones are necessary for wolffian system development)
  -> External: Primordial external genitalia development into clitoris, labia, outer vagina

*Females are more likely to initiate sexual behavior during the ovulatory stage of the menstrual cycle

MALES

Key Hormone is testosterone

Testosterone controls both the physiology (sperm production, erection) and motivation (initiation, overall interest).

Gonadotropin-releasing Hormone, GnRH, blocker on men -> loose sperm production/erection + loose sexual interest

GnRH blocker in monkeys -> Loss depends on rank (i.e. previous experience. Low hierarchal rank has largest loss).

Testosterone levels increase with psychological anticipation and is also involved in other male behaviors like aggression. Testosterone levels also decrease with age (explains decrease in libido)

SEXUAL ORIENTATION – defined as the gender of the preferred sexual partner (homo vs heterosexual)

Other dimensions of sexual preferences: monogamy, polygamy, age, etc.

Possible dependence on developmental (educational) vs genetic (physiology) factors?
Theory: prenatal exposure to androgens and genetic factors possibly play a role.

Disorder for genetic females: Congenital Adrenal Hyperplasia = too much androgen exposure during gestation

- Mild physical effects (i.e. enlarged clitoris)
- Increased likelihood for homosexual preference
- Increased likelihood for male ‘behaviors’ (i.e. preference to toys with moving parts)
- Change in sexually dimorphic behaviors (behaviors that are based on differences in genetics)
- Excessive secretion of ACTH from ant. pituitary causes constant stimulation of adrenal cortex and leads to hyperplasia (as seen in clitoris enlargement mentioned earlier)

Genetic Males: Androgen Insensitivity Syndrome

- XY genetic makeup (chromosomes), but all or some of the physical features of a female
- Internal testes (undescended) produce testosterone, but there are no receptors, they are therefore insensitive to testosterone and other androgens.
- Production of estrogens in small amounts produce feminization
  - Normal female sex lives/behaviors
  - XY genes not sufficient for heterosexual behaviors. Lack of androgens sufficient for homosexual behaviors (but not necessary).

Genetic Factors (conducted with twin-studies: significantly more monozygotic (identical twins) twins are both homosexual when compared to fraternal twins (heterozygotic)

- Genetic component for both male and female homosexual orientations
- There are sexual dimorphic traits/characteristics in the brain, but they do NOT explain sexual orientation

Brain Differences

- Corpus callosum + few other areas are sexually dimorphic. Women have more fibers connecting the two hemispheres of the brain.
- Hetero vs. Homosexuals: inconclusive (at least, indirect); no supporting evidence

Links
- Brief overview of sex hormones and their relationship to sexual behavior: