Development and teratology of reproductive system.

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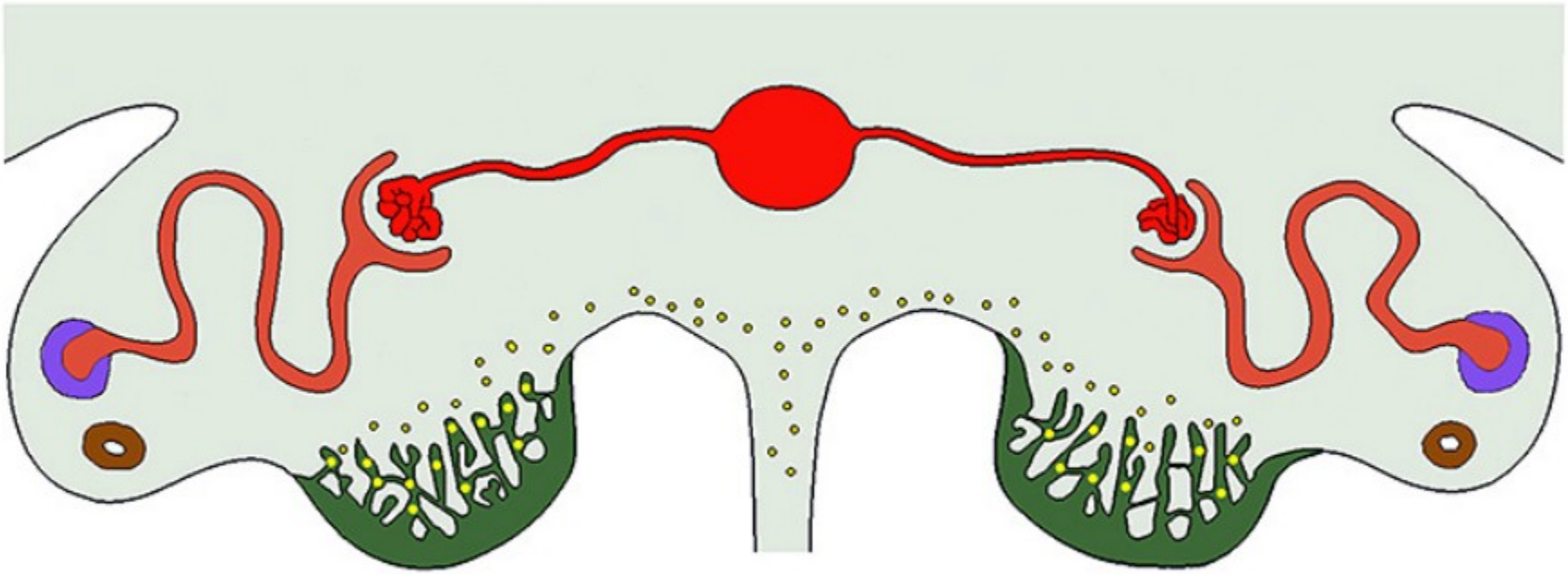
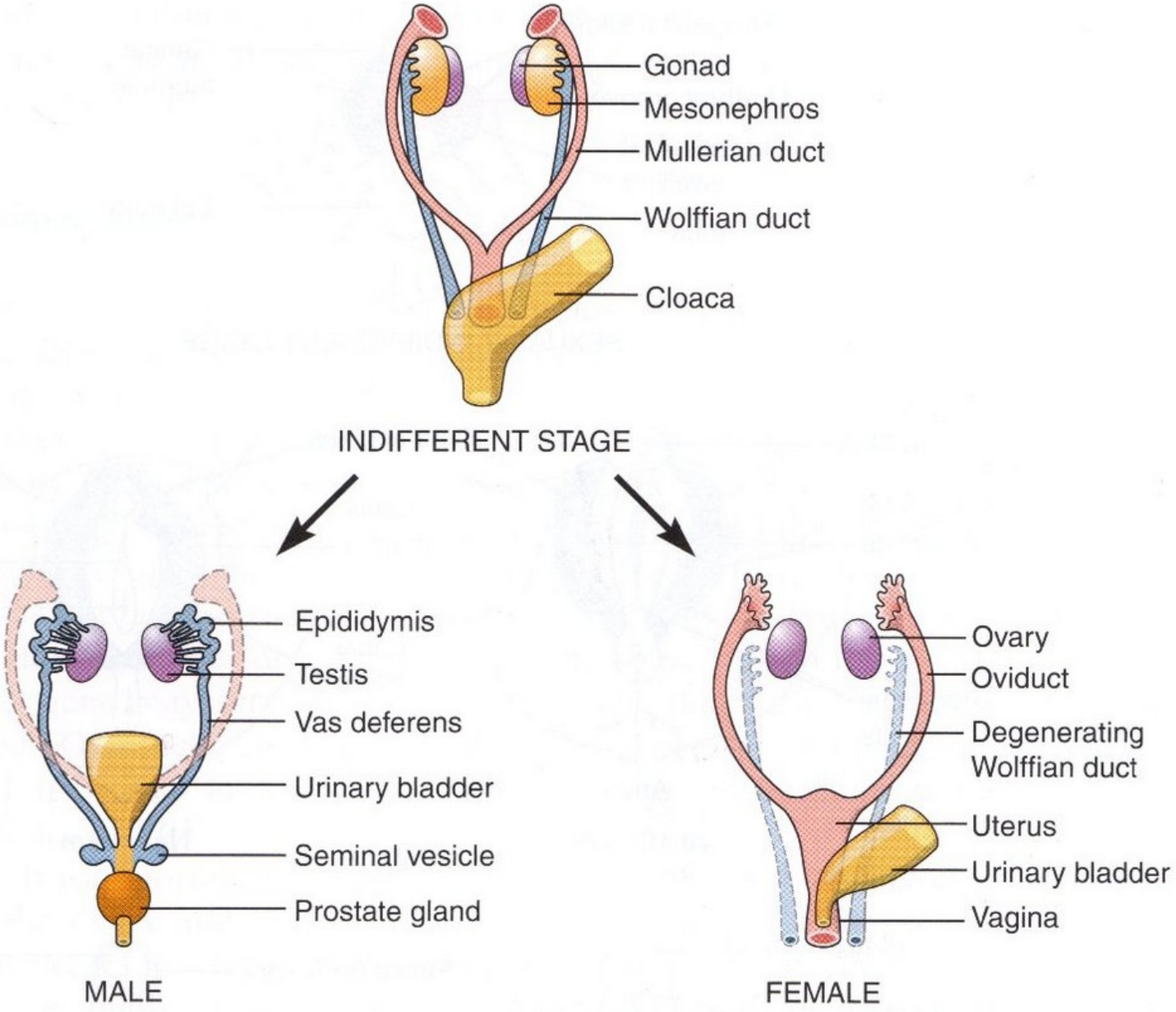
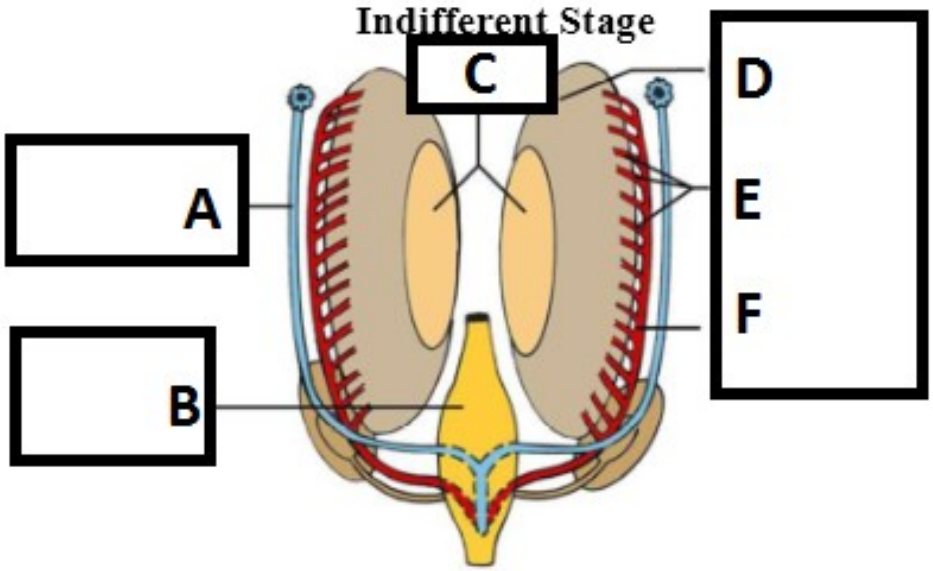




Development of gonad



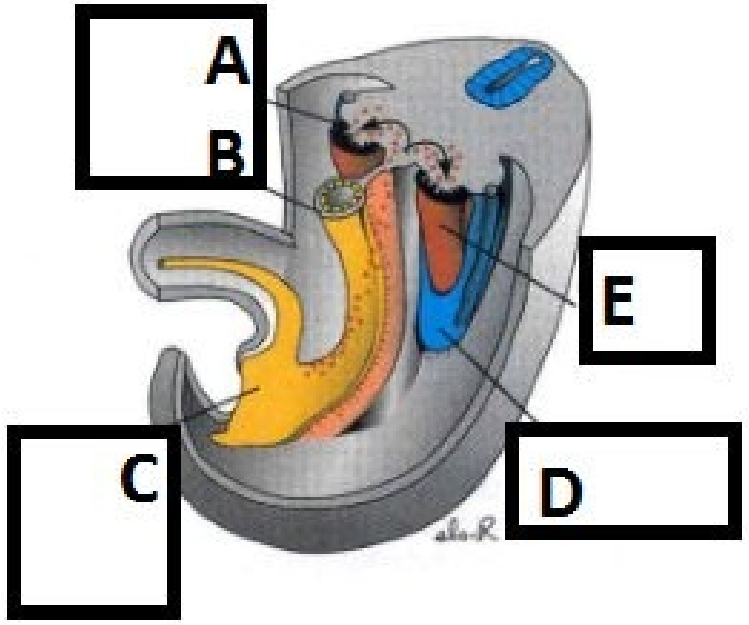
- **indifferent gonad**

  to 6th-7th week of development

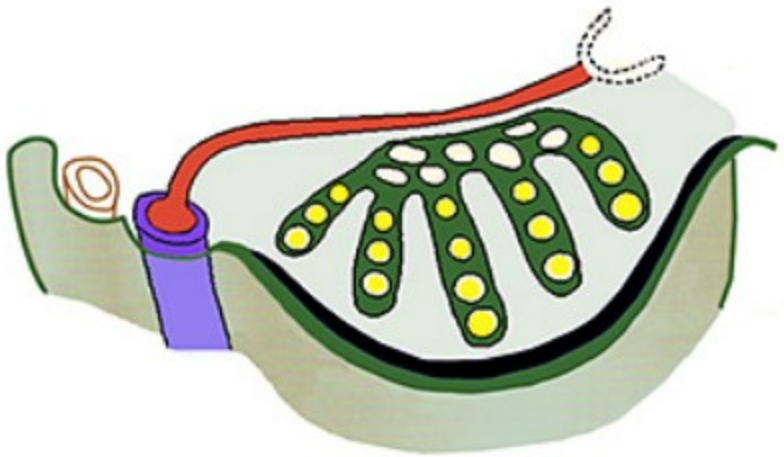
  – germ cell (wall of yolk sac)

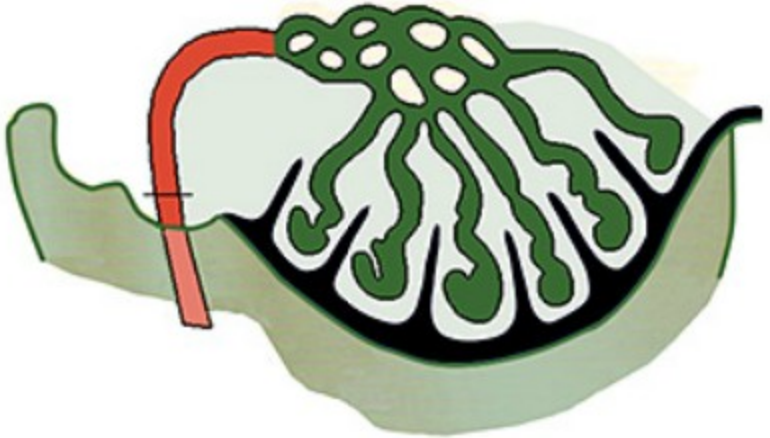
  – genital (gonadal) ridge – mesoderm

  – coelomic epithelium – mesoderm – primitive sex cords



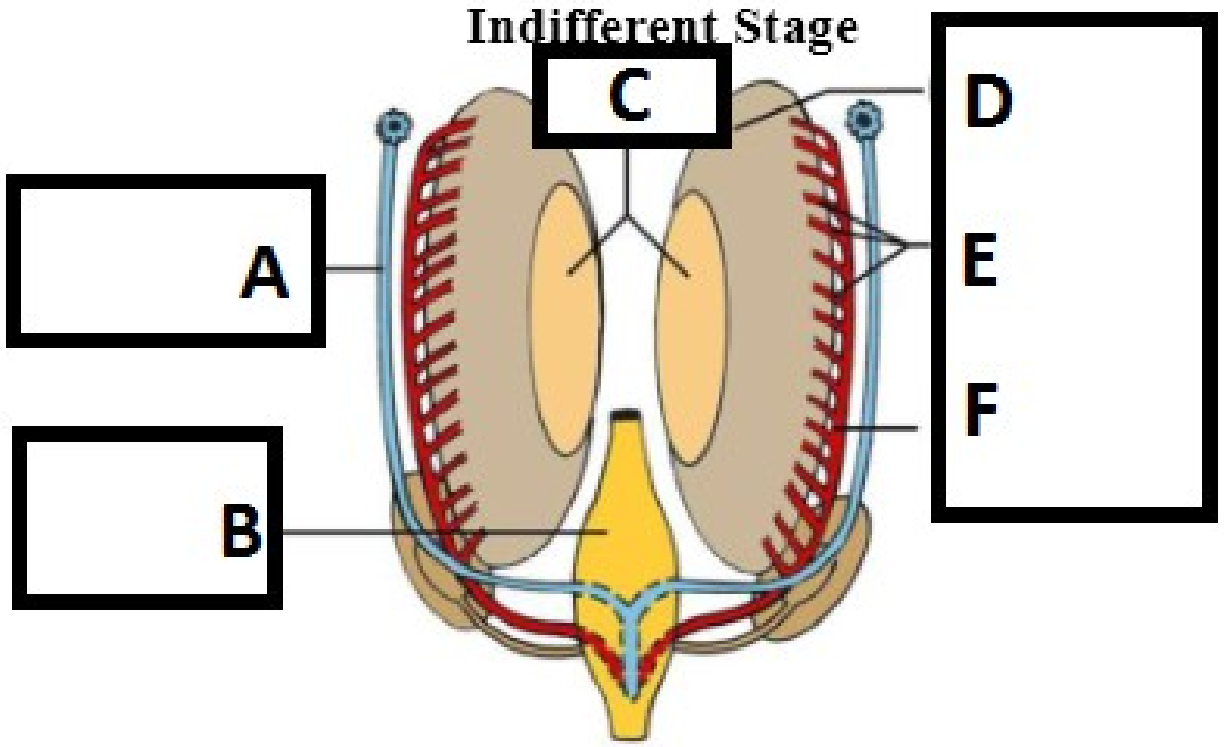
http://quizlet.com/15832386/tamhsc-development-of-genital-system-flash-cards/





Development of genital ducts

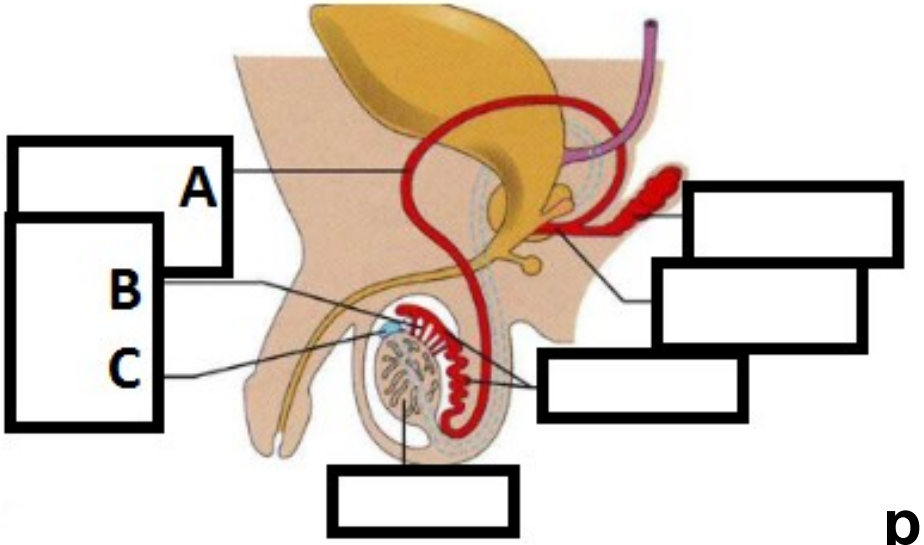
- **indifferent stage**
  - mesonephric duct (Wolffian)
  - paramesonephric duct (Müllerian) – longitudinal invagination of coelomic epithelium at the urogenital cord

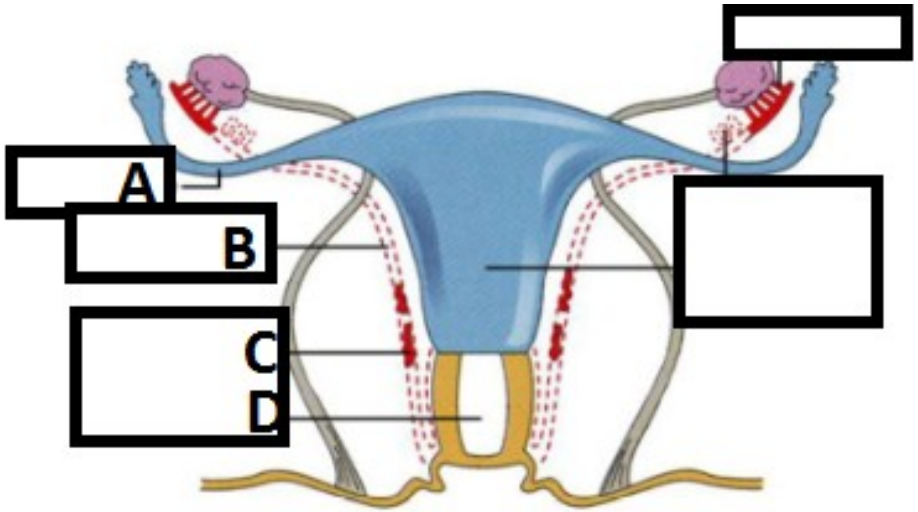


Differentiation

towards male sex

towards female sex





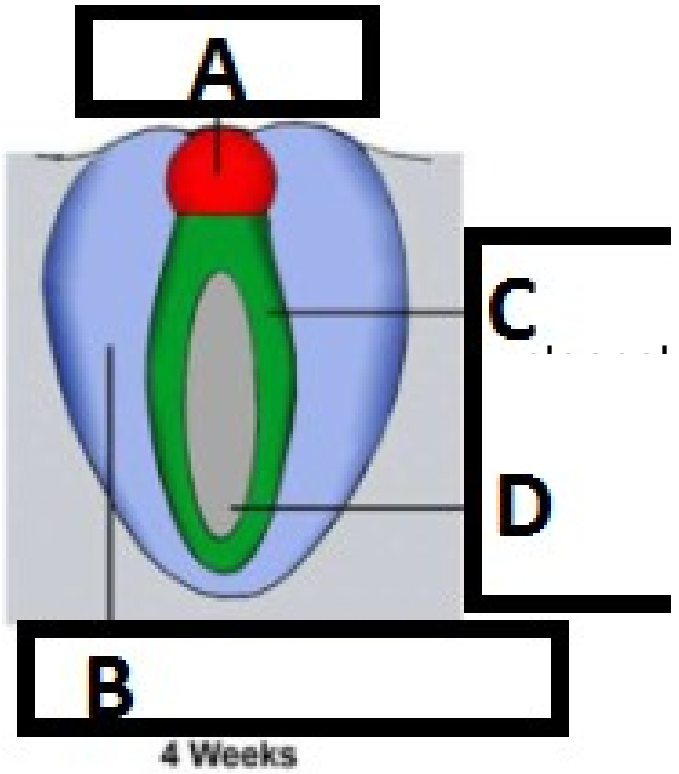
mesonephric duct – Wolff

paramesonephric duct - Müller

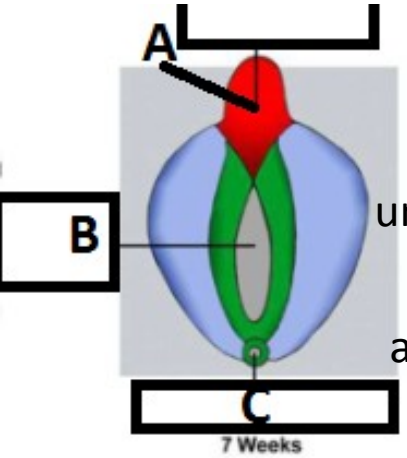
- vertical
- horizontal do not fuse →uterine tube
- vertical - both ducts fuse → **uterovaginal primordium** – uterus and cranial part of vagina

Development of external genitalia

- <u>indifferent stage</u>
  - cloacal **folds** around the cloacal membrane →anteriorly **urethral** (urogenital) folds
    →posteriorly anal folds
  - genital **tubercle (phallus)**
  - genital **swellings**



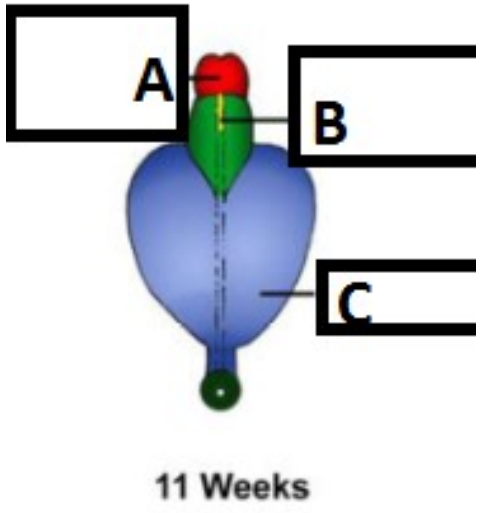
Development of external genitalia - differentiation



urogenital membrane

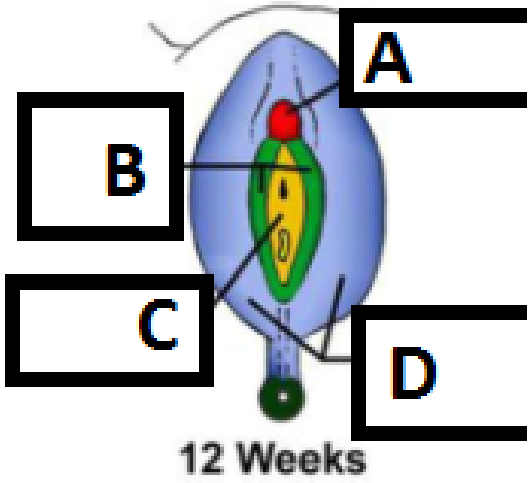
anal membrane

MALE



- genital tubercle →penis
- urogenital folds fuse →pars spongiosa urethrae m.
- genital swellings fuse →scrotum

FEMALE



- genital **tubercle** →clitoris
- **urethral (urogenital) folds** →labia minora
- **genital swellings** (tori genitales) →labia maiora

Disorders of sexual development „hermaphrodites“

- Ambigous genitalia: clitoral hypertrophy/small penis with hypospadia
- Ovotestes – less than 1 in 20000 in 70 % of cases, the caryotype is 46, XX
- Genotype does not match the phenotype

– congenital adrenal hyperplasia, most common cause;

- androgen insensitivity syndrom (AIS): complete (CAIS), mild (MAIS) or partial (PAIS)
- 5-a-reductase deficiency – affects males

Chromosomal abberations

- Klinefelter syndrom – 47, XXY (XXXY…) – 1 in 1000 males: decreased fertility, small testes, decreased testosteron levels, gynecomastia in app. 33%

- Gonadal dysgenesis – oocytes are absent:
- Swyer syndrome – XY female gonadal dysgenesis – point mutation or deletions of the SRY gene
- Turner syndrome – 45, X

Hernias and cryptorchidism

- Congenital inderect inguinal hernia
- Hydrocele of the testis and/or spermatic cord

- Cryptorchidism

Uterine and vaginal defects

- Duplication of the uterus
- uterus didelphys
- uterus bicornus
- uterus arcuatus
- Uterus bicornus unicollis
- Cervical atresia
- Vaginal atresia

Defects in male genetalia

- Hypospadia – 3 to 5 in 1000 births
- Epispadia – 1 in 30000 – most often associated with extrophy of the bladder and abnormal closure of the ventral body wall
- Micropenis – insufficient androgen stimulation – primary hypogonadism, hypothalamic or pituitary disfunction
- Bifid penis