Developmental Anatomy (Ch. 4)
Human Anatomy lecture

I. Overview: Table 4.1
A. Terminology
   - gestation - period from conception (fertilization) to parturition
     "childbirth"
   - conceptus =
   - clinically gestation is divided into three 3-month intervals
   - biologically, divided into 3 different stages:
     - sketch-

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<th>ovarian cycle begins</th>
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B. Fertilization
   - occurs in uterine tube
     sperm viable for 48 hours
     + oocyte viable for 24 hours =
   - sperm + ovum =

II. Preembryonic stage (zygote → ~ day 16)
A. cleavage (mitosis of zygote) begins within 30 hours – KNOW Fig 4.2
   1. 2 cells → 4 → 8 → 16
   -
   2. peristalsis and ciliary action move morula through uterine tube into uterine cavity by day 4
3. By 5th day, morula has become a hollow ball of cells, the blastocyst (Fig. 4.3a)
   - embryoblast (inner cell mass) - "bag"
   - trophoblast -
   - blastocoel –

B. implantation – begins ~ 6th day (Fig. 4.3b& c)
   - blastocyst attaches and embeds into uterine wall

   - takes about a week,

C. embryogenesis (Fig. 4.3 & 4.4)
   - blastomeres multiply, rearrange, differentiate
   - gastrulation forms 3 primary germ layers ~ day 15 & 16

   -- Table 4.2 details fate of primary germ layers: NRF, but
   1. ectoderm -
   2. mesoderm -
   3. endoderm -

III. Embryonic stage (day 17 → end of 8th week)
   A. further cell movements & complex foldings begin shaping body (Fig. 4.5)

   -

   -

   -

   B. Embryonic membranes -- KNOW FIG. 4.8b
   - protect/ nourish the embryo/fetus
   - considered accessory organs
     1. amnion –
        - thin transparent sac, surrounds embryo with a fluid-filled cavity
2. yolk sac

3. allantois

4. chorion

C. Placenta and umbilical cord -- Fig. 4.8c

“flat cake”

1. placenta is a combination of fetal & maternal tissue (Review fetal circ. notes)
   - chorionic villi -
   - decidua -

   - surrounding endometrial capillaries enlarge

* NO MIXING OF BLOOD*
   - exchange of nutrients/ wastes is by diffusion across capillary walls
   - multiple other functions (Table 4.3, NRF details)

2. Placentation takes 3 months to complete

3. umbilical cord

IV. Fetal stage (Table 4.4, NRF)

A. organs continue to grow and develop: at 3 months, fetus is 9 cm; 45 g

B.

C.
V. Maternal anatomical changes

A. Uterus
- 10x - 15x increase in weight –
- fills abdominopelvic cavity

RESULTS: Compression

B. Other organs
- vagina --
- breasts --
- increase skin pigmentation (hormonal)
- average weight gain

C. puerperium - post-delivery recovery ~ 6 weeks
- during puerperium, uterus undergoes involution

- obstetrics -
  “midwife”
VI. Mammary glands

A. General structure of the breast – KNOW Fig. 26.21a & c
   1. modified sweat glands

2. levels of organization
   - mammary gland → lobe (15-20) → lobule (many) → acinus (many) = “berry”

3. single nipple surrounded by pigmented areola

4. suspensory ligaments

B. Path of milk flow
   - suckling stimulates contraction of myoepithelial cells within acinus

   acinus → lactiferous duct (1 per lobe) → lactiferous sinus