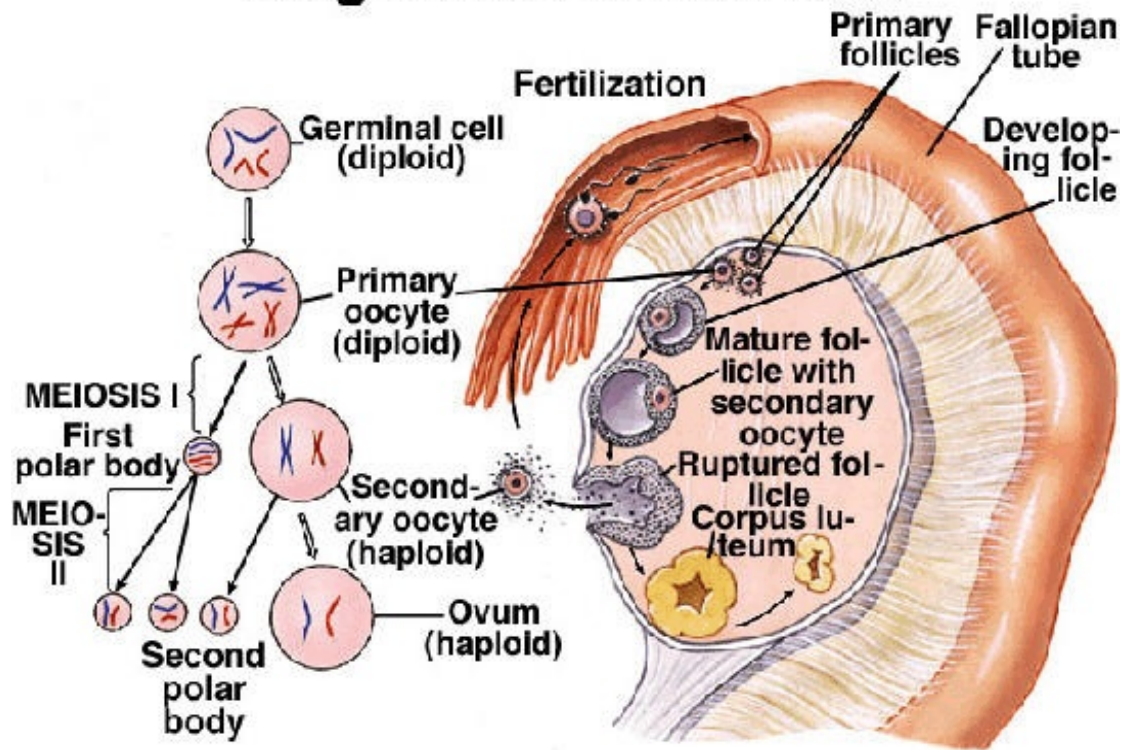


# Oogenesis in Humans



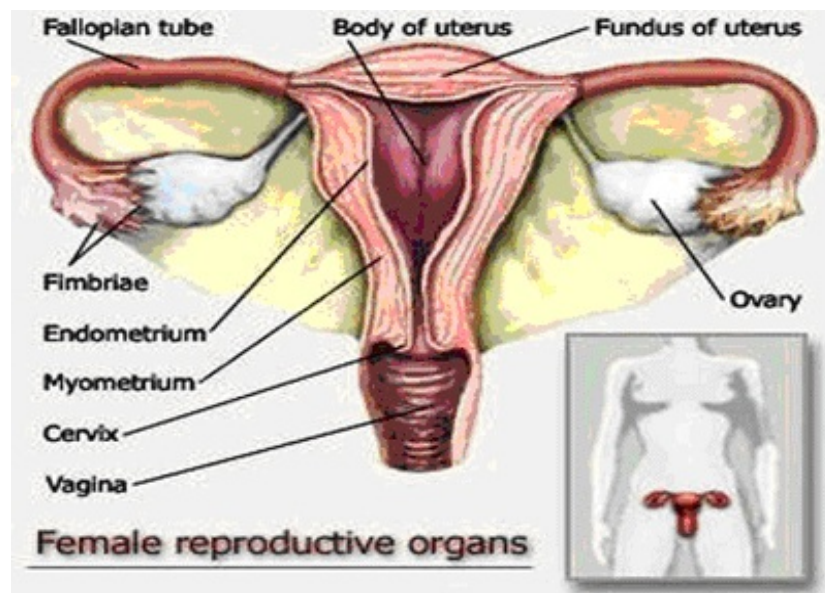
- starts with the diploid “**oogonium**” cell (germ / germinal cell)
- goes through meiosis I to form a **polar body** and a **primary oocyte** ( larger one )
- meiosis II yields two more polar bodies and one egg ( “ovum” ). The polar bodies ( much smaller ) do not have the resources to survive long, and die.
- supposed to be one process per month

## Female reproductive system : (490)

Unlike the male system, the female system has three functions....

- produces one viable ovum per month
- maintains any fertilized ovum through the embryo and fetus stages of development
- allows for internal development, followed by birth

Parts and function....



External parts : labium minora and  
majora, clitoris, vaginal  
opening

Internal parts : vagina, cervix, uterus,  
oviducts, fimbriae,  
ovaries

Vagina -

site of sperm deposition, the beginning of the reproductive tract and the exit for a fetus during birth

Cervix -

a constriction between vagina and uterus

Uterus -

thick walled muscular organ the size of a fist, but expandable to hold a developing fetus. Its lining ( **endometrium**) is used as a point of attachment for any developing fetus. It has a complex blood vessel network in its walls, and its thickness changes each month in response to a number of hormones...the **menstrual cycle**

Oviducts ( **Fallopian tubes**) -

a tube connecting the upper corners of the uterus to each ovary. Once **ovulation** has occurred, the newly released ovum travels

down one of these tubes towards the uterus ( the tubes are lined with cilia that create a slow current that guides the ovum). Fertilization usually occurs inside one of these oviduct tubes. The ovary ends of the tubes end in finger like projections called **fimbriae**, which slowly sweep across the ovary surface and guide any released ovum into an oviduct tube.

### **Ovaries -**

a pair of organs suspended within the abdominal cavity by ligaments. This is the site of cells undergoing meiosis to produce one ovum and three polar bodies each month, and also produce two hormones themselves.

## Comparison of Sperm and Egg Cells : (Pg 478)

- relative sizes
- mitochondria numbers and energy supply.....cell lifespan
- numbers produced
- motility
- coverings

## Two Technologies Developed From This Knowledge....

### Cloning:

Reproducing an organism by skipping the meiosis/sex cell formation.

- animal to be cloned donates a diploid nucleus
- transplanted into an egg ( minus its own nucleus...removed prior) of a surrogate mom
- inserted into a surrogate mom (now pregnant), develops into a copy of the nucleus donor

## Stem Cell Transplants:

Cells that have the ability to “specialize” or “differentiate” to become any other kind of body cell

### Human embryo sources :

first few days, mostly undifferentiated stem cells, leftover embryos from reproductive clinics frozen in liquid nitrogen

### Fetal sources :

Aborted fetus used as source of stem cells, the older the fewer. Umbilical cord and placenta blood.

### Adult sources :

Scattered throughout body tissues, 1 per 5 million cells, mostly in bone marrow.