

NAME: ADEGBENRO DIEKOLOLAOLUWA

MATRIC NO: 18/MHS01/016

EMBRYOLOGY ASSIGNMENT

1. Discuss Ovulation

Ovulation is the release of a secondary oocyte from the ovarian follicle. i.e this event occurs when the ovarian cycle ruptures and releases secondary oocyte ovarian cells. In a few days after ovulation, under the influence of LH and FSH, the secondary oocyte grow rapidly to a diameter of about 25mm and becomes mature vesicular/ mature secondary/ Graafian follicle. Secondary oocyte is arrested in the metaphase by cytostatic factor approximately 3 hours before ovulation. Once the oocyte leaves the cell, it becomes corpus luteum of pregnancy.

2. Differentiate between meiosis I and meiosis II

Meiosis I	Meiosis II
a. Synapsis is present. There is crossing over and chiasma formation	a. Synapsis is absent. No crossing over and chiasma formation.
b. Alignment of 46 homologous duplicated chromosome at the equator	b. Alignment of 23 duplicated chromosome at the equator
c. Centromere does not split	c. Centomere splits
d. Two diploid daughter cells are formed.	d. Four haploid daughter cells are formed.
e. Homologous chromosomes separate	e. Sister chromatids separate
f. This is a reduction cell division	f. This is a normal somatic cell division

3. Discuss the stages involved in fertilization

- i. Passage of sperm through the corona radiata: this is the removal of glycoprotein and cellular plasma protein from the corona radiata.
- ii. Penetration of the zona pellucida: the zona pellucida contains glycoprotein which induces acrosomal reaction and maintains sperm binding. Release of the acrosomal enzymes allows sperm to penetrate the plasma membrane of the oocyte then the permeability of the zona pellucid changes. When the sperm comes in contact with oocyte surface, a lysosomal enzyme is realeased from the cortical granules lining the plasma memembrane of the oocyte. These enzymes in turn prevent sperm penetration and inactive binding site for spermatozoa on the

surface of the zona pellucid, only one sperm can penetrate the oocyte (block to polyspermy)

- iii. Fusion of the plasma membrane of the sperm and oocyte: the plasma membrane of the sperm and oocyte fuses together. The head and the tail of the sperm enters the cytoplasm of the oocyte. The plasma membrane of the sperm remains behind.
- iv. Completion of the 2nd meiotic division and formation of female pro nucleus: penetration of the oocyte by the sperm completes the 2nd meiotic division and gives rise to a mature oocyte and a second polar body.
- v. Formation of male pro nucleus: Within the cytoplasm of the oocyte, the nucleus of the sperm enlarges and forms the male pro-nucleus. The tail of the sperm degenerates.
- vi. Formation of zygote: the oocyte contains two haploid pro-nuclei called an ootid. The two pro-nuclei fuses into a diploid aggregation of chromosomes, ootid becomes zygote. The chromosomes of the zygote are arranged on a cleavage.

4. Differentiate between monozygotic twins and dizygotic twins

Monozygotic twins	Dizygotic twins
a. They are genetically identical	Genetically unidentical
b. A sperm fuses with just an oocyte	Two different sperm fertilize two different oocytes
c. They have the same sex	Can be of different sexes
d. Share the same placenta	Have separate placenta
e. Have the same amniotic sac and chorionic sac	Have separate amniotic sac and chorionic sac
f. Have two umbilical cord	Separate umbilical cord
g. Also called identical twins	Also called fraternal twins