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Course: Embryology Assignment

Matric. Number: 18/Mhs01/146

Date: 29/04/2020

ANSWERS.

1. Ovulation

This is the event which leads to the release of the secondary oocyte from the ovarian follicle. Days before ovulation, the follicular stimulating hormone and the luitinizing hormone cause the vesicular hormone to become a mature vesicular follicle. While the follicle becomes mature, there would be an increase in the amount of Luitinizing hormone and this will lead to the completion of meiosis one and also lead to the follicles entering the preovulatory mature vesicular stage.

While the secondary hormone is being arrested at metaphase two, the surface of the ovary begins to bulge and at the apex avascular spot, the stigma appears.

The oocyte released experiences toe events caused by LH surge and these streets increase in collagen activity and increase in prostaglandin levels.

Some climatically correlates to look out for during ovulation are:

- Tender breast
- Urge for sex
- Swollen vagina
- Drop in body temperature. Etc.

2. Difference between Meiosis 1 & 2

- In meiosis I, homologous chromosomes separate, while in meiosis II, sister chromatids separate.
- Meiosis II produces 4 haploid daughter cells, whereas Meiosis I produces 2 diploid daughter cells.
- Genetic recombination (crossing over) only occurs in meiosis I
- Meiosis one is a heterotypic division while meiosis two is a homophobic division.
- Meiosis one takes more time than meiosis two.
- Meiosis one is preceded my interphase while meiosis two is no interphase.

3. Stages involved in Fertilization

- In order for sperm to pass through the corona radiata, they must undergo capacitation which is the removal of the glycoprotein material and seminal plasma protein which covers the acrosomal region of the sperm.
- The condition for which sperm penetrates the zona pellucida is when acrosomes bind to the zona pellucida. There are binding sites on zona pellucida and enzymes contained in acrosome, acrosin. The sperm releases acrosin on getting to the binding sites which in turn helps in breaking down and make passage through the zona pellucida. After passing through, there are cortical granules which send message to the zona pellucida to close its binding sites thus only one sperm can cross the zona pellucida in order to prevent polyspermy.
The fusion of plasma membrane of the sperm and oocyte; there is the fusion of the plasma membranes of oocyte and sperm. The head and tail of sperm enters the cytoplasm leaving the plasma membrane of the sperm behind.
- Immediately after the sperm enters the region of the oocyte, the second meiotic division is completed. The female nucleus becomes the female pronucleus.
- It occurs with the degeneration of the tail of sperm. The remaining nucleus enlarges to become the male pronucleus. Note: all the mitochondria of the sperm degenerate along with the tail of sperm which indicates that the mitochondria within the zygote are of maternal origin.
- There is the fusion of the male pronucleus and the female pronucleus to form an ootid. The ootid later develops into a zygote.

4. Differences between monozygotic and dizygotic twins.

- Monozygotic twins are produced from the same zygote, that is, a single zygote divides to give rise to two embryos. They are usually identical. Dizygotic twins are formed when a female releases two eggs that are fertilized by two different sperms and result in the formation of two zygotes, and eventually two embryos.
- Monozygotic twins are genetically identical while dizygotic twins are not.
- Monozygotic twins develop in just one amniotic sac while dizygotic twins develop in two different amniotic sacs.
- Monozygotic twins are of the same sex while dizygotic twins are of different sexes.