NAME: OPARA JUDUTH CHIOMA

MATRIC NO: 18/MHS01/312

1. Discuss ovulation?

Ovulation occurs when hormonal changes signal the ovaries to release a mature egg. In women of reproductive age with no hormonally-related fertility issues, this usually occurs monthly as part of the menstrual cycle. Ovulation sometimes happens more than once within a one-month period. It can also not occur at all, even if menstruation takes place. In humans, ovulation occurs about midway through the menstrual cycle, after the follicular phase. The few days surrounding ovulation (from approximately days 10 to 18 of a 28-day cycle), constitute the most fertile phase. The time from the beginning of the last menstrual period (LMP) until ovulation is, on average, 14.6days, but with substantial variation among females and between cycles in any single female, with an overall 95% prediction interval of 8.2 to 20.5 days.

The process of ovulation is controlled by the hypothalamus of the brain and through the release of hormones secreted in the anterior lobe of the pituitary gland, luteinizing hormone (LH) and follicle stimulating hormone (FSH). In the preovulatory phase of the menstrual cycle, the ovarian follicle will undergo a series of transformations called cumulus expansion, which is stimulated by FSH. After this is done, a hole called the stigma will form in the follicle, and the secondary oocyte will leave the follicle through this hole. Ovulation is triggered by a spike in the amount of FSH and LH released from the pituitary gland. During the luteal (post-ovulatory) phase, the secondary oocyte will travel through the fallopian tubes toward the uterus. If fertilized by a sperm, the fertilized secondary oocyte or ovum may implant there 6–12 days later.

2. Differentiate between meiosis 1 a meiosis 2?

MEIOSIS 1	MEIOSIS 2
Starts as diploid ends as haploid	Starts as haploid ends as diploid
Reductive division	Equational division
Long duration	Short duration
Complicated division process	Simple division process

3. Discuss the stages involved in fertilization?

The goal of fertilization is the union of one, and only one, sperm nucleus with the female pronuclear within the activated oocyte. For this to occur successfully, several events must transpire, including the incorporation of the entire spermatozoon into the oocyte, the completion of meiotic maturation with the extrusion of the second polar body, the metabolic activation of the previously quiescent oocyte, the DE condensation of the sperm nucleus and the maternal chromosomes into the male and female pronuclei respectively, and the cytoplasmic migrations of the pronuclei, which bring them into apposition. Defects in any of these events are lethal to the zygote and might prove to be causes of infertility. In this study, the microtubules and DNA were imaged in inseminated human oocytes that had been discarded as unfertilized. The presence and number of incorporated sperm tails were also documented using a monoclonal antibody specific for the post-translationally modified acetylated-α-tubulin found in the tail, but not the oocyte, microtubules. An analysis of 211 oocytes from failed in-vitro fertilizations from 58 patient couples resulted in the determination of several previously undetectable phases at which fertilization arrests: (I) metaphase II arrest; (ii) arrest after the successful incorporation of the spermatozoon; (iii) arrest after the formation of the sperm aster; (iv) arrest during mitotic cell cycle progression; and (v) arrest during meiotic cell cycle progression. Data on polyspermy and arrested embryonic development are also presented. These results have implications for the diagnosis and treatment of female, as well as male, infertility. They also provide a rationale for the reasonable use of intracytoplasmic sperm injection (ICSI) therapy, although they suggest that cases intractable to this approach will be found. Concerns are raised about the use of seemingly 'unfertilized' but inseminated oocytes for subsequent re-inseminations, ICSI or even research, since the fertilization process might have arrested after sperm penetration. These results demonstrate that the proper union of the parental genomes requires a series of cytoskeletal-mediated events on the oocyte surface and within the oocyte proper, and that failure at any phase results in the arrest of human fertilization.

4. Differntiate between monozygotic and dizygotic twins?

MONOZYGOTIC TWINS	DIZYGOTIC TWINS
Gender is this same	Gender is different
Blood types are the same	Blood types are different
Genetic codes are nearly identical	Genetic codes are the same as any other sibling
Appearance is extremely similar but maybe affected by environmental factors	Appearance is similar like any other sibling

REFERENCE: WIKIPEDIA