Jonathan Quang 4/3/15

HW#27 SLS44-09/Period 4,5

1a) The pathway taken by sperm to be expelled out the human body begins in the seminferous tubules where it is produced. The sperm migrate up the seminferous tubules until they reach the epididymis. The sperm mature and are stored here. During ejaculation, the sperm migrate to the vas deferens, which propels the sperm forward through smooth muscle contractions into the ampulla. Secretions from the seminal vesicles are added here. The sperm are propelled forward into the urethra, passing by the prostate that adds a milky fluid to form semen. From there, the semen is ejeaculated out the urethra and out the penis.

1b) Fluids are added to sperm to form semen. The fluids are produced by the seminal vesicles, the prostate gland, and the bulbourethral glands. These secretions activate swimming by the sperm, provide the glucose that sperm will use as fuel to swim, and to neutralize the acidic fluids of the vagina.

2) The ovarian cycle is the cycle where an oocyte matures, erupts from the ovary, and travels down the oviduct to the uterus. The uterine cycle is the cycle where the uterus lining grows, and if an egg does not implant, then the uterus lining degenerates and bleeds off. These two cycles influence each other through hormones. During the ovarian cycle, the oocyte matures and then hatches around day 14. As the oocyte is maturing, levels of estrogen rise. This rise in estrogen causes the uterine lining to build up. Estrogen begins to drop when the oocyte erupts from its follicle. The follicle eventually forms a corpus luteum, which causes progesterone levels to rise. This rise in progesterone causes the uterine lining to maintain its current thickness. Upon the corpus lutem beginning to degenerate, progesterone and estrogen begin to drop, causing the uterine lining to shed.

3) In males, LH stimulates the interstitial cells of the testes to release testosterone. Testosterone and FSH stimulates the Serotoli cells and spermatgonia, causing spermatogensis. In females, LH and FSH circulating in the bloodstream initiate the development of several follicles within the ovaries. Withand stimulates the hypothalamus the influence of FSH, LH, and estrogen, the follicles grow for 2 weeks. As the follicle enlarges, it secretes more estrogen, to make the follicle and primary oocyte inside it to grow even more. It also stimulates the growth of the uterine wall and the hypothalamus and pituitary to have LH and FSH to peak around the 12th day of the menstrual cycle. Progesterone peaks at the formation of the corpus luteum, and it causes the uterine wall to maintain its current thickness. When progesterone levels lower, it causes the uterine lining to be shed.

4) The functions of the zona pellucid are to prevent polyspermy, protect the embryo from early implantation, and to protect the embryo from the mother's own immune system. It is thought to be formed by secretions from the oocyte and the follicle.

5) The three primary germ layers are the ectoderm, endoderm, and mesoderm. The ectoderm is the outside layer of an embryo and/or generally above the blastopore after gastrulation. It eventually develops into the epidermis of the skin, lining of the mouth and nose, hair, glands of the skin, the nervous system, the lens of the eye, and the inner year. The endoderm is formed by the cells lining the cavity of the blastopore. It will develop the digestive and respiratory tracts, the liver, and the pancreas. Some cells will migrate between the ectoderm and the endoderm, forming the mesoderm. It will give rise to the dermis of skin, muscle, bones, the circulatory system, gonads, kidneys, and the outer layers of digestive and respiratory tracts. The extraembryonic membranes formed during the prenatal period are the amnion, allantois, yolk sac, and chorion. The amnion is a sac that encloses the embryo in fluid. The allantois provides the blood vessels of the umbilical cord, which carries the blood between the embryo and placenta. The yolk sac is a membranous sac that forms part of the digestive tract in the embryo. The chorion is the fetal contribution to the placenta, which is a structure that filters out what the embryo needs from the mother's blood and transports the embryo's waste into the mother's blood.

6) There are many changes that occur in a pregnant mother's body. Some of them are the enlarging of the breasts, decreased blood pressure due to an increase in blood vessel size, frequent urination, shortness of breath due to the baby's need for oxygen and for carbon dioxide to be expelled, sudden cramps due to ion shortages, and swelling of the ankles.

7) Oxytocin stimulates the onset of labor. There are three stages of labor. The first stage is split into two phases. During early labor, the cervix of the mother gradually thins out and opens up. During active labor of the first stage, the cervix opens up more rapidly, and contractions increase in intensity and frequency. The second stage of labor begins when the cervix has been fully opened up. Uterine contractions force the baby out, and the mother must "push" the baby out. The third stage of labor begins right after the birth of the baby. Similar to the second stage of labor, the placenta must be pushed out of the birth canal.