Tai-Hsuan Lin

Dr. Stephen Maret

PSY 242

14 February 2023

Essay Questions-Chapter3&4, Video response

1. **Describe the various aspects of the male reproductive organs.**

Structure of the External Genital Organs The primary male sex organ is the penis, which is made up of sponge-like erectile tissue that becomes engorged with blood during sexual arousal. The penis shaft terminates at the acorn-shaped glans and is densely packed with nerve receptors, making it extremely sensitive. The friction on the coronal ridge aids in the stimulation of sustained sexual arousal, which leads to orgasm and ejaculation. As a result, the erect penis acts as a conduit for the "transport" of sperm from the testicles to the vagina, allowing for fertilization. During orgasm, sperm and sperm combine to form sperm. The foreskin is covered in an unawakened state in uncircumcised men.Arousal pulls back the foreskin, exposing it to stimulation. The shaft and glans of the male penis are identical to the shaft and glans of the female clitoris. The lower side of the male penis is coterminous with the female labia minora. During prenatal development, a line runs down the center of the lower penis, and the tissues fuse together. The scrotum is a sac that holds the testicles loosely in two separate chambers, allowing them to hang down from the body. This allows the scrotum temperature to be slightly lower than the body temperature required for healthy sperm production. If the scrotal temperature falls below 95 degrees, the scrotal muscles contract and reflexively pull the testes toward the body to be heated and protect the developing sperm. The scrotum in men corresponds to the labia majora in women. The primary function of the testes is to produce and then store sperm in preparation for fertilization. The testes are located in the scrotum and are approximately 1 X 1.5 inches in size. The testes are identical to the female ovaries. Each testicle is divided into lobes, and within each lobe are coiled masses of serpentine spermatogenic tubules, which are where sperm is first produced. Interstitial cells, which produce androgens and protect and nourish the sperm, are found in the tubules. Sperm move from the germinal tubules to the testes, another network of tubes, and then to the epididymis, where they continue to develop gradually and gain motility. The epididymis, which is located at the top of the testicle, is another bundled and coiled tube that is about 20 feet long when fully extended. Mature sperm is stored here for up to two weeks before being used. The testes are connected to the male body via the spermatic cord, which contains the nerves and blood vessels that ensure the testes' survival and function.

Internal Genital System The vas deferens, two long curved tubes that begin at the end of the epididymis and also store mature sperm, connects the testes to the penis. The vas deferens ascends from the spermatic cord at the top of the bladder, through the seminal vesicles, and into the prostate, where it merges into a single ejaculatory duct. This duct then connects to the urethra, which runs down the center of the penis and ends in a small crevice on the glans' head.

The urethra is also connected to the bladder, allowing urine to be discharged. At any given point, the muscular sphincter controls which of the two processes (ejaculation or urination) occurs, automatically prohibiting the other. Seminal vesicles are small elongated pouches that are located directly behind the bladder. The spermatozoa are mixed in the seminal vesicles after passing through the vas deferens during ejaculation. This fluid, which accounts for roughly 70% of semen, is chemically alkaline and has the ability to neutralize the vaginal environment, ensuring the survival of some (but not all) sperm. It also contains nutrients such as fructose, citric acid, and amino acids, which all provide energy to the sperm and increase viability.

2. **Describe the various aspects of the female reproductive organs.**

External Genital Organs The external female genital structures, referred to collectively as the vulva or vulva area, contain a plethora of nerve connections that make them extremely sensitive to touch and thus potentially responsive to sexual arousal. It is a mound of fatty tissue that covers the female pubic bone and is covered with varying amounts of hair after puberty. The labia majora and minora are two sets of skin folds located just below the pubic bone and including the opening to the vaginal internal sex organs. The outer lips are known as labia majora and are similar to the male scrotum. They loosely cover and thus protect the urethra and vaginal canal. The labia majora are significantly stretched during childbirth so that they do not close completely after delivery, and the inner skin folds are smaller and are called labia minora. They are fused together at the top to form a hood, which is a small protective skin flap. In the awakened state, both labia majora and labia minora are engorged with blood and are pulled back and out, effectively exposing the vaginal opening. The clitoris, located below the pubic bone, and the lips of the labia minora are joined together to form the hood. The clitoris is homologous to the head of the penis and thus consists of the glans, the visible clitoris apex, and the shaft. Internally, it is made up of an erectile tissue known as the sponge, which engorges and swells during arousal in a manner similar to a male erection. Because it is mostly beneath the skin's surface and thus invisible, this swelling is less visible. The average clitoris is approximately 1 x 1/2 inch in size and, like the male penis, varies from person to person. Its nerve receptors are densely packed, making it extremely sensitive. The vaginal opening, which connects the external genitalia to the internal genitalia, is the permissible opening and can be born after 9 months in some cases. During arousal, two small, bean-shaped structures called vestibular glands (homologous to the male keeper's gland) secrete lubricating fluid from the vaginal opening. The perineum is a skin-covered muscle that runs from the vaginal opening to the anal opening. To prevent tearing, this area may be cut during delivery. This is known as an episiotomy, and it allows the vagina to deliver larger babies.

Internal genital anatomy Within the vaginal opening, the vagina is a tubular organ that extends to the cervix and is about 4 inches long. It is composed primarily of smooth muscles lined with mucosa and is located between the rectum below and the bladder and urethra above. These muscles can stretch a long way to accommodate and deliver. Unlike the inner two-thirds, the outer third is viable and thus sensitive to touch. The interior of the vaginal cavity remains moist and secretes continuously, assisting in the maintenance of an acidic environment and thus protecting women from "unfriendly" bacteria and other pathogens. Antibiotics can kill "friendly" bacteria, increase vaginal alkalinity, and cause yeast infections. Sperm are considered "unfriendly" and deplorable to the female body, and when present in the vagina, are subject to immune system attack and modulation. The cervix, located at the innermost end of the vagina,

connects the vagina to the lower end of the uterus via the cervix's opening. When sperm accumulates in the vagina, it must swim through the cervix opening into the uterus and then into the fallopian tubes in order to fertilize. Mucus produced by the cervical glands usually protects the uterus from bacterial infection. Ovulation causes hormonal changes in the woman's body that thin the consistency of the cervical mucus, allowing sperm to swim through. It has small sacs (called crypts) that secrete alkaline mucus to protect sperm from the acidic vaginal environment. The uterus is a pear-shaped organ that measures about 2 x 3 inches and is located directly above the vagina and cervix (called the sulcus). It tapers in the middle (the uterus's body) and is widest at the top of the rounded dome (the base of the uterus). It, like the vagina, can stretch significantly and then shrink back to its original size after the birth of a baby. The uterus's fundus and body are made up of three layers. The outermost layer is the outer uterine layer or plasma layer. It secretes plasma, which acts as a lubricant and prevents friction between the uterus and the surrounding organs as the woman goes about her daily activities. The middle layer, called the myometrium, provides the powerful contractions that are so important during childbirth. The oviducts, two fallopian tubes, extend from the top and sides of the uterus. They are about 4 inches long. The oviducts connect the uterus to the ovaries and to the channels that allow sperm to swim upward and eggs and fertilized eggs to float downward. The uterine end (called the canal) is narrow, and it gradually expands towards the ovarian end (called the ampulla). Fibers, which are finger-like projections at the end of the fallopian tubes, "hover" over the ovaries. The egg is released from the ovary and gently pushed along the channel of the fallopian tube by a weak trembling movement during ovulation. The cilia, tiny hair-like protrusions in the lining of the fallopian tubes, and the rhythmic contraction of the muscular wall of the fallopian tubes also contribute to the uterine movement of the egg. Fertilization occurs at some point in the fallopian tube during the days when the egg is floating toward the uterus if sperm is present. The ovaries are two amygdaloid ovaries (one on each side of the uterus) that are homologous to the male testes and are located at the filamentous end of the fallopian tubes. They are about 3/4 to 1.5 inches long and are held in place by ovarian ligaments attached to the uterine wall rather than the fallopian tubes. The ovaries have two primary functions, the first of which is endocrine in nature. They generate and secrete female sex hormones such as estrogen and progesterone. The ovaries' second function is egg storage and production. The surface of the ovaries becomes wrinkled, uneven, and covered with epithelial tissue as a result of the changes that occur during puberty. Many tiny primary follicles are embedded beneath this tissue in a connective tissue called the stroma. The follicles both store and produce mature eggs in sexually mature women.

3. **Describe the process of sperm production. What are some possible problems that may affect the process?**

Spermatogenesis begins in the testicular spermatogenic tubules. Each cell has the standard 46 chromosomes of a human cell. The cells divide continuously during a process known as mitosis, resulting in mature sperm with 23 chromosomes. These 23 chromosomes are combined with the egg's 23 chromosomes, resulting in half of the genetic material being shared with the father and half with the mother. The mature sperm is made up of the tail, the body, and, most importantly, the head, which contains the chromosomal material's nucleus. The acrosome, which contains the enzymes released by the sperm when it comes into contact with the egg, covers the top of the head. The connective elements, which consist of mitochondria that supply energy, are located directly beneath the head. Finally, the tail is formed by proteinaceous fibers. These fibers contract on alternate sides, creating a wave-like action that propels the sperm forward at about 3

mm (0.12 inch) per minute. A temperature of 3-5 degrees below body temperature is required for optimal sperm production. The scrotum contains a "thermostat" that pulls the testicles toward the body if the temperature is too low to conserve heat and allow sperm development. However, sperm development can be hampered if the scrotum is too warm. Trousers and other form-fitting clothing effectively pull the scrotum closer to the body, raising the temperature and increasing the percentage of abnormal sperm development and motility. Men who are repeatedly exposed to high temperatures (for example, near a pizza oven) can experience the same effects. Aside from temperature, there are numerous other potential causes of abnormal sperm production, which frequently results in low sperm counts. Stress, various medications, drug and alcohol use, environmental exposure to chemicals and/or radiation, hormonal changes, smoking, infections, and testicular damage are all thought to be causative factors for reduced and abnormal sperm production, as well as sperm motility (the ability of sperm to "swim"). Sperm can also develop abnormally in a variety of ways. They may have two tails or two heads, or they may be malformed in other ways. Reduced motility, low sperm counts, and an increased percentage of abnormal sperm can all have an impact not only on a man's ability to have successful children, but also on the genetic health of any children he does have.

4. Describe the process of ova production. What are some possible problems that may affect the process?

Oogenesis begins in the uterus and occurs in the ovaries. As early as the 50th day after conception, a woman's ovaries produce primordial cells, which begin to multiply at an alarming rate. The egg production process starts with the primary oocyte, which divides, replicates, and divides again in a process known as meiosis. They eventually disintegrate and become eggs. The eggs are stored in the ovaries' follicles. The follicles themselves develop over the course of more than a year. This process, known as cumulus expansion, is stimulated by the secretion of a hormone called progesterone during the first half of the menstrual cycle, which lasts about 28 days (FSH). In response to peaks in FSH and another hormone called LH, the follicles and eggs in the body mature and eventually rupture (LH). Both of these hormones are required for ovulation. The pore is formed, which allows the egg to exit the ovary and enter the fallopian tube. This process, known as ovulation, occurs at the midpoint of the menstrual cycle. The hypothalamus regulates ovulation by instructing the pituitary gland to release hormones in varying amounts and at varying intervals. The egg travels down the fallopian tube towards the uterus during the second half of the menstrual cycle, known as the luteal phase. If it is not fertilized, it degrades within 24 hours in the fallopian tubes and is eventually expelled in the menstrual stream. The innermost layer of the uterus (the endometrium) is constantly thickening and thinning. It is at its worst a few days after ovulation, when sperm is most likely to fertilize the egg. This thickening is caused by hormonal changes and is made up of blood and nutrient-rich tissue, thereby increasing the chances of survival for any blastocyst that implants in the uterine wall. If implantation does not occur, the enriched endometrial tissue sheds and causes menstruation.

8. Discuss the various gender-based chromosomal anamolies.

Red-green color blindness is inherited. Because the genes for the green and red receptors are on the X chromosome, the offset gene on the Y chromosome will be missing if the defective

gene is present in males. Males will be colorblind in the red-green spectrum as a result. Color blindness can only be inherited by females if both X chromosomes are defective. All of the colorblind male's daughters inherit his gene, but they will not be affected unless they also inherit the trait from their mother. However, they will be carriers who can pass the trait on to their sons and, in rare cases, daughters. Sons of affected males will not inherit the trait because they will only inherit his Y chromosome and not his (defective) X chromosome.

- Fragile X syndrome is a genetic disorder.
  A genetic mutation causes this syndrome, and typical symptoms in men with the syndrome include mental retardation, prominent ears, and large testicles. Some people with this disorder meet the autism diagnostic criteria due to social impairment. Females have a lower incidence because of the possibility of a second "non-fragile" X as a result of genetic mutation balance. Because of their small Y chromosome and lack of the genetic locus, males are nearly twice as likely as females to have the syndrome. Males with this disorder may experience more severe symptoms, whereas females experience ongoing symptoms.
- Turner syndrome (XO)
  Turner's personality is always female and has female external genitalia. If they are not treated, they will develop poorly during adolescence and will be unable to have children. Common symptoms include mental retardation, short stature, a broad chest, a low hairline, and low ears. The symptoms expressed, however, differ from person to person. According to studies, 72% of fetuses are aborted after being diagnosed with Turner syndrome during pregnancy. Boys are not affected by equivalence syndrome ("OY"). In any case where this chromosomal abnormality occurs, there is no viability. Although there is no "cure," various types of hormone therapy are used to produce and maintain secondary sexual characteristics during puberty and adulthood.
- Klinefelter's syndrome (XXY or XXXY or XXXXY or XXYY)
  Klinefelter syndrome, like Down syndrome, affects approximately one in every 1000 male births and is caused by extra genetic information in the 23rd pair. Because they have the Y chromosome, these people are male. Symptoms include small and underdeveloped genitalia, undescended testes, large breasts, and, in about 25% of cases, mental retardation. Although there is no "cure," hormone therapy (testosterone) is used to produce and maintain secondary sexual characteristics during puberty and adulthood. The most common are Klinefelter XXY variants, with fewer and fewer X chromosomes added. The XXYY chromosome composition occurs once every 17,000 births and is also a Klinefelters variant.
- Hyperfeminine syndrome (XXX or XXXX or XXXX), Hypermasculine syndrome (XYY or XYYY, or XYYYY)
  "Superfeminine" syndrome is caused by genetic material from the extra female ("X") chromosome of the 23rd female pair. The vast majority of people with this syndrome go undiagnosed. Because the syndrome is not a genetic disorder, but rather a chromosomal

abnormality in the sperm or egg, it is not "passed on" to future children. Symptoms include a slight increase in height and an increased likelihood of mental retardation. The XXX mutation is the most common hyper female variant, and increased X chromosomes are becoming increasingly rare (tetra-X and penta-X). Males suffering from hyperandrogenic symptoms are typically fertile and develop normally during puberty. The syndrome cannot be "passed on" to future generations because it is not a genetic disorder but rather the result of chromosomal abnormalities in sperm. The risk of developing the syndrome in any subsequent pregnancy is the same as in the general population. The symptoms are typically subtle. As a result, the vast majority of people with the syndrome go undiagnosed. Symptoms include being taller than average, having some coordination difficulties manifesting as childhood clumsiness or awkwardness, and having a higher likelihood of moderate to severe acne during adolescence. Males with this syndrome have slightly lower IQs than their siblings. Boys and men with this syndrome are also more likely to have behavioral issues, particularly issues with impulse control. Inability to properly metabolize certain neurohormones may also play a role in the XYY results. Hypermales may be unable to properly metabolize neurohormones and neurotransmitters.

10. Select and discuss at least 3 genetic conditions.

1. Down syndrome
   Additional genetic material in the 21st autosome causes Down syndrome. Because people with this syndrome have distinctive facial features, it was originally known as Mongolism or Mongolian idiocy. Down's Syndrome was not identified as a cause until 1959. Trisomy 21 was named after the discovery of extra chromosomes in the 21st pair. The disease is distinguished by a flattened nasal bridge and small skin folds in the inner corners of the eyes. Other possible physical characteristics include a shorter neck, shorter stature, a large, protruding tongue, hearing loss, and decreased muscle tone. The majority of people with Down syndrome have mild to moderate mental retardation. Even when intelligence is normal, some cognitive or learning disabilities are frequently present. Down syndrome is also associated with an increased risk of congenital heart disease, Alzheimer's disease, leukemia, and epilepsy. Maternal age is the most definitive risk factor for Down syndrome. This figure has steadily risen as women have aged. However, paternal age has recently been identified as a possible factor in the etiology of Down's syndrome.

2. Huntington's disease
   A dominant gene on chromosome 4 causes this disease. It affects about 1 in 10,000 births and causes the production of a faulty protein, which causes progressive and selective degeneration of body cells, particularly neurons. Onset usually occurs between the ages of 30 and 50, but 10% of cases occur before the age of 20. Chorea, lack of coordination, loss of control of facial muscles and thus slurred speech, and difficulty coordinating eating and drinking processes can all result in weight loss. Cognitive deficits in abstract reasoning, perceptual and special skills, and memory are also more common than in the general population. Anxiety, depression, aggressive and compulsive behaviors such as alcohol and carpet abuse, gambling, and hyperactivity are examples of psychological

deficits that can occur alongside physical and cognitive symptoms. Although there is no "cure" for Huntington's chorea, symptom relief and remission can be achieved with a variety of medications as well as physical and speech therapy. Children of Huntington patients are at risk because the disease can be inherited.

3. Ty Sachs disease (TSD)
   The disease was first identified in the 1880s. It is most common in the Jewish-German lineage and very uncommon in other ethnic groups. One in every 5,000 births occur in this population. It is a genetic disease that can confer resistance to another disease, in this case tuberculosis, on its carriers. It is a recessive trait in which the gene on chromosome 15 fails to produce hexosaminidase A, resulting in an accumulation of fatty acids called gangliosides in neurons. The end result is blindness, deafness, muscle atrophy, and paralysis, and death usually occurs before the age of three. People with TSD rarely live past the age of five without a cure or treatment, even with the best care. Infants with this disease appear to develop normally, but as ganglioside fats accumulate, damage occurs. A red dot on the retina at the back of the eye where the optic nerve enters is one of the first signs of nerve damage in the brain. It is carried on chromosome 4 by a dominant gene. It affects about 1 in 10,000 births and results in the production of a faulty protein that causes progressive and selective degeneration of body cells, particularly neurons. Onset usually occurs between the ages of 30 and 50, but 10% of cases occur before the age of 20.

11. What is genetic counseling. Why is it important? Do you see any ethical issues which may be problematic regarding genetic counseling.

A field known as genetic counseling has emerged in the last 30 years as a result of recent incredible advances in research and technology. It entails the examination of medical records, family history, and various genetic tests in order to obtain a complete picture of genetic risk. This is not necessary for the vast majority of people. However, family history suggests that some prospective parents may be at risk of having a child with a recessive expression disorder or syndrome. Personally, I am opposed to genetic counseling. As a Christian, I believe that God has a plan for everything that has happened, even if it does not appear to be "perfect," but who are we to define what is perfect? Many people may wonder what if we know our child will be born with TSD and they will not survive, or if some fetus may cause the mother to die while giving birth, but these are all hypothetical risks; we will never know

what will happend until it actually happens. So, in my opinion, if you're going to consider abrotein after genetic counseling, it's no different than murdering a child.

Autism- What We Know

In this video, Wendy Chung talks about the different causes of autism, whether it is genetic or due to epidemic infection, or other factors. Autism is not just a specific disorder, but there are many different levels of severity and symptoms within the autism spectrum. As Wendy explained in the video, people with high levels of autism may not only have low IQs and may not be able to speak and communicate normally, but there are also people with high functioning autism who have a higher level of mathematical logic than others, and may even be considered geniuses, but have extreme social difficulties. Statistics show that one in 88 children are diagnosed with autism, and the numbers continue to rise. One possibility is that the definition of autism has become broader, and as the generations progress we find more and more symptoms that could fall under the autism spectrum. Different variables can contribute to autism, but we still haven't identified the major contributing factors, and we don't even know why boys are much more likely to have autism than girls. In addition to studies showing that the older the father is, the higher the risk of autism in the fetus, and vaccines were once asserted to be a major cause of autism, but this theory was later debunked. In addition to the age of the father and maternal infections during pregnancy, studies have also investigated the effect of genetic compatibility, with 77% for identical twins, 31% for dizygotic twins, and ~21% for normal siblings. If we can effectively diagnose whether an infant has autism in the early stage, then we can use the correct education and treatment methods earlier. We hope that in the future there will be more ways to educate not only autistic people so that they can be more integrated into society, but also to educate the community on how to live happily with these special groups.