

Section 14.1: Review Answers

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1. The two main purposes of the gonads are to produce gametes and to secrete sex hormones.
2. (a) *fimbriae*: found in the female reproductive system; it is responsible for helping to move the ovum (released during ovulation) into the oviduct. It sweeps over the ovary and moves the ovum into the cilia-lined oviduct.
(b) *ductus deferens*: found in the male reproductive system; it is a storage duct responsible for storing and eventual transport of sperm to the urethra during ejaculation.
(c) *endometrium*: found in the female reproductive system; it is the uterine lining that will support an implanted embryo.
(d) *epididymis*: found in the male reproductive system, it stores the sperm during maturation and as they become motile. Once matured, the sperm move to the ductus deferens.
3. Sperm move out of the epididymis into the ductus deferens where they are mixed with various fluids to make semen. The seminal vesicles provide a mucus-like fluid containing fructose for energy; the prostate gland and Cowper's gland provide alkaline and mucus-like fluids that can neutralize the acids in the female reproductive tract. The combination of sperm and the fluids make up semen.
4. The ovum is moved from the ovary into the oviduct with the aid of the fimbriae, which are thread-like projections. As the egg moves down the oviduct it is aided by the beating of the cilia. This creates a current that moves the ovum towards the uterus.
5. The diagram needs to trace the sperm cells from the seminiferous tubules inside the testes to the epididymis, then on to the ductus deferens and urethra in the penis.
6. (a) an oocyte; (b) a follicle; (c) ovarian tissue.
7. The sperm is composed of three parts; a head, a mid-section, and a tail. The tail provides the motility required to move the sperm through the female reproductive tract; the tail is powered by a middle section that has mitochondria that can use the fructose provided by the seminal vesicles to make energy. The head section carries both the chromosomal material and the acrosome (a cap-like structure that contains the enzymes needed to penetrate the jelly-like layer surrounding the egg). The much larger, round ovum is covered by a specialized layer that only allows sperm with acrosome enzymes to penetrate. The egg has no structures to support motility, making it a more accessible target for the sperm, and its larger size makes it easier for the tiny sperm to attempt to fertilize it. The egg also contains cytoplasm and organelles to support the zygote as it makes its way into the uterus to implant itself in the endometrium.
8. By wearing looser pants, his scrotum will be further away from his body and at a temperature more conducive to the production of viable sperm—35 °C as opposed to the usual 37 °C. High temperatures can cause deformed sperm to mature, as well as decrease the number of sperm produced.