

Biology 9

Reproductive System and STD

Objectives

- To demonstrate and describe how infections can spread
- To demonstrate and describe how people can transmit infections even when they don't know they are sick
- To demonstrate and describe how infection can be spread from one person to a third person even if they have never met (indirect transmission)
- To observe and understand the structures and functions of the female and male reproductive systems

Part 1: STDs

Materials:

- Empty test tube (1 per person)
- Test tube of clear solution (1 per person)
- Transfer pipettes/droppers (1 per person)
- Phenol red indicator (shared at table)

Procedure

1. Each student will start with a test tube of clear solution. One student's solution is different from all the rest, but the difference is not visible. Label your test tube of clear solution with your initials and the word "EXCHANGE".
2. Take an EMPTY test tube, label it with your initials and the word "BEFORE".
3. Transfer about 1mL of your clear fluid into the "BEFORE" tube. This "BEFORE" tube will remain at your table untouched until Step 12.
4. Pause until everyone is ready and **wait for the instructor to signal for you to begin.**
5. Find ONE person at random in the class and exchange a dropperful (one full squeeze or about 1mL) of solution using the "EXCHANGE" tube with him or her. Place one dropperful (~1mL) into that person's test tube while that person puts one dropperful (~1mL) into your test tube. Mix by gently swirling your tube.
6. Record the name of your contact on your assignment sheet.
7. **Pause and wait for the instructor to signal for the next round.**
8. Repeat steps 3-7 two additional times, so you have contacted and exchanged fluid with three total **DIFFERENT** people! Move around the classroom. Remember to record each contact on your assignment sheet and pause in-between each round to wait for the signal to continue.
9. After the 3rd round, add about 5 drops of phenol red into your "EXCHANGE" test tube and record the color on your assignment sheet. The "infected" solution is basic (pink), and all of the others started out acidic (yellow).
10. Reconvene as a class and discuss. Record the names and contacts of the infected individuals in the table on your assignment sheet.
11. Try to determine the route of transmission using the "conversation tree" and answer the questions on your assignment. The route of transmission determines who initially had the basic solution and how it was passed through the class.
12. Test your hypothesis about the original person with the pink solution by adding about 5 drops of phenol red to the "BEFORE" tube.
13. Don't forget to clean up!

Your Contacts:

- First contact _____
- Second contact _____
- Third contact _____

What is the color of your EXCHANGE vial after adding phenol red? _____

Are you infected? Yes No

Infected Person	1 st Contact	2 nd Contact	3 rd Contact

What was the maximum number of people in the lab class *who could* be infected after each round of contact?

First round _____ Second round _____ Third round _____

Based on the results in the table above, who was the initial infected person (narrow down to 2 individuals)?

Now place a few drops of phenol red in your BEFORE vial. What is the color? _____

Are you infected? Yes No

Share the results with the class.

Who was the initial infected person?

Was your hypothesis correct in identifying “patient zero”? Explain.

In this lab exercise, you could not avoid contacting an infected individual because you could not tell who was infected until it was too late. What are some actual diseases where this might be the case?

How was this “disease” transmitted?

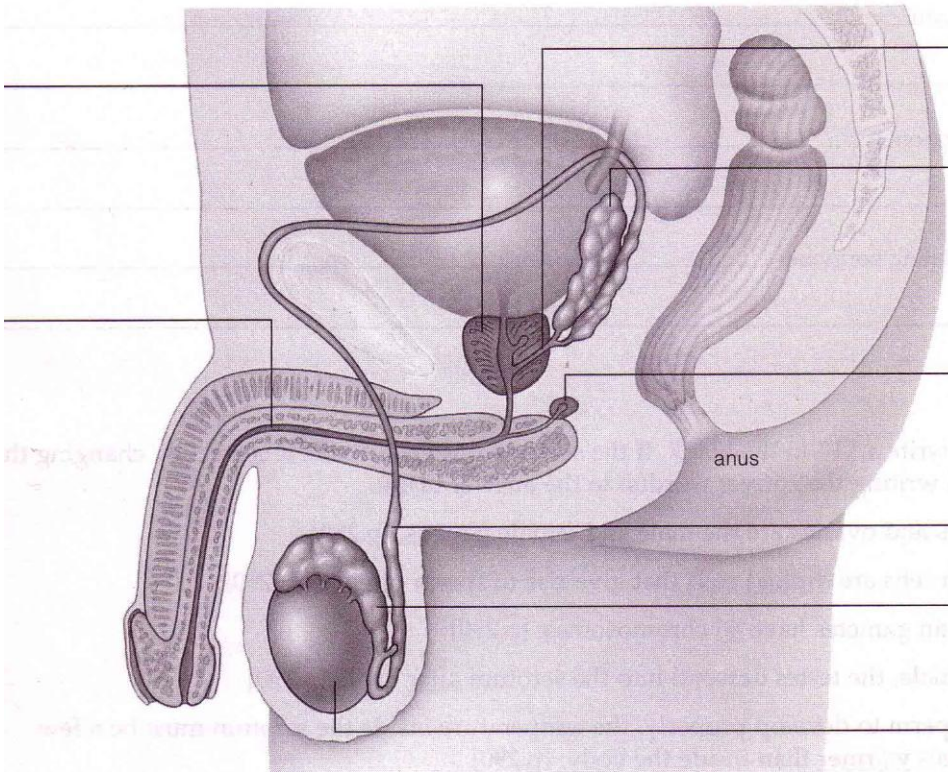
What are THREE other ways that diseases can be transmitted? See the lecture slides and/or textbook for information on other modes of disease transmission.

Part 2: Microscopic and Macroscopic Anatomy of the Reproductive System

1. Macroscopic Anatomy of the Male Reproductive System

Utilizing your textbook or resources online, MATCH and state a FUNCTION of the following structures as indicated in the figure below.

- bulbourethral gland _____
- ductus or vas deferens _____
- ejaculatory duct _____
- epididymis _____
- prostate gland _____
- seminal vesicle _____
- testes _____
- urethra _____



2. Microscopic Anatomy of the Male Reproductive System

Look at the slide of cross sections of testes showing seminiferous tubules. You can also view sections on JayDoc Histoweb at <http://www.kumc.edu/instruction/medicine/anatomy/histoweb/male/male.htm>. SKETCH a tubule in cross-section, note and LABEL the spermatids that are about to be released into the lumen.

- What is the function of the seminiferous tubules?
- Fill in the blanks for the duct system and the pathway of sperm from the epididymis:

epididymis -> _____ -> _____ -> out of the body

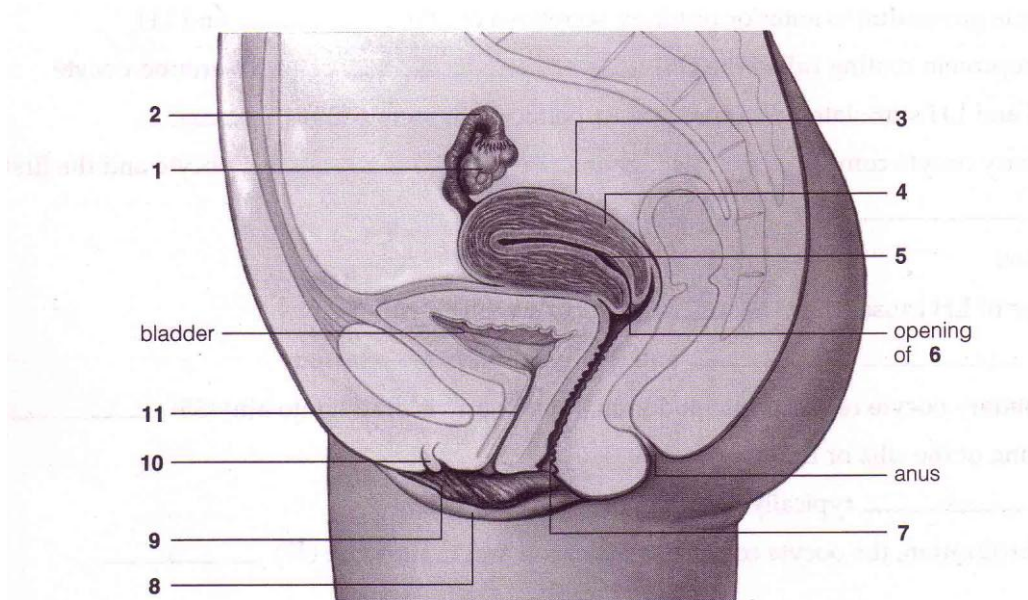
Look at the slide of human sperm. DRAW and LABEL the following parts of a sperm AND state their FUNCTIONS.

- head, acrosome, midpiece, tail

3. Macroscopic Anatomy of the Female Reproductive System

Utilizing your textbook or resources posted in the course resource table MATCH and state a FUNCTION of the following structures in the figure below.

- cervix _____
- clitoris _____
- ovary _____
- oviduct _____
- urethra _____
- uterus _____
- myometrium of uterus _____
- endometrium of uterus _____
- vagina _____



4. Microscopic Anatomy of the Female Reproductive System

Look at the slide of cross sections of ovary. You can also view sections on JayDoc Histoweb at <http://www.kumc.edu/instruction/medicine/anatomy/histoweb/female/female.htm>. SKETCH the section and LABEL the oocyte contained within it. Label all other structures that you can identify.

5. Match the following male reproductive structures with their functional equivalent female reproductive structures.

Male

Testis

Vas deference

Glans penis

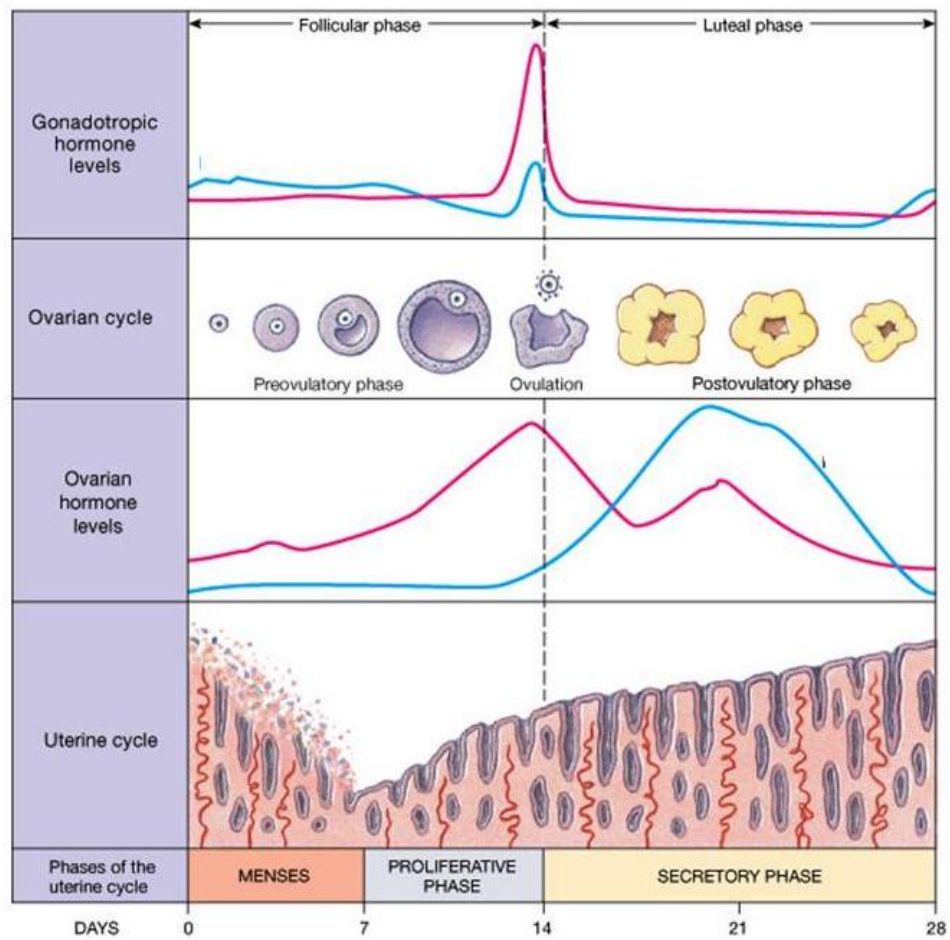
Female

Uterine (Fallopian) tube

Glans clitoris

Ovary

6. Review the female reproductive cycle below. Label the curves with the hormones they represent, and describe the function of each hormone in the cycle.



- LH:
- FSH:
- Estrogen:
- Progesterone: