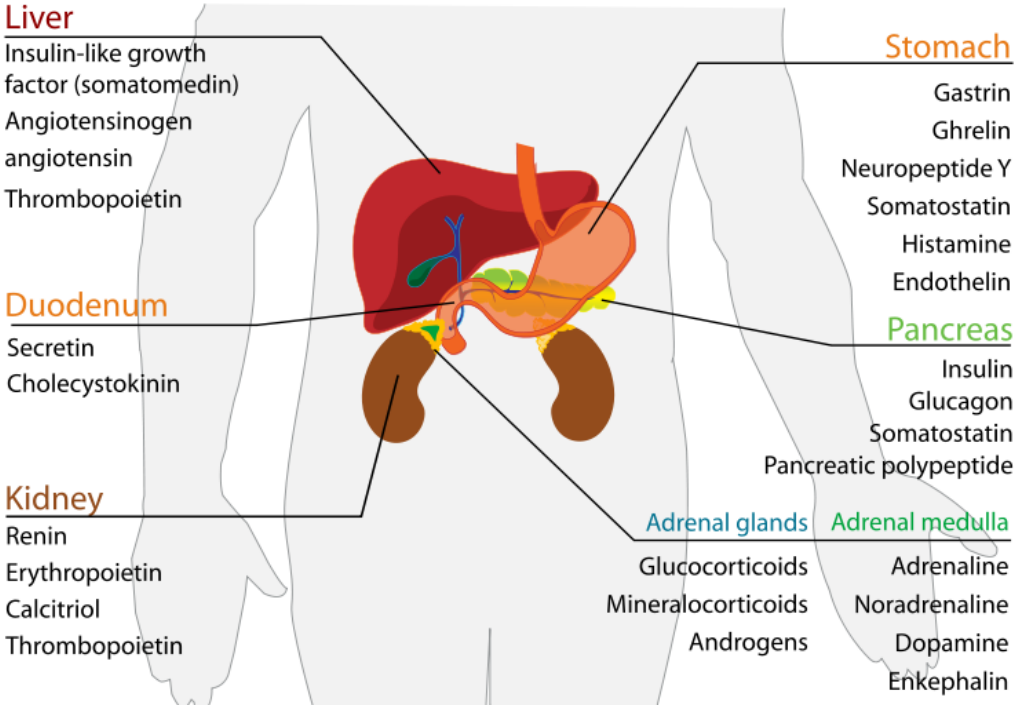
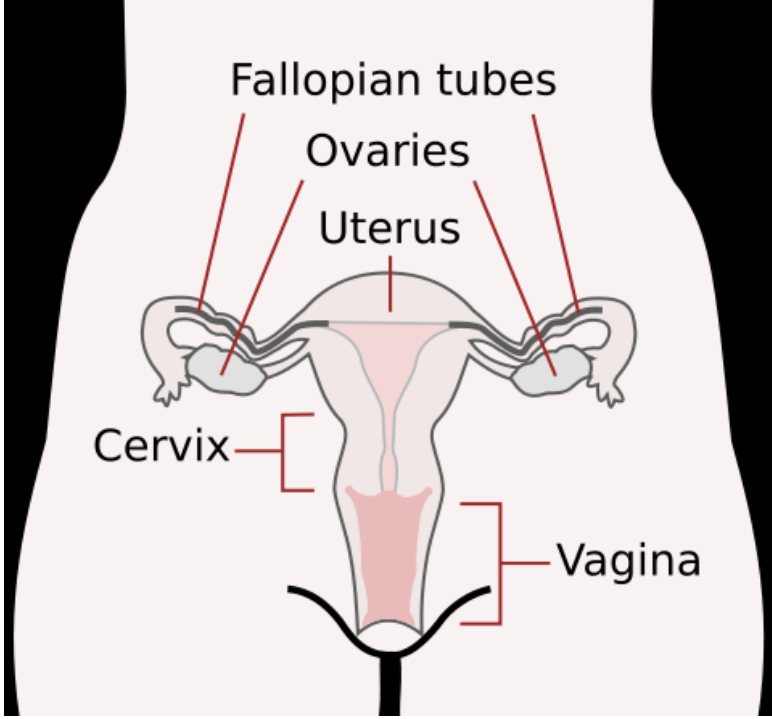
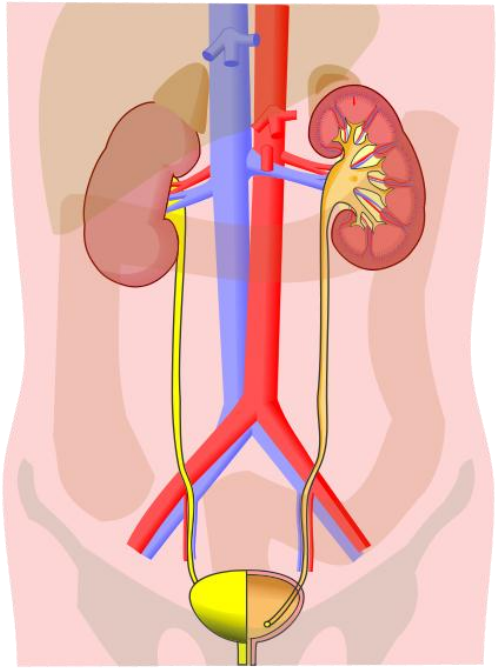




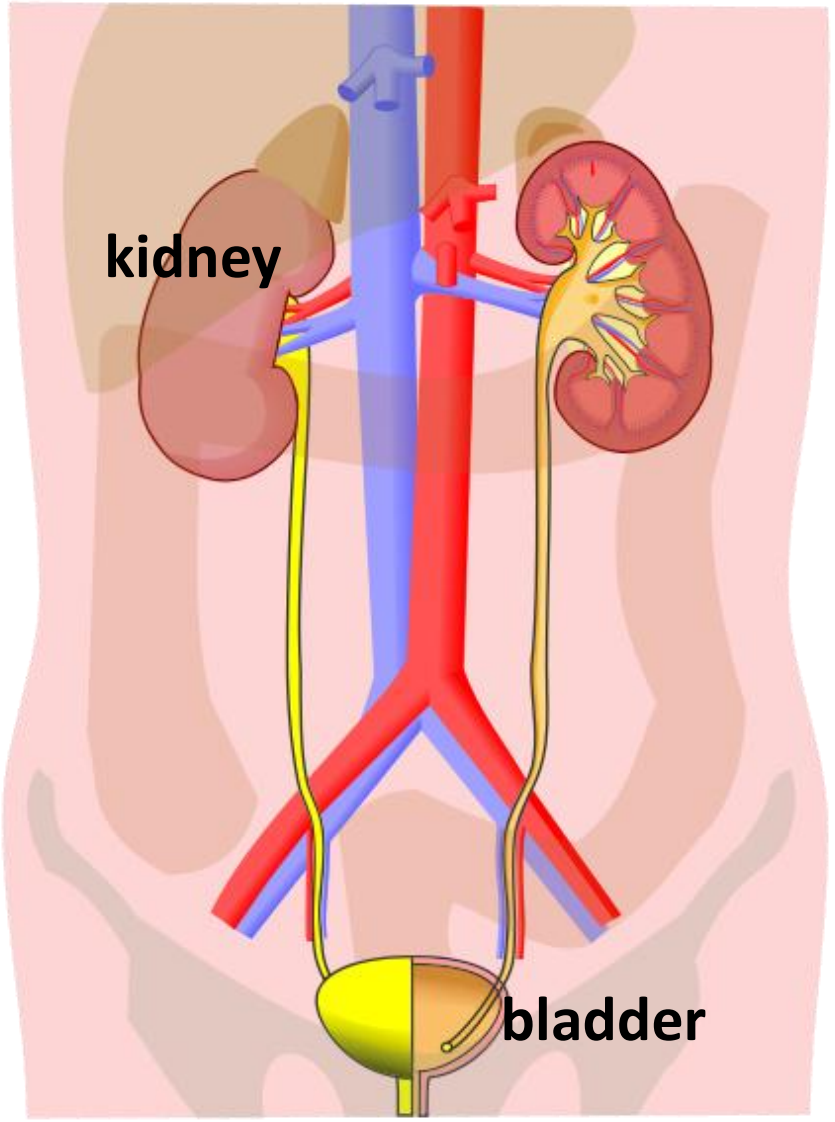


Body Systems Interactions:

Regulation and Reproduction

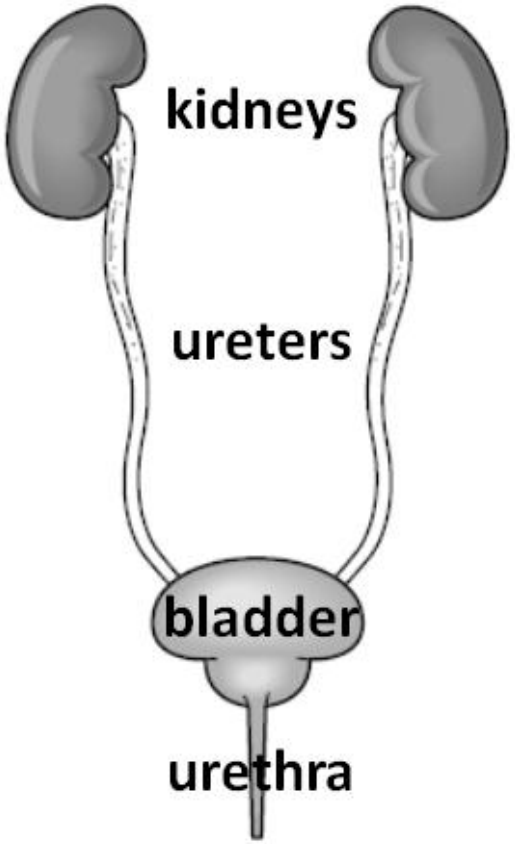
Excretory System

The primary job of the excretory system is to remove wastes from the body. This is an important process to keep *homeostasis* from being disrupted.



Excretory System

Wastes are filtered from the blood by the kidneys. The kidneys send extra water and dissolved wastes to the bladder to be stored. Once your bladder is full, the solution with its waste are urinated out of the body through the *urethra*.



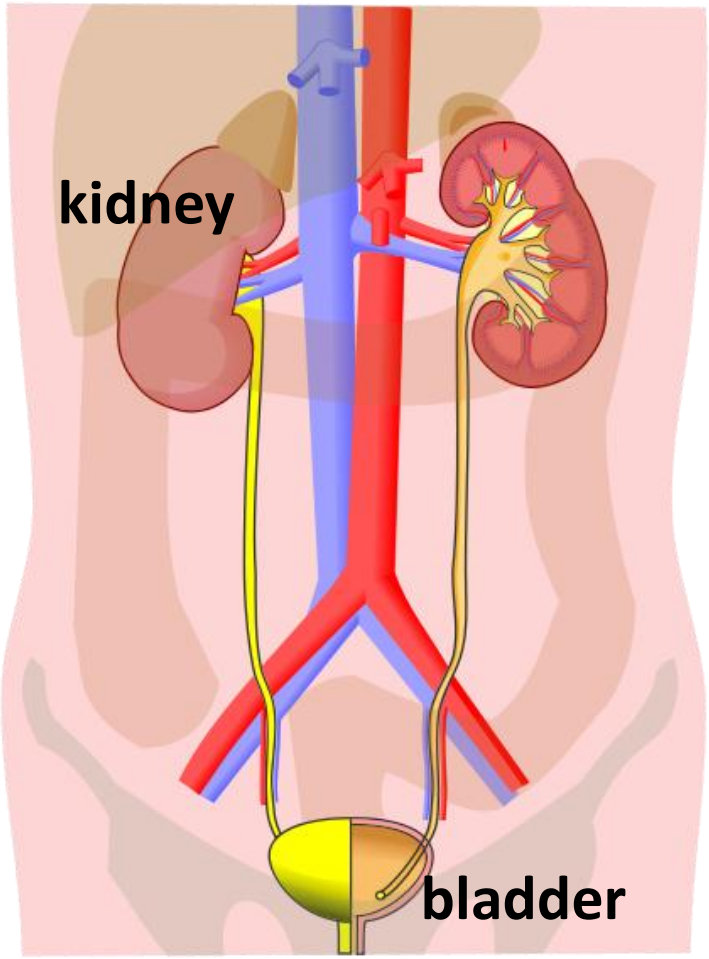
Lamb kidneys

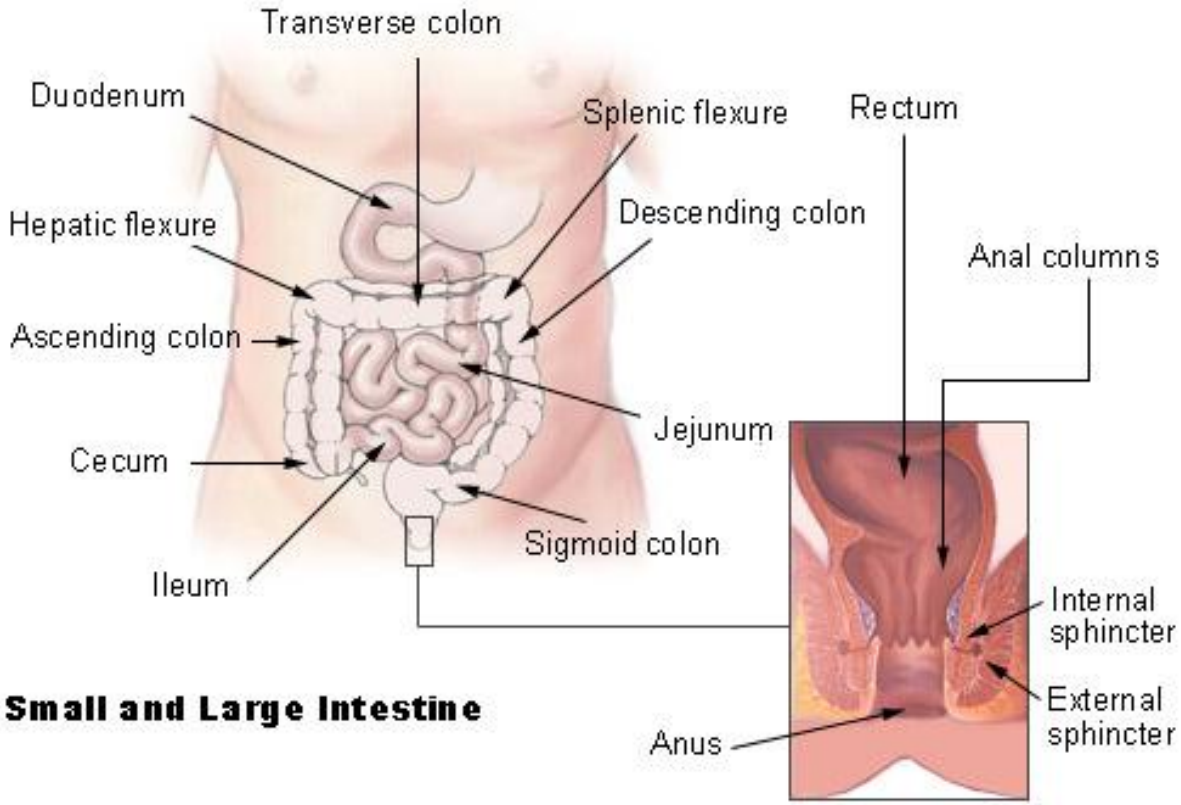
This shows how the circulatory system interacts with the excretory system to remove wastes from the blood.

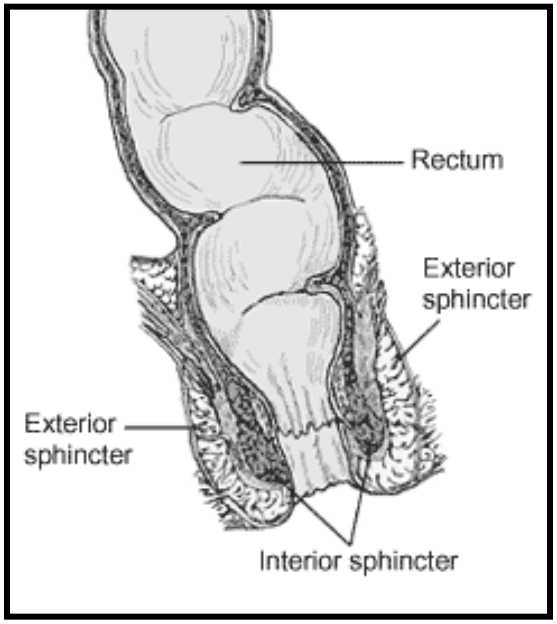
Excretory System: Homeostasis

The kidneys help regulate water levels in the body. If there is plenty of water, the kidneys send the extra to the bladder and the urine is almost clear.

If there is not enough water, the kidneys retain the water in the blood and the urine becomes concentrated with wastes and a bright yellow color.



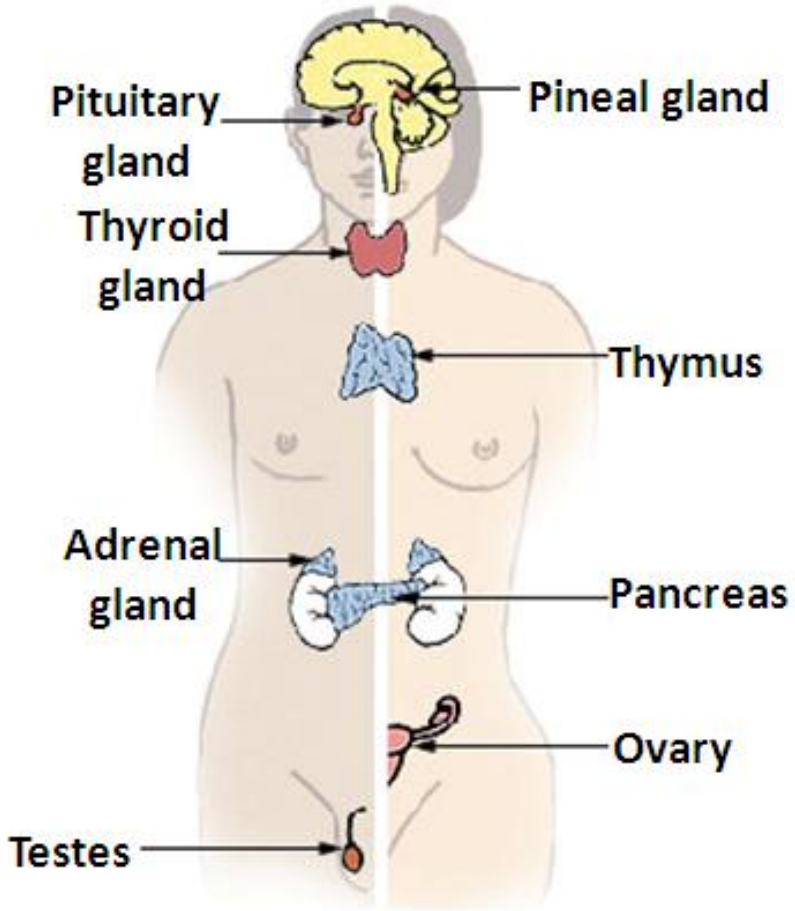




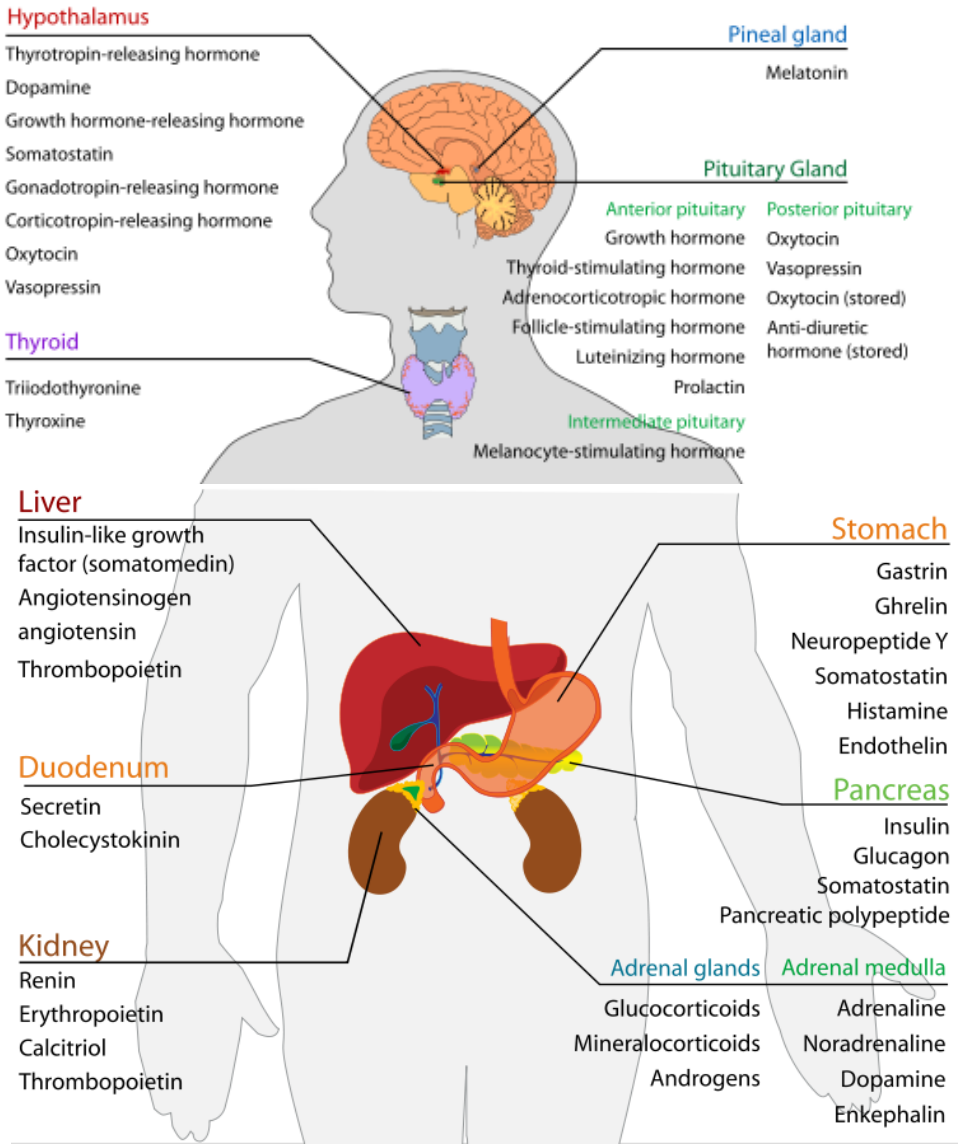
Only some of your solid food is absorbed into the blood. The solid waste continues on through the intestines and is stored in the colon until it is eliminated from the body through defecation.

Endocrine System

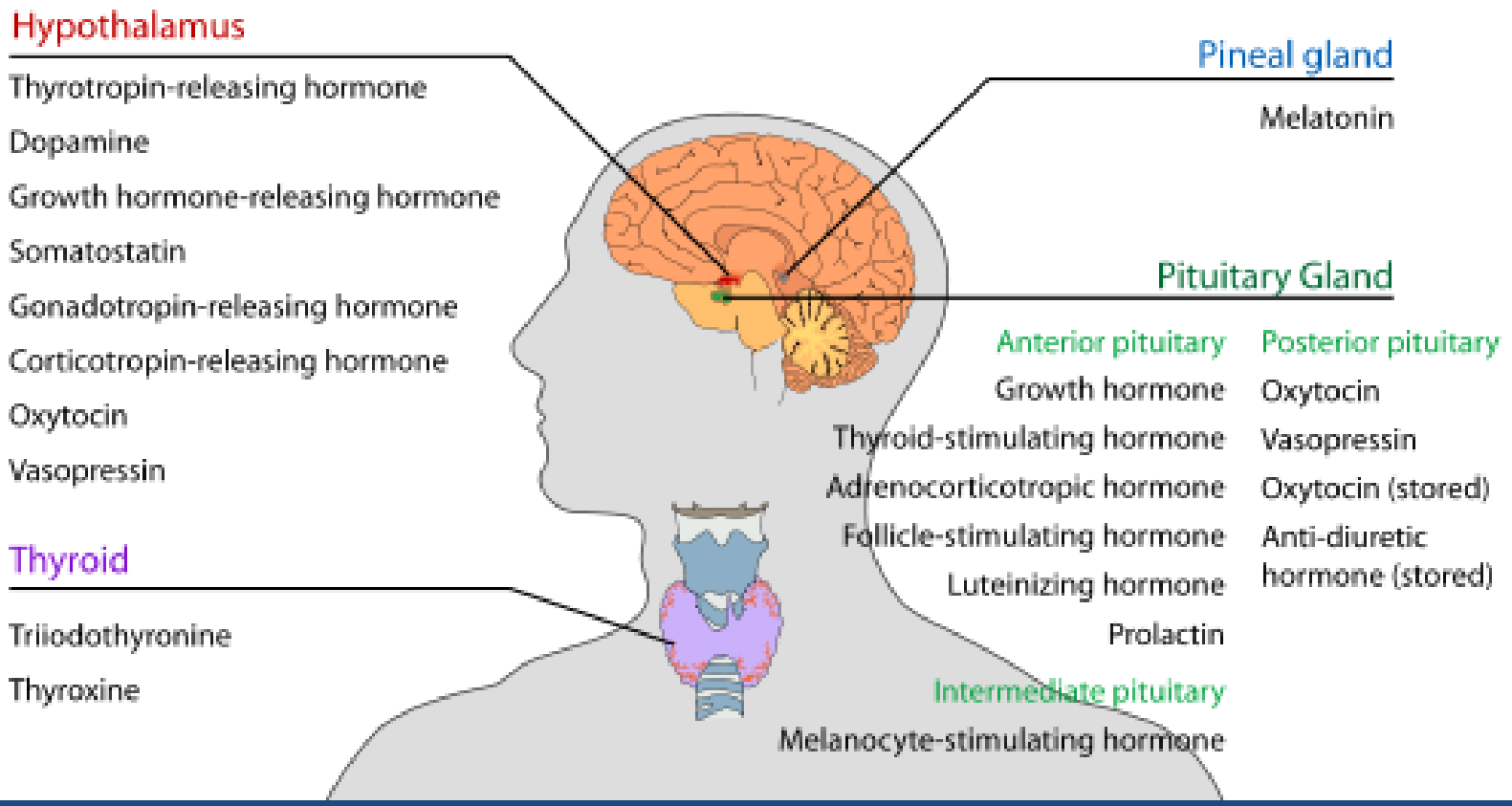
The endocrine system is made up of a system of small organs called endocrine glands. These glands are found throughout the body, and they secrete chemical signals call hormones.



Endocrine System



Many larger organs which belong to other systems also *secrete hormones* and can be classified as a part of the **endocrine system**.

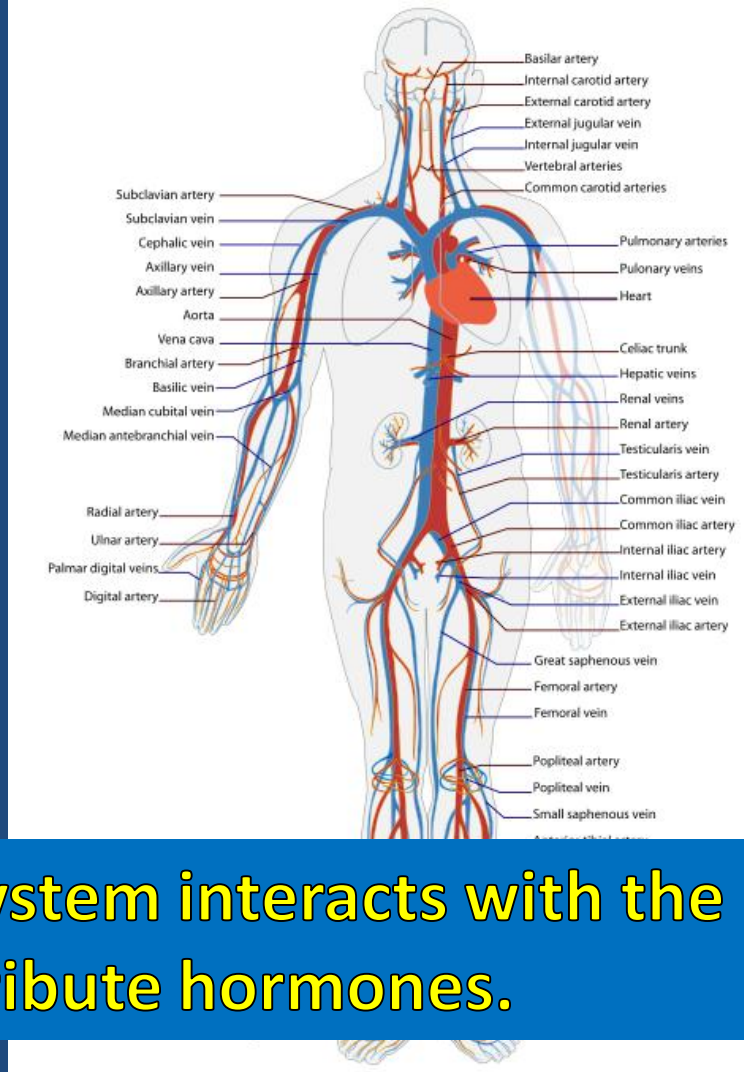


The brain is an especially important producer of many critical hormones.

This shows how the nervous system and the endocrine system interact to help regulate homeostasis in the body.

Endocrine System

After hormones are secreted from the glands, they are **distributed** to cells around the body in the **blood**.

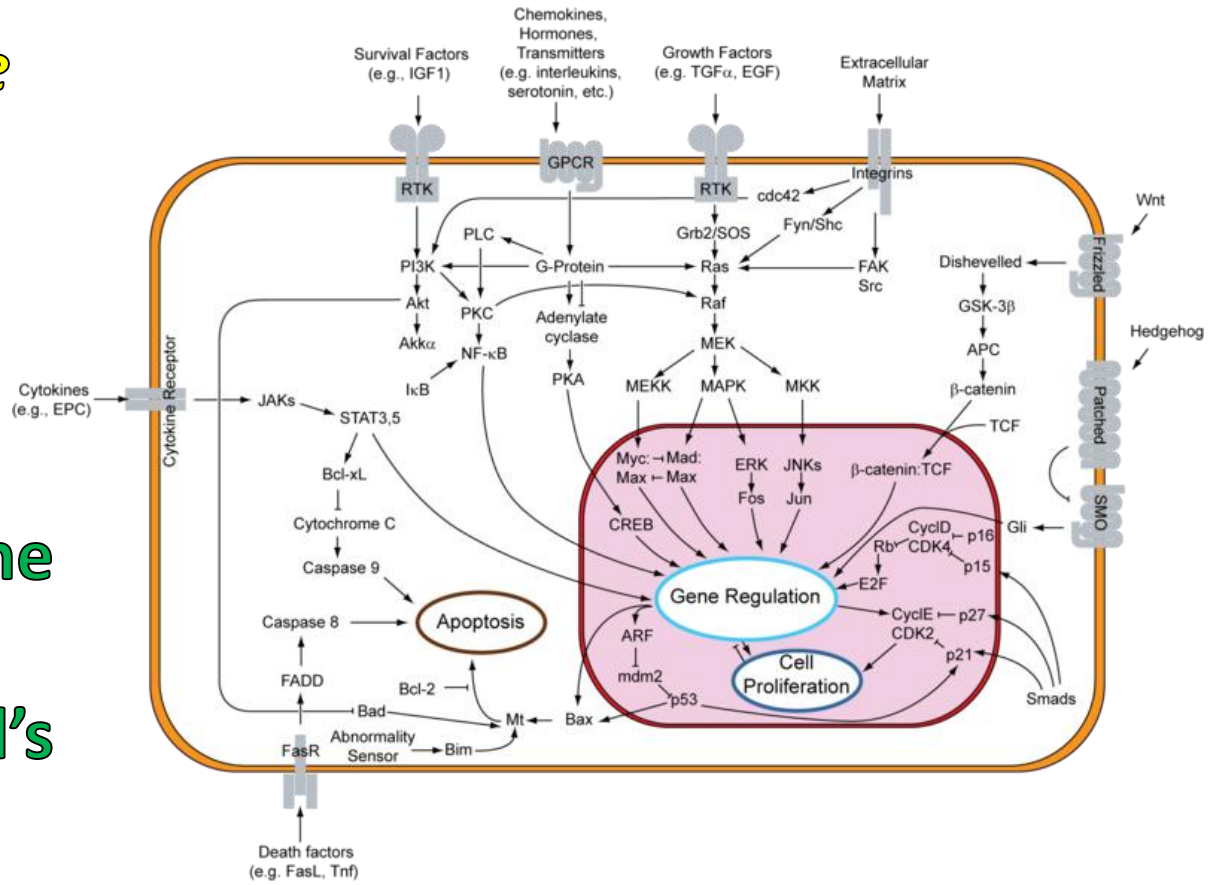


This shows how the endocrine system interacts with the **circulatory system** to distribute hormones.

Hormones attach to receptor proteins in their target cells' membrane. This causes a chain reaction which *regulates gene expression* in the cell.

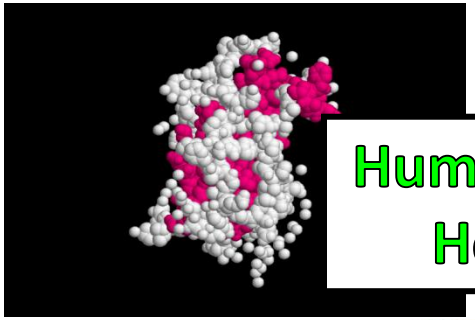
The *cell membrane* allows a cell to communicate and receive chemical messages.

This is one way gene expression is affected by the cell's *environment*.

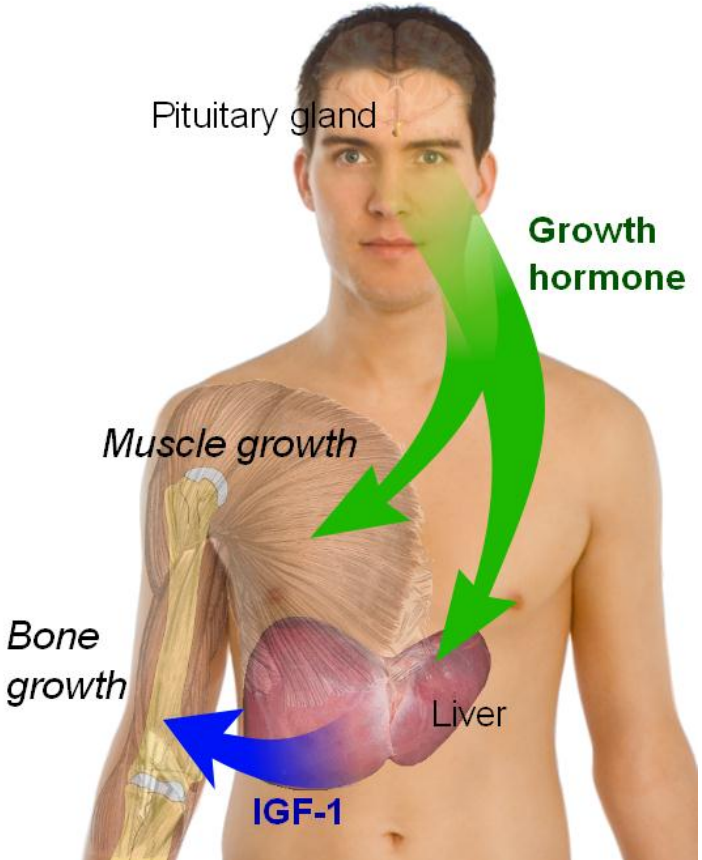


Endocrine System

Hormones help to regulate an organism's **metabolism** by directing the *function* and *growth* of cells. They help the body maintain **homeostasis**: the steady balance of water, nutrients and energy.



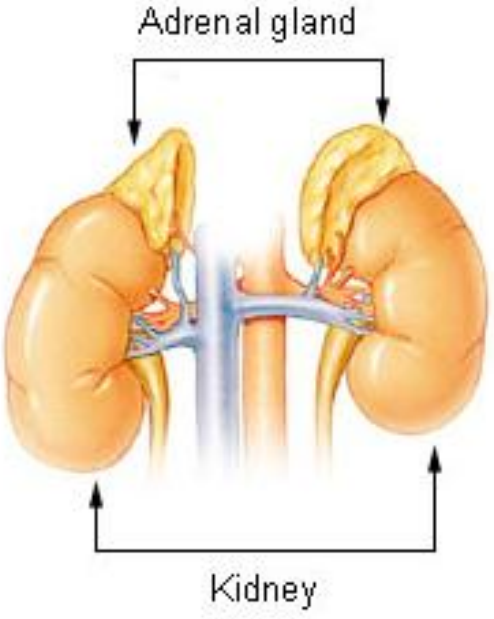
Human Growth Hormone

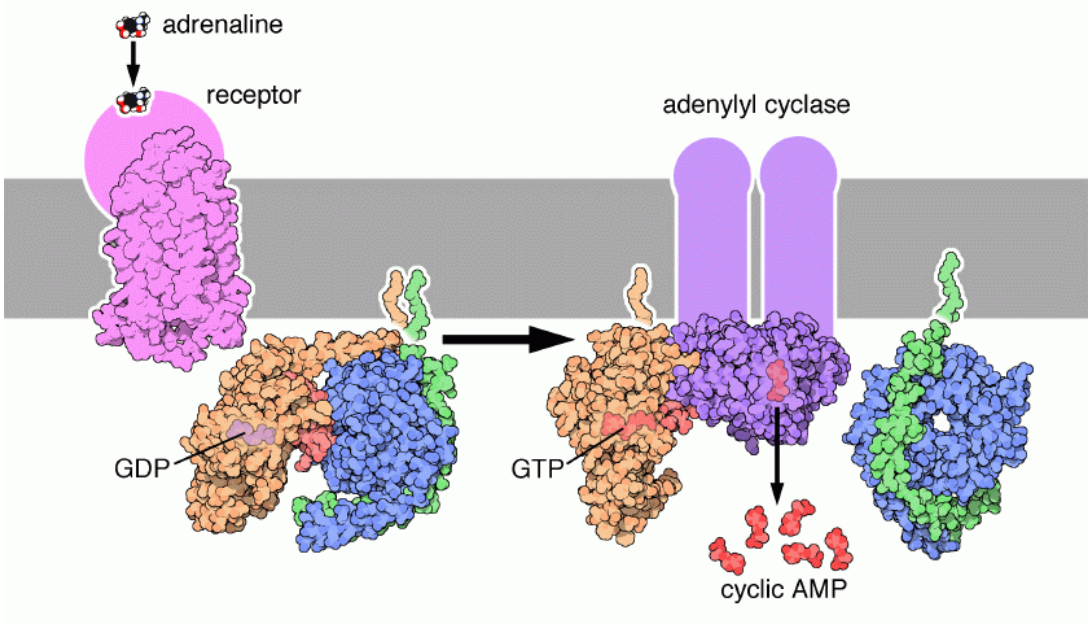


Endocrine System: Hormones

Adrenaline: In the United States, adrenaline is known as epinephrine. It is released in your body when you are presented with a stressful or dangerous situation and triggers your *fight or flight** response.

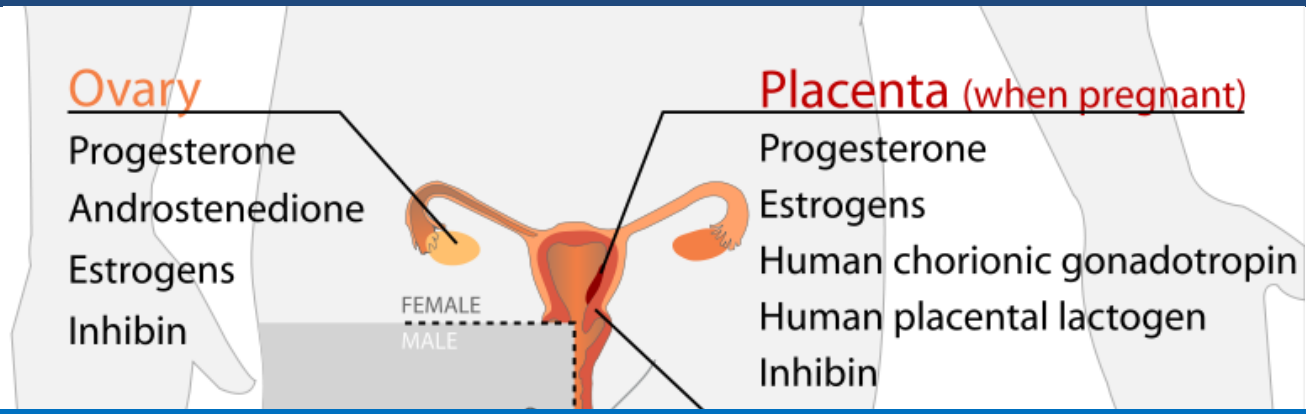
** We will discuss this more next class.*





Endocrine System: Hormones

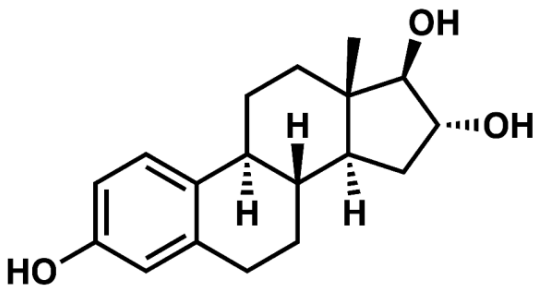
Testosterone: Males produce 40-60 times more testosterone than females. This is one of the androgens secreted by the testes. It increases muscle mass and bone density and triggers facial hair growth in teenage males.

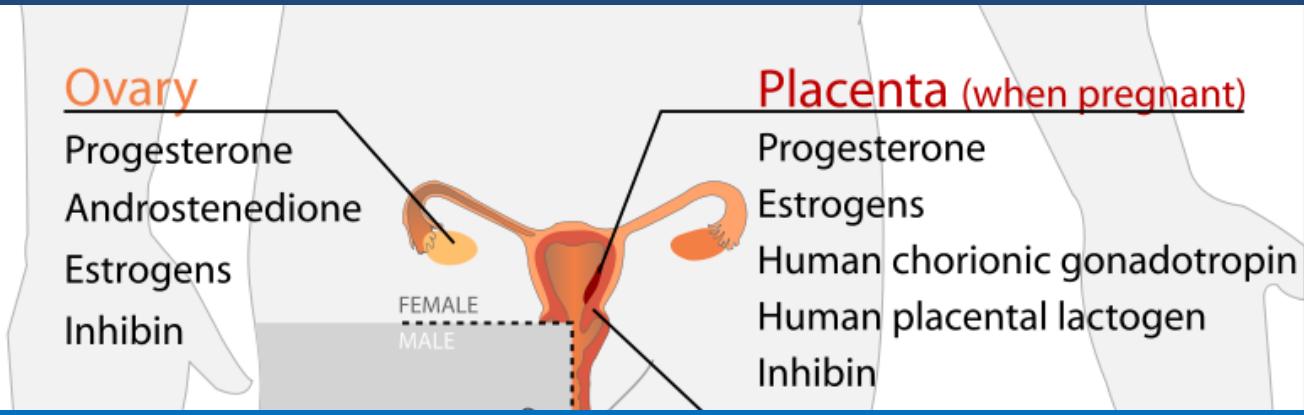


The endocrine system interacts with the muscular and skeletal systems to increase muscle and bone growth.

Endocrine System: Hormones

Estrogens: These hormones are present in larger amounts in females. They stimulate the growth of the endometrial wall and the uterus as well as female secondary characteristics. Many of these types of hormones are produced in the ovaries.



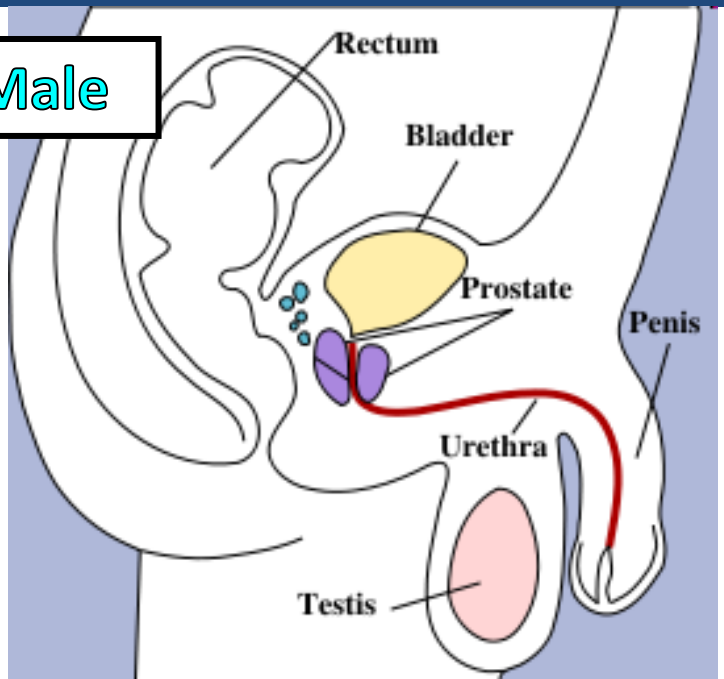


The reproductive system interacts with the endocrine system to produce sex hormones in testes and ovaries.

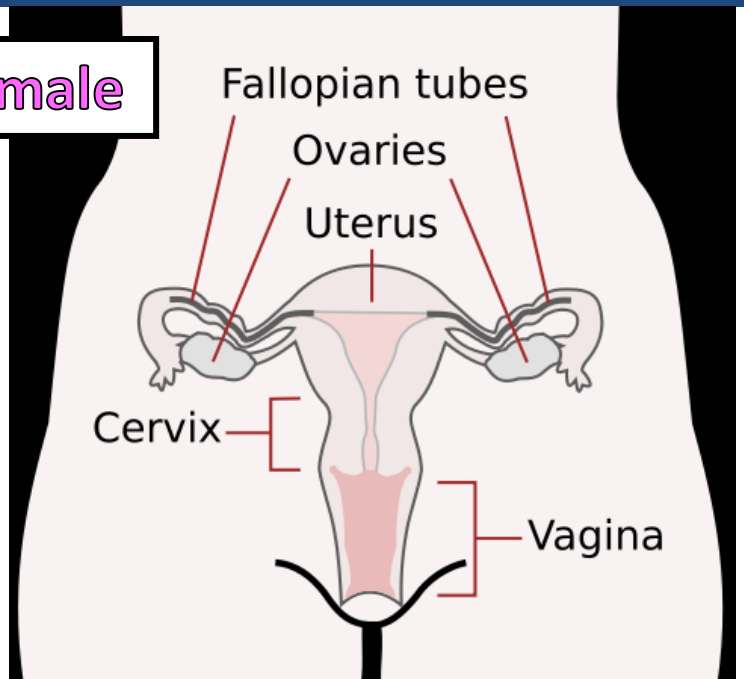
Reproductive System

Gonads are reproductive organs that produce gamete cells. In males, the gonads are the testes and in females the gonads are the ovaries. Gamete cells are specialized cells that allow for sexual reproduction.

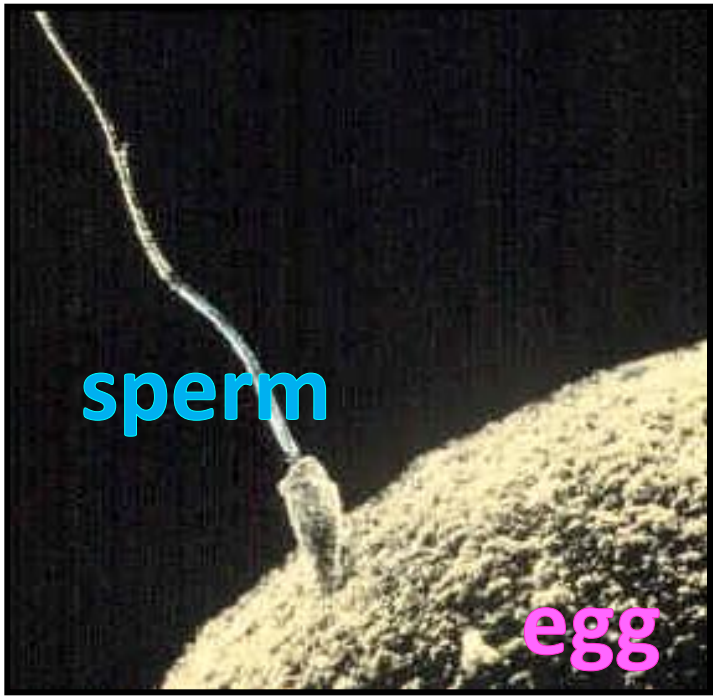
Male

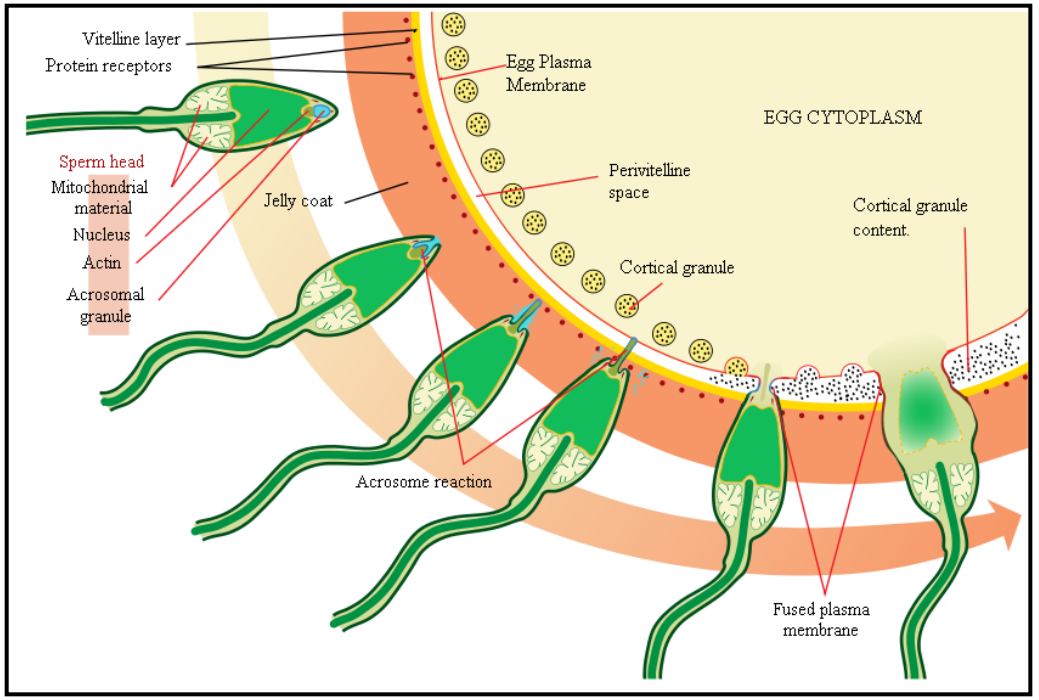


Female

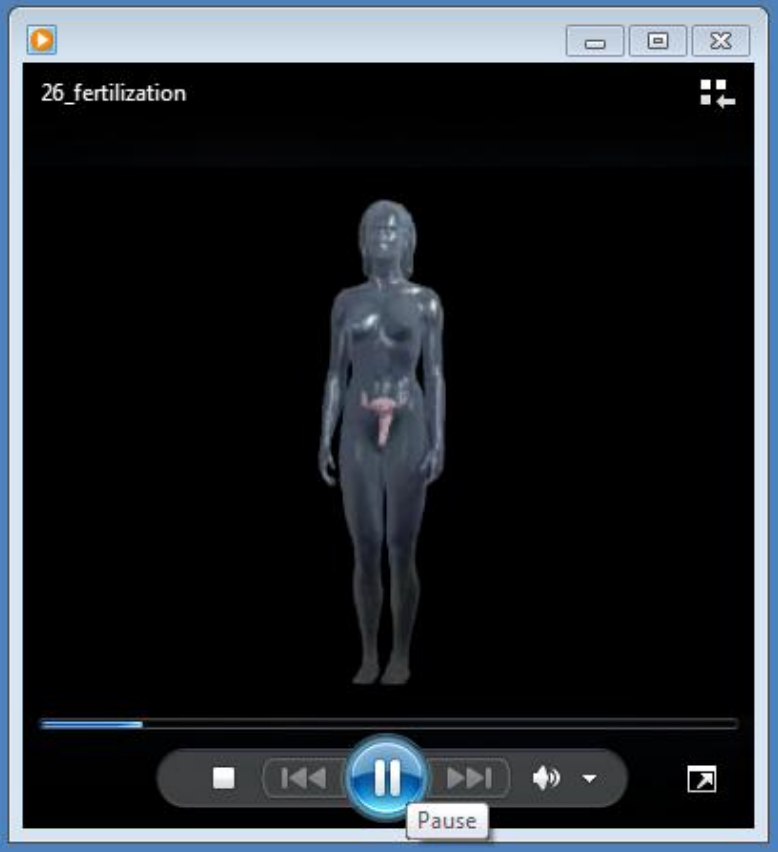


Sexual reproduction occurs when genetic material is combined from two different organisms. Sperm from the male and an egg from the female fuse to produce a zygote. This is the first cell of a new, unique human.



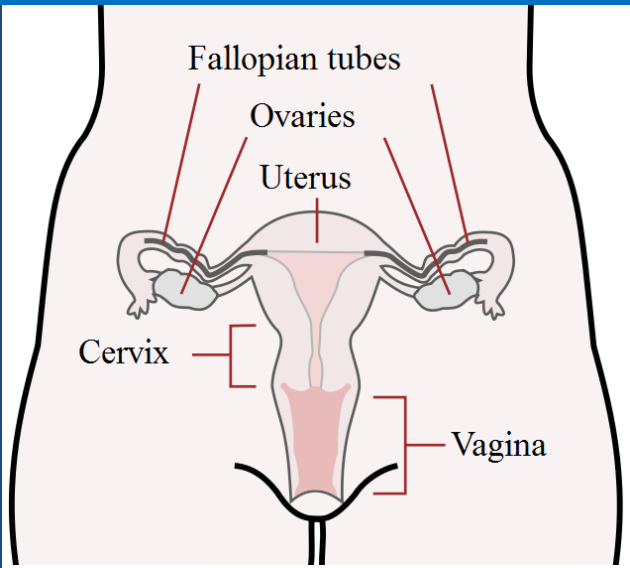


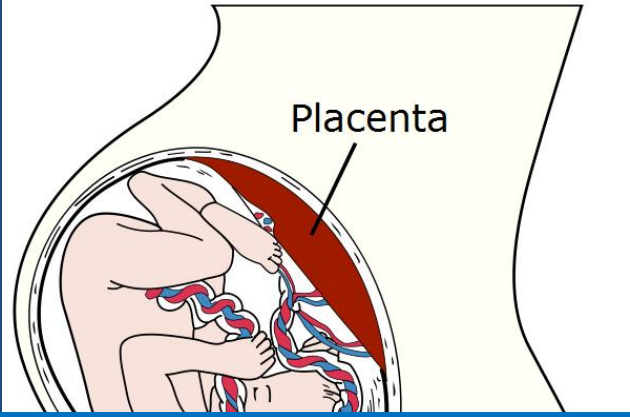
Watch the short video about fertilization on the Weebly site.



Reproductive System

The job of the reproductive system is to produce offspring (children). The fetus grows inside the mother's *uterus* (womb). Nutrients and oxygen from the mother's blood diffuse into the placenta, and these get to the fetus through the umbilical cord.

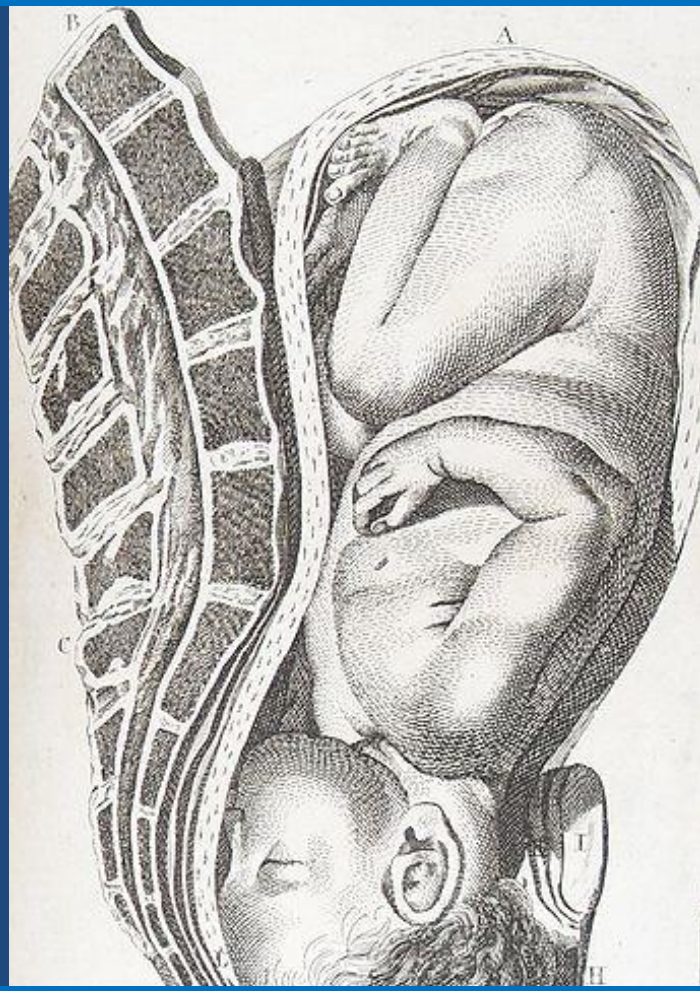




This shows how the reproductive system interacts with the circulatory system to nourish the fetus.

Reproductive System

Babies are born when muscle contractions in the uterus push the baby through the birth canal.



This shows how the reproductive system interacts with the muscular system to allow women to give birth.