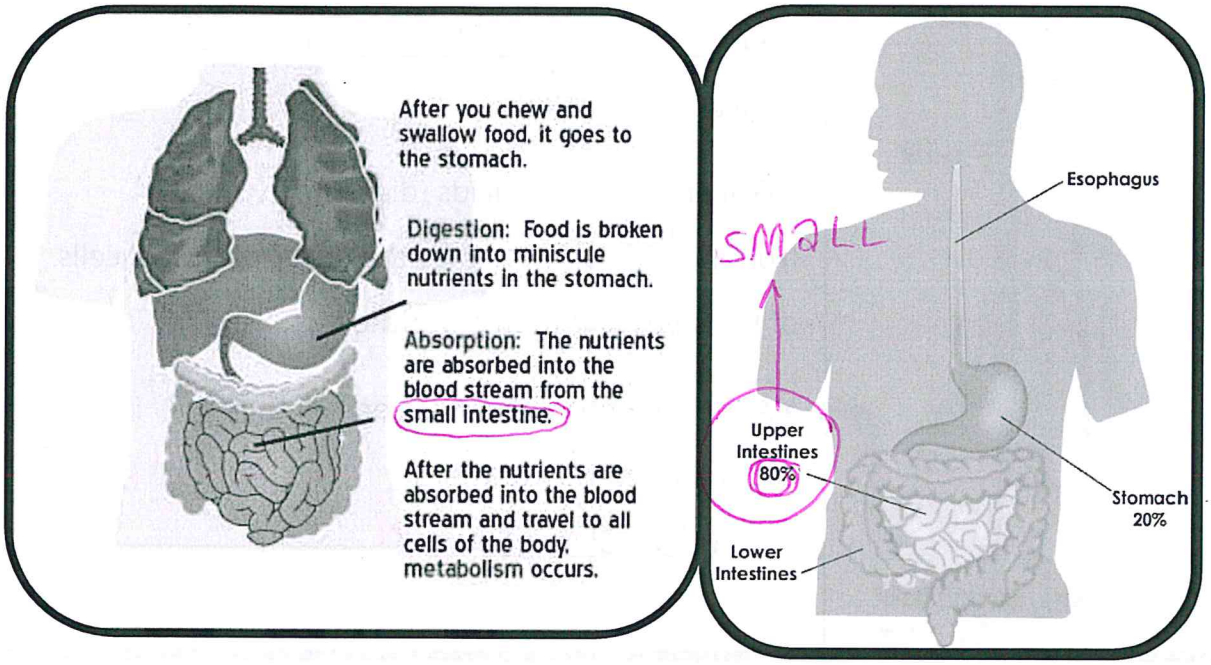
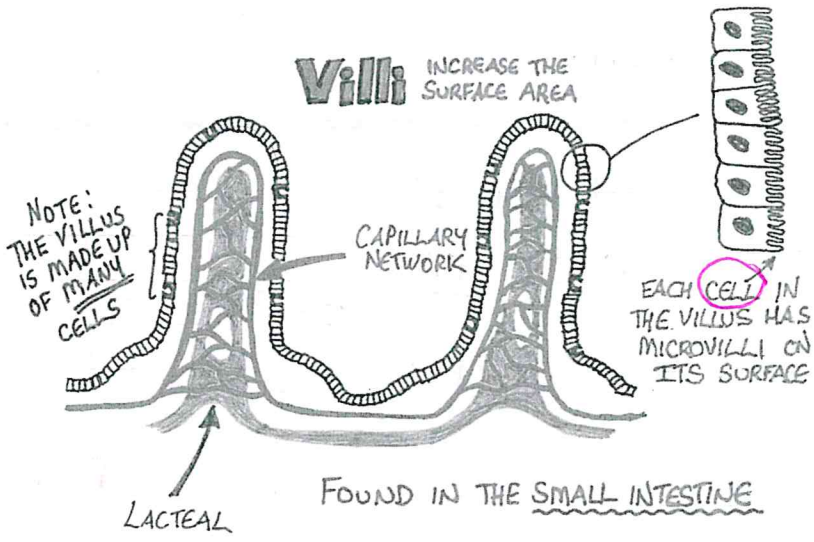
U2:L3 ABSORPTION

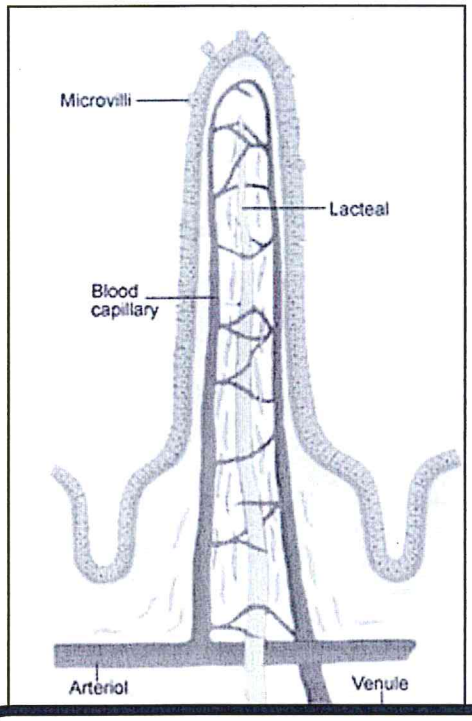


SMALL INTESTINE:

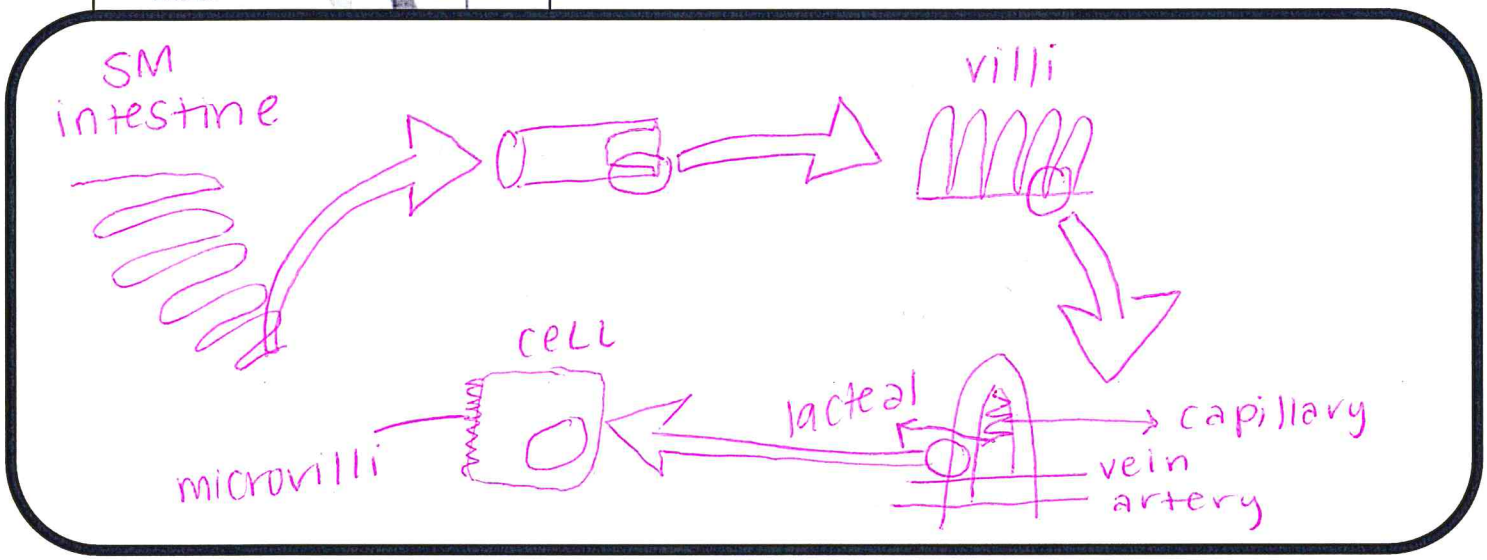
- The small intestine averages about 18ft/6M ish in length. It is the site of chemical digestion and nutrient absorption in the digestive tract.
- In order to absorb nutrients efficiently, the small intestine has an extremely large surface Area. It has been suggested that the surface area is approximately that of a tennis court.
- This large surface area is due to the finger-like projections on the walls of the small intestine known as villi. These give the small intestine a soft, velvety appearance.
- Each villi is covered with millions of microscopic extensions called microvilli The microvilli increase the surface area used for absorption even more.



- A villus contains blood capillaries and a small lymphatic capillary in the centre known as a lacteal.

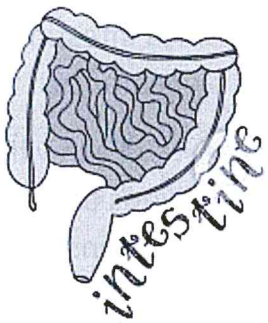


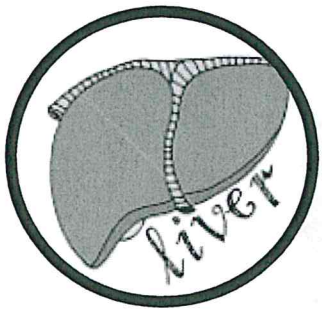
- Sugars (glucose / carbs) and amino acids (proteins) enter the blood capillaries of a villus.
- Glycerol and fatty acids (digested from fats / lipids) enter the outer epithelial cells of the villus and then enter the lacteal.
- After the nutrients are absorbed, they are eventually carried to the bloodstream.



LARGE INTESTINE:

- Does not produce digestive enzymes
- Absorbs H_2O, salt + vitamins
- Stores indigestible material until eliminated (anus).





THE LIVER regulates most chemical levels in the blood and excretes a product called bile. Bile helps to break down fats, preparing them for further digestion and absorption. All of the blood leaving the stomach and intestines passes through the liver. The liver processes this blood and breaks down, balances, and creates nutrients for the body to use. It also metabolized drugs in the blood into forms that are easier for the body to use.

The liver is an AWESOME organ, because it does a plethora of things! Some of these include:

- Production of bile, which helps carry away waste and break down fats in the small intestine during digestion → to gallbladder.
- Production of certain proteins for blood plasma — blood clots.
- Production of cholesterol and special proteins to help carry fats through the body
- Store and release glucose as needed — vitamin D
- Processing of hemoglobin for use of its iron content (the liver stores iron)
- Conversion of harmful ammonia to urea (urea is one of the end products of protein metabolism that is excreted in the urine)
- Clearing the blood of drugs and other harmful substances — TOXINS.
- Regulating blood clotting → converts to non-harmful
- Resisting infections by producing immune factors and removing bacteria from the bloodstream
- Clearance of bilirubin (if there is a buildup of bilirubin, the skin and eyes turn yellow)

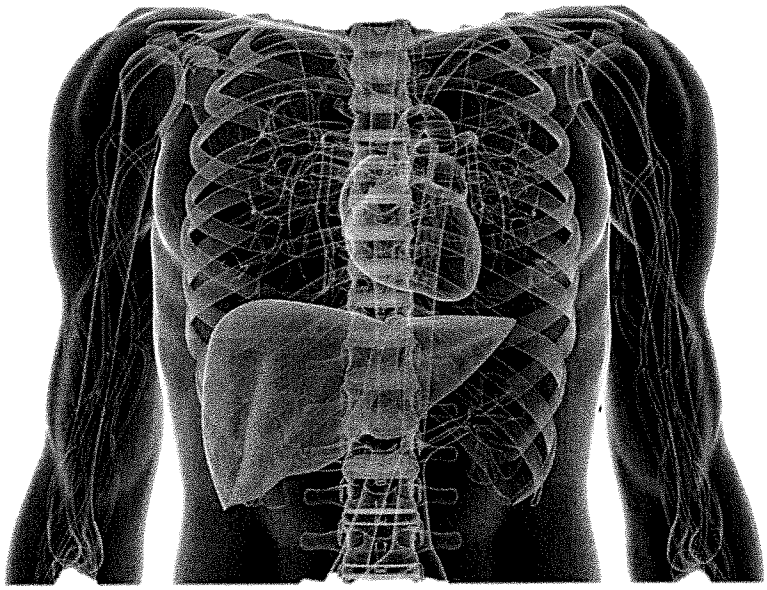
When the liver has broken down harmful substances, they are excreted into the bile or blood. Bile by-products enter the intestine and ultimately leave the body in the feces. Blood by-products are filtered out by the kidneys and leave the body in the form of urine.

1.4 kg (heaviest)

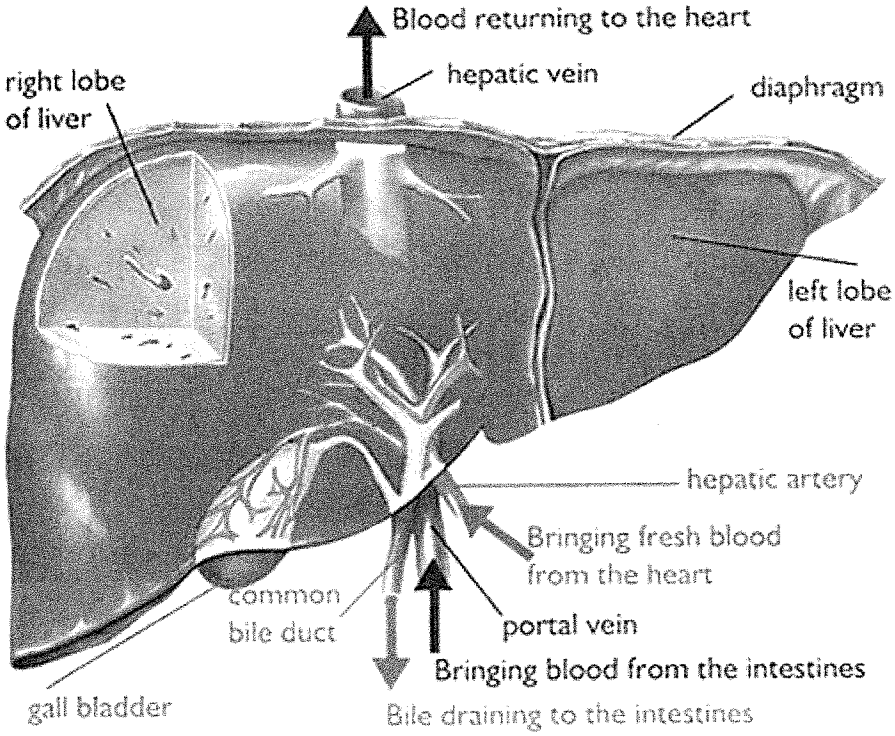
storage + sorting.

lobules - storage.

filter



The Liver


Blood returning to the heart
hepatic vein
right lobe of liver
diaphragm
left lobe of liver
hepatic artery
Bringing fresh blood from the heart
common bile duct
portal vein
Bringing blood from the intestines
gall bladder
Bile draining to the intestines