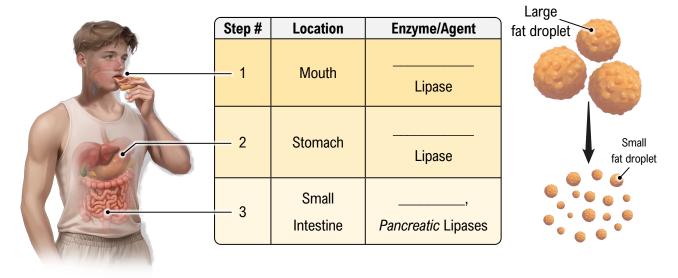
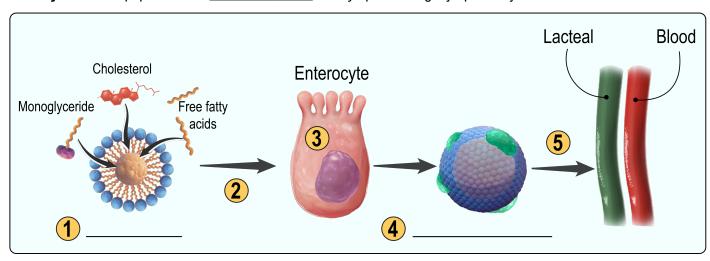
Most Fat Digestion Occurs in Our Small Intestine

- ◆ Fat digestion occurs in _____ amounts in our mouth & stomach but intensifies in _____ intestine.
 - Lipases: enzymes that digests lipids, breaking down triglycerides into fatty acids & monoglycerides.
 - ▶ Bile: produced by liver & released into small intestine; plays a major role in ______ lipids.



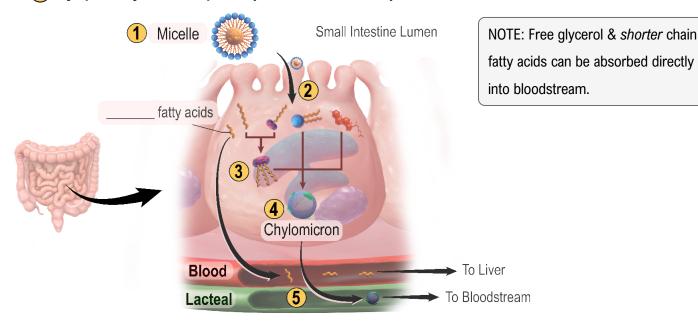
Micelles & Chylomicrons

- ◆ Micelles & chylomicrons transport digested lipids through aqueous solutions of intestines & lymph/blood.
 - ► Micelle: spherical phospholipid-complex that collects digested lipids & facilitates enterocyte
 - **Lipoprotein:** spherical complex made of lipids & proteins that *transports* lipids throughout the body.
 - **Chylomicron:** lipoprotein that ______ dietary lipids through lymphatic system & into blood.



Small Intestine's Fat Absorption in 5 Steps

- 1 Micelle Formation: bile salts combine with digested lipids to form micelles, which facilitate lipid absorption.
- 2 Absorption by Enterocytes: digested lipids diffuse from micelle into _____ intestine enterocytes.
- 3 Triglyceride Reassembly: free fatty acids & monoglycerides are _____-assembled into triglycerides.
- 4 Chylomicron Formation: triglycerides & other lipids are packed into chylomicrons.
- 5 Lymphatic System Transport: chylomicrons exit enterocytes, enter _______, & later enter bloodstream.



EXAMPLE

Which of the following statements is true?

- a) Lingual lipase & gastric lipase are responsible for most lipid digestion.
- b) The primary function of chylomicrons is to emulsify lipids.
- c) Lingual lipase, gastric lipase, & pancreatic lipase can all break down triglycerides & sterols.
- d) Micelles are spherical lipid-based structures that facilitate absorption of digested lipids into enterocytes.

PRACTICE A ______ is a lipoprotein that carries lipids through the lymphatic system and into the bloodstream. a) Micelle. c) Phospholipid.

b) Chylomicron. d) Bile.

PRACTICE

Why is bile such an important compound in the digestion process?

- a) It breaks down triglycerides into glycerol & fatty acids.
- b) It breaks down sterols into their individual ring structures.
- c) It emulsifies lipids, allowing lipases to more effectively break down triglycerides.
- d) Answers a) & b) only.

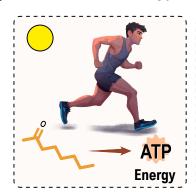
PRACTICE

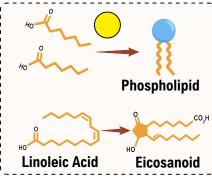
Why is the lymphatic system needed to transport fats in the body?

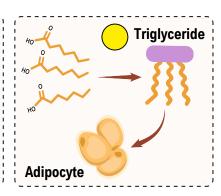
- a) Fatty acids can only mix with lymphatic fluid.
- b) Chylomicrons cannot travel in the bloodstream.
- c) Bile is only able to emulsify fats in the lymphatic system.
- d) Chylomicrons & their fatty acids are too large to be absorbed into blood capillaries; lacteals are more porous.

Released Fatty Acids Have 3 Primary Fates

- ◆ Lipoprotein Lipase (______): enzyme that breaks down triglycerides in chylomicrons, releasing fatty acids.
 - Fatty acids delivered to body cells have _____ primary fates:
 - 1 Utilized immediately for ______.
 - 2 Utilized to generate other lipid-containing molecules.
 - 3 ______ assembled into triglycerides for energy ______ in adipose tissue.



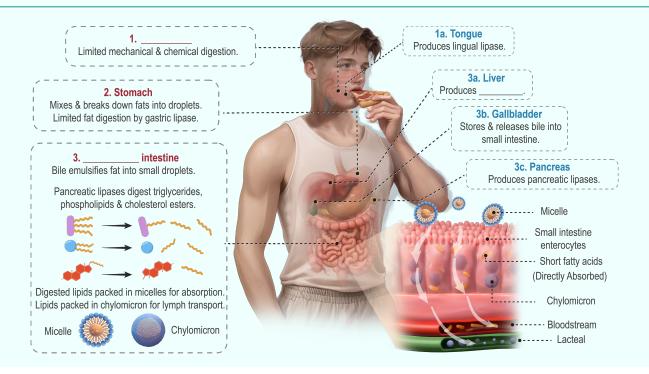




LPL

EXAMPLE

Fill in all of the blanks throughout the image to review lipid digestion.



PRACTICE

Which of the following is NOT a primary fate of dietary lipids?

- a) Body cells utilize fats immediately for energy.
- b) Body cells re-assemble fatty acids into triglycerides to be stored in adipose tissue.
- c) Most dietary fat is biochemically converted into glycogen for energy storage.
- d) All of the above are common fates of ingested fats.

PRACTICE

Which of the following options shows the correct sequence of events in lipid digestion/absorption?

- a) Chylomicron formation > absorption by enterocytes > micelle formation > lymphatic system transport.
- b) Absorption by enterocytes > chylomicron formation > micelle formation > lymphatic system transport.
- c) Micelle formation > absorption by enterocytes > chylomicron formation > lymphatic system transport.
- d) Lymphatic system transport > micelle formation > absorption by enterocytes > chylomicron formation.