Monstrously Huge Lipids Reading Guide!
Chapter 16

Yes, this is big, but no, it is not hard. It is very important to your understanding of lipids. Please, please, pretty please, with sugar on top, do this assignment! ☺

1. Fats are actually part of a larger grouping called _____.

2. What are lipids?

3. What are the **three** main "catgeories" of lipids?

4. What are **triglycerides**? (What do they typically include)?

5. What are **phospholipids**?

6. How does the food industry use phospholipids?

7. What is the most well known **sterol**?

8. What are the main <u>two</u> functions of triglycerides?

9. What <u>three</u> elements on the periodic table make up all triglycerides?

10. All **fatty acids** contain **carboxyl groups**. Draw a picture of a carboxyl group. (See the bottom of page 240 to help with this). What does the "R" in the picture stand for?

11. What chemicals react together to make a triglyceride? (Look at the box at the bottom of page 241 to help with this).

12. **Essential** fatty acids are fatty acids that your body needs for growth and development, but that your body doesn't make. Which <u>two</u> fatty acids are considered essential?

13. If your body doesn't make the two essential fatty acids mentioned in #12, how do you get them?

14. What types of bonds (single or double) are found in **saturated fats**?

15. What type of bonds (single or double) are found in **unsaturated fats**?

16. Which has *more* double bonds – a **monounsaturated** fat or a **polyunsaturated** fat?

17. Energy is released by _____. Triglycerides are high in _____ and _____ so they offer many sites for _____ reactions. Carbohydrates are _____ so they can't be further oxidized. This is why you get more energy from eating lipids (9 kcal/g) than you do carbohydrates (4 kcal/g).

18. Are triglyceride molecules polar, nonpolar or ionic?

19. What does the polarity of the triglyceride molecule tell you about the solubility of lipids in water?

20. **Fats** usually come from _____ and are _____.

21. Saturated fats are have single bonds that are tightly packed like the _____.

22. What state of matter (solids, liquids or gases) are **fats**?

23. Lipids from plants are usually **oils**. They are _____. The bend in the oil molecules make the molecules less compact, so they are _____ at room temperature.

24. You might have noticed that margarine is easier to spread on a roll than butter. Explain *why* this is. Your answer should include a description of the fatty acids in margarine versus butter.

25. *How* do fats **tenderize** baked goods?

26. *Extra Credit Opportunity: Ask Mrs. Carlson why shortening is called shortening!*

27. What is **aeration**?

28. What is an **emulsion**? (Give an example of one, too).

29. Fats carry _____ throughout a food.

30. What is the main reason high fat foods spoil?

31. What does **rancid** mean?

32. What are **antioxidants**?

33. You have probably seen the words "partially hydrogenated vegetable oil" in the ingredients list of foods that you eat. What is **hydrogenation**?

34. What does **smoke point** mean?

35. If you want to prevent a lipid from reaching its smoke point, which is better to use – animal fats or vegetable oils?

36. *Why* should food be totally dry before frying it in oil? (Keep this in mind if you or your family ever decides to fry a turkey on Thanksgiving – if you do it wrong, it can be *very* dangerous)!

37. What percentage of a teenager's daily calories *should* come from fats?

38. What percentage of a typical American's diet *does* come from fats?

39. Look at the nutrition link box. Name <u>three</u> things you can do to help limit the amount of fat in your diet.

40. How are **trans fats** made?

41. What impact do trans fats have on your cholesterol levels?

42. Name two good things cholesterol does for your body.

43. Which organ in your body makes cholesterol? (That's right – your body naturally makes cholesterol all by itself. Even a person who follows a strict vegan diet could still have high cholesterol)!

44. Where is *dietary* cholesterol found?

45. What is **atherosclerosis**?

46. There are two types of cholesterol – LDL and HDL. Which is the "bad" kind of cholesterol?

47. How do Omega-3 fatty acids help heart health?