

LIPIDS

With this lab exercise, you will be expected to build molecular models of lipids and answer related questions in complete sentences.

Part One: Fatty Acids

1. Each person in your row should build the saturated fatty acids called butyric. This fatty acid only has four carbons total. Sketch and label a diagram of your model. Label the carboxyl group, the methyl group and the hydrocarbon chain. Keep your fatty acid assembled.
2. Determine the molecular formula for butyric.

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Part Two: Saturated Fats

3. Within your group, construct one glycerol molecule. Then, in your team, construct a triglyceride by joining the three butyric molecules to the glycerol. Remember to remove $-OH$ and $-H$ ends to ensure proper joining. Sketch and label a diagram of your model.
4. Write the molecular formula for this triglyceride.

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Part Three: Phospholipids

5. Model a hydrolysis reaction and break the triglyceride molecule apart while keeping the three butyric molecules in tact. Then, use two of the butyric fatty acids as you build a phospholipid molecule. Use the structure shown in your notes as a guide. Sketch a diagram of your model, and label the fatty acid chains, the glycerol backbone, the phosphate group and the head group.

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Part Four: Cis- and trans fatty acids

6. Break apart your phospholipid, keeping the fatty acids in tact. Each person then constructs a cis-unsaturated fatty acid. Sketch and label a diagram of your model.

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7. Convert your fatty acid into a trans-unsaturated fatty acid. Sketch and label a diagram of your model.

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8. In words, describe the difference between cis- and trans- fats.

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