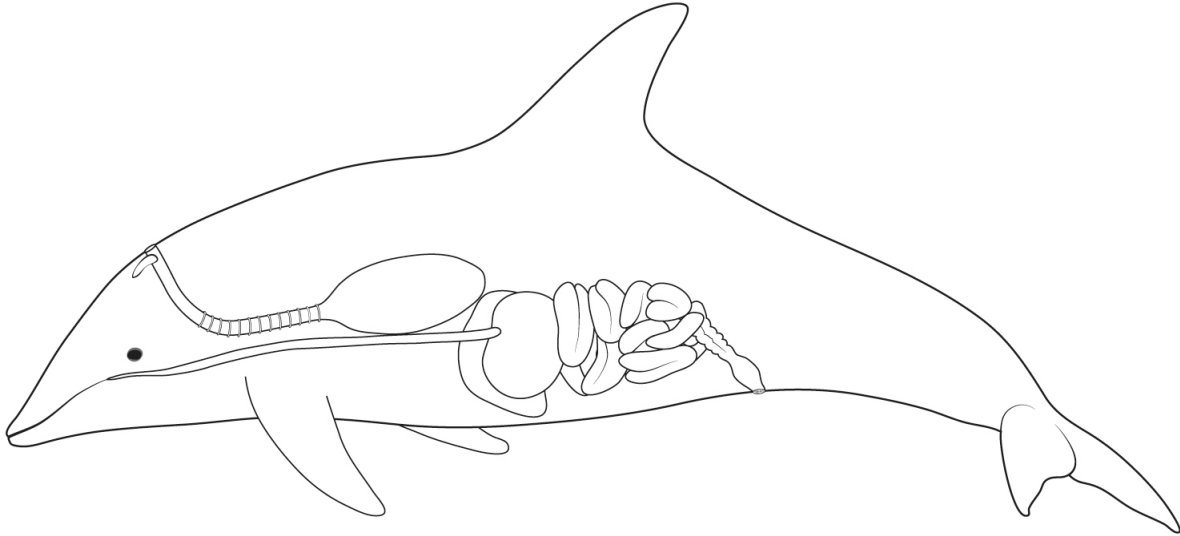


6.1: Dolphins Worksheet

Draw and label arrows that represent the molecules that carbon atoms are in as they move into, through and out of the dolphin as it moves and grows.

Label each arrow to show the kind of molecules that the carbon atoms are in: large organic molecules (LOM), small organic molecules (SOM), or carbon dioxide (CO₂).



What happens to the food a dolphin eats as it moves and grows?

What happens to the air a dolphin breathes as it moves and grows?

A. Investigating how Dolphins grow and function

A class was interested in how dolphins grow. The teacher started the lesson by telling his students that a dolphin eats a lot of food each week but only gains a little bit of weight. The teacher asked, "What happened to the mass of the rest of the food?"

a. Three students shared their ideas about what happened. Do you agree or disagree with what each student claims?

Agree	Disagree	Jared: "The dolphin's body turned the mass of the food into energy in order to grow."
Agree	Disagree	Anup: "The dolphin breathed out most of the extra mass of the food as gases, like CO ₂ ."
Agree	Disagree	Bianca: "The dolphin's body got rid of most of the extra mass of the food as solid waste (feces)."

b. Provide an explanation. Why do you agree or disagree with each student's claim?

c. The class generated some data. They measured the starting mass of 5 dolphins and observed each dolphin in its own pool at a local aquarium. Then they gave each dolphin 30 kg of food and made sure the dolphins always had the same amount of water in the aquarium. After one week, the students measured the masses of the dolphins, leftover food and dolphin feces. Below are the data they generated.

Sample	Change in Dolphin mass (kg)	Change in food mass (kg)	Mass of solid waste (kg)
1	+2.0	-20.0	+4.0
2	+2.0	-20.1	+5.0
3	+3.0	-20.3	+5.0
4	+1.0	-10.9	+4.0
5	+4.0	-20.3	+7.0
Average	+3.0	-20.1	+5.0

Which claim do you think is best supported by the data?

- a. Jared's claim
- b. Anup's claim
- c. Bianca's claim

Explain how the patterns in the data support the claim that you chose.

d. What additional evidence would you collect to help show that the claim you chose is the best claim?

B. A question about how Dolphins grow and function

Fat is mostly made of molecules such as stearic acid: $C_{18}H_{36}O_2$. Decide whether each of the following statements is true or false about what happens to the atoms in a dolphin's fat when he swims for a long distance and loses weight.

Some of the atoms in the dolphin's fat are:

True	False	incorporated into CARBON DIOXIDE in the air.
True	False	converted into ENERGY that he uses when he swims.
True	False	BURNED UP AND DISAPPEAR.
True	False	converted into HEAT.
True	False	incorporated into WATER VAPOR in the air.

Explain your answers. What happens to the atoms in the fat of a dolphin that loses weight?

C. Something interesting about dolphins

What is something interesting that you learned about the dolphin that makes this animal different from other animals?
