

Welcome! Sit where you sat yesterday

- 1) Pick up the handout, and have yesterday's handout available.
- 2) On the "Biology Catalysts" handout, copy what's in blue in the correct spaces, and RESPOND as needed.

Date: 8/31. Number: 1-1. Title: **4 Themes/Key Ideas**

OBJECTIVE: I can use the four big ideas of biology to describe an apple (and other living things)

HOMEWORK : Apply the four big ideas to an organism of your choice.

COPY AND COMPLETE: The acronym E.S.I.M.E captures the four big ideas, which are E _____, S _____, I _____, and M _____ and _____

Evolution , systems, information, matter and energy

The four themes...in an apple



Observe...

1. Look
2. Cut a small slice.
3. Notice the skin...the flesh underneath.
4. Carefully slice the apple in half (SAFETY!!!)
5. Notice the changes in the apple as you move from the outer skin to the core.
6. Take out an apple seed. Dissect it with your fingers.
Notice the inner parts
7. Quarter the apple so everyone in the group can eat it.

Discuss

1. Biology is the science of life. Our course approaches biology through four themes
 1. Evolution
 2. Systems and System Interactions
 3. Information flow
 4. Matter and Energy flow

HOW DO YOU SEE THESE FOUR THEMES IN OUR APPLE?

DISCUSSION STRUCTURE: ROUND ROBIN. Take a moment to think. Go around the circle. Everyone has a turn to contribute for a maximum of one minute.



Evolution 1:

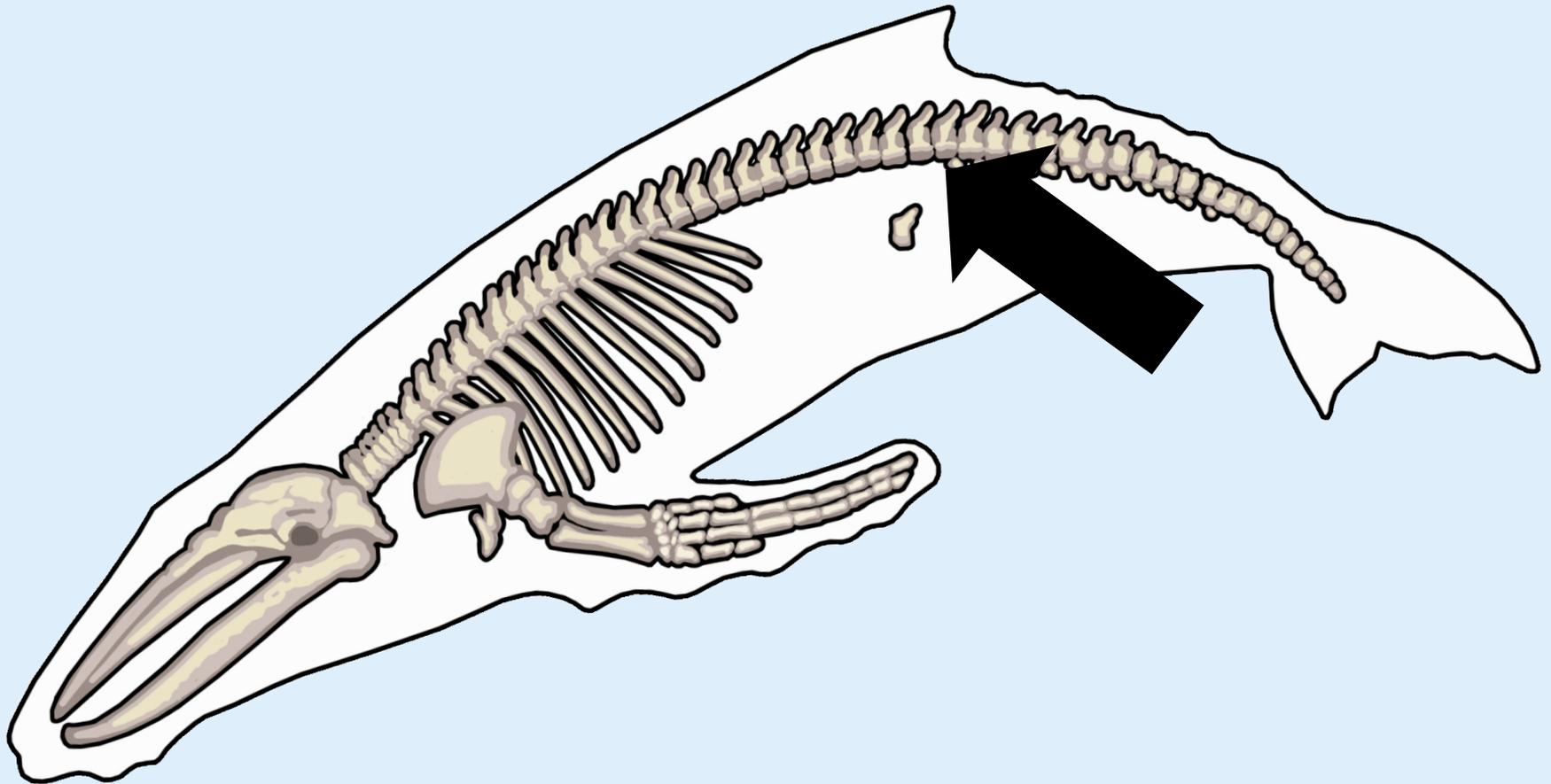
Life has a history

Evolution 2: Unity and diversity



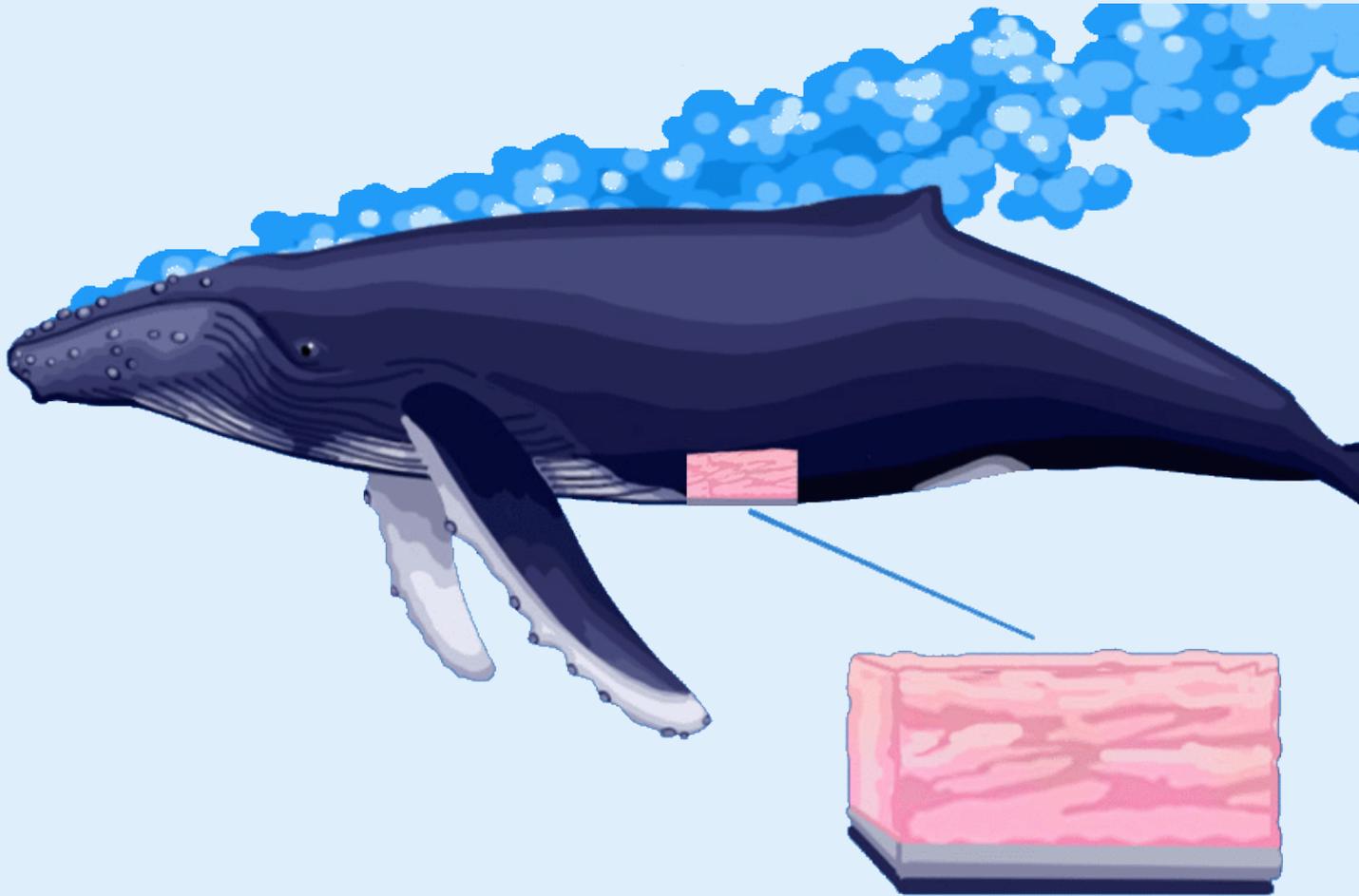
Evolution 3: Adaptations

Hind Limbs Disappeared Completely



Adaptations

Blubber Instead of Hair



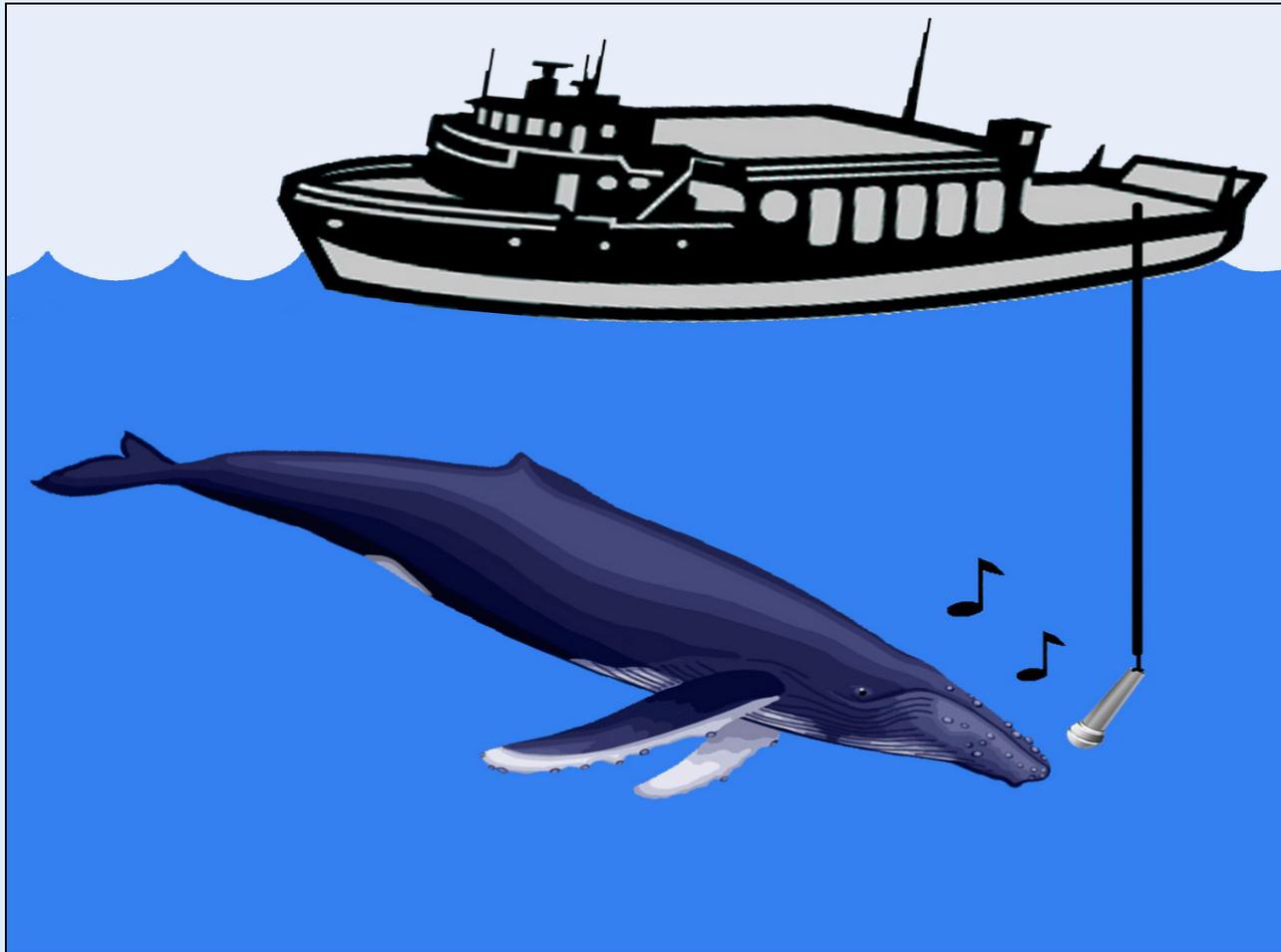
Adaptations

Nostrils on Top of Head



Adaptations

Highly Developed Hearing



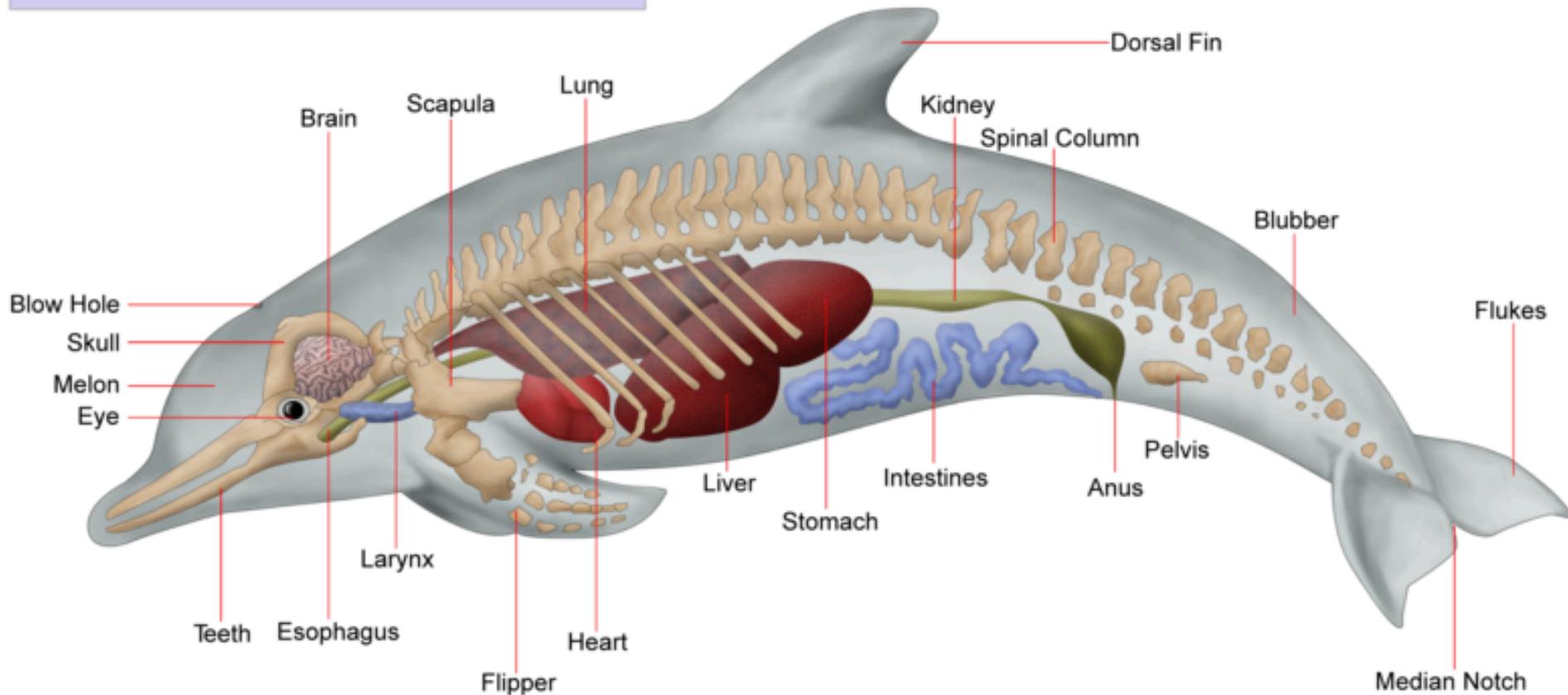
SYSTEMS

- Inputs (what goes in)
- Outputs (what goes out)
- Components (inner parts)
- Processes (what happens inside)
- Boundaries (where the system starts and ends)

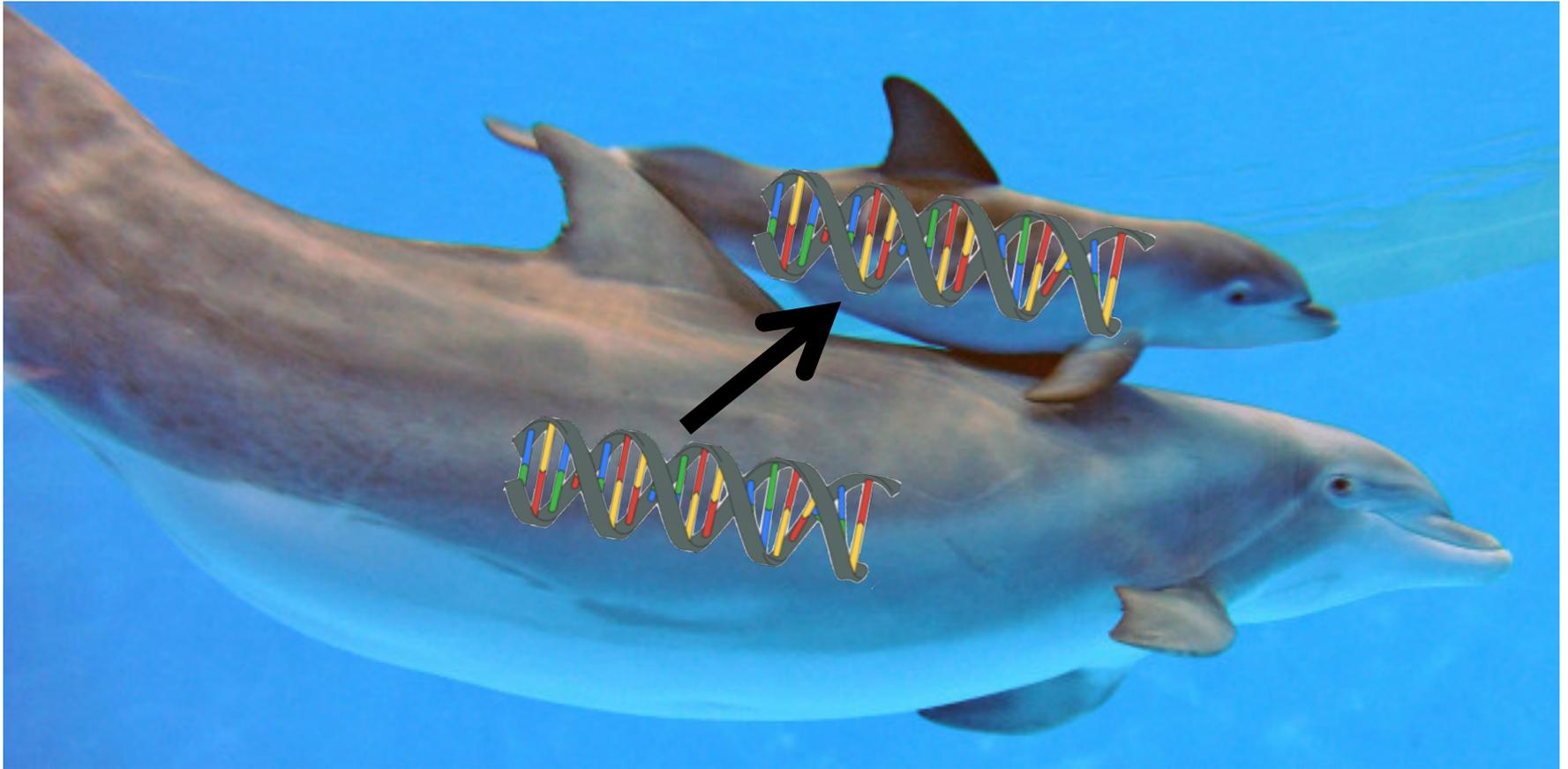


SYSTEMS 2: Interacting subsystems

ANATOMY OF A DOLPHIN (*Delphinidae*)

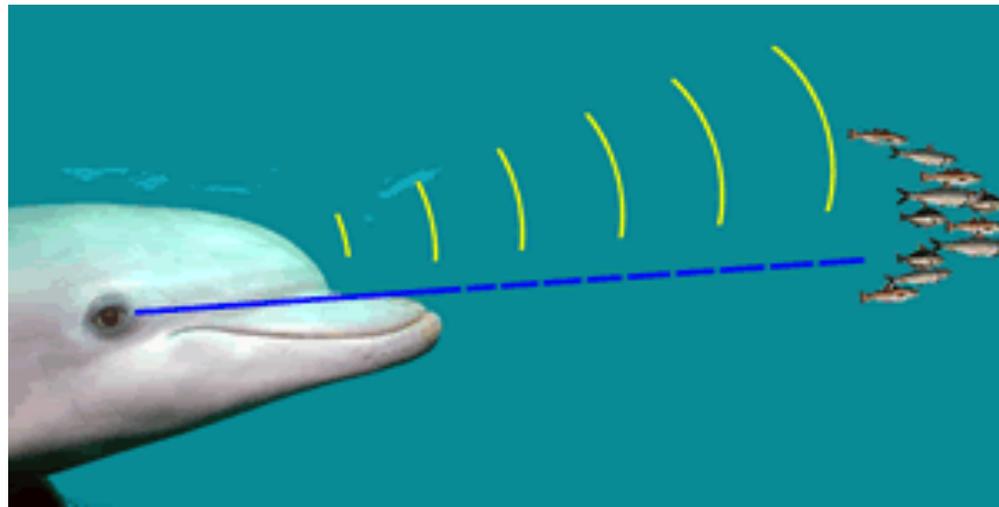
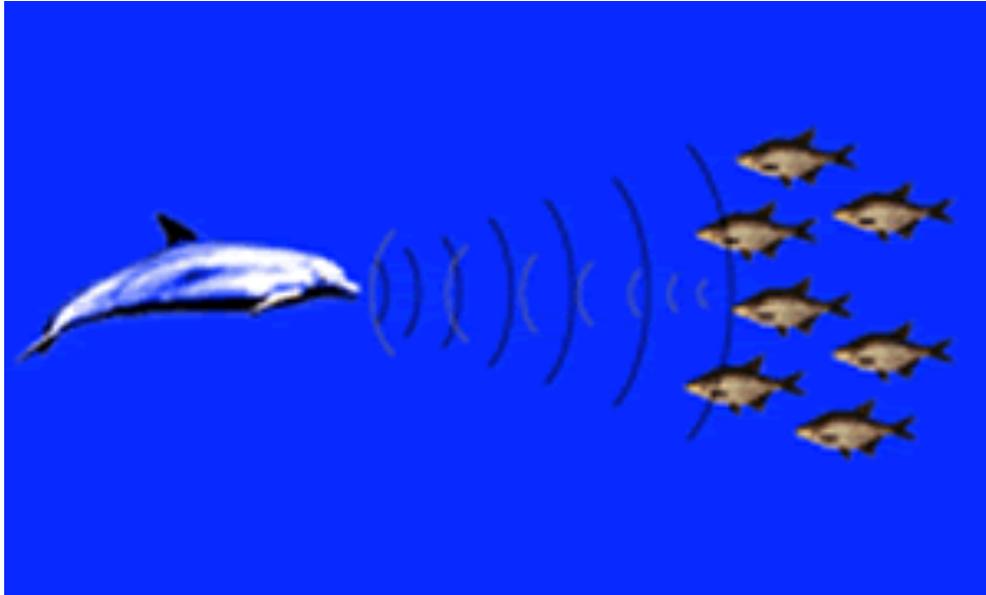


INFORMATION 1: Passing on genes

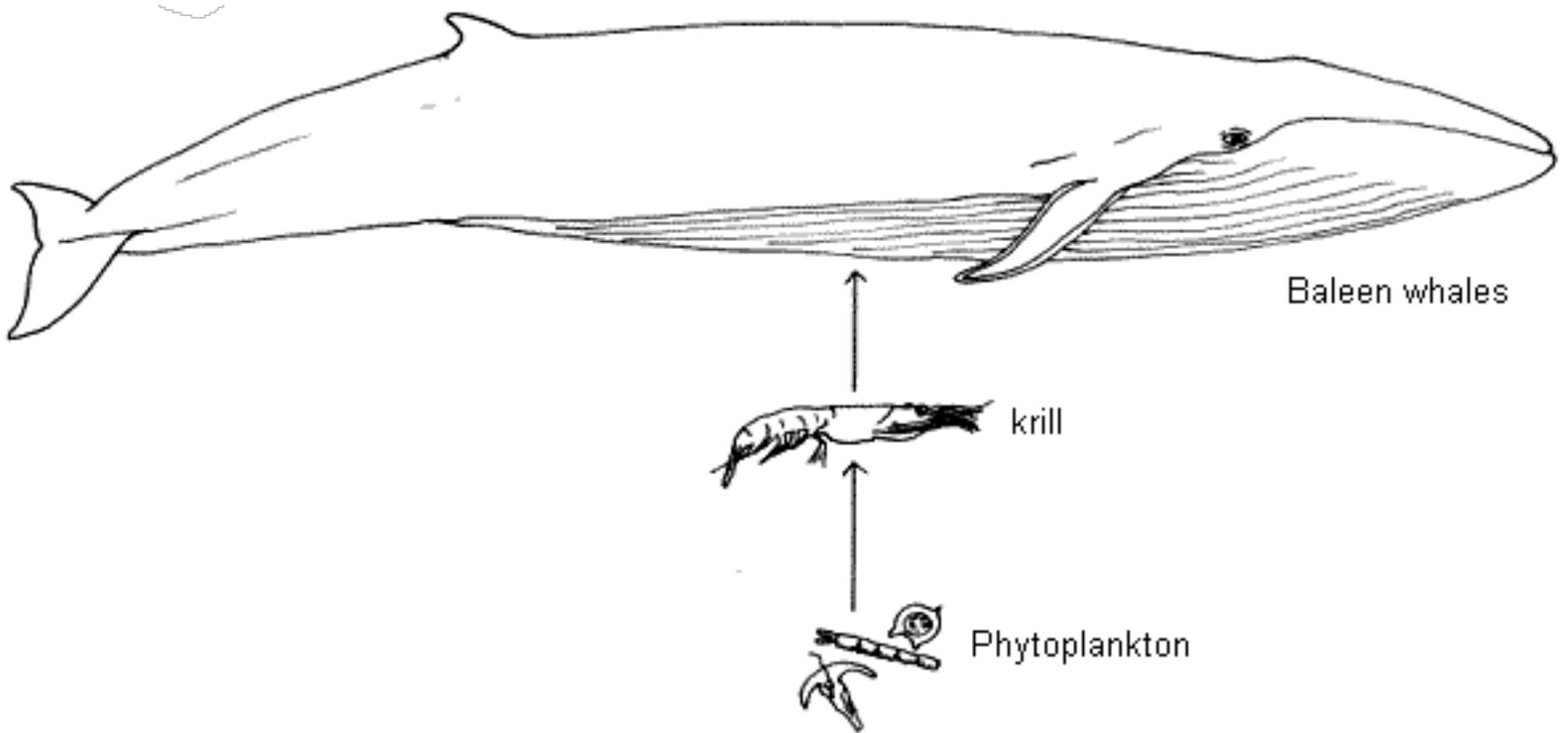


JIM SCHULTZ/CHICAGO ZOOLOGICAL SOCIETY

INFORMATION 2: receiving and responding to information from the environment



Matter and Energy Flow



NOW....

- Read “AP Biology Course Themes”
(page 2 of yesterday’s handout)
- Discuss how to apply to an apple (consider the tree as well).
 - 1 a, b, c
 - 2, 3, and 4

Now (and continue for homework)

- Either finish eating or dispose of your apples
- One person: carefully bring your knife and cutting board back to the supply table.
- Start homework
 - Read handout 1-2: Module 1, Biology, Thematic introduction
 - Write: Apply the four big ideas of biology (1 a –c, 2, 3, and 4) to an organism of your choice