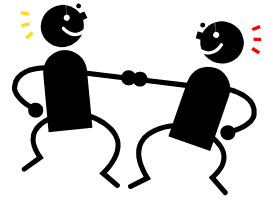




Biology SAC Lab

Biology I, MISD



Objectives

12A) interpret relationships, including predation, parasitism, commensalism, mutualism, and competition among organisms

Skills

- Identify relationships as mutualism, commensalism or parasitism

Simply Symbiosis

Background:

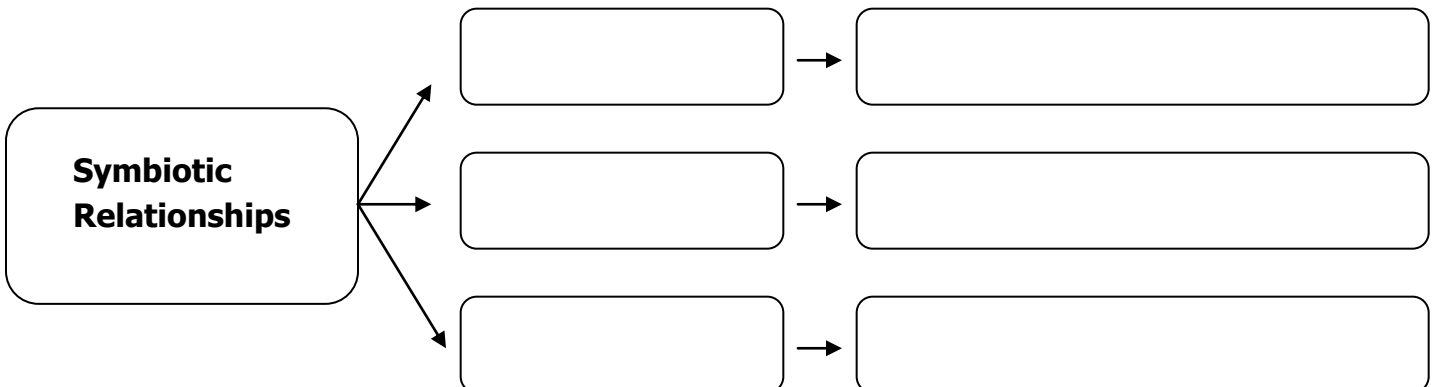
The word **symbiosis** was first defined as “unlike organisms living together”. The relationship between these two unlike organisms can be positive, negative or neutral. There are three types of symbiotic relationships- mutualism, commensalism and parasitism. **Mutualism** is when both organisms benefit from each other like the African crocodile and the blackbird plover- the bird gets nutrients from left over food material in the mouth of the crocodile and the crocodile has cleaner teeth because of the bird.

Commensalism is when one organism benefits from the relationship, while the other one is neither helped nor harmed. An example of commensalism is a barnacle on a whale. The barnacle gets protection and transportation to different food sources while the whale is neither helped nor harmed by the presence of the barnacle. The last example of symbiosis is **parasitism**. This is when one organism benefits but while doing so it is harming the other member in the relationship. A common example of this is a flea on a dog. The flea obtains nutrients and protection from the dog but the dog has an uncomfortable skin reaction because of the flea.

Pre Lab Assignment

Complete the concept map about symbiotic relationships using the word bank below.

One benefits/One is harmed	Both benefit	Parasitism
One benefits/One not helped nor harmed	Mutualism	Commensalism



Purpose:

The purpose of this lab is to determine the type of symbiotic relationships between two unlike organisms found in nature.

Materials:

6 Symbiotic Relationship Cards

Safety:

- Follow all safety procedures.

Procedure:

- ___1. At each station read the description provided on the Symbiotic Relationship Cards.
- ___2. In Table 1 write down the name of both organisms, which one benefits, which one is neutral and which one is harmed. **Do not leave a column blank- for example, if neither organism is harmed you could write "none" or "neither"**
- ___3. Determine if the relationship is mutualism, commensalism or parasitism and record in Table 1.
- ___4. In Table 2, write a COMPLETE SENTENCE describing how the relationship was mutualism, commensalism or parasitism.
- ___5. Move to the next station, based on teacher instructions, and complete all 6 stations.

Data:

Table 1

Station #	Name of Organism 1	Name of Organism 2	Which organism(s) benefits?	Which organism is neutral?	Which organism is harmed?	What type of symbiotic relationship is this?
1						
2						
3						
4						
5						
6						

Table 2

Station #	Type of Relationship	Description
1		
2		
3		
4		
5		
6		

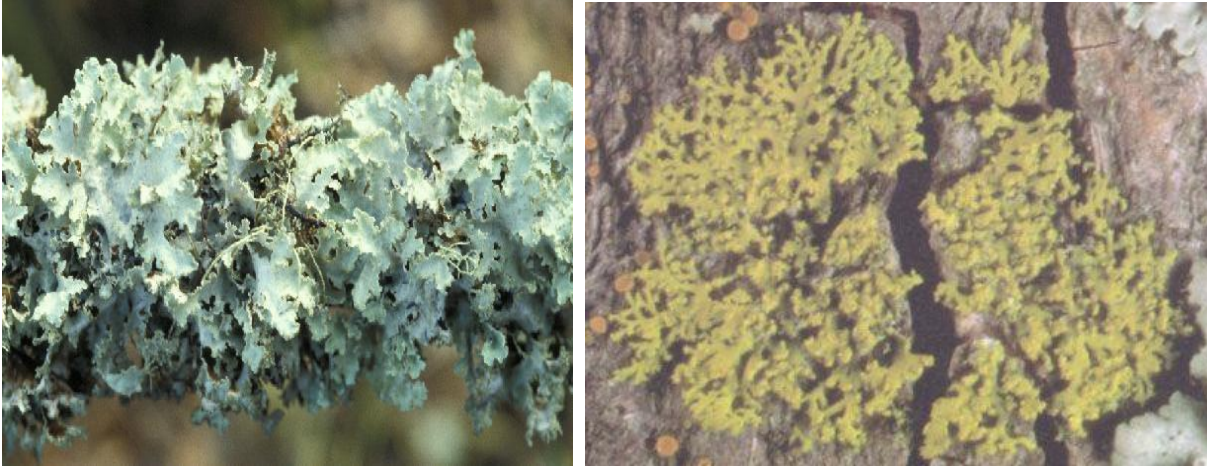
Analysis:

Read the descriptions below and determine if the symbiotic relationship is **mutualism**, **commensalism** or **parasitism**.

1. A Boxer crab carries a pair of sea anemones in its claws. When predators approach the Boxer crab it waves the anemones, which present their stinging tentacles. The Boxer crab gets protection and the anemones get the partials of food that are dropped by the crab.
2. Mycorrhizae is a fungus that lives on the roots of plants. The plant provides the fungi with carbohydrates such as glucose while the fungi provides the plant with phosphate.
3. Cattle egrets (a type of bird) are typically found around cattle and horses as they graze in the field. The cattle stir up various insects in the fields that the egrets feed upon.

Station 1

LICHEN: symbiotic relationship between fungus and algae



- Fungus provides nutrients to algae
- Algae provides food to fungus
- Both algae and fungus benefit

Station 2

TICKS, FLEAS, WORMS ON DOG/CATS: symbiotic relationship between parasites and animals

Tick on dog



Flea on cat



- Parasites get nourishment from dog.
- Dog is harmed.... may become sick from bites/diseases transmitted by parasite.
- One is harmed; one is helped.

Station 3

CLOWN FISH AND SEA ANEMONE: symbiotic relationship between clown fish and the sea anemone



- Clown fish get protection from the anemone
- Sea anemone get cleaned of parasites from the clown fish
- Both benefit.

Station 4

GALLS ON OAK LEAVES/BRANCHES: symbiotic relationship between insects that make the galls and the oak tree.



- Insects form a nursery called a gall on the leaf/branch of a tree. Insects have a safe place to develop.
- Tree is not helped or harmed by the presence of the galls.

Station 5

MISTLETOE: symbiotic relationship between mistletoe and tree that it is attached to.



- Mistletoe gets food and water from the tree.
- Tree loses food and water that it needs.... eventually will die.

Station 6

Shark and Remora Fish : symbiotic relationship between the shark and remora fish



- Remora fish get free food by hanging out with sharks.
- Sharks are not affected by presence of fish.