

Symbiosis

Most of the interactions between species involve food:

- competing for the same food supply
- eating (predation)
- avoiding being eaten (avoiding predation)

These interactions are often brief. There are many cases, however, where two species live in close association for long periods. Such associations are called **symbiotic** ("living together").

In symbiosis, at least one member of the pair benefits from the relationship. The other member may be

- injured (= **parasitism**)
- relatively unaffected (= **commensalism**)
- may also benefit (= **mutualism**). (Some people restrict the term symbiosis to only these mutually beneficial interactions, but we shall not.)

Mutualism- Symbiotic relationships in which **each species benefits** are mutualistic.

- *Paramecium bursaria* is a ciliate that engulfs unicellular green algae into vacuoles within its cell.
 - The paramecium certainly benefits from the food synthesized by the alga. It can be cultured apart from the alga but then must be given extra food.
 - The alga presumably benefits from the carbon dioxide produced by its host as well as the host's ability to transport it to a spot where there is ample light.

Commensalism- Symbiotic relationship where one organism benefits while the other is neither helped nor harmed. Some examples:

- the remora and the shark. The dorsal fin of the remora (a bony fish) is modified into a sucker with which it forms a temporary attachment to the shark. When the shark feeds, the remora picks up scraps. The shark makes no attempt to prey on the remora.
- Some species of barnacles are found only as commensals on the jaws of whales. And there are other species of barnacles found only as commensals on those barnacles!

Parasitism- Symbiotic relationship where one organism benefits while the organism is harmed. A parasite is an organism that

- lives on or in the body of another organism (the host)
- from whose tissues it gets its nourishment, and
- to whom it does some damage

TYPES OF SYMBIOSIS

There are 3 basic types of symbiosis. Don't forget that symbiosis is the relationship between two organisms of different species that benefits one or both organisms.

M- Mutualism- a symbiotic relationship that benefits both organisms involved.

C- Commensalism- a symbiotic relationship that benefits one organism and the other is not helped or harmed.

P- Parasitism- a symbiotic relationship that benefits one organism and the other is harmed.

Directions: Put the letter (M,C,P) by the statement that best describes the type of symbiosis.

- ___ 1. A tick living on a dog.
- ___ 2. The honeyguide bird leading the honey badger to the bees hive, both eat the honey.
- ___ 3. A tapeworm living in a 6th grade students intestines.
- ___ 4. A bird building their nest in a tree.
- ___ 5. The hermit crab carrying the sea anemone on its back.
- ___ 6. The bristle worm living with the hermit crab.
- ___ 7. Head lice living on a human scalp.
- ___ 8. Mistletoe putting its roots into its host tree.
- ___ 9. The ants and the acacia tree living together and both receiving benefit.
- ___ 10. The egret, an insect eating bird, graze near some herbivores mouth.
- ___ 11. Orchids growing in tall tropical trees, the trees are not harmed but the orchids get sunlight.
- ___ 12. Bacteria living on a humans skin.
- ___ 13. The remora hitching a ride on a shark.
- ___ 14. Barnacles living on a whale.
- ___ 15. Bees and a flower.
- ___ 16. Bacteria living in the intestines of a cow to help it break down cellulose.
- ___ 17. The clownfish and the sea anenemoe.
- ___ 18. A sixth grader and their pet.
- ___ 19. The Rhino and the tick bird.
- ___ 20. The lichen- a close relationship of a fungus and an alga that benefits both.