Symbiosis (Symbiotic Relationship)

[1] In the wonderful world of nature, some animals love forming partnerships with other animal species, with plants, and with microorganisms. We have a special name for such interesting arrangements. We call it "symbiosis" that literally means "living together".

[2] Do both species involved in a symbiotic relationship benefit from their partnership? Well, the question itself is open for debate. While some scientists restrict the meaning of symbiosis to a "win-win" situation for both participants, others disagree. Using a broader definition, we are going to explore the three types of symbiotic partnerships.

[3] When two species engage in a mutually beneficial symbiotic relationship, they are in the so-called "mutualism" type of symbiosis. To understand mutualism better, let's examine the interaction between clown fish and an anemone. While most fish stay away from an anemone for fear of touching its poisonous tentacles, clown fish have a special coat on their skin that protects them from getting stung. (This trick does not work for all anemones though. Clown fish can only have symbiotic relationships with 10 of the 1,000 different anemone species in the world.) Swimming carefree and unharmed among their host's deadly tentacles, clown fish know very well that their predators do not dare to come near them. Plus, clown fish get to pick up and eat the leftover bits discarded by their landlord. What does the anemone get in return for offering clown fish a safe haven? Well, first and foremost, it kills and feeds on fish that are eyeing its tenant! Aside from that, clown fish pay their rent by cleaning up food scraps and dead anemone tentacles.

[4] The second type of symbiosis is called "commensalism" in which only one party emerges as the clear winner. As for the other party involved, it neither benefits nor suffers from the partnership. Okay, let's look at the case of remoras and sharks. Remoras have sucking disks above their heads that they use to attach themselves to large marine animals, especially sharks. Hence, remoras are also known as "shark suckers" or "sucker fish." Remoras are the clear winners in this relationship. First, they save energy by delegating the task of swimming to their host. Second, they do not have to worry about predators whose exact nightmare is to run into hungry sharks. Third, they feed on the food scraps of their host's latest victim or the parasites from their host's skin. What do sharks get out of this partnership? Well, nothing really. Except for remoras' parasite-cleaning work that they can live without, sharks gain nothing and lose nothing by having remoras around.

[5] "Parasitism" is the third and last type of symbiosis. In this relationship, one (the parasite) wins and the other (the host) loses. There are many examples of parasitism around us. For instance, like remoras, leeches also have sucking disks. When a leech finds an ideal host, say a little boy named Frank, it fastens itself firmly onto his skin and starts sucking blood. Amazingly, it can consume about 3 times its weight of blood in one feeding! Frank, in the meantime, not only loses his blood but also runs a risk of getting infected by the viruses that the leech may carry. While all parasites do harm to their hosts, some extremists go as far as killing their hosts!

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1. What is the term that we use to describe two species living together?
   - (A) Symbiosis
   - (B) Migration
   - (C) Camouflage
   - (D) Hibernation

2. The relationship between sharks and remoras is characterized as parasitism.
   - (A) False
   - (B) True

3. If we eat undercooked or raw fish, we may inadvertently consume tapeworms hidden inside the fish. We can get really sick if we have tapeworms lurking in our intestines. What kind of relationship exists between humans and tapeworms?
   - (A) Parasitism
   - (B) Commensalism
   - (C) Mutualism

4. Why do remoras attach themselves to sharks?
   - (A) To hitch a free ride
   - (B) To gain access to free food
   - (C) To avoid getting eaten by other fish
   - (D) All of the above

5. Which of the following is a "win/no effect" relationship?
   - (A) Commensalism
   - (B) Mutualism
   - (C) Parasitism

6. Which of the following statements about mutualism is correct?
   - (A) Clown fish and anemones have a mutualism relationship.
   - (B) Both parties involved in a mutualism relationship suffer from the alliance.
   - (C) Leeches and their hosts have a mutualism relationship.
   - (D) All scientists agree that mutualism is the only form of symbiosis.

7. Clown fish are able to live with every anemone species because they have a special coat on their skin preventing them from getting stung by the anemone's poisonous tentacles.
   - (A) False
   - (B) True

8. What happens to the host in a parasitism relationship?
   - (A) It relies on the parasites for protection.
   - (B) It eats the leftover bits discarded by the parasites.
   - (C) The parasites may kill it.
   - (D) Nothing happens to it.

9. Symbiosis is a behavior that exists strictly between two different animal species.
   - (A) False
   - (B) True