










## CONCEPT: SYMBIOTIC RELATIONSHIPS

- Different living organisms (ex. humans & microorganisms) can interact to form \_\_\_\_\_ relationships.
  - **Symbiosis**: biological interactions/relationships between two \_\_\_\_\_ organisms/species.
- There are \_\_\_\_\_ forms of *symbiotic relationships*:
  - 1) **Mutualism**: relationship where BOTH organisms \_\_\_\_\_ from the relationship.
  - 2) **Commensalism**: relationship where *one organism benefits* & the other is \_\_\_\_\_ affected (not affected).
  - 3) **Parasitism**: relationship where *one organism benefits* at the *expense* of the other (the other is \_\_\_\_\_).
    - All *pathogens* are categorized as *parasites*.

Types of Symbiotic Relationships		
Interaction	Relationship	Biological Example
 Benefits Benefits	① Species A Benefits Species B Benefits	 Flowers get pollinated  Bees get nectar
 Benefits Unaffected	② Species A Benefits Species B Unaffected	 Barnacles get food  Whale is unaffected
 Benefits Harmed	③ Species A Benefits Species B Harmed	 Tick feeds on dog blood  Dog gets infection

**PRACTICE:** Organisms that interact and live together on a permanent basis are in a relationship termed:

- Mutualism.
- Parasitism.
- Symbiosis.
- Transient microbiota.

**PRACTICE:** A relationship between two organisms in which one partner benefits and the other is harmed is termed:

- Commensalism.
- Parasitism.
- Independence.
- Mutualism.

**CONCEPT: SYMBIOTIC RELATIONSHIPS**

**PRACTICE:** Which of the following is an example of a commensal relationship?

- a) Fungi residing in plant roots and the fungi providing the plant nutrients.
- b) Bacteria fixing nitrogen in the roots of some plants and the plants providing shelter for the bacteria.
- c) Rancher ants that protect aphids in exchange for sugar-rich honeydew that the aphids create.
- d) Cattle egrets eating insects stirred up by grazing bison in a meadow.

**PRACTICE:** Our microbiome is composed of a variety of microorganisms that live within and on our bodies. Research has shown our microbiota protects us against infectious pathogens, creates vitamins and minerals we need, and helps us digest our food. We act as a safe residence and food source for our microbiota. The relationship humans have with their microbiome could be described as?

- a) A commensal relationship.
- b) A resident relationship.
- c) A mutual relationship.
- d) A parasitic relationship.