

## Answer on Question #54233 – Biology – Microbiology

### Question:

Microorganisms are divided into seven major types: bacteria, archaea, protozoa, algae, fungi, viruses and microbial mergers.

### Answer:

1. Bacteria. Bacteria are unicellular organisms lacking the nucleus. They divide by binary fission and exist in four major shapes: bacillus (rod shape), coccus (spherical shape), spirilla (spiral shape) and vibrio (curved shape).
2. Archeae or Archaeobacteria differ from true bacteria in their cell wall structure and lack peptidoglycans. They are prokaryotic cells with avidity to extreme environmental conditions (methane-producing organisms, Archaeans that live in salty environments, Archaeans that live at extremely hot temperatures and cold-temperatures).
3. Protozoa are unicellular aerobic eukaryotes. They have a nucleus, complex organelles, and obtain nourishment by absorption or ingestion through specialized structures.
4. Algae are unicellular or multicellular eukaryotes that obtain nourishment by photosynthesis.
5. Fungi (molds and yeasts) are eukaryotic cells with a true nucleus. Most fungi are multicellular and their cell wall is composed of chitin.
6. Viruses are noncellular entities that consist of a nucleic core (DNA or RNA) surrounded by a protein coat. Although viruses are classified as microorganisms, they are not considered living organisms.
7. Microbial mergers. Many microbial species have proved to be consummate evolutionary wheelers and dealers, arranging collaborations, mergers, and acquisitions that usually serve both partners well. *Rhizobia* are bacteria that form nodules on the roots of legumes to supply them with nitrogen; in return, the plants provide the bacteria with carbohydrates. *Mycorrhizae* are soil-dwelling fungi that act as extensions of plants' roots, enabling them to vastly increase their nutrient-absorbing network. The plants provide the fungi energy in the form of carbohydrates. *Zooxanthelle* are photosynthetic algae that live inside the body tissues of coral polyps. They provide nutrients to their polyp hosts in exchange for a protected, stable environment and nutrients they need for growth. Lichens are an alliance of fungi and algae that allows each to grow in environments where neither could survive alone, like deserts, rocks, or tree bark.