Protista

The kingdom Protista is much more diverse than any other kingdom. Protists do not form a neat group that has certain traits in common instead they are extremely varied. It is just a grab-bag collection of organisms that do not fit into any other kingdom.

Protists are all eukaryotic but they vary widely, from single cells to huge 200ft long seaweeds. Some are photosynthetic, but others collect food like an animal. The main groups are the subkingdom algae (photosynthetic), protozoa (animal-like) and slime molds.

## A) Web site name: Science Daily

**Web URL**: <http://www.sciencedaily.com/releases/2007/08/070830165013.htm>

Read “Weird ‘Engine of the Reef’ revealed”

1. What is Symbiodinium? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. What evidence is there that corals “farm” these plants? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

3) In what way are these algae “weird”? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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4) Why would a decline in the algae be harmful? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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5) What environmental factor has caused coral bleaching in the last 30 years? \_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

6) How many genes does Symbiodinium have? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

7) What percentage of CO2 entering the oceans is used up by these algae? \_\_\_\_\_\_ %

**B) Web site address:**  Science Daily

**Web URL:** <http://www.sciencedaily.com/releases/2010/03/100304121542.htm>

Read “Plodding amoeba”

8) What distinguishes eukaryotes from prokaryotes?

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9) From where was this particular organism collected and isolated?

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10) What is the scientific name of this amoeba?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

11) What is usual, or rare, about this particular species? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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12) How many protein-coding genes does the amoeba have? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

13) How many genes may have been part of the first eukaryotes?\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. What protein is important in flagella?\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. Explain the “metabolic flexibility” that the amoeba exhibits. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. **Web site name:** Science daily

**Web URL:** <https://www.sciencedaily.com/releases/2012/12/121210160846.htm>

Read “Biologists engineer algae to make complex anti-cancer drug”

1. Why can’t these drugs be made in bacteria? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_   
    \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. Why can’t these proteins be made in mammalian cells?

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1. What is the scientific name for the green alga that is used here?

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1. What is the protein VEGF used to treat?

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1. Why does the anti-cancer protein from algae only need to be purified one time?

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1. Where inside the algae is the protein produced and sequestered?

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1. **Web site name:** Science Daily

**Web URL:** <http://www.sciencedaily.com/releases/2009/03/090324171556.htm>

Read “New possibilities for Hydrogen-producing Algae”

1. In which habitat is this alga found? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. Which enzyme produces hydrogen? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. What chemical does this mutant strain of algae produce, which is a widely used industrial chemical? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. What three environmental factors can be extremely variable in soil?

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1. Why is it better to produce hydrogen from algae, instead of ethanol from crops? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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1. **Web site name:** Science Daily

**Web URL:** <http://www.sciencedaily.com/releases/2009/04/090408145556.htm>

Read “Ancient diatoms lead to new technology for solar energy”

1. What chemical makes up the shell, or outer wall, of a diatom?\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. Why are researchers still interested in using diatoms, even though they are more expensive than some existing approaches?

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1. What are two advantages of dye-sensitized technology compared to silicon?

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1. Which chemical is used as the thin film semiconductor in this solar device?\_\_\_\_\_\_\_\_\_\_
2. Why are the holes in diatom shells useful? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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1. How far back in the fossil record are diatoms found?

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