#3584

THE BIOLOGY OF FLAGELLATES AND AMOEBAS

Grade Levels: 9-12
16 minutes
ENVIRONMENTAL MEDIA CORPORATION 1997

DESCRIPTION

The three types of protists are distinguished by their method of locomotion: flagellates (use a whiplike flagellum), amoebas (use a pseudopod), and ciliates (use short "hair"). Microphotography provides a close-up examination of flagellates and amoebas, noting their similarities, differences, and some examples of the huge numbers of species.

ACADEMIC STANDARDS

Subject Area: Science

- Standard: Knows about the diversity and unity that characterize life
  - Benchmark: Knows different ways in which living things can be grouped (e.g., plants/animals; pets/nonpets; edible plants/nonedible plants) and purposes of different groupings
  - Benchmark: Knows that plants and animals progress through life cycles of birth, growth and development, reproduction, and death; the details of these life cycles are different for different organisms

SUMMARY

Flagellated Protists:

Flagellates can be found in just about any body of standing water, moist soil, wet leaf piles, wet sand, and living in virtually all animals.

Euglena spirogyra, a common large euglenid, is a particularly good subject for microscopic study of euglenid structures such as chloroplasts, starch bodies (paramylum bodies), red eye-shield and surface features.

Euglena rubra has a unique adaptation that allows it to live on the surface, fending off ultraviolet radiation with a retractable parasol of red pigment. In addition, Euglena rubra produces "plastic" bubbles that prevent drying.

Related euglenids include: Trachelomonas, living in a case; Phacus, the incredibly plastic Distigma, and others. Peranema feeds on euglenids and other small flagellates.

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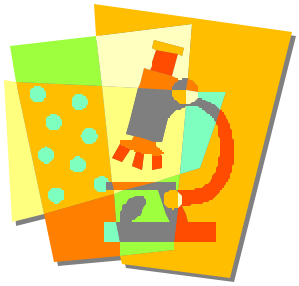
Chilomonas has two flagella. It absorbs nutrients directly from decomposing vegetation, as does Astasia, an "instant species" derived from a Euglena that has lost its chloroplasts.

Colonial flagellates suggest a possible evolutionary bridge between single cells and simple multicellular plants. Volvox shows a division of labor among its cell: some provide locomotion, some produce daughter colonies, and others become sex cells.

Trypanosoma is a blood parasite that causes sleeping sickness. Symbiotic flagellates of termites engulf and digest woodchips. A view into a termite's intestine shows the vast numbers of symbionts needed to digest cellulose.



Amoeboid Protists:

Amoebas engulf their food and incorporate it by phagocytosis, converting their outer membrane into food vacuoles where digestion can take place.

Examine the shots of pseudopodia and come up with your own theory on how amoeboid movement is accomplished.

RELATED RESOURCES

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- Biology: Ecology of the Human Body #3343
- The Biology of Ciliates #3583
- The Biology of Nematodes, Rotifers, Bryozoans, and Some Minor Phyla #3585

World Wide Web

The following Web sites complement the contents of this guide; they were selected by professionals who have experience in teaching deaf and hard of hearing students. Every effort was made to select accurate, educationally relevant, and "kid-safe" sites. However, teachers should preview them before use. The U.S. Department of Education, the National Association of the Deaf, and the Captioned Media Program do not endorse the sites and are not responsible for their content.

- **THE SMALLEST PAGE ON THE WEB**

http://micscape.simplenet.com/mag/wimsmall/smal1.html

An introduction to microscopic organisms you can find in a freshwater pond.

- **WATERWORLD AT THE MICROBE ZOO**

http://commtechlab.msu.edu/sites/dlc-me/zoo/zwmain.html

A visit to the often unseen worlds of microlife.

- **LIFE SCIENCE INTERNET RESOURCES**

http://www.wcsu.ctstateu.edu/library/ls_microbiology.html

A list of professional hotlinks to journals, societies, research findings, and more.

- **LIVING THINGS**

http://www.fi.edu/tfi/units/life/life.html

Hundreds of living things links (plants, bugs, animals, ecosystems, etc.) from the Franklin Institute of Science online. Buttons include: "Individuals," "Families," "Neighborhoods," and "Circle of Life."

- **MS. OLSEN'S HOME PAGE**

http://clab.cecil.cc.md.us/faculty/biology1/bio.htm

Choose from a variety of related biology and microlife topics.

- **BIOLOGY4KIDS**

http://www.kapili.com/biology4kids/

Check out the "Aquatic Biomes" and "Food Chain" sections. Then browse for additional information.

- **PLANTAE: LIFE HISTORY AND ECOLOGY**

http://www.ucmp.berkeley.edu/plants/plantaelh.html

Plants in ecosystem, "dealing with life differently from animals." Comparative microlife and water life information.

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