

Protists

I. Introduction

A. Taxonomy

Domain: Eukarya

Kingdom: Protista

Not monophyletic

B. General characteristics

Cellular organization

Size

Reproduction

Metabolism

“Kingdom of convenience”

C. Phylogeny

7 main groups:

Flagellates

Shelled cells

Alveolates

Stramenopiles

Red & green algae

Amoebozoans

Choanoflagellates

II. Flagellates

A. General Characteristics

Single-celled

No cell wall

Flagella

Binary fission

B. Anaerobic flagellates

Live w/o oxygen

Diplomonads

Giardia lamblia

Parabasalids

Trichomonas vaginalis

C. Trypanosomes

Kinetoplastids – larger group of which trypanosomes are a part

Trypanosomes – parasites

Trypanosoma brucei

D. Euglenoids

Varied group

Some are photosynthetic

Contain contractile vacuoles

III. Shelled Cells

A. Foraminiferans

Calcium carbonate shells

B. Radiolarians

Silica shells

IV. Alveolates

A. General characteristics

Layers of sacs under plasma membrane

B. Ciliates

Have cilia Single-celled Heterotrophs

Example: *Paramecium*

C. Dinoflagellates

Have 2 flagella Single-celled Autotrophs

Can cause algal blooms ("red tides")

D. Apicomplexans (sporozoans)

Parasites

Complex life cycles involve two or more hosts

Example: *Plasmodium falciparum*

Cause of malaria

V. Stramenopiles

A. General characteristics

None?

Grouped by molecular similarities rather than physical characteristics

B. Diatoms

2-part shell

Reproduce by asexual or sexual reproduction

C. Brown algae

Multicellular

Dark color, live in cool or temperate water

Life cycles show alternation of generations

Sizes range widely

Example: giant kelp (*Macrocystis*)

D. Water molds

Similar to fungi in some ways, but distinct

Colonial or single-celled

Example: *Saprolegnia*

VI. Red & Green Algae

A. Green algae

Single- or multicellular

Similar to land plants

Chlorophyll a and b

2 groups

Chlorophytes

Charophyte algae

B. Red algae

Multicellular

Red color due to different light-capturing molecules

VII. Amoebozoans

A. General characteristics

Lack rigid shape

Move by pseudopods

B. Amoebas

Entamoeba histolytica

C. Slime molds

Complex life cycle

Colonial / multicellular