Part 3 Protists

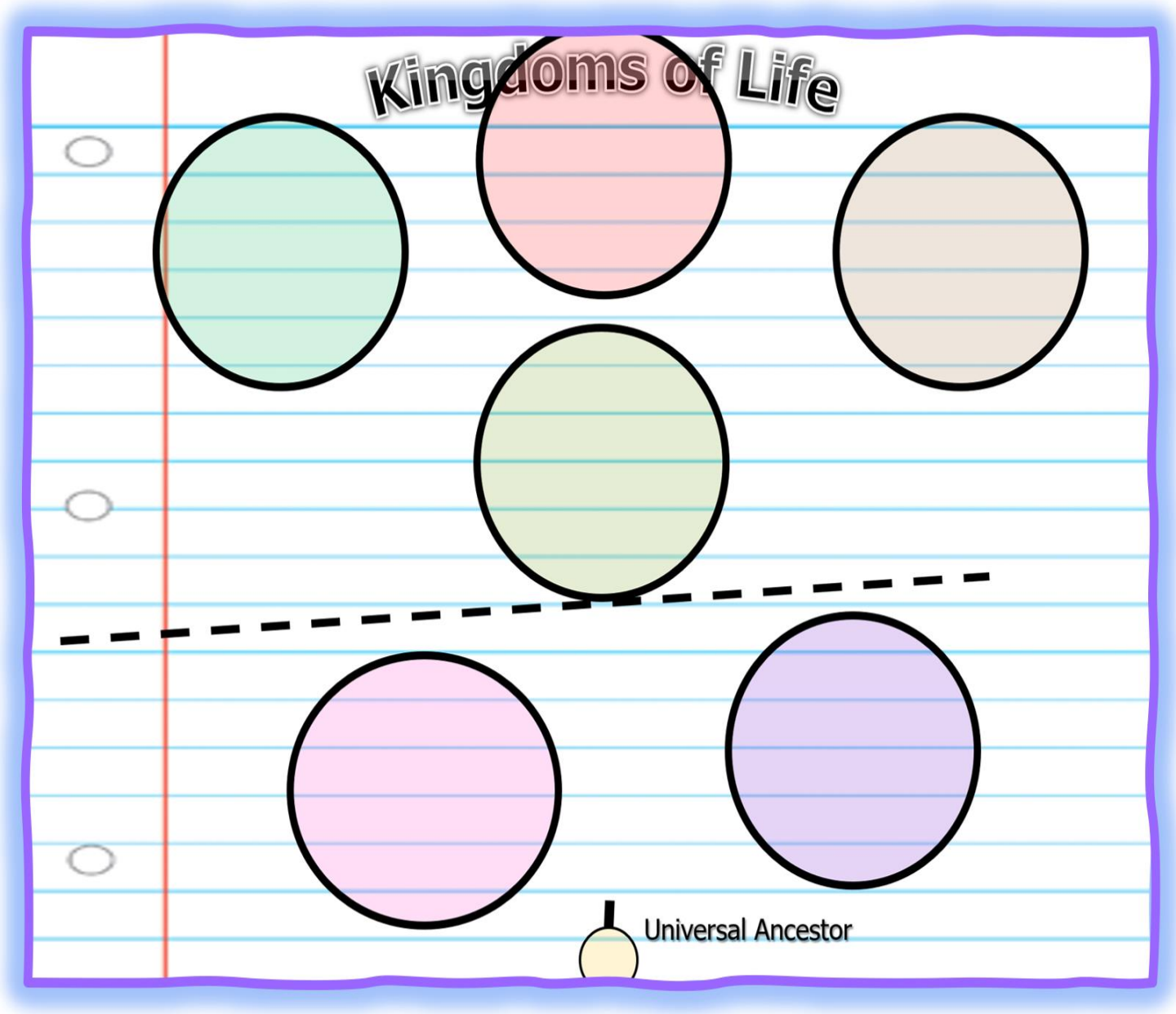
Name:

Part 3 Lesson 1 Protista, Plant-Like Protists

Domain _____ : Have cells with a membrane bound nucleus and membrane bound organelles.

Animals, Plants, and Fungi all _____ from primitive Protists.

Describe the missing Kingdoms below. Where do Protists fit into the diagram? Why are they so unique?



What about Chromista? Where does that fit? Show me above.

Protist: An organism with Eukaryotic _____ cell, or colonies (multicellular). Lacking _____ and eats, makes, or decomposes for food.

Draw a Protist below?

Protists: of past are separated into 7 new groups that also have plants, fungi and animals.

1. Excavata
2. Stramenopiles
3. Alveolata
4. Rhizaria
5. Archaeplastida, (Plants)
6. Ameobozoans
7. Opisthokonts, also has fungi and animals

Plant-like Protists (photosynthetic but no root stem or leaves)

Plant-like protists are called _____. They include single-celled diatoms and multicellular seaweed.

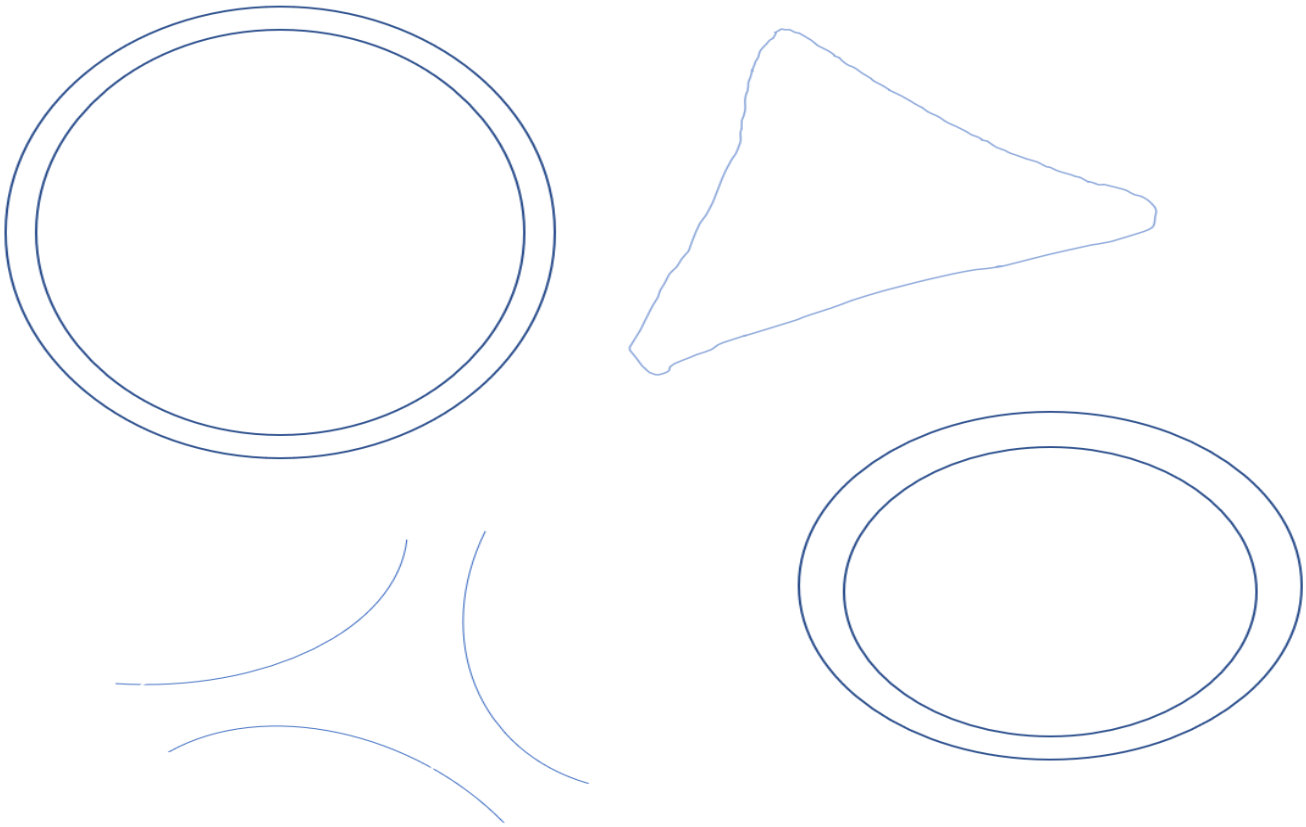
Like plants, algae contain _____and make food by _____.

Types of algae include red and green algae, euglenids, and dinoflagellates.

Sketch and label 3 Plant-Like Protists below "Archaeplastida"

Part 3 Lesson 2 More Plant-Like Protists

Sketch out some diatoms below / Make them as cool as diatoms are…



Diatoms: Round shells made of _____
-Belonging to the Division Chrysophyta

Diatoms use _____ to make their glass shells using a process called _____.

Diatoms are a major group of algae, found in the _____, waterways and soils of the world. Living diatoms make up a significant portion of the Earth's _____:

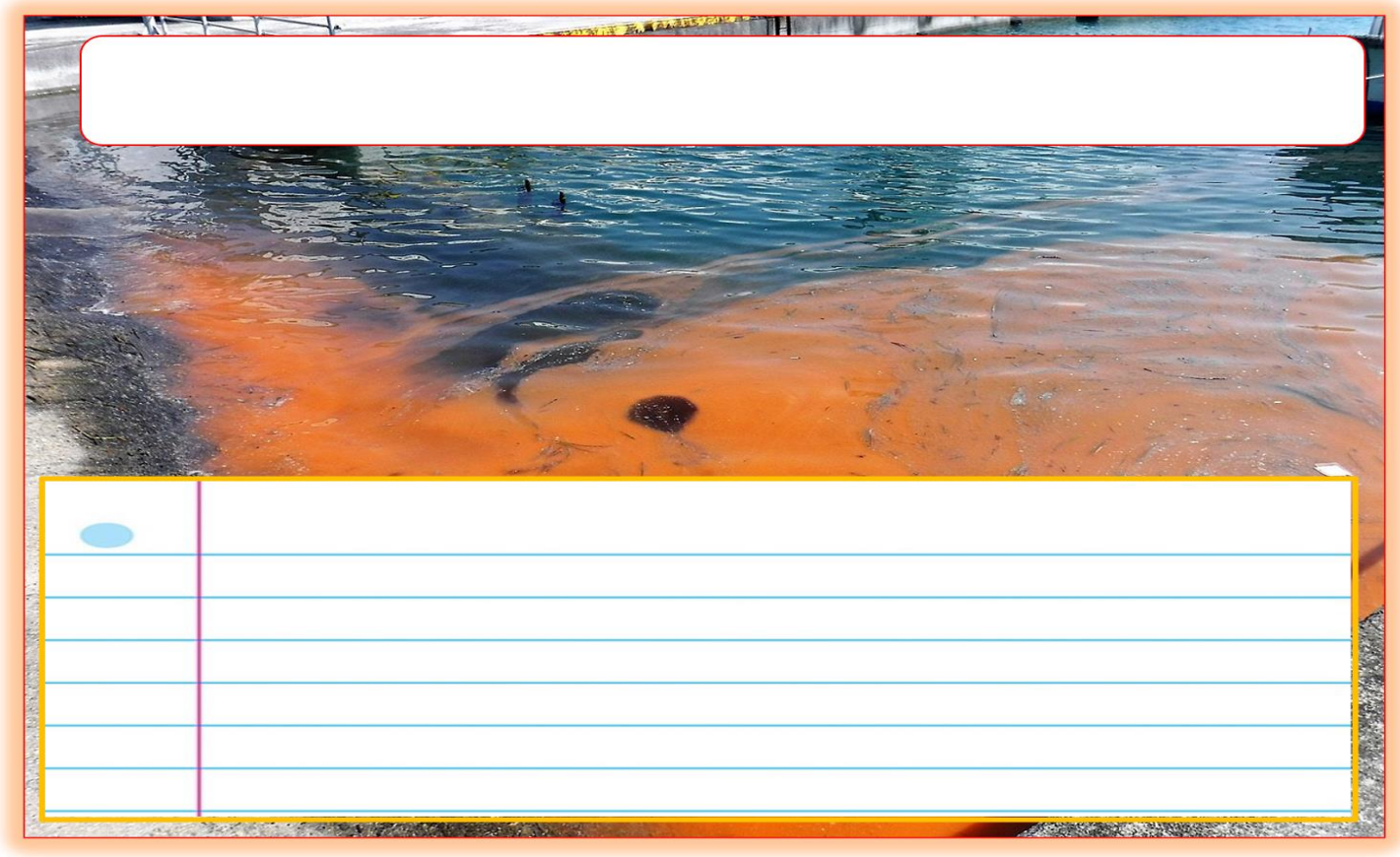
-They generate about 20 to 50 percent of the _____ produced on the planet each year.
-Take in over 6.7 billion metric tons of silicon each year from the waters in which they live.
-Constitute nearly half of the _____ material found in the oceans.
-The shells of dead diatoms can reach as much as a half-mile (800 m) deep on the ocean floor, and the entire Amazon Basin is fertilized annually by 27 million tons of diatom shell dust transported by transatlantic winds from the African Sahara.

The Alveolates: They all share a system of _____ underneath their cell membranes.
We will look at dinoflagellates and ciliates.

Dinoflagellate, any of numerous _____-celled aquatic organisms bearing two dissimilar _____ and having characteristics of both plants and animals.

Most are marine, though some live in freshwater habitats. The group is an important component of _____ in all but the colder seas and is an important link in the _____.

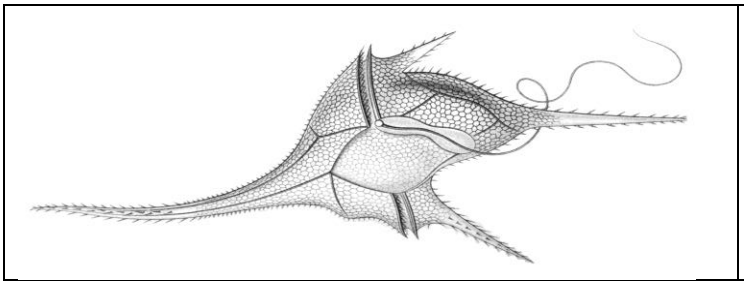
What is the picture below? Why is it dangerous?

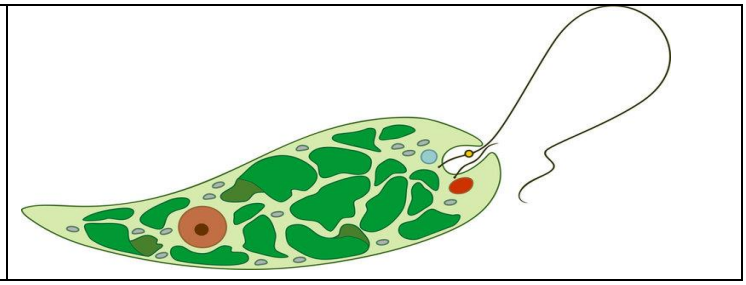


"HAB's" _____ _____ _____, occur when colonies of algaes grow out of control while producing toxic or harmful effects on people, fish, shellfish, marine mammals, and birds.

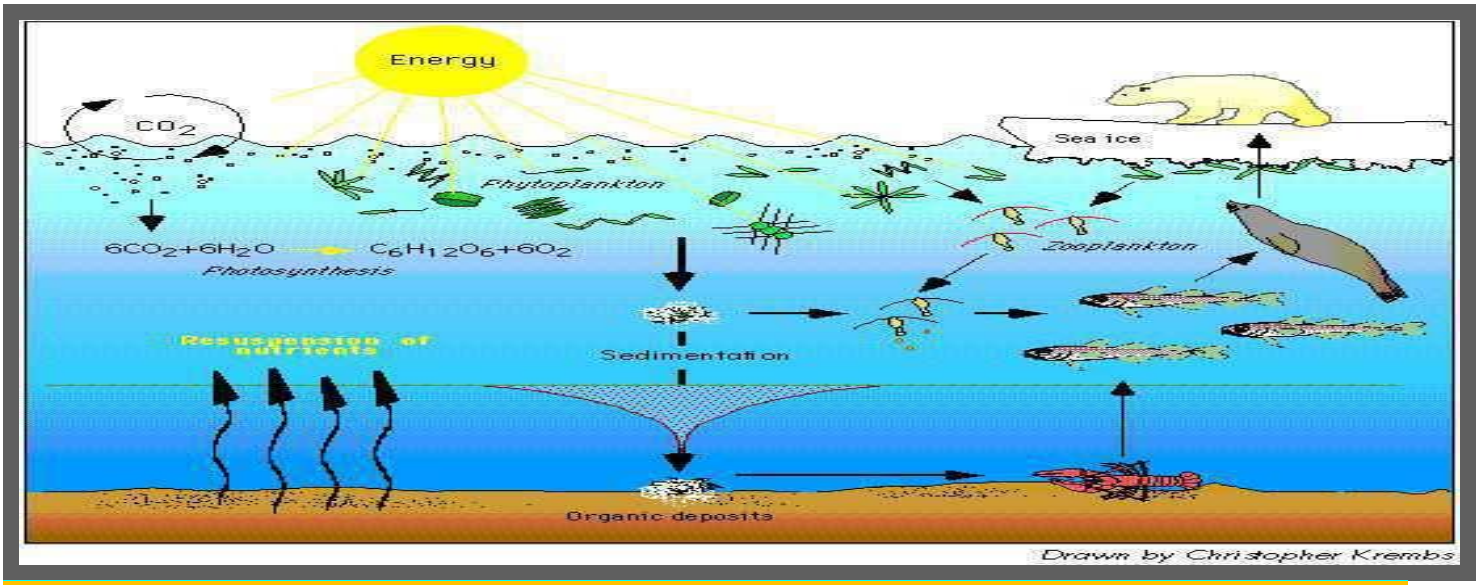
The human illnesses caused by HABs, though rare, can be debilitating or even fatal.

Name the two Protists below?





Describe the role of Protists in the food chain?

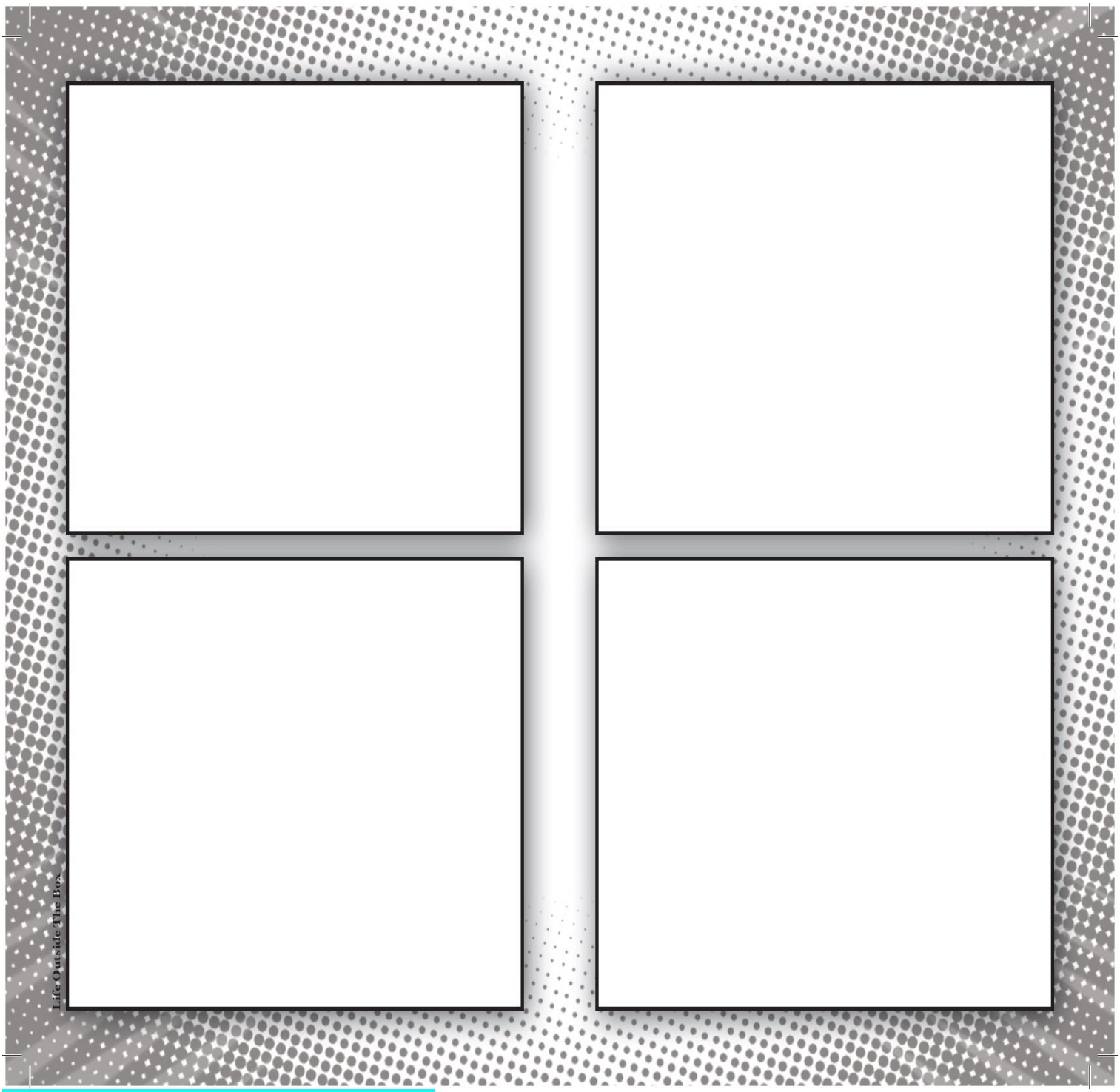


Part 3 Lesson 3 The Animal-Like Protists

Animal like protists are single-celled _____. Animal-like protists are also known as _____. Some are also _____. (They move, eat food, some use sun)

The Protozoa is often divided into ___ phyla : _____like protists, _____, ciliates, and _____-forming protists.

Draw and **describe** at least four phyla of animal-like Protozoa below. Make sure to label them.



Part 3 Lesson 4 The Fungus-Like Protists

Fungus-Like Protists: They are protists that _____ their food from dead organic matter. They are grouped into 2 groups, _____ molds and _____ molds. Most fungus-like protists use psuepods, ("_____") to move around.

While walking down the sidewalk you see what looks like vomit. Describe what is this below?

_____– Makes its food. (Photosynthesis, Chemosynthesis)

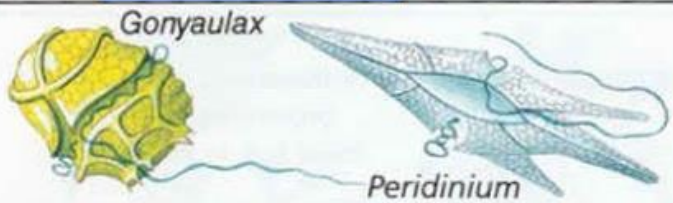
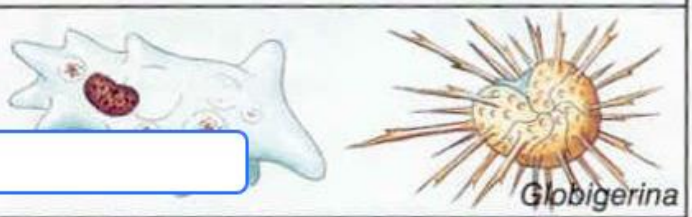
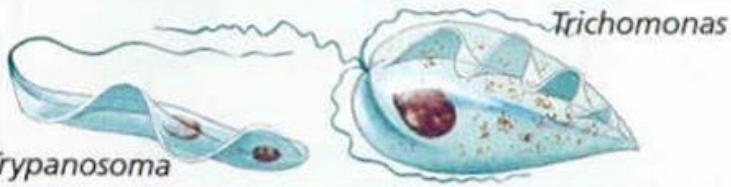
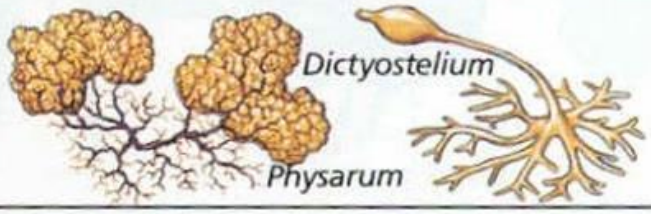
_____– Eats food

_____- A mixotroph is an organism that can use a mix of different sources of energy and carbon.

_____ - Feeding by extracellular (Outside of cell) digestion. Feeding on decayed organic matter

Protist Kingdom

Kingdom Protista

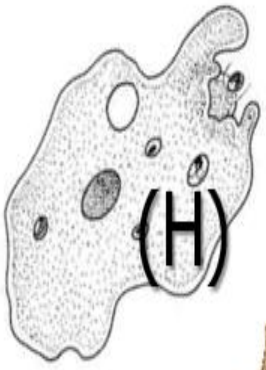
Phylum	Some characteristics	Examples
Euglenophyta	one-celled make or take in food most have one flagellum	
Chrysophyta	most are one-celled make own food yellow-brown color	
Pyrrophyta	one-celled take in food have two flagella	
Sarcodina (sarcodines)	one-celled take in food have pseudopods	
Ciliophora	one-celled take in food have cilia	
Mastigophora	one-celled take in food have two or more flagella	
Sporozoa	one-celled take in food no means of movement	
Myxomycetes	many- or one-celled absorb food change form during life cycle	

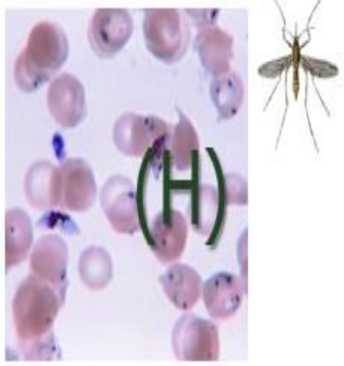
Part 3 Lesson 5 Wrap-Up and Project

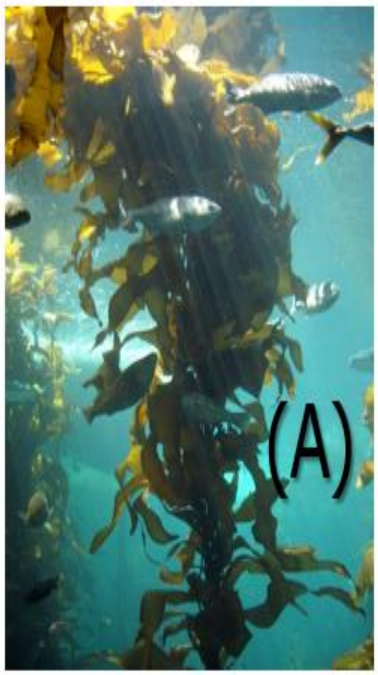
Name the Protists below and provide some information about each one. Visit the Mascot projects or listen to the lyrics in the songs for assistance. You can always research.

H = Heterotrophic, A = Autotrophic

Green (A)

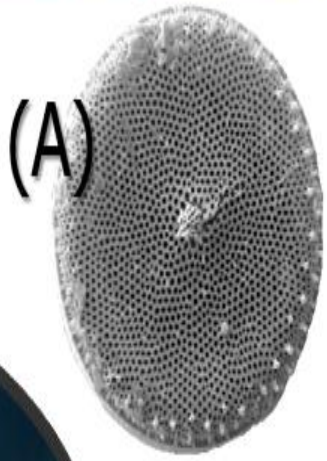






Can be (A) and (H)

Red (A)



Mostly (H)

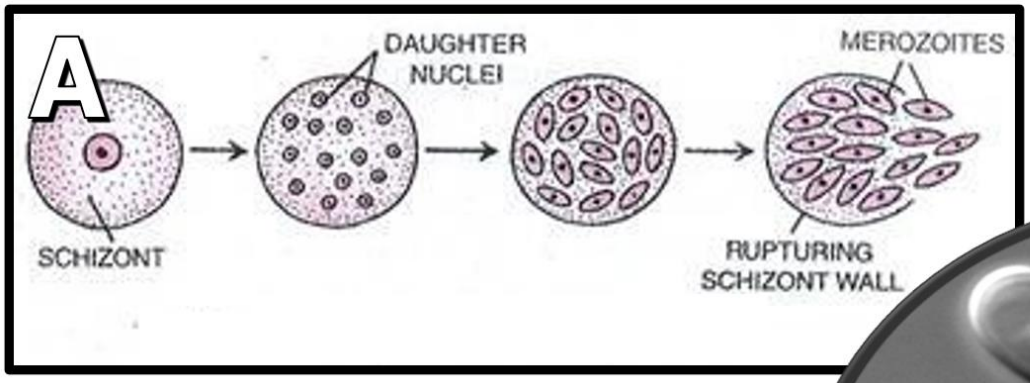
(S)

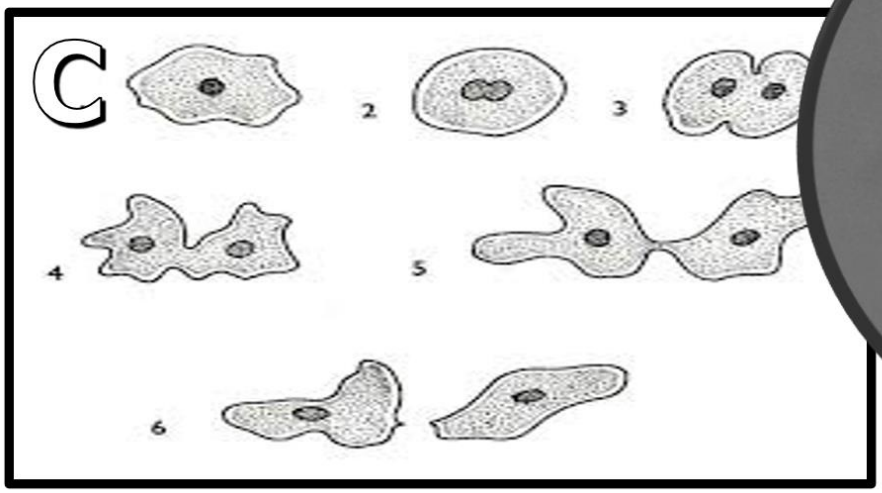
Protista Reproduction (Asexual)

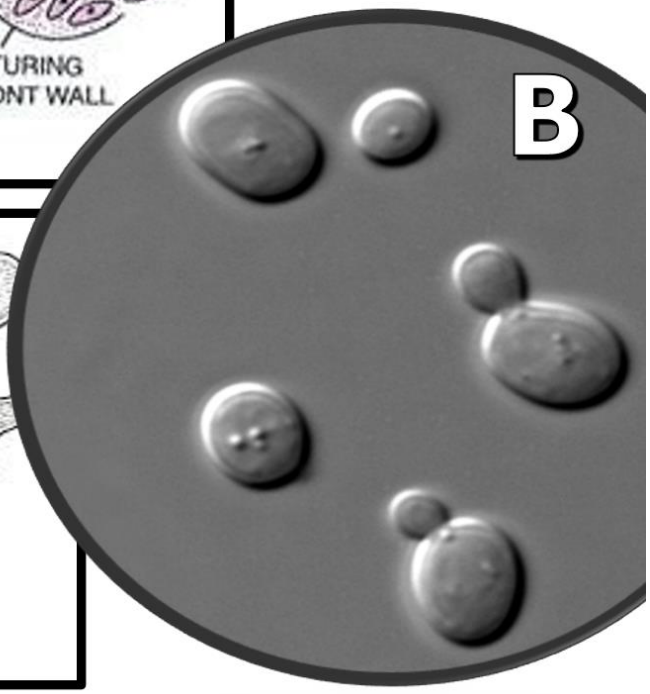
- Binary Fission: the body is separated into two parts, or halves. (copy and split).
- Multiple Fission: The protist's nucleus divides many times to create multiple daughter nuclei to create new individuals.
- Budding: a new organism grows from the body of the parent organism.

Which is Binary Fission, Multiple Fission, and Budding? All asexual

A)	B.)	C.)





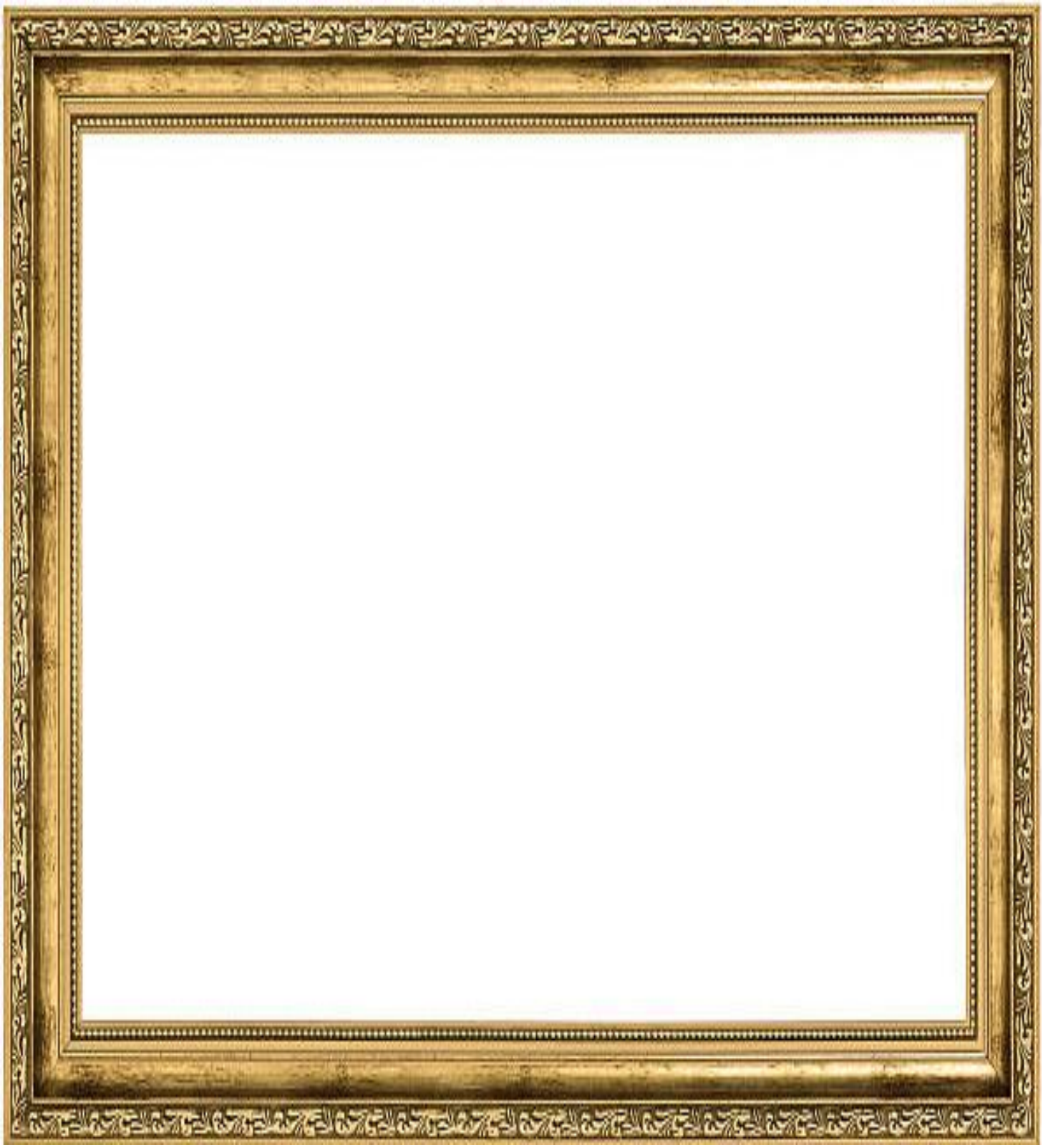


Project Options

• Project! The song option. – Choose a Protist. – Research that type of Protist. • What is most important to sing about? – Create a short song to sing to the class that teaches about that Protist. • Advice – Keep it simple. – Work with a small group.	• New School Mascot Petition Option – Create a "fake" sign up sheet poster. – Provide room at bottom for some signatures. – <u>Needs a visual</u> for the new school mascot with lots of information about that member of Protista. – Example on next slide. No partners.

Name of Protist for Project? _____
Circle One: Poster / Mascot Project or Song Option

Record your research and Lyrics or Rough Sketch and name of your Mascot in the frame below. You will need to do some research on your own for your final product.



Across

1. An _____, is a type of cell or unicellular organism which has the ability to alter its shape, primarily by extending and retracting pseudopods.
3. _____ are characterized by being one-celled, non-motile, parasitic, and spore-forming Protist.
6. Protista Reproduction (Asexual) – Binary _____: the body is separated into two parts, or halves. (copy and split).
9. An organism that can use a mix of different sources of energy and carbon.
11. Domain _____: Have cells with a membrane bound nucleus and membrane bound organelles.
12. These are a major group of algae, found in the oceans, waterways and soils of the world. Living diatoms make up a significant portion of the Earth's biomass:
15. An organism with Eukaryotic Single cell, or colonies (multicellular). Lacking tissues and eats, makes, or decomposes for food.
16. Eats food
18. Protista Reproduction (Asexual) _____ Fission: Fission: The protist's nucleus divides many times to create multiple daughter nuclei to create new individuals.
19. Protista Reproduction (Asexual) _____: a new organism grows from the body of the parent organism.

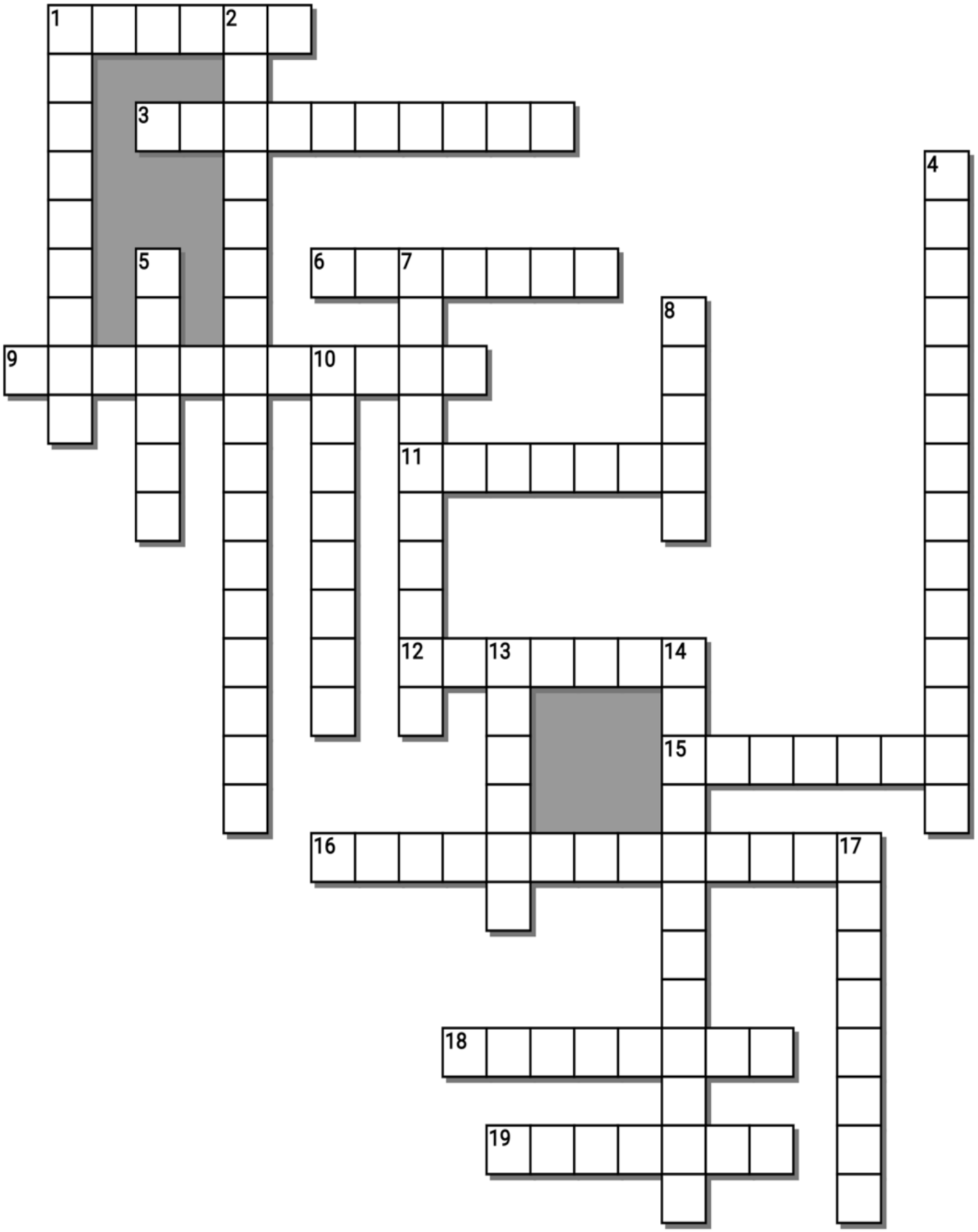
Down

1. A_____: Makes its food. (Photosynthesis, Chemosynthesis)
2. Diatoms use silicon to make their glass shells using a process called _____.
4. Any of numerous one-celled aquatic organisms bearing two dissimilar flagella and having characteristics of both plants and animals.
5. "HAB's" harmful algal _____, occur when colonies of algaes grow out of control while producing toxic or harmful effects on people, fish, shellfish, marine mammals, and birds.
7. These belong in the phylum Myxomycota in the kingdom Protista. They are not a true fungus. These organisms exist in nature as a "blob" (plasmodium), similar to a amoeba.
8. Plant-like protists are called _____. They include single-celled diatoms and multicellular seaweed. Like plants, they contain chlorophyll and make food by photosynthesis.
10. Animal like protists are single-celled consumers. Animal-like protists are also known as _____.
13. Fungus-Like Protists: They are protists that _____ their food from dead organic matter.
14. Feeding by extracellular (Outside of cell) digestion. Feeding on decayed organic matter
17. The _____ are a group of protozoans characterized by the presence of hair-like organelles called cilia, which are identical in structure to eukaryotic flagella, but are in general shorter and present in much larger numbers, with a different undulating pattern than flagella.

---------Teacher can remove this wordbank to make puzzle more challenging----------

Possible Answers

ALGAE, AUTROPHIC, BLOOMS, BUDDING, DIATOMS , DINOFLAGELLATE, EUKARYA, FISSION, HETEROTROPHIC, MIXOTROPHIC, MULTIPLE, PROTIST, PROTOZOA, SAPROTROPHIC, SLIMEMOLDS, SPOROZOANS , ABSORB , AMOEBA, BIOMINERALIZATION, CILIATES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Part 3 Review Game Lesson 6

Name:

1-10 = 5 pts * = Bonus + 1 pt,
(Secretly write owl in correct space +1 pt)
Final Question = 5 pt wager

Due: Today
Score ____ / 100

THE VERY FIRST	GREEN HOUSE	ANIMAL HOUSE	FUN HOUSE	GREEN MACHINE Bonus round 1 pt each
1)	6)	11)	16)	*21)
2)	7)	12)	17)	*22)
3)	8)	13)	18)	*23)
4)	9)	14)	19)	*24)
5)	10)	15)	20)	*25)

Final Question Wager ___/5 Answer: _____

Part 3 Protists

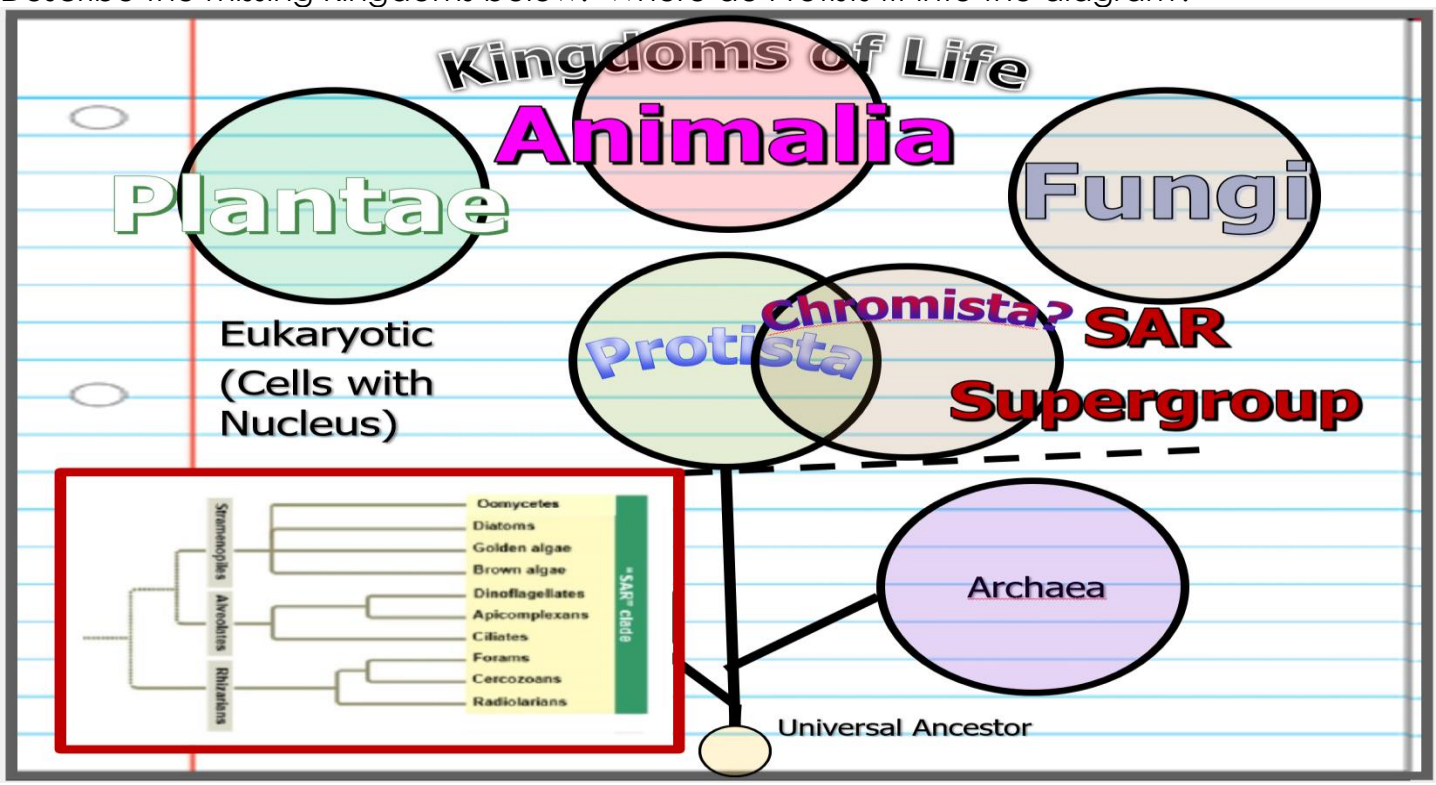
Name:

Part 3 Lesson 1 Protista, Plant-Like Protists

Domain Eukarya: Have cells with a membrane bound nucleus and membrane bound organelles.

Animals, Plants, and Fungi all evolved from primitive Protists.

Describe the missing Kingdoms below. Where do Protists fit into the diagram?



What about Chromista? Where does that fit? Show me above.

Protist: An organism with Eukaryotic single cell, or colonies (multicellular). Lacking tissue and eats, makes, or decomposes for food.

Draw a Protist below?

Protists: of past are separated into 7 new groups that also have plants, fungi and animals.

1. Excavata
2. Stramenopiles
3. Alveolata
4. Rhizaria
5. Archaeplastida, (Plants)
6. Ameobozoans
7. Opisthokonts, also has fungi and animals

Plant-like Protists (photosynthetic but no root stem or leaves)

Plant-like protists are called algae. They include single-celled diatoms and multicellular seaweed.

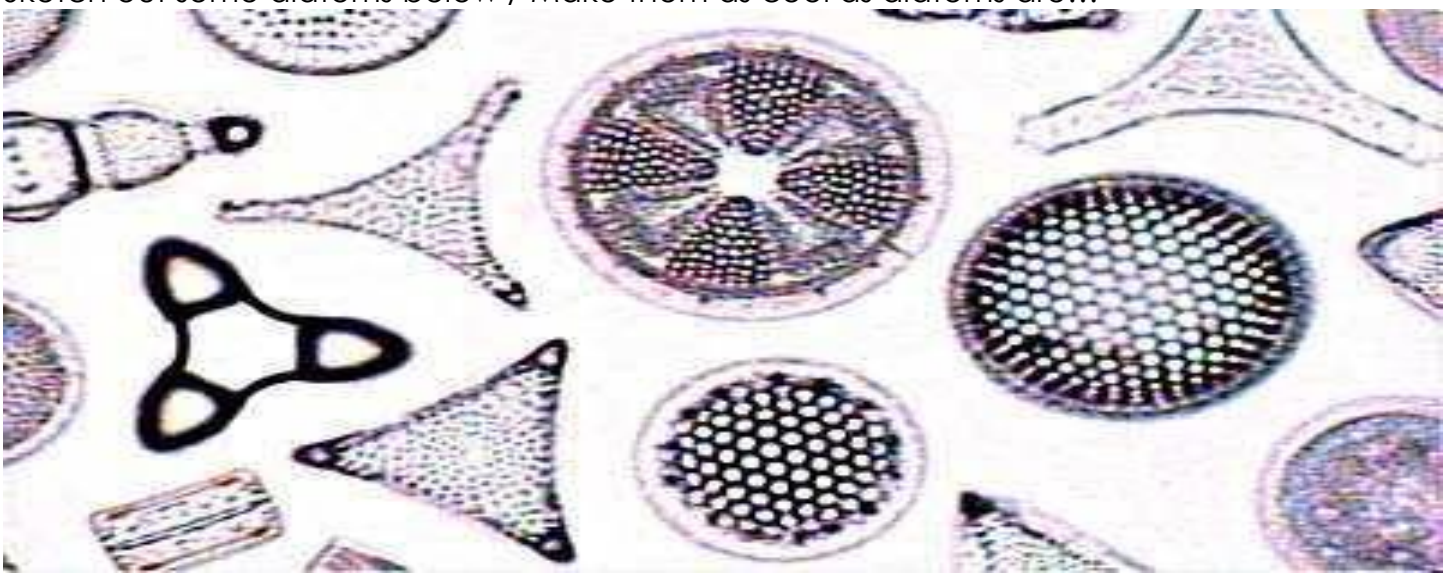
Like plants, algae contain chloroplasts and make food by photosynthesis.

Types of algae include red and green algae, euglenoids, and dinoflagellates.

Sketch and label 3 Plant-Like Protists below "Archaeplastida"

Part 3 Lesson 2 More Plant-Like Protists

Sketch out some diatoms below / Make them as cool as diatoms are…



Diatoms: Round shells made of glass
-Belonging to the Division Chrysophyta

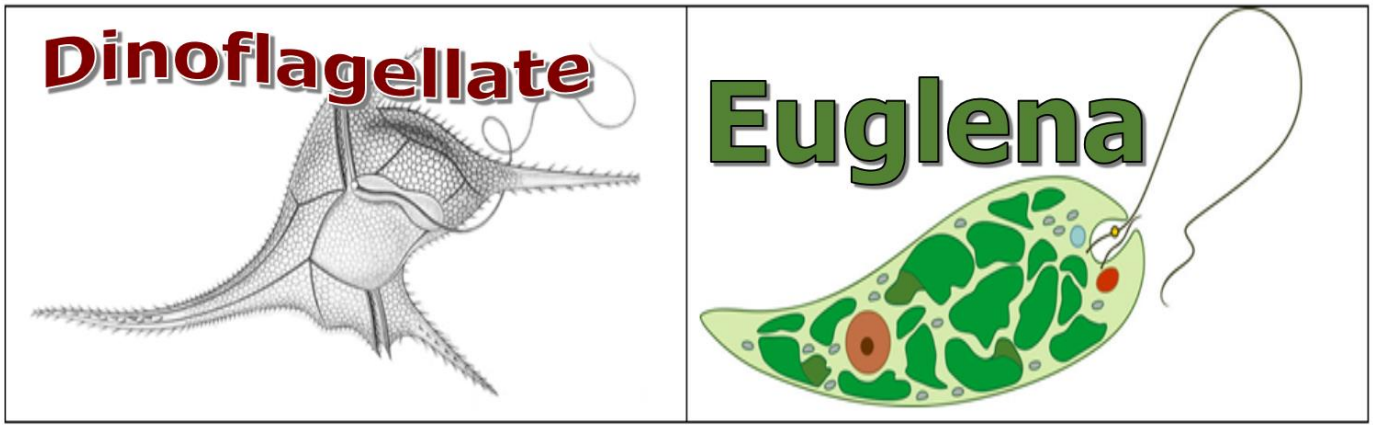
Diatoms use silicon to make their glass shells using a process called biomineralization.
Diatoms are a major group of algae, found in the ocean, waterways and soils of the world.
Living diatoms make up a significant portion of the Earth's biomass: .
-They generate about 20 to 50 percent of the oxygen produced on the planet each -year.
-Take in over 6.7 billion metric tons of silicon each year from the waters in which they live.
-Constitute nearly half of the organic material found in the oceans.
-The shells of dead diatoms can reach as much as a half-mile (800 m) deep on the ocean floor, and the entire Amazon Basin is fertilized annually by 27 million tons of diatom shell dust transported by transatlantic winds from the African Sahara.

The Alveolates: They all share a system of sacs underneath their cell membranes.
We will look at dinoflagellates and ciliates.

Dinoflagellate, any of numerous one-celled aquatic organisms bearing two dissimilar flagella and having characteristics of both plants and animals.
Most are marine, though some live in freshwater habitats. The group is an important component of phytoplankton in all but the colder seas and is an important link in the food chain.
What is the picture below? Why is it dangerous?

"HAB's" Harmful Algal Blooms occur when colonies of algaes grow out of control while producing toxic or harmful effects on people, fish, shellfish, marine mammals, and birds.
The human illnesses caused by HABs, though rare, can be debilitating or even fatal.

Name the two Protists below?

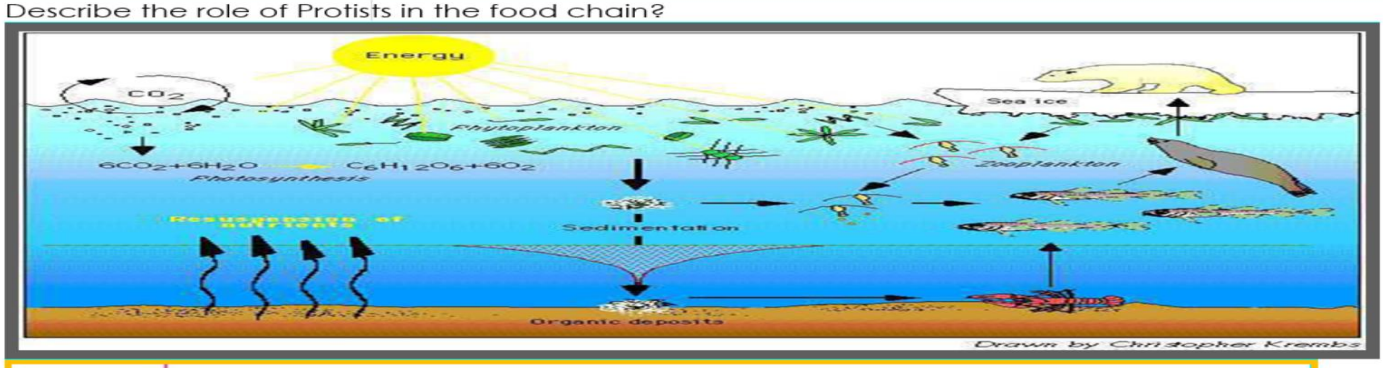


Dinoflagellates are a group of single-celled eukaryotes usually considered algae. Their populations vary with sea surface temperature, salinity, and depth. Many dinoflagellates are photosynthetic, but a large fraction of these are in fact mixotrophic, combining photosynthesis with ingestion of prey

Euglena is a genus of single cell flagellate eukaryotes. It is the best known and most widely studied member of the class Euglenoidea, a diverse group containing some 54 genera and at least 800 species

Describe the role of Protists in the food chain?

Describe the role of Protists in the food chain?



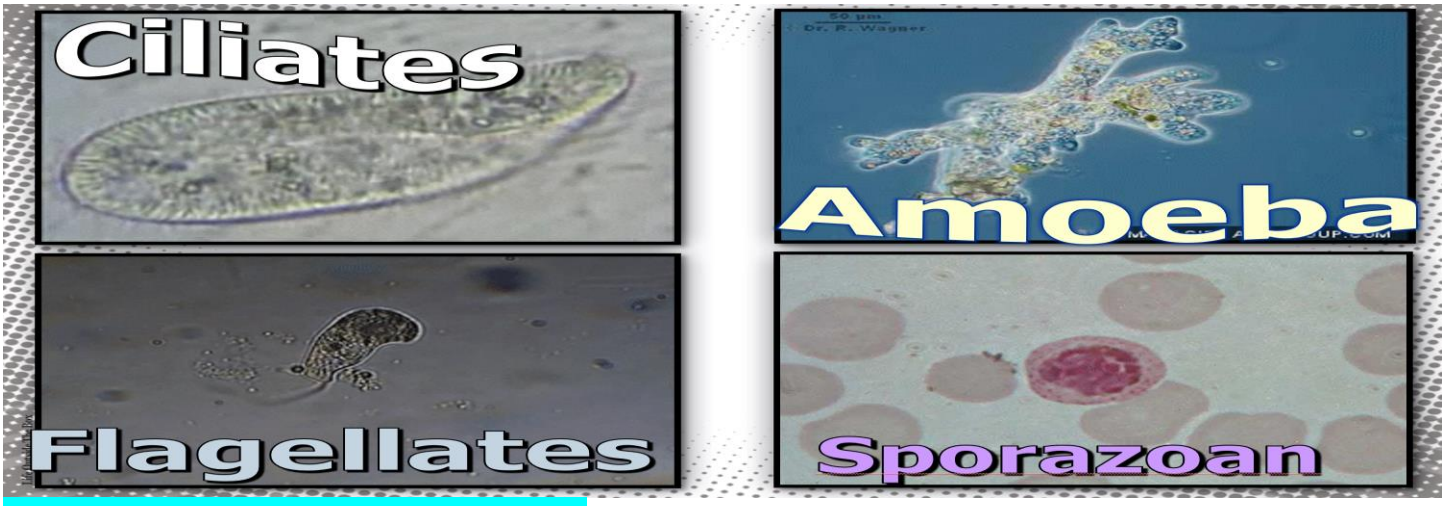
Like plants, they produce oxygen through photosynthesis, providing aquatic animals, as well as those found on land, with the oxygen necessary for respiration. Phytoplankton also make up the first step in the marine food chain and thus serve as food sources for smaller sea organisms, which in turn sustain larger ones.

Part 3 Lesson 3 The Animal-Like Protists

Animal like protists are single-celled consumers. Animal-like protists are also known as Protozoa. Some are also parasites. (They move, eat food, some use sun)

The Protozoa is often divided into 4 phyla : Amoebalike protists, flagellates, ciliates, and spore-forming protists.

Draw and **describe** at least four phyla of animal-like Protozoa below. Make sure to label them.

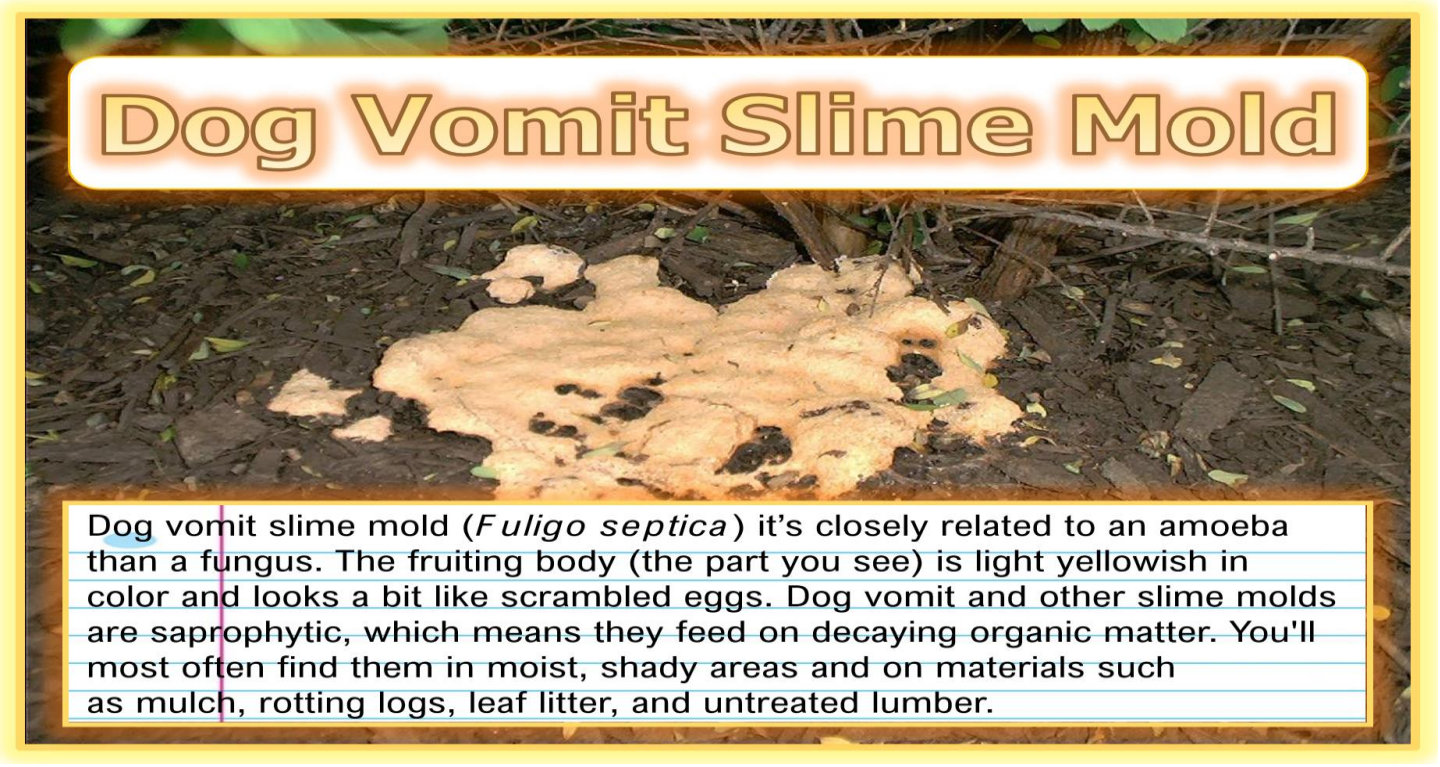


Part 3 Lesson 4 The Fungus-Like Protists

Fungus-Like Protists: They are protists that absorb their food from dead organic matter.

They are grouped into 2 groups, slime molds and water molds. Most fungus-like protists use psuepods, ("false feet") to move around.

While walking down the sidewalk you see what looks like vomit. Describe what is this below?

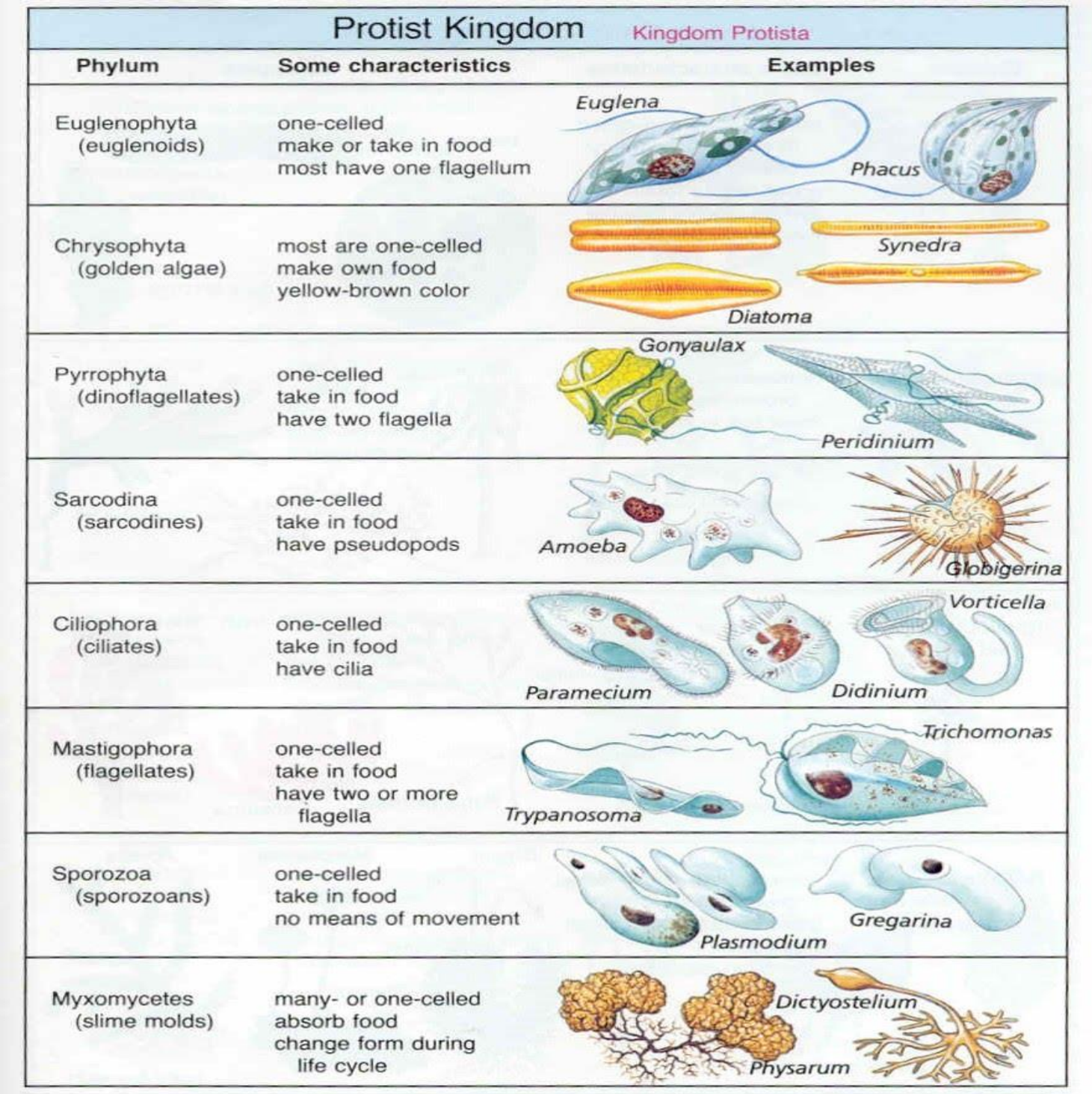


Autrophic – Makes its food. (Photosynthesis, Chemosynthesis)

Heterotrophic – Eats food

Mixotrophic - A mixotroph is an organism that can use a mix of different sources of energy and carbon.

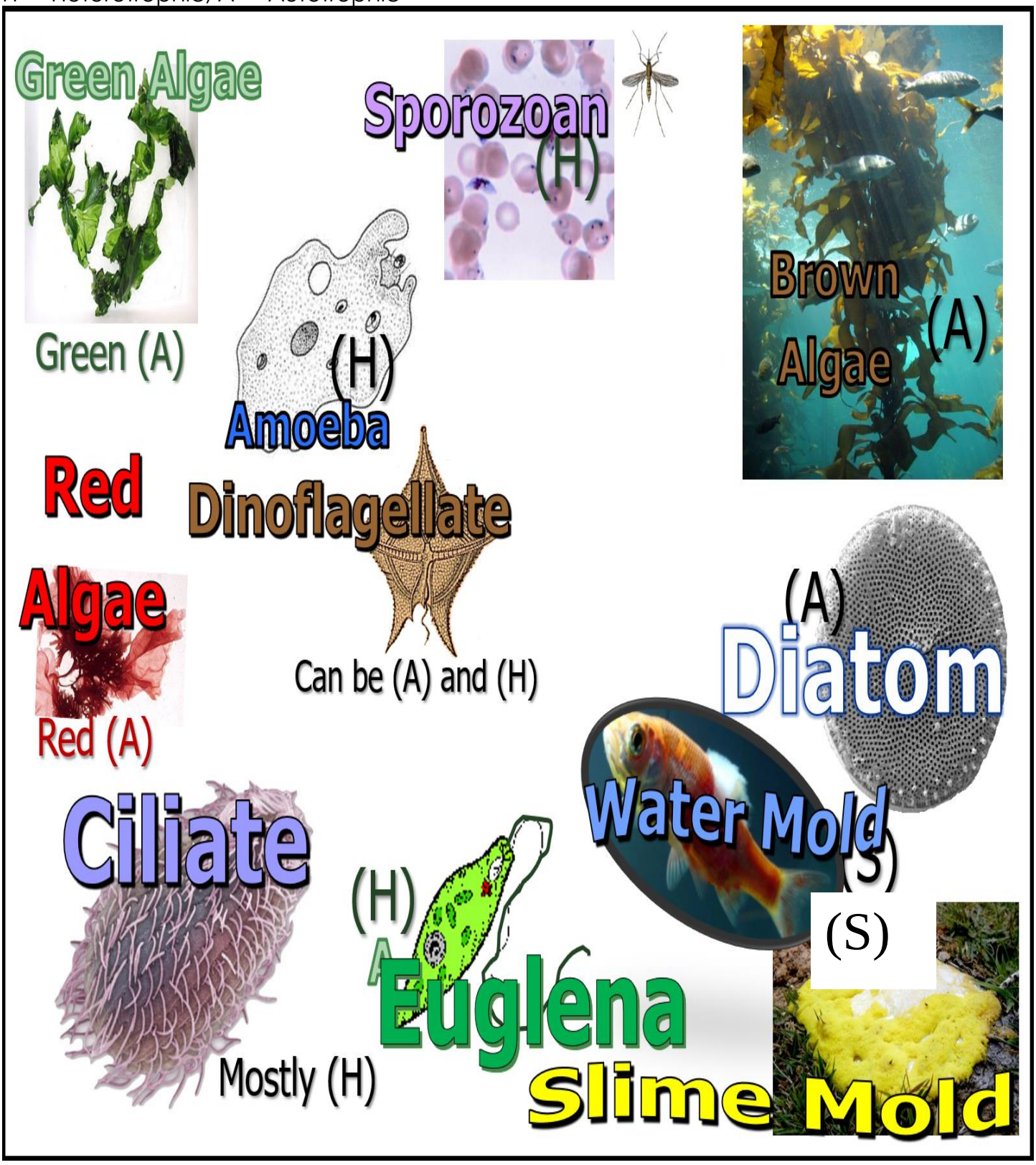
Saprotrophic - Feeding by extracellular (Outside of cell) digestion. Feeding on decayed organic matter



Part 3 Lesson 5 Wrap-Up and Project

Name the Protists below and provide some information about each one. Visit the Mascot projects or listen to the lyrics in the songs for assistance. You can always research.

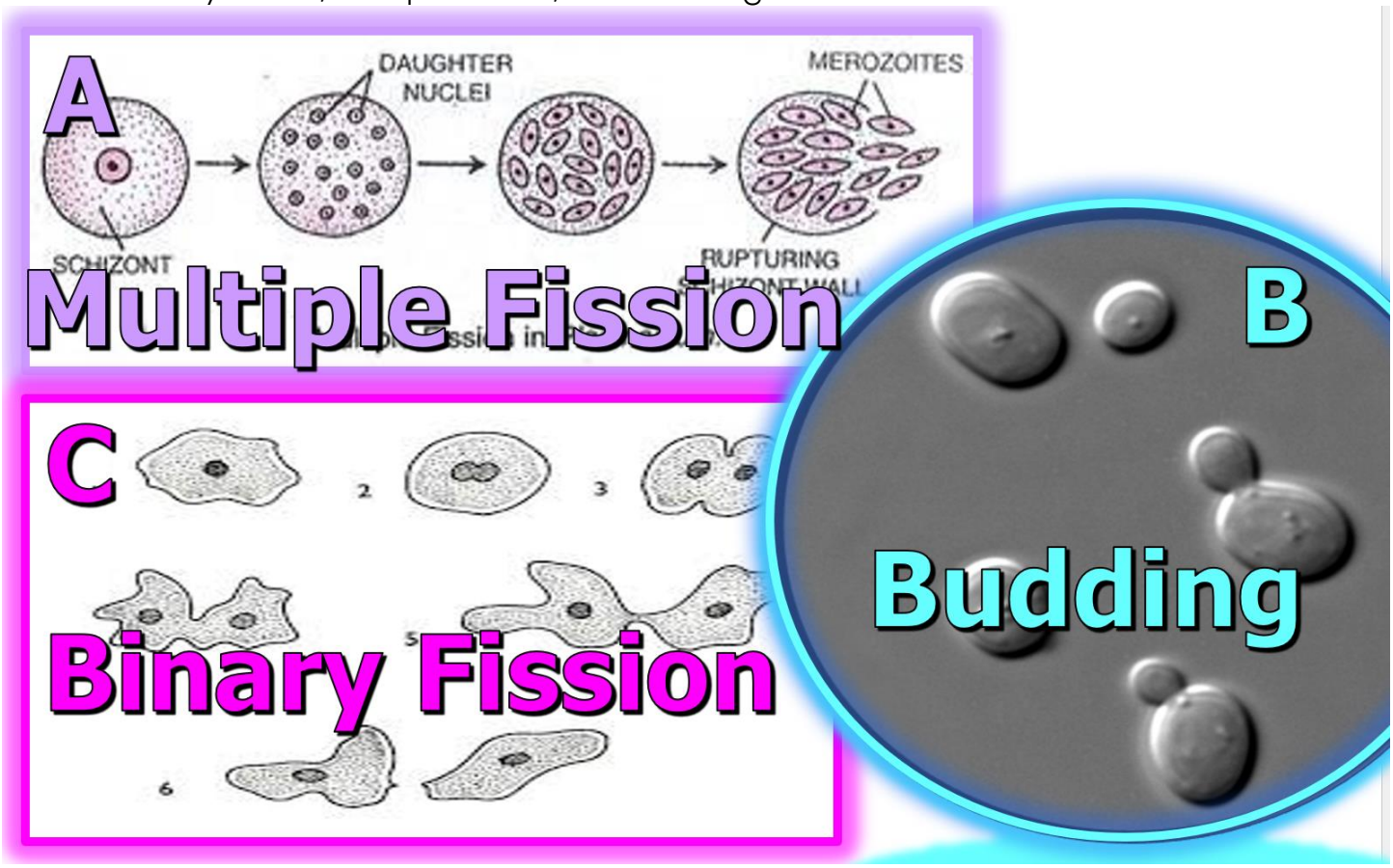
H = Heterotrophic, A = Autotrophic



Protista Reproduction (Asexual)

- Binary Fission: the body is separated into two parts, or halves. (copy and split).
- Multiple Fission: The protist's nucleus divides many times to create multiple daughter nuclei to create new individuals.
- Budding: a new organism grows from the body of the parent organism.

Which is Binary Fission, Multiple Fission, and Budding? All asexual



Project Options

• Project! The song option. – Choose a Protist. – Research that type of Protist. • What is most important to sing about? – Create a short song to sing to the class that teaches about that Protist. • Advice – Keep it simple. – Work with a small group.	• New School Mascot Petition Option – Create a "fake" sign up sheet poster. – Provide room at bottom for some signatures. – <u>Needs a visual</u> for the new school mascot with lots of information about that member of Protista. – Example on next slide. No partners.

Name of Protist for Project? _____

Circle One: Poster / Mascot Project or Song Option

Record your research and Lyrics or Rough Sketch and name of your Mascot in the frame below. You will need to do some research on your own for your final product.

Danny the Dinoflagellate

By Your Name

Made of one cell, dinoflagellates make their own food (photosynthesis). "Autotrophic"

They have two different flagella.

They are a food source for other organisms such as clams and mussels.

Can bloom during the summer months in something called the "Red Tide."

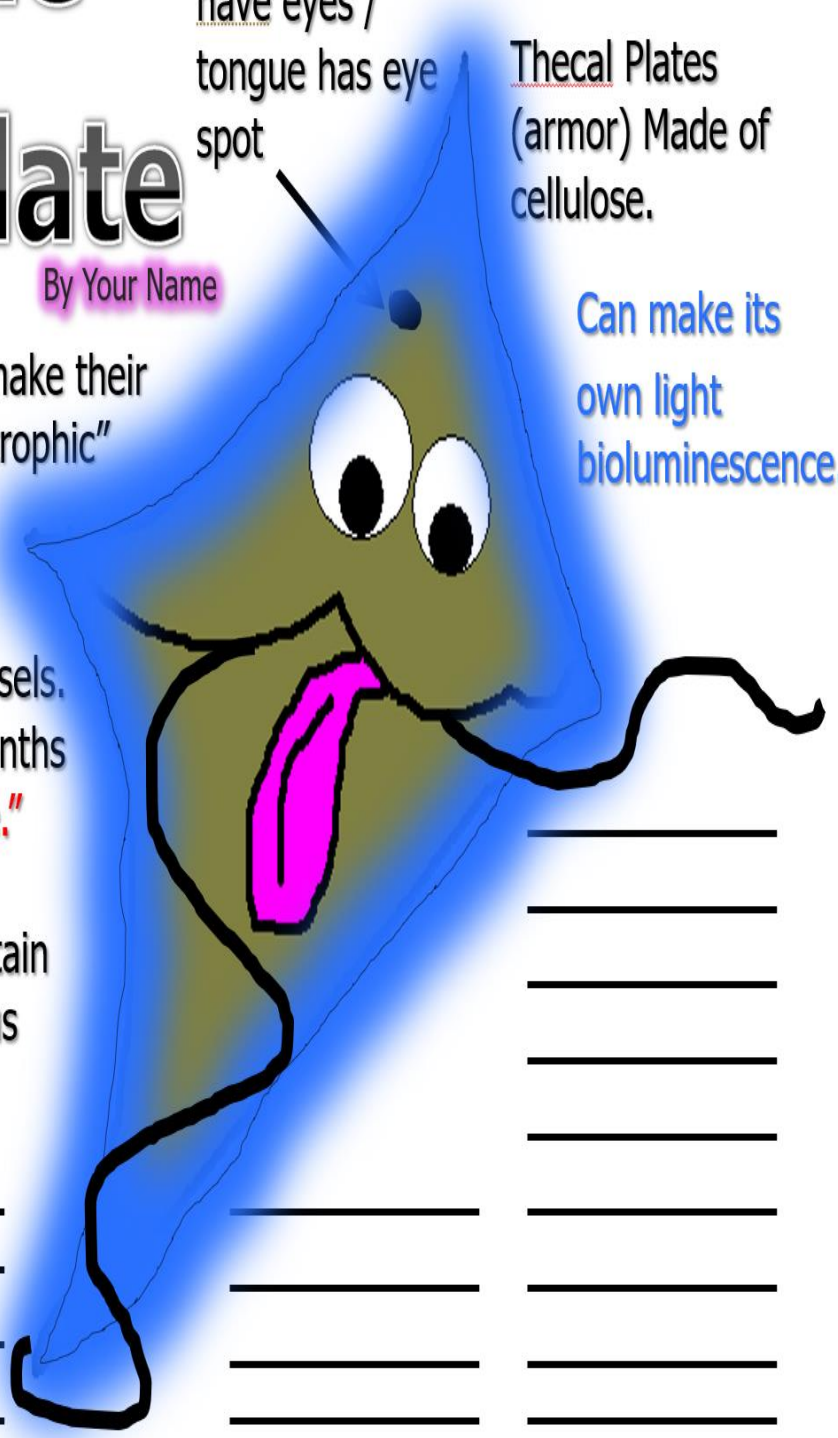
Some marine life can suffer in the bloom and the dinoflagellates contain a neurotoxin that can cause serious health problems if consumed.

Doesn't actually have eyes / tongue has eye spot

Can be a parasite on fish.

Thecal Plates (armor) Made of cellulose.

Can make its own light bioluminescence.



Bold, H C, and M J Wynne. Introduction to the Dinoflagellata. 2018, www.ucmp.berkeley.edu/protista/dinoflagellata.html.

Across

1. An _____, is a type of cell or unicellular organism which has the ability to alter its shape, primarily by extending and retracting pseudopods.
3. _____ are characterized by being one-celled, non-motile, parasitic, and spore-forming Protist.
6. Protista Reproduction (Asexual) – Binary _____: the body is separated into two parts, or halves. (copy and split).
9. An organism that can use a mix of different sources of energy and carbon.
11. Domain _____: Have cells with a membrane bound nucleus and membrane bound organelles.
12. These are a major group of algae, found in the oceans, waterways and soils of the world. Living diatoms make up a significant portion of the Earth's biomass:
15. An organism with Eukaryotic Single cell, or colonies (multicellular). Lacking tissues and eats, makes, or decomposes for food.
16. Eats food
18. Protista Reproduction (Asexual) _____ Fission: Fission: The protist's nucleus divides many times to create multiple daughter nuclei to create new individuals.
19. Protista Reproduction (Asexual) _____: a new organism grows from the body of the parent organism.

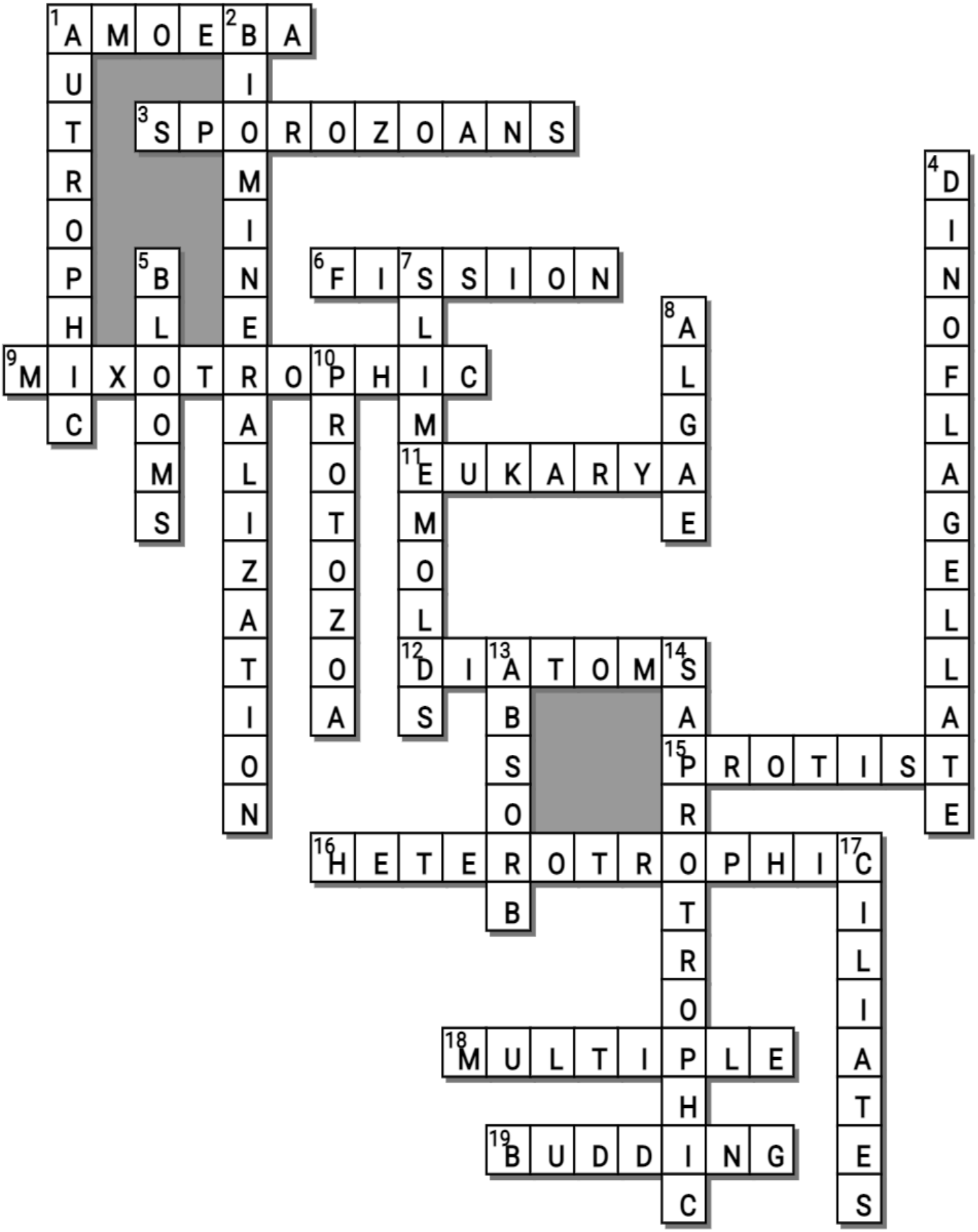
Down

1. A_____: Makes its food. (Photosynthesis, Chemosynthesis)
2. Diatoms use silicon to make their glass shells using a process called _____.
4. Any of numerous one-celled aquatic organisms bearing two dissimilar flagella and having characteristics of both plants and animals.
5. "HAB's" harmful algal _____, occur when colonies of algaes grow out of control while producing toxic or harmful effects on people, fish, shellfish, marine mammals, and birds.
7. These belong in the phylum Myxomycota in the kingdom Protista. They are not a true fungus. These organisms exist in nature as a "blob" (plasmodium), similar to a amoeba.
8. Plant-like protists are called _____. They include single-celled diatoms and multicellular seaweed. Like plants, they contain chlorophyll and make food by photosynthesis.
10. Animal like protists are single-celled consumers. Animal-like protists are also known as _____.
13. Fungus-Like Protists: They are protists that _____ their food from dead organic matter.
14. Feeding by extracellular (Outside of cell) digestion. Feeding on decayed organic matter
17. The _____ are a group of protozoans characterized by the presence of hair-like organelles called cilia, which are identical in structure to eukaryotic flagella, but are in general shorter and present in much larger numbers, with a different undulating pattern than flagella.

---------Teacher can remove this wordbank to make puzzle more challenging----------

Possible Answers

ALGAE, AUTROPHIC, BLOOMS, BUDDING, DIATOMS , DINOFLAGELLATE, EUKARYA, FISSION, HETEROTROPHIC, MIXOTROPHIC, MULTIPLE, PROTIST, PROTOZOA, SAPROTROPHIC, SLIMEMOLDS, SPOROZOANS , ABSORB , AMOEBA, BIOMINERALIZATION, CILIATES


1 AMOEBA
UTROPHIC
2 BIMINE
3 SPOROZOANS
4 DINOFLAGELLATE
5 BLOOMS
6 FISSION
7 SLIME
8 ALGAE
9 MIXOTROPHIC
10 PROTOZOA
11 EUKARYOTE
12 DIATOMS
13 ABSORB
14 SAPROPEL
15 PROTISTE
16 HETEROTROPHIC
17 CILIATES
18 MULTIPLE
19 BUDDING

Part 3 Review Game Lesson 6

Name:

1-10 = 5 pts * = Bonus + 1 pt,
(Secretly write owl in correct space +1 pt)
Final Question = 5 pt wager

Due: Today
Score ____ / 100

THE VERY FIRST	GREEN HOUSE	ANIMAL HOUSE	FUN HOUSE	GREEN MACHINE Bonus round 1 pt each
1) Eukarya	6) A=Brown Algae B=Green Algae C=Red Algae	11) Flagella	16) A=Amoeba B=Ciliate	*21) Beast Boy
2) Letter C	7) Autotrophic Makes its own Food	12) Dino- -flagellates	17) Sporozoan	*22) Gamora
3) Letter B is the Protist	8) Carbon Dioxide	13) A=Zooplankton B=Phytoplankton	18) Slime Molds	*23) Monsters Inc.
4) False, Protists don't have tissues	9) All of the Above	14) The Sun	19) C.) Saprotrophic	*24) The Mask
5) Plant Like Animal Like Fungus Like	10) Diatoms	15) Heterotrophic Eats Food	20) Evolved into Plants, Animals and Fungi	*25) Gumby

Final Question Wager ____/5 Answer: The Red Tide