Biology JEOPARDY

Pamela Keef

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Contents

To the Teacher

Biology Jeopardy deals with facts and principles related to the study of life. It is designed to be used for several purposes: as a fun and easy way to reinforce what is being studied, as a study guide, and as a review of the unit or a culminating activity. It challenges your students to remember important facts and encourages them to enjoy themselves in the process.

The format of *Biology Jeopardy* is like the popular television quiz show *Jeopardy!* A student is given the answer and is asked to provide the question. The fact given as a question is actually stated ("An organism made of only one cell"), not asked. The student response is given as a question ("What is a unicellular organism?"). Many students will be familiar with the format from watching the *Jeopardy!* television show or playing its computer or board-game versions.

The questions are classified according to general topic and further by category. This format lends itself to use with a variety of attention-keeping games. Some games are suggested here; you and your students may invent others.

A number of questions throughout the book have more than one correct response. Often, an alternate response is written in parentheses, for example, "What is a pollen cone (or male cone)?"

How to Use This Book

Each section, or game, consists of five general categories. Within each category are five questions, each assigned a point value of 5 through 25 depending on its relative difficulty, plus a bonus question. The bonus question is not necessarily more difficult; it may refer to an unusual fact or a less important one. It may be used in whatever way seems suitable. A point value of 5 for each bonus question would give the entire game 400 points; a value of 25 would make it a 500-point game.

These questions in this format may be used to play a variety of games. However, it may prove effective to allow the students an opportunity to find the answers to, or study, the questions first. You may wish to reproduce the questions for a series of assignments, and then use a game as an evaluation, a further review, or a culmination of the unit. You may find that using the questions without a game is adequate. For these reasons, the answers are presented separately at the back of the book rather than with the questions.

Feel free to modify *Biology Jeopardy.* If you have stressed something in your class that is not included in this game, it is easy to add questions. Your students will quickly learn how to make questions for you in order to extend the game. You can also modify the questions to make them easier or harder to fit the needs of each particular class. Your class can play the same game more than once, which will help them remember material much more easily.

The same basic procedure can be used for playing any number of different games. Here are the directions for a typical *Jeopardy!*-style game:

- Write on the board the categories for the game to be played along with point values for each question.
- Divide the class into teams. Play begins when one student asks for a question from a given category with a given point value. For instance, the student might say, "I want the 10-point question from the 'Terrestrial Biomes' category."
- The game leader then reads the 10-point question from the requested category.
- Any student on the team may answer. The first person on the team to raise his or her hand is called on. (It may be the student who asked for the category to begin with.)
- If the answer is correct, record points for the team. The student who answered chooses the category and point value for the next question.

- If the answer is wrong, subtract the point value of the question from the team score. A student from the other team now has the chance to answer the question. Whoever answers the question correctly chooses the category and point value for the next question.
- If no one can answer the question, give the correct answer to the group. The student who last successfully answered a question chooses the next category and point value.
- When all the questions in the category have been used, erase the category from the board. Continue until all the categories are erased and the game is over.

Following are some other variations of the game:

Rounds

The categories and point values are displayed and the value of the bonus question is agreed upon. Bonus questions are not used until last. A scoreboard is drawn on the board to show the teams and what score they receive in each round.

The class is divided into three, four, or five groups, each having an equal number of students. (Up to 30 can play. Extra pupils may serve as scorekeepers, readers, or board keepers.) The players in each group or team sit or stand in a set order—first player, second, and so forth.

The game begins with Player 1 on Team 1 requesting a question. If the player responds correctly, the earned score is recorded under Team 1/Round 1. If the response is incorrect, the correct answer is read and a score of 0 is recorded. In either case, the point value is erased under the respective category. Then Player 1 of Team 2 has a turn to choose a question. After all the first players on each team have played, the play goes to the second players of each team, then the third, and so forth.

The game continues for as many complete rounds as possible. There may be several unused questions. If there are 30 players, the last player in each team chooses a category for a bonus question. Otherwise, the bonus question for each team is given to, or chosen by, the team's top scorer or chosen captain, either for that player or for the team to answer. The top-scoring team wins.

Progression

This game is set up like Rounds, preferably in five groups. The first players on each team choose a category for 5 points, the second players choose a question for 10 points, the third players go for 15, and so forth. Play continues for as many complete rounds as possible, with bonus questions handled as in Rounds.

Concentration

First, the categories and point values are written on the board and the bonus value is determined. The class is divided into two teams. The first player on one team requests a question. If the player replies correctly, his or her team gets the points, and the point value is erased below the respective category. If the player does not answer correctly, the response is announced to be wrong and nothing is erased from the board. The first person on the opposite team then chooses a question. The play goes from team to team, with each person choosing a question still listed on the board. The advantage goes to the person who knows the answer to a previously asked question and can remember where it is located on the board. Play continues until all questions have been used. The highest-scoring team wins.

Last Chance

The class is divided into two, three, four, or five teams, with the players seated or standing in a set order. The categories and point values are displayed, and the bonus value (perhaps generous) is chosen. The bonus questions are not used in regular play.

Player 1 on the first team requests a question. If the player replies correctly, his or her team earns the respective points; if the reply is incorrect, the teacher tells or explains the answer. In either case, the point value under that category is erased. The play then goes to Player 1 on the second team, who requests a question. After all the first players have had a turn, the play goes to the second players on each team, then the third, and so forth.

When all the questions have been used, the scores for each team are calculated. The next player on the lowest-scoring team chooses a category for the bonus question for his or her team. The teacher reads the question and accepts only one answer from the team. (The players may confer in order to come to an agreement.) If the reply is correct, the bonus score is added

to their total. Then the second-lowest-scoring team chooses a category, then the third, and the fourth, if there are that many teams. Only one bonus question is given to each team. There may be some that are not used. The winning team is that which has the highest score.

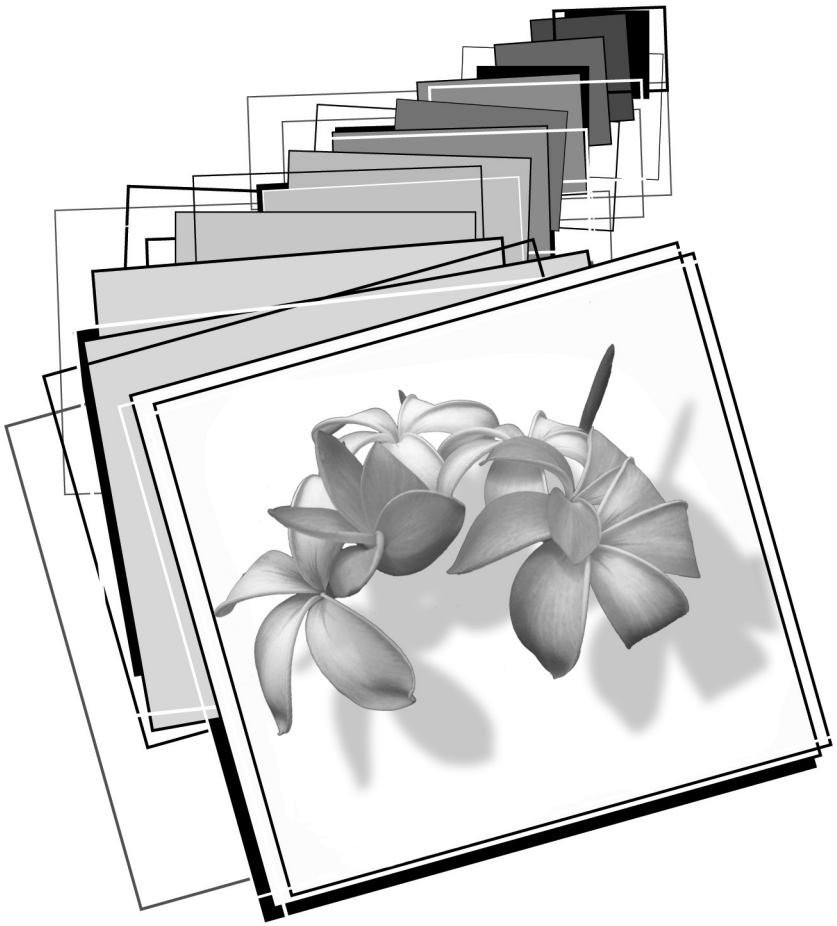
Solo

This game is played like Last Chance, except that it is played by five players instead of teams. The play goes from one player to the next in succession until all questions are used. Then each has a chance to choose a bonus question to raise his or her score. The top scorer wins.

Biology Bee

This game is played like a spelling bee, but no one is eliminated. First the categories and point values are displayed, and the value of the bonus question is determined. The class is divided into two teams. The first person on one team asks for a question by stating a category and point value. If the player responds correctly, his or her team receives the points and that point value is erased under that category. The next turn is taken by the first player on the other team, who chooses a question. However, if the first player's response is not correct, the same question is repeated for the first player on the other team. If the player replies correctly, his or her team gets the points and the play then goes to the second player of the first team. The play continues from one side to the other, with points going to the teams that answer correctly and the respective category points being erased from the board. The game is over when all 30 questions have been used. The team accumulating the most points wins.

No matter how you use *Biology Jeopardy,* it is an entertaining and stimulating way to review, and it's an excellent change-of-pace activity. You'll find your students eager to play it again and again



UNIT 6

Microorganisms and Fungi

6 Microorganisms and Fungi

Section 18

	Bacteria Classification	Characteristics of Bacteria I	Characteristics of Bacteria II	Characteristics of Bacteria III	Viruses I
5	The kingdom or domain of bacteria that are characterized by the lack of peptidoglycan in the cell wall and unusual lipids in the cell membrane	Bacteria that are round or spherical in shape	Bacteria, like cyanobacteria, that use sunlight to make energy	Asexual reproduction in which bacteria copy their genetic information and divide in half	The outer protein coat of a virus
10	The kingdom or domain of bacteria that are characterized by having peptidoglycan in the cell wall	Bacteria that are rod-shaped	Bacteria that obtain energy by feeding on dead and decaying matter	Sexual reproduction in bacteria in which DNA is exchanged through joined pili	A virus that infects bacteria
15	When exposed to Gram stain, these bacteria turn violet in color.	Bacteria that are spiral-shaped	Bacteria that make energy by using chemicals instead of light	A structure that allows a bacteria to go dormant; it contains cytoplasm and DNA encased in a tough coating.	A process by which a bacteriophage enters a host cell, makes copies of itself, and then destroys the host cell when new viruses are released

20	When exposed to Gram stain, these bacteria turn pink in color.	Spherical-shaped bacteria that live in long chains	Bacteria that require oxygen to live	A type of chemical that inhibits the growth of bacteria	A process by which the genetic code of a bacteriophage is replicated with the host cell's DNA for a period of time without destroying the cell
25	A group of anaerobic bacteria that make energy by converting H_2 and CO_2 into methane gas	Spherical-shaped bacteria that live in clusters	Bacteria that cannot survive in the presence of oxygen	A disease-causing bacteria	A piece of a bacteriophage's genetic code that is embedded in the host's DNA during the lysogenic cycle
BONUS	A group of bacteria that live in extremely acidic and hot environments, such as hydrothermal vents	A structure some bacteria use for movement	Bacteria that can live with or without oxygen	The process bacteria use to convert nitrogen gas into ammonia	Found on the envelope of a virus, these projections of proteins, containing chains of sugar, help viruses attach to host cells.
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6 Microorganisms and Fungi

Section 19

	Viruses II	Protist Phyla I	Protist Phyla II	Protist Characteristics I	Protist Characteristics II
5	A viral capsid shape made of a geometric pattern of 20 triangular surfaces	A group of heterotrophic protists that have one or more flagella; members of this group cause African sleeping sickness, giardia, and leishmaniasis.	A group containing the green algae; their chloroplasts have both chlorophyll a and b and their cell walls are made of cellulose.	An extension of cytoplasm used for feeding and movement in some organisms	A structure used by algae to attach to a substrate
10	Viruses that contain RNA and reverse transcriptase	A group of heterotrophic protists that use cilia for locomotion and feeding; members of this group are in the genus *Paramecium.*	A group containing the red algae; they contain chlorophyll a and phycobilins.	An organelle used to collect and expel water in protists	A gellike compound extracted from algae used to grow bacteria and other microorganisms in culture
15	A virus known to cause acquired immunodeficiency syndrome (AIDS)	Members of this group contain photosynthetic pigments, lack a cell wall, and move using two flagella; some species are in the genus *Euglena.*	A group containing the brown algae; they contain both chlorophyll a and c and fucoxanthin.	Food swept into the oral groove of a ciliate is forced into a vacuole at this site.	The light produced by organisms such as dinoflagellates as a result of a chemical reaction

20	A type of virus known to cause cancer in animals	A group containing protists that do not move on their own and reproduce using sporozoites; many species are parasitic.	A group containing the diatoms that have silicon in their cell walls	A collection of pigments that helps protists and some invertebrates detect light	A structure found in acellular slime molds that contains many nuclei
25	Small strands of RNA nucleotides, lacking a capsid, that are known to infect plants	A group of heterotrophic protists that move and feed using pseudopodia; some are encased in a shell (radiolarians) and some are not (amoebas).	A group containing yellow-brown algae that store much of their extra energy as oil	A structure used to exchange genetic information during conjugation in *Paramecium*	The sexual reproduction in algae and plants that switches between a haploid phase and a diploid phase
BONUS	Infectious proteins that cause proteins to become abnormally shaped; linked with transmissible spongiform encephalopathies	In this group, about half of the species are photosynthetic and half are not; they have two flagella and cell walls made of cellulose.	A group containing the cellular slime molds	A tough but flexible covering made of proteins found around ciliates and euglenoids	The common name given to funguslike organisms in phylum Oomycota that were responsible for the Potato Famine
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Section 20

	Protist Characteristics III	Fungi I	Fungi II	Fungi III	Potpourri
5	The membrane-bound sacs of digestive enzymes in which food is broken down	A phylum of fungi, known as sac fungi, that develop haploid spores in an ascus	A polysaccharide containing nitrogen that is found in the cell walls of fungi	A unicellular sac fungus used to make bread rise and to ferment grains and grapes	Solutions containing a weakened form of a pathogen, such as a virus, bacteria, or toxin, that causes an immune response in the body
10	A flattened leaflike portion of a seaweed that collects light for photosynthesis	A phylum of fungi that includes the black bread mold and uses zygospore during its life cycle	Tiny filaments found in multicellular fungi	Hyphae that grow into and anchor fungi, such as black bread mold, to a substrate	Small plant and animal organisms that swim or float in aquatic environments
15	A defense structure in paramecium that releases stiff projections from the cell	A phylum of fungi, known as the club fungi, that use spore-bearing basidia during their life cycle	The cross wall found in the hyphae of some fungi	Hyphae that grow across a substrate in a fungus such as black bread mold	An antibiotic derived from fungi used to inhibit cell wall production in bacteria

20	The sticky polysaccharide found in some red algae that is used in ice cream, cosmetics, and some cheeses	A phylum of fungi known as the imperfect fungi because a sexual stage of their life cycle has not been identified	A thick tangled mat of hyphae	Structures found in sac fungi in which ascospores develop during sexual reproduction	An infection caused by a fungus that results in itching and splitting of the top layer of skin
25	The form of sexual reproduction used by paramecium to exchange genetic material between individuals	The symbiotic relationship between a fungus and a photosynthetic organism such as a green algae or cyanobacteria	In some fungi, this saclike structure contains spores and sits on top of a sporangiophore	Structures found in sac fungi in which conidia develop during asexual reproduction	A type of colonial green algae that form a sphere and live in freshwater
BONUS	The multinucleated mass of cytoplasm found in acellular or plasmodial slime molds	The symbiotic relationship between a fungus and plant roots	A structure containing gametes that forms at the end of each mating type of hyphae during sexual reproduction	Club-shaped structures containing spores found in the club fungi	Food poisoning caused by anaerobic bacteria that release toxins into canned foods that have not been completely sterilized
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