the process of the acquisition of nutrients in one-celled organisms.

(7.) **Blackline Master #7: Multicellular Nutrition** examines the process of the acquisition of nutrients in multicelled organisms.

(8.) **Blackline Masters #8a-8b: Five Kingdoms** looks closely at the five kingdoms of life and how they affect the food web.

(9.) **Blackline Masters #9a-9c: Post-Test** is an assessment tool to be used after the video and follow-up activities have been completed. The test is based directly on the Student Objectives for this program and the National Science Education Standards for grades 9-12.

ANSWER KEY

Blackline Master #1: Pre-Test

1.T
2.T
3.T
4.F
5.T
6.F
7.T
8.F
9.T
10.F

Blackline Masters #3-8

Note that some of these questions have more than one possible answer.

1. Viruses are used to collect the H-plasmid so it can be studied.
2. Although a virus has a genetic program which is reproducible, it cannot reproduce without a host cell. In isolation a virus is an inert particle; it uses the host cell's structure and function to reproduce itself. This

duality makes it difficult to classify viruses as either living or non-living.

3. The H-plasmid is a piece of DNA, a set of instructions for bacteria cells.
4. How is the H-plasmid transferred from one bacteria cell to another?
5. No, most bacteria are not dangerous, nor are most disease causing.
6. They live their life as single cells.
7. Prokaryote means "before a nucleus." These are simple organisms without membrane-bound organelles inside the cell.
8. a. Eukaryotic – organelles are present.
   b. Prokaryotic – no organelles are present.
   c. Eukaryotic – organelles are present.
   d. Virus – cannot be classified.
   e. Eukaryotic – organelles are present.
9. *Paramecium* uses cilia, small hair-like projections on its surface, to sweep material into its oral groove, which acts like a mouth.
10. This is the flowing of matter around the insides of *Paramecium*. It is a method of transporting material throughout the cell.
11. Oil-contaminated soil is usually removed and burned, or disposed of in a landfill. Using bacteria could reduce the destruction of soil. The risks of the products the bacteria leave behind are not well known. Introducing bacteria into an ecosystem they do not normally inhabit can have unforeseen consequences. So their effects on the environment are hard to predict.
12. Nerve cells are long filaments with a central body. They transmit messages throughout the body. This helps coordinate different parts of the body and helps them respond to the environment.
13. Guard cells are bean-shaped cells that open and close the stoma that lies between them. When guard cells

fill with water they swell outward which opens the stoma. When water leaves the cells they squeeze together and close the stoma. This helps to control the movement of air in and out of the leaf of a plant.

14. *Euglena* belongs to the Kingdom Protista. Only some protists and plants contain chloroplasts; protists are single celled.
15. No, root cells contain no chloroplasts because they are not exposed to the light.
16. They are both decomposers and extract energy from dead and decaying material.
17. The kingdoms classify all living things. Viruses are on the edge of life, so they are often not included when living things are categorized.
18. Bacteria have the essential materials in their cytoplasm. The materials are simply not packaged in organelles.

Blackline Masters #9a-9c: Post-Test

Multiple Choice

1.a.cilia

2.d.all of the above

3.c.protist

4.b.prokaryotes

5.d.all of the above

6.a.multicellular organisms

Long Answer

1.electrons

2.genetic material; protein

3.microscope

4.A virus requires a host cell to carry out its life functions. It takes over the host's organelles for its own purpose and imposes its genetic code.

5.prokaryotes; the eukaryotes

6.*Bacteria*; *Protista*; *Fungi*; *Plantae* (Plants); *Animalia* (Animals)

7.It is both a producer and consumer.

It has chloroplasts and can photosynthesize in light; and ingests nutrients in the dark.

8.cytoplasmic streaming; organelles and material

9.Single celled organism carry out all life functions. Multicellular organisms specialize, acquisition of nutrients is carried out by one type of specific cell and removal of wastes by another. Cells are organized into tissues and organs for specific tasks.

10.aiding in digestive functions; clean up of oil spills

production of dairy products; used to fight disease

used in sewage treatment

11.root cells; xylem; phloem; guard cells

12.Introducing a new organism into an ecosystem can have unexpected results.