Review Sheet
NYS Regents Lab Activity
Making Connections

Important Terms

Pulse Rate	Independent variable	Control group	Trial
Muscle fatigue	Dependent variable	Control variable	Histogram
Homeostasis	Hypothesis	Sample size	

Key Points I

1. In order to find a hypothesis, one looks for patterns. For example, we did not see a connection between pulse rate and height, but we did see a connection between pulse rate and exercise.
2. Graphs and data tables present data in a clear, organized way that is easy to understand.
3. Pulse rate increases during exercise because the cells need to be provided with more food and oxygen and more wastes are produced which need to be transported to the lungs (CO_2) and the kidneys (urea).
4. Muscles become fatigued, tired, due to waste products building up in them.
5. Organ systems interact in order to maintain homeostasis.

Procedure I

1. Students found their average pulse rates after three trials.
2. Class results were graphed in a histogram, bar graph.
3. Pulse rates were found to increase after exercising.
4. A clothespin was squeezed rapidly for one minute. The # of times that it was squeezed was recorded.
5. The clothespin was squeezed the same way for another minute.

Analysis:

1. Organ systems interacted to maintain homeostasis during exercise. For example:
    a. The respiratory system takes in oxygen, which is transported to cells by the circulatory system. As cells use oxygen at a higher rate, an increased heart rate would get the oxygen to the cells more quickly
    b. As muscle cells increase their activity, they produce waste products at a higher rate. These wastes are carried to the excretory system by the blood (circulatory system) more efficiently when the heart rate increases.
2. A reliable way to test a hypothesis or a claim is to do an experiment.

Key Points II:

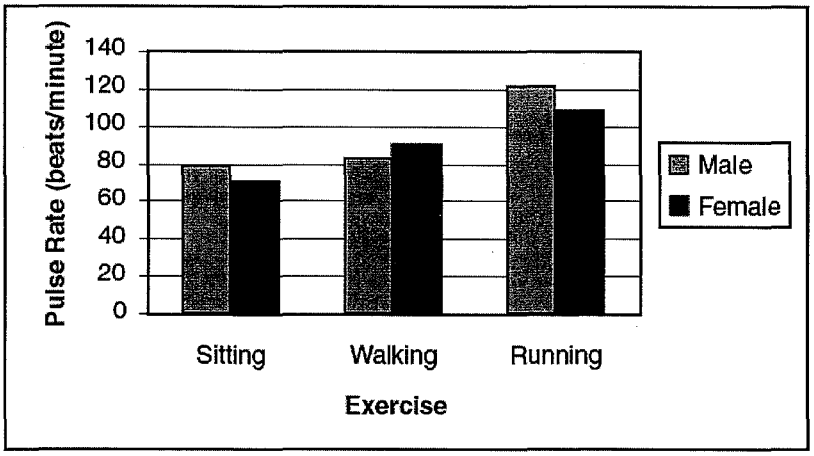
1. Know how to design an experiment and how to interpret an experiment's design.
2. Independent variable: The variable that the scientist changes. Only one of these in an experiment. This is put on the x-axis in a graph.
3. Dependent variable: The variable that is changed by the independent variable. The results. Only one of these in an experiment. This is put on the y-axis in a graph.
4. Controlled variable: The variable that remains the same for all trials. All variables except for the independent & dependent variables must be controlled. **If this is not true, the results may be invalid.**
5. Control group: A group in which the independent variable is set to 0. This group is used to compare with an experimental group. Without this group, the results may be invalid.
6. Increasing the number of trials increases the validity of the experiment.
7. You should be familiar with constructing a data table and a graph (line and bar).

Procedure:

1. An experiment was designed to determine the effect on exercise on squeezing a clothespin using the "Guidelines for Designing a Controlled Experiment." These guidelines are in your packet, and they were also a part of your independent investigation project.
2. You did the experiment following your design.
3. The data was included in a data table and a graph.
4. You determined if your data accepted or rejected your hypothesis.
5. Suggestions for improvement and further research were included in the final report.

Questions:

Base your answers to questions **1 and 2** on the information below and on your knowledge of biology. In an investigation, 28 students in a class determined their pulse rates after performing each of 3 different activities. Each activity was performed three times during equal time intervals. The average results are shown in the graph below.



1 Before constructing the graph it would have been most helpful to organize the results of the investigation in
(1) a research plan (2) an equation (3) a data table (4) a generalization

2 Some students concluded that males always have a higher pulse rate than females. Does the graph support this conclusion? Justify your answer. [1]

3 When a person exercises, changes occur in muscle cells as they release more energy. Explain how increased blood flow helps these muscle cells release more energy. [1]

4 An increase in heart rate will most likely result in
(1) a decrease in metabolic rate
(2) an increase in pulse rate
(3) an increase in cell division
(4) a decrease in body temperature

5 A student squeezed a clothespin as many times as possible in a 30-second time period.
The student repeated this procedure nine more times in quick succession. The data obtained are in the chart below.

Trial	Number of Squeezes in 30 Seconds
1	32
2	29
3	28
4	27
5	26
6	25
7	23
8	21
9	19
10	17

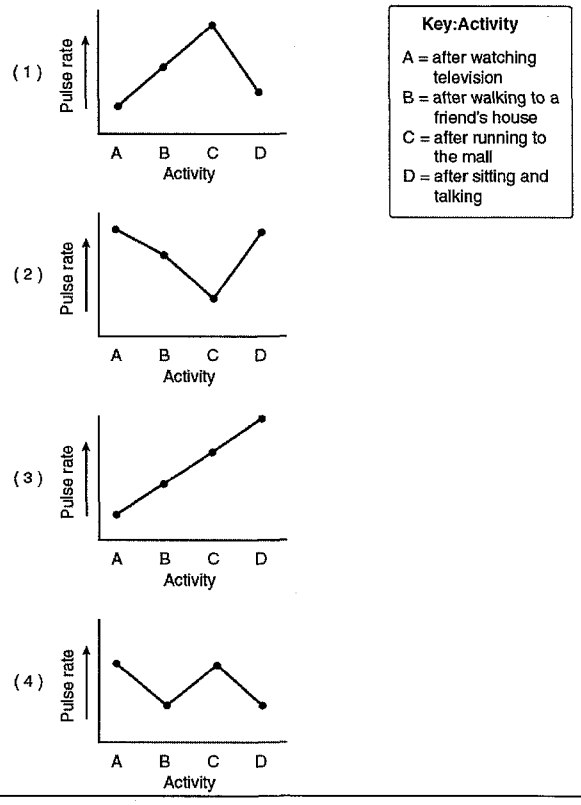
State one hypothesis that this data would support concerning the relationship between number of trials and number of squeezes in 30 seconds. [1]

6 On a television talk show, a guest claims that people who exercise vigorously for 15 minutes or more every day are able to solve math problems more rapidly than people who have no vigorous exercise in their daily routine. Describe a controlled experiment that could be conducted to test this claim. In your description be sure to:

- state the purpose of the experiment [1]
- state why the sample to be used should be large [1]
- describe how the experimental group will be treated and how the control group will be treated [2]
- state the specific data to be collected during the experiment [1]
- state one way to determine if the results support the claim [1]

Multiple Choice

7 A student measures his pulse rate while he is watching television and records it. Next, he walks to a friend's house nearby and when he arrives, measures and records his pulse rate again. He and his friend then decide to run to the mall a few blocks away. On arriving at the mall, the student measures and records his pulse rate once again. Finally, after sitting and talking for a half hour, the student measures and records his pulse rate for the last time. Which graph below best illustrates the expected changes in his pulse rate according to the activities described above?



Review Sheet
NYS Regents Lab Activity
Diffusion Through a Membrane

Important Terms

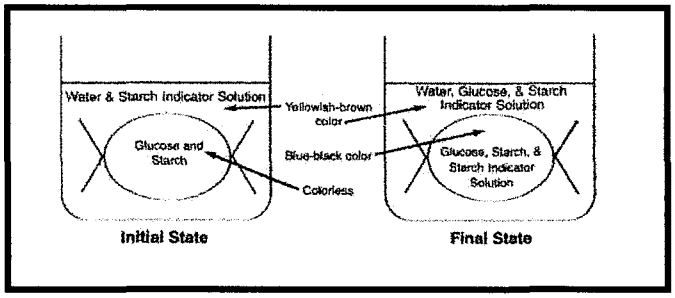
Diffusion
Selectively permeable
Indicators
Dialysis tubing
Starch
Glucose
Starch indicator
Glucose indicator
Controls
Cytoplasm
Cell membrane
Cell wall
Osmosis
Wet mount
Cover slip

Key Points I

1. Molecules tend to move from high to low concentration without the use of energy (*diffusion*).
2. Membranes may allow some molecules to pass through while not allowing others (*selectively permeable*).
3. *Indicators* are used to show the presence of certain kinds of molecules.

Procedure I

1. A model cell is made using a plastic membrane (usually *dialysis tubing*) containing *starch* and *glucose*. The bag is sealed with string.
2. *Starch indicator* (iodine) is placed in solution outside the 'cell'.
3. Because of the differences in concentration, starch indicator diffuses in and glucose diffuses out. Starch 'wants' to diffuse out, but cannot because the molecule is too large to pass through the membrane.



4. Starch (milky white) + starch indicator (brown) = blue-black color
5. The inside of the bag turns blue-black while the outside stays brown, proving that indicator went in, but starch did not leave.
6. *Glucose indicator* (blue) + glucose (clear) + HEAT = green, brown, red, or orange
7. Testing the fluid outside the 'cell' shows glucose has left. This is tested by placing fluid from outside into a test tube, adding indicator solution, and heating the mixture.
8. You may prove that #6 is true by testing (heating) indicator alone and also testing indicator + starch. Both of these *controls* result in a blue color (no change).

Analysis I

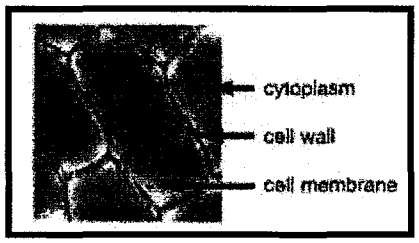
1. Glucose and starch indicator may pass through the membrane. Starch may not. This is because starch is a much larger molecule than glucose or starch indicator.
2. This shows the importance of breaking down large molecules inside the digestive system in order for nutrients to enter the bloodstream.

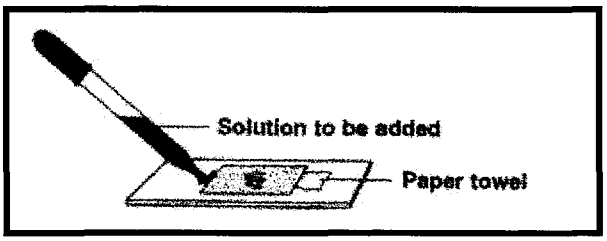
Key Points II

1. Basic parts of the cell that are easily seen under the microscope are the *cytoplasm*, *cell membrane*, and *cell wall* (in plants).
2. Molecules tend to move from high to low concentration without the use of energy (*diffusion*).
3. Diffusion of water molecules is particularly important and has the special name of *osmosis*.
4. The balance of water molecules inside and outside the cell is extremely important for the survival of all organisms, including humans.

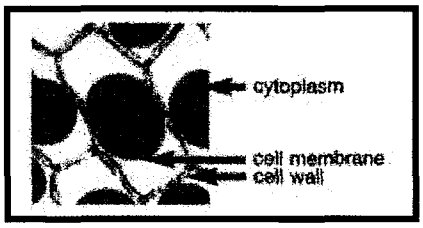
Procedure II

1. Make a *wet mount* slide of a thin section of red onion cells. The cells are taken from the outer 'skin' of the onion bulb and a small piece is placed in a drop of water on a microscope slide. A *cover slip* is placed on top by touching it to the water at an angle, and then carefully placing it on the specimen, trying not to get air bubbles underneath.
2. The cells are examined under the light (compound) microscope. You should be able to identify the cytoplasm, cell membrane, and cell wall.
3. It is important to see that the cell membrane and cytoplasm completely fill the space within the cell wall.





4. Place a 10% salt solution under the cover slip. This is done by putting a drop of salt solution next to one edge of the cover slip, then absorbing water from the opposite side of the slip using a paper towel.
5. Observe the cells in the salt solution. It is important to see that the cytoplasm and cell membrane have shriveled up inside the cell wall. This is due to water molecules leaving the cell and entering the salty (low water) solution.



6. Place distilled water under the cover slip using the technique described in #4 above.
7. Observe the cells in distilled water. It is important to see that the cytoplasm and cell membrane have swollen back to fill the entire space available within the cell wall.

Analysis II

1. Cells placed in very salty solutions will lose water, causing them to collapse and possibly lose the ability to complete life functions.
2. Cells placed in very watery solutions will tend to gain water, which causes them to swell and might cause them to burst/break open, destroying the cell. Note that this did not happen in the plant cells because the cell wall prevents the cell membrane from easily expanding.
3. Freshwater creatures, particularly single-celled organisms, must cope with too much water entering the cells. Saltwater organisms tend to have the opposite problem and must try to reclaim lost water.

Diffusion Lab Review

Base your answers to questions 1 and 2 on the diagrams below and on your knowledge of biology.

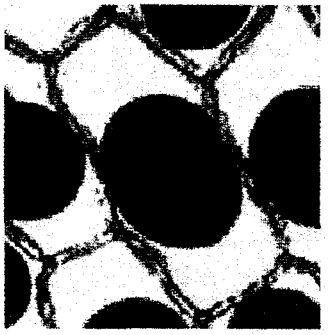


Diagram 1: red onion cells

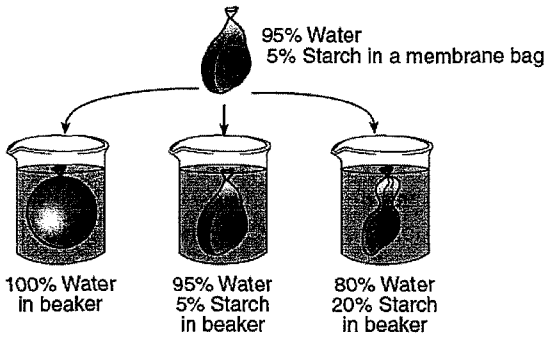
Diagram 2: red onion cells

1 Describe how to prepare a wet-mount slide of red onion cells with the cell membrane shrinking away from the cell wall, as shown in diagram 1. The following materials are available: microscope slide, pipettes, cover slips, paper towels, water, salt solution, and red onion sections. [3]

2 List the laboratory procedures to follow that would cause the cells in diagram 1 to resemble the cells in diag 2. [2]

3 A student places an artificial cell, similar to the one used in the laboratory activity *Diffusion Through a Membrane*, in a beaker containing water. The artificial cell contains starch and sugar. A starch indicator is added to the water in the beaker. Explain how the student will know if the starch is able to diffuse out of the artificial cell. [1]

4 An investigation was set up to study the movement of water through a membrane. The results are shown below.



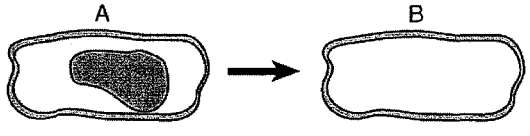
Based on these results, which statement correctly predicts what will happen to red blood cells when they are placed in a beaker containing a water solution in which the salt concentration is much higher than the salt concentration in the red blood cells?

(1) The red blood cells will absorb water and increase in size.
(2) The red blood cells will lose water and decrease in size.
(3) The red blood cells will first absorb water, then lose water and maintain their normal size.
(4) The red blood cells will first lose water, then absorb water, and finally double in size.

5 State *one* factor that influences which molecules can pass through the cell membrane of a human cell. [1]

6 An indicator for a protein is added to a solution that contains protein and to a solution that does *not* contain protein. State *one* way, other than the presence or absence of protein, that the two solutions may differ after the indicator has been added to both. [1]

7 A student prepared a wet-mount slide of some red onion cells and then added some salt water to the slide. The student observed the slide using a compound light microscope. Diagram *A* is typical of what the student observed after adding salt water. Complete diagram *B* to show how the contents of the red onion cells should appear if the cell were then rinsed with distilled water for several minutes. [1]



Red onion cell in salt water

Red onion cell after rinsing with distilled water

Review Sheet
NYS Regents Lab Activity
The Beaks of Finches

Important Terms

Variation	Environment	Adaptation	Selecting Agent
Struggle for Survival	Competition	Migration	

Key Points

1. Species evolve over time. Evolution is a result of the interactions between:
    a. The potential for a species to increase its population
    b. Genetic variation of offspring due to mutation and genetic recombination.
    c. A limited amount of resources in the environment (ex. food, space, mates, etc.)
    d. Selection by the environment of those individuals that are better able to survive and produce viable offspring ("survival of the fittest")

2. Some characteristics / variations give individuals an advantage over others in surviving and reproducing. The offspring of these "better adapted" individuals will be more likely to survive and reproduce than those of other individuals. The proportion / frequency of individuals with favorable characteristics will increase.

3. Variation in a population increases the likelihood that at least some individuals will survive the changing environmental conditions.

Procedure

1. In teams of two, students will simulate competition for food by finches in an island environment.
2. The beak variations of finches will be represented by a variety of tools (tweezers, spoons, pliers, etc.)
3. In Round One, students simulate feeding on small seeds. Each student will remove seeds alone, without competition from other students.
4. The winners of Round One stay on their original island while the losers migrate to a new island with a different food source (large seeds). In Round Two, the same procedure will be followed with one exception. Competition between species will be simulated by having a member from each opposing team feed from the tray at the same time. The winning teams proceed to Round Three and the losing teams are eliminated.
5. In Round Three, all surviving teams feeding on large seeds will feed from the same tray of large seeds at the same time. All surviving teams feeding on small seeds will feed on the same tray of small seeds at the same time.
6. The winning teams of from Round Three will possess the beak variation that is best fit for feeding on that particular type of seed.
7. All trials in each round run for the same length of time. Only those seeds that are successfully removed are counted.

Analysis

1. Those individuals with beaks best adapted for feeding on small seeds remained on the island at the end of Round One while those with "less adapted" beaks migrated to a new island.

2. Competition for food in Round Two should have had an adverse effect on feeding success.

3. There were fewer survivors at the end of Round Three due to increased competition.

4. The following four components of Natural Selection were simulated:

    a. Variation: different beaks, different size seeds
    b. Competition: more than one bird feeding at one bowl
    c. Struggle for survival: each bird trying to get enough food to survive
    d. Adaptation: particular characteristics of "beaks"
    e. Environment: students, seeds, dishes are part of environment
    f. Selecting agent: type of "beak" and / or type of seed available

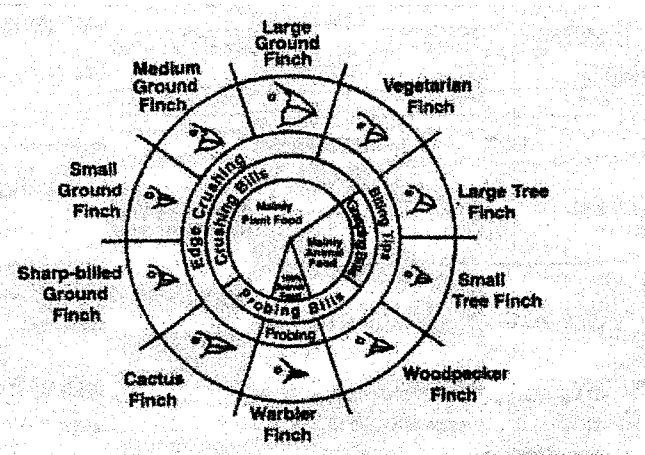


Figure 1. Variations in Beaks of Galapagos Islands Finches

*** Be sure you study the diagram to the left that shows the variations in beaks of Galapagos Island finches. The diagram represents the types of beaks, the function of the beaks, and the type of food the finches eat.**

Questions:

Use diagram above for questions 1 & 2.

1. The diagram above shows variations in beak sizes and shapes for several birds on the Galapagos Islands. Using information provided in the chart, identify *two* birds that would most likely compete for food in times of food shortage and explain why they would compete. [2]

_____ & _____

2. The cactus finch, warbler finch, and woodpecker finch all live on one island. Based on the information in the diagram below, which one of these finches is *least* likely to compete with the other two for food? Support your answer with an explanation. [1]

3. Even though the finches on the various Galapagos Islands require different biotic and abiotic factors for their survival, these finches would most likely be grouped in the same

(1) species, but found in different habitats	(3) species and found in the same biosphere
(2) kingdom, but found in different ecological niches	(4) population, but found in different ecosystems

4. Galapagos finches evolved partly due to

(1) cloning and recombination	(3) mutation and asexual reproduction
(2) migration and selective breeding	(4) variation and competition

5. In members of a bird species living on a remote island, the greatest number of beak variations in the population would most likely be found when

(1) there is a high level of competition for limited resources	(3) they have a large and varied food supply
(2) homeostasis is limited by a severe climate	(4) they are prey for a large number of predators

6. The different tools used during the beaks of finches lab represented

(1) feeding adaptations in finches	(3) variations in seed size
(2) nest construction adaptations	(4) variations in ecosystems

7. Researchers discovered four different species of finches on one of the Galapagos Islands. DNA analysis showed that these four species, shown in the illustration below, are closely related even though they vary in beak shape and size. It is thought that they share a common ancestor.

Which factor most likely influenced these differences in beak size and shape?
(1) Birds with poorly adapted beaks changed their beaks to get food.
(2) Birds with yellow beaks were able to hide from predators.
(3) Birds with successful beak adaptations obtained food and survived to have offspring.
(4) Birds with large, sharp beaks become dominant.

Base your answers to questions 72 through 74 on the information below and on your knowledge of biology.
In the *Beaks of Finches* laboratory activity, students were each assigned a tool to use to pick up seeds. In round one, students acting as birds used their assigned tools to pick up small seeds from their own large dishes (the environment) and place them in smaller dishes (their stomachs). The seeds collected by each student were counted. Some students were able to collect many seeds, while others collected just a few. In round two, students again used their assigned tools to collect seeds. This time several students were picking up seeds from the same dish of seeds.

8. Explain how this laboratory activity illustrates the process of natural selection. [1]

9. One factor that influences the evolution of a species that was *not* part of this laboratory activity is

(1) struggle for survival	(2) variation	(3) competition	(4) overproduction

10. Identify *one* trait, other than beak characteristics, that could contribute to the ability of a finch to feed successfully. [1] _____

Base your answers to questions 11 and 12 on the information below and on your knowledge of biology.
Evolutionary changes have been observed in beak size in a population of medium ground finches in the Galapagos Islands. Given a choice of small and large seeds, the medium ground finch eats mostly small seeds, which are easier to crush. However, during dry years, all seeds are in short supply. Small seeds are quickly consumed, so the birds are left with a diet of large seeds. Studies have shown that this change in diet may be related to an increase in the average size of the beak of the medium ground finch.

11. The most likely explanation for the increase in average beak size of the medium ground finch is that the
(1) trait is inherited and birds with larger beaks have greater reproductive success
(2) birds acquired larger beaks due to the added exercise of feeding on large seeds
(3) birds interbred with a larger-beaked species and passed on the trait
(4) lack of small seeds caused a mutation which resulted in a larger beak

12. In exceptionally dry years, what most likely happens in a population of medium ground finches?
(1) There is increased cooperation between the birds.
(2) Birds with large beaks prey on birds with small beaks.
(3) The finches develop parasitic relationships with mammals.
(4) There is increased competition for a limited number of small seeds.

Review Sheet
NYS Regents Lab Activity
Relationships and Biodiversity

Important Terms

Biodiversity
Evolutionary relationships
Molecular Evidence
Structural Evidence
Chromatography
DNA
Extinct
Transcription
Enzymes
Gel Electrophoresis
Genus species
Habitat Destruction
Habitat Degradation
Human Impact
Cladograms*
Amino Acids
Translation

*Term is not actually used in lab, but essentially is what they are talking about. They do discuss and have a question on "branching tree diagrams."

Key Points

1. The diversity of life on the planet has been created through the process of evolution by means of natural selection.
2. Through natural selection, organisms have evolved to lessen competition, and therefore fill a wide array of niches. This *biodiversity* increases the stability of ecosystems.
3. Biodiversity has important benefits to mankind, including development of new food sources and medicines; as well as beneficial, free, ecosystem services. Ecosystem degradation and destruction lead to the loss of genetic biodiversity and increases the chance that an ecosystem will become less stable and collapse.

Procedures

*Safety precautions are moronic for this lab. Goggles in step 4 & 5 are for a vinegar and baking soda reaction and paper chromatography using food coloring, vinegar, and water.

1. Seven tests are conducted to determine the relatedness of Samples X, Y and Z to *Botana curus*. They are as follows:
    a. Structural Characteristics of Plants
        - Compare the characteristics of the bagged samples
    b. Structural Characteristics of Seeds
        - Compare the characteristics of the bagged samples
    c. Structural Characteristics of Stems (Internal Microscopic Structures)
        - Use low power on the microscope to examine cross sections of the stems. Look for a scattered arrangement of bundles or a circular arrangement of bundles.
    d. Paper Chromatography to Separate Plant Pigments
        - Using clean, separate pipettes for each sample, transfer two drops of each plant extract to a piece of chromatography paper, two cm above the bottom. Label the top of the paper with the proper sample names.
        - Place the paper into a cup of water, 1 cm deep. The water should NOT touch the spots of plant extract.
        - Keep checking the sample to make sure the water does not reach the labeled top part of the paper. When the water is done rising, check the color and relative amounts of pigments and record this in the data table.

e. Indicator Test for Enzyme M
    - Placing a scoop of the indicator powder into 4 depressions of the well tray, check the extracts for the presence of Enzyme M. A fizzing reaction indicates that Enzyme M is present in the extract.

f. Gel Electrophoresis (simulated) to Compare DNA
    - Obtain colored paper strips representing portions of DNA molecules. The sequence of bases are representative of molecules isolated from *Botana curus* and Species X,Y, and Z. An enzyme will be used to cut between C and G of the sequences to produce different sized portions of the DNA. These will be placed on a simulated gel plate to compare the relatedness of *B. curus* to X, Y, and Z.

g. Translating the DNA Code to Make a Protein
    - Using the DNA codons, create the complementary messenger RNA, remembering that the DNA base A specifies the RNA base U (*T is replaced with U in RNA). Using the Universal Genetic Code table, translate the mRNA base sequences into the correct amino acid sequences of the protein.

Analysis

1. This lab has 7 tests used to determine the relatedness of 4 plant samples. Remember that scientists use a variety of evidence to determine evolutionary relationships, including cell types, structural morphology, DNA, behavior, embryology, and fossils. The more criteria that are shared between organisms, the more likely they are closely related.
2. Relatedness can be shown using a "branching tree diagram", or cladogram. Organisms that are closely related are next to each other on the same branch. More distant relations are further apart on the branch.
3. *Botana curus* shares the most characteristics with Sample Z, making this sample the most closely related. These characteristics included the presence of Enzyme M, the same pigments blue, yellow, and pink, scattered bundles, no difference in the amino acid sequences, and the same DNA banding pattern.
4. The evidence that should receive the most emphasis when determining the relatedness would be the genetic sequence, as many things can look similar structurally (convergent evolution), but would be unlikely to share the same DNA sequence if they are not truly closely related.
5. The loss of even a single species (extinction) can have major implications for mankind and natural ecosystems.
6. Scientists use gel electrophoresis to separate DNA fragments. Negatively charged DNA molecules migrate through the gel like material towards the positively charged pole. The smaller molecules migrate more rapidly through the gel than the larger ones do.

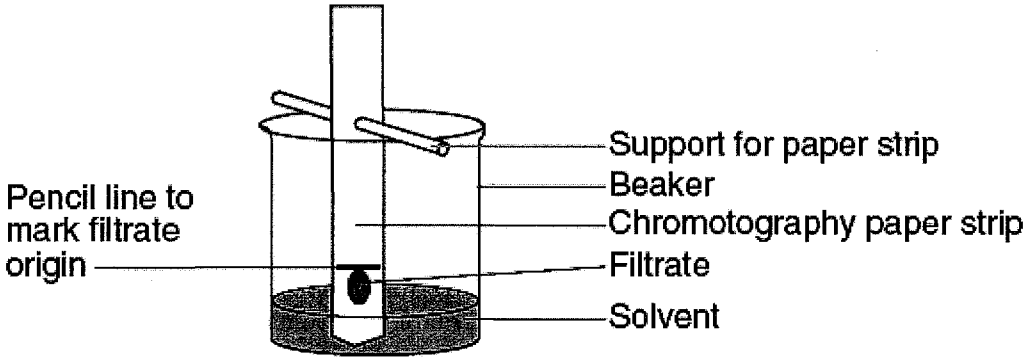
Questions:

Base your answers to questions 1 through 3 on the information below and on your knowledge of biology.

Paper chromatography can be used to investigate evolutionary relationships.

Leaves from a plant were ground and mixed with a solvent. The mixture of ground leaves and solvent was then filtered. Using a toothpick, twenty drops of the filtrate (material that passed through the filter) were placed at one spot on a strip of chromatography paper.

This procedure was repeated using leaves from three other species of plants. A separate strip of chromatography paper was prepared for each plant species. Each of the four strips of chromatography paper was placed in a different beaker containing the same solvent for the same amount of time. One of the laboratory setups is shown below.



1. State *one* reason for using a new toothpick for the filtrate from each plant. [1]
2. State *one* way the four strips would most likely be different from each other after being removed from beakers. [1]
3. State how a comparison of these resulting strips could indicate evolutionary relationships. [1]

Base your answer to **question 4** on the portion of the mRNA codon chart and information below.

AUU, AUC, AUA } ILE (Isoleucine) AUG } MET (Methionine)	ACU, ACC, ACA, ACG } THR (Threonine)	AAU, AAC } ASN (Asparagine) AAA, AAG } LYS (Lysine)	AGU, AGC } SER (Serine) AGA, AGG } ARG (Arginine)

Series I represents three mRNA codons. Series II includes a mutation of series I.

Series I AGAUCGAGU

Series II ACAUCGAGU

4 How would the amino acid sequence produced by the mutant strand (series II) compare to the amino acid sequence produced by series I?

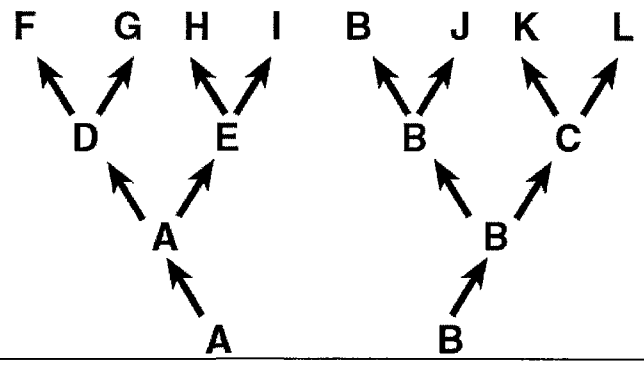
(1) The amino acid sequence would be shorter.

(2) One amino acid in the sequence would change.

(3) The amino acid sequence would remain unchanged.

(4) More than one amino acid in the sequence would change.

Base your answers to questions **5 through 7** on the diagram below and on your knowledge of biology. Letters *A* through *L* represent different species of organisms. The arrows represent long periods of geologic time.

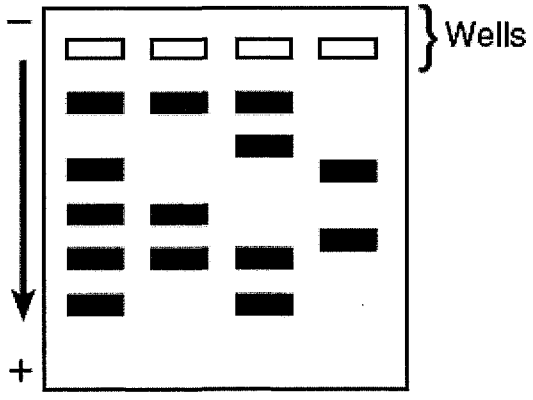


5 Which two species are the most closely related?
(1) *J* and *L*
(2) *G* and *L*
(3) *F* and *H*
(4) *F* and *G*

6 Which species was best adapted to changes that occurred in its environment over the longest period of time?
(1) *A*
(2) *B*
(3) *C*
(4) *J*

7 Which two species would most likely show the greatest similarity of DNA and proteins?
(1) *B* and *J*
(2) *G* and *I*
(3) *J* and *K*
(4) *F* and *L*

Base your answers to questions 8 through 11 on the information and diagram below and on your knowledge of biology.
The four wells represented in the diagram were each injected with fragments that were prepared from DNA samples using identical techniques.



8 This laboratory procedure is known as
(1) cloning
(2) gel electrophoresis
(3) chromatography
(4) use of a dichotomous key

9 The arrow represents the direction of the movement of the DNA fragments. What is responsible for the movement of the DNA in this process? [1]

10 The four samples of DNA were taken from four different individuals. Explain how this is evident from the results shown in the diagram. [1]

11 Identify the substance that was used to treat the DNA to produce the fragments that were put into the wells. [1]

Base your answers to questions 12 through 13 on the information provided and on your knowledge of biology. A student observed the physical characteristics of seven organisms and prepared the data table below.

Organism Comparison

Organism	Internal Skeleton Present	Legs Present	Wings Present	Fur Present	Moist Body Covering Present
Earthworm	no	no	no	no	yes
Fish	yes	no	no	no	yes
Fly	no	yes	yes	no	no
Gorilla	yes	yes	no	yes	no
Jellyfish	no	no	no	no	yes
Parrot	yes	yes	yes	no	no
Snake	yes	no	no	no	no

One of the student's classmates sorted the seven organisms into two groups as shown below.

Group 1	Group 2
fly parrot	earthworm gorilla snake fish jellyfish

12 Which characteristic from the data table did the student use to group the organisms? [1]

_____

13 Another classmate suggested that the earthworm is more closely related to the jellyfish than to any other organism observed. State the evidence from the data table that the student most likely used for this suggested relationship. [1]

_____

_____

14 Fish and snakes are very different organisms, yet they have many similarities. Provide a biological explanation for the fact that fish and snakes have so many characteristics in common. [1]

_____

_____