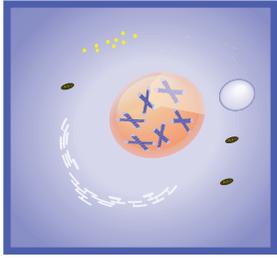


Agricultural Biotechnology

From DNA to GMOs



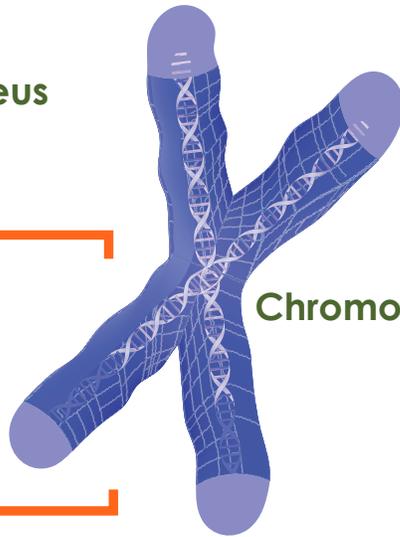
Plant Cell



Field Corn



Nucleus

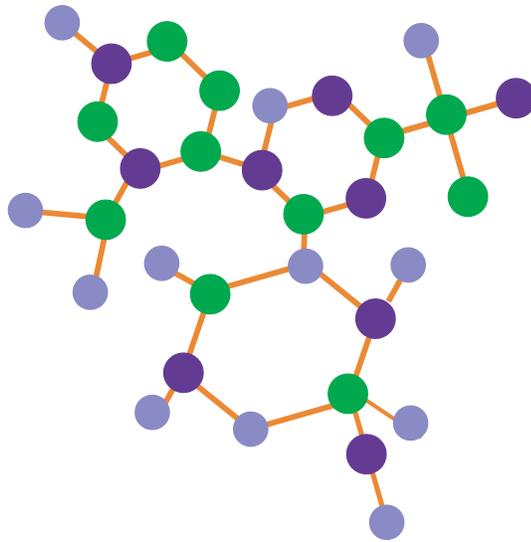
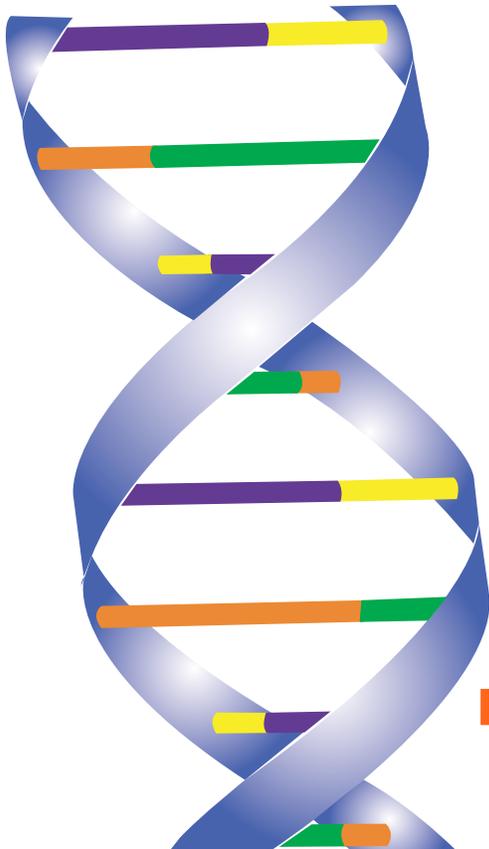


Chromosome

DNA



Cotton



Soybeans

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Traits and Heredity

Objective:

Students will:

1. Be able to explain traits, heredity and the use of natural and artificial selection.

Time: 5-10 minutes

Grade Level: 4-6

Curriculum Standards

Common Core:

- CCSS.ELS-Literacy.W.5.8
- CCSS.Math.Practice.MP.4

Next Generation Science

Standards:

- From Molecules to Organisms: Structure and Processes
MS-LS1-4
- From Molecules to Organisms: Structure and Processes
MS-LS1-5

Vocabulary:

Trait

Species

Natural Variation

Inherited

Artificial Selection

Natural Selection

Materials Needed

- ☐ 1 copy of the litter of puppies photo

Background

There are a lot of differences in a litter of puppies. Some may be light in color, while others may be fast runners. In science, we call these differences within a species, *natural variation*. A *species* is a group of organisms that can reproduce and have offspring under natural conditions. Since the animals in the photo are all dogs, they belong to the same species.

When we choose one puppy over another, we are practicing something called *artificial selection*. Farmers, and other people have been using artificial selection for a long, long time. If a farmer had three cows and one produced a pint of milk every day, the second produced a gallon of milk every day and the third produced two gallons of milk every day, which one would the farmer want to keep to raise calves with? They would likely choose the cow that gave the most milk; hoping that the *trait* of high milk production would be passed on to her calves.

A *trait* is a characteristic that can be *inherited*, or passed down from one generation to the next. Long ago, farmers tried to choose the fastest horse, the meatiest pig, the chicken's who laid the most eggs and the biggest ears of corn so that those traits would be passed down to future generations of plants and animals.

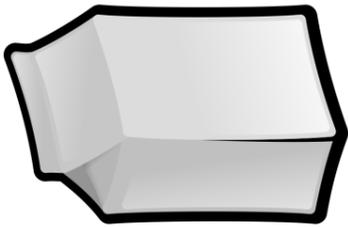
There is another type of selection similar to this that happens all the time in nature. It is called *natural selection*. When certain plants and animals have traits that will help them survive in the wild, they are more likely to find a mate and pass that characteristic down.

Discussion Outline

1. Show students the image of a litter of puppies (pg. 2) and discuss the following 3 questions
 - Question: If you had your choice, how many of you would pick one of the yellow puppies?
 - Question: Who would pick one of the dark colored ones?
 - Discuss: What other traits might you look for in a puppy? Perhaps, you wouldn't pick your puppy based on color, maybe you would pick the biggest one, or the friskiest one, etc.
 - Discuss: The differences within a species (traits), are natural variation within a species.
2. Show students the image of the cow and milk cartons (pg. 3)
 - Question: If a farmer had three cows and one one produced a pint of milk every day, the second produced a gallon of milk every day and the third produced two gallons daily, which one do you think the farmer would want to raise calves with?
 - Discuss: When an organism with good traits is chosen to reproduce, it is called Artificial Selection.



Artificial Selection



A pint



One gallon



Two gallons





Natural Selection Activity

Objective:

Students will:

1. Be able to distinguish the difference between artificial and natural selection.
2. Identify the main idea and supporting statements for each one.

Time: 10-15 minutes

Grade Level: 4-6

Curriculum Standards

Common Core:

- CCSS.ELS-Literacy.W.5.1
- CCSS.Math.Practice.MP.4

Next Generation Science

Standards:

- From Molecules to Organisms: Structure and Processes
4-LS1-1
- Matter and Its Interactions:
5-PS3-1
- From Molecules to Organisms: Structure and Processes
MS-LS1-4
- From Molecules to Organisms: Structure and Processes
MS-LS1-5

Vocabulary:

Trait

Inherited

Artificial Selection

Natural Selection

Materials Needed

- 1 copy of pg. 6 for each student
- A writing utensil for each student
- 2ft. x 2ft. black fur fabric pieces (1 for each group of 4 students)
- Black and red pom poms (25 of each color per group of 4 students)
- Plastic spoons and forks (every student needs either a fork or a spoon)
- Small plastic cups; 2 small cups per group (for pom poms)

Background

Farmers, and other people have been using *artificial selection* for a long, long time. *Artificial selection* is the process by which humans breed other plants and animals for particular *traits*.

A *trait* is a characteristic that can be *inherited*, or passed down from one generation to the next. So long ago, farmers tried to choose the fastest horse, the meatiest pig, the chickens who laid the most eggs and the biggest ears of corn so that those traits would be passed down to future generations of plants and animals.

There is another type of selection that happens all the time in nature and it is called *natural selection*. When certain plants and animals have traits that will help them survive in the wild, they are more likely to find a mate and pass that characteristic down.

Activity Outline

1. Read the background and discuss survival of the fittest.
 - When certain plants and animals have traits that will help them survive in the wild, they are more likely to find a mate and pass that characteristic down.
 - Question: What traits or characteristics might help a lion survive in the wild? (strongest, fastest, smartest, color that blends in with their surroundings, good hunter, healthy, etc.).
 - Discuss: The lions will continue to get stronger, smarter and better able to survive and reproduce through natural selection. This process is sometimes called survival of the fittest.
2. Explain the activity thoroughly with students and split them into groups of 4 students.
3. Set-up the natural selection activity.
 - Place the black fur fabric on floor; have students gather around.
 - Place 25 of both red and black pom poms on the black fur fabric.
4. Review the rules:
 - Only use a spoon or fork to pick up pom poms; no hands.
 - You cannot steal from someone else's spoon or fork.
 - You cannot help someone else.
 - The objective is to gather 5 pom poms, so you can survive to have offspring and live another year.

Natural Selection Activity

Continued

5. Hand out and review the worksheet:
 - As a group discuss the answers to 1 and 2 on the worksheet
 - As a group, fill in the first row of the chart.
6. Randomly pass out the spoons and forks and begin the first round, allowing 10 seconds for the students to pick up the pom poms.
 - Each group should have some spoon and fork eaters.
 - Have students count remaining pom poms and fill in chart.
 - Students without 5 pom poms sit out following rounds.
 - Repeat activity 10 seconds to pick up 5 pom poms each.
7. Have students fill out question 4 on the worksheet.
8. Discuss the results as a group.

Natural Selection Activity

1. Briefly describe the activity we will be doing.

2. Our environment is _____

Our two types of "food" are _____ and _____

Our two types of predators are _____ and _____

3. Fill out the chart with the number of predators and pompoms for your group at the beginning of each generation.

	Spoon Eaters	Fork Eaters	Black Pompoms	Red Pompoms
Generation #1				
Generation #2				
Generation #3				

4. Explain how this activity showed natural selection.



DNA Model Activity

Objective:

Students will:

1. Be able to distinguish the three dimensional shape of a double helix.
2. Identify the main components of the double helix.

Time: 10-15 minutes

Grade Level: 4-6

Curriculum Standards

Common Core:

- CCSS.Math.Practice.MP.4

Next Generation Science

Standards:

- Matter and Its Interactions:
5-PS1-1
- From Molecules to Organisms:
Structure and Processes
MS-LS1-2

Vocabulary:

Cell

Nucleus

Chromosomes

DNA

Genes

Adenine

Thymine

Cytosine

Phosphate

Sugar

Materials Needed

- 1 copy of the pg. 9 cell to gene diagram
- 1 copy of the pg. 10 DNA labeling worksheet for each student
- Writing utensils for each student
- For each pair of students:
 - 2 fuzzy pipe cleaners
 - A set of 3 straight pipe cleaners, cut to 2 inches in length
 - 12 blue beads
 - 1 yellow and 1 purple bead
 - 2 orange and 2 green beads

Background

Traits in living organisms are controlled by *genes* which are found in each of our cells. All living things are made of *cells*. The *nucleus* controls what the cell does and inside the *nucleus* are the structures we call *chromosomes*. *Chromosomes* look like squiggly x's and they are made up of a substance called *DNA* (deoxyriboneucleic acids). *DNA* is very tiny but if we were to stretch out the amount in each one of our *cells*, it would be about six feet long. *Genes*, which control our traits, are sections of the *DNA* and they are in every cell in your body.

DNA is what controls genetic information in all living things from humans to soybean plants and mosquitos to mushrooms. The structure of *DNA* looks like a twisted ladder and has just six major parts. Students will build a simple model so they can see what it looks like.

Activity Outline

Cell to gene diagram:

1. Hand out or display on the screen the cell to gene diagram on page 9
 - Discussion question: Where is DNA located?

Making the DNA Model:

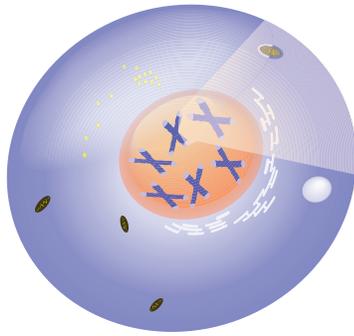
2. Show the students the finished model made from a fuzzy pipe cleaner.
3. Discuss the parts of the DNA
 - The two sides of the ladder are made of *phosphate* and *sugar* molecules alternating.
 - The fuzzy pipe cleaner represents the sides, the fuzzy sections will be the *sugar* molecules and we will be putting two blue beads between each fuzzy section to represent the *phosphate* molecule.
 - There are four different bases that make up DNA and they go together in pairs. The four bases are *adanine*, *thymine*, *guanine* and *cytosine*. *Adanine* always pairs with *thymine* and *guanine* always pairs with *cytosine*.
 - On the board, or in a place where everyone can see, write A-T and G-C.
4. Split the students into pairs

DNA Model Activity

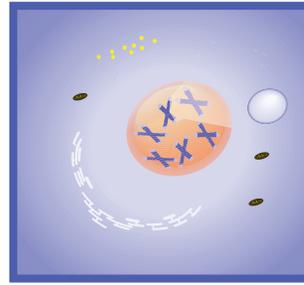
Continued

5. Give each pair a prepared baggie with the supplies to make the DNA molecule.
6. Review the directions as students begin assembling
 - Using the small pieces of straight pipe cleaner, put on the two beads that should go together (yellow with purple and green with orange).
7. Carefully attach the small pieces between the blue beads on your ladder. You should have three pieces to attach.
 - Have students hold it up when they think they are done.
8. Hold both ends and twist them in opposite directions and you will get an idea of the actual shape of a DNA molecule.
9. Collect the DNA models.
10. Display on the screen the worksheet that shows the labeled DNA molecule, pg. 11.
DNA Labeling Diagram:
11. Review the parts of the DNA molecule
12. Hand out the pg. 10 DNA Labeling worksheet to each student.
13. When everyone is finished, go over the answers to the handout (see pg. 11 key) and discuss any questions that the students may have.

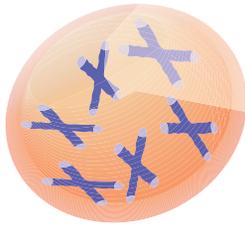
WHAT'S IN A CELL?



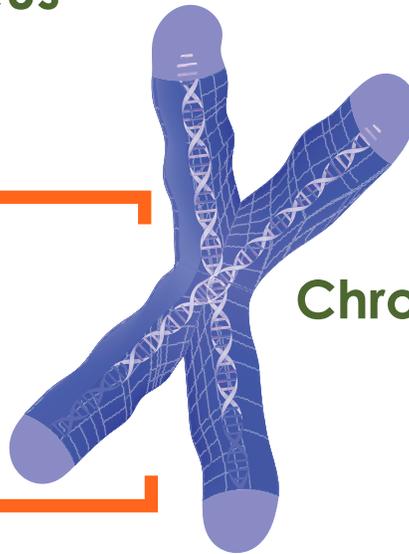
Human Cell



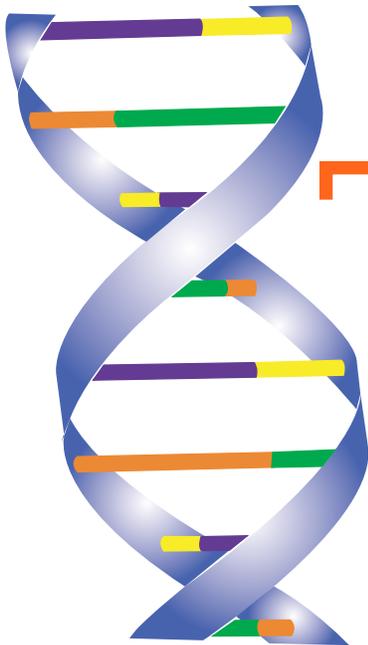
Plant Cell



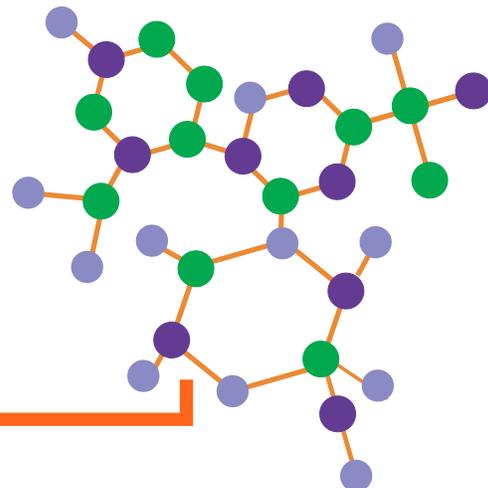
Nucleus



Chromosome



DNA

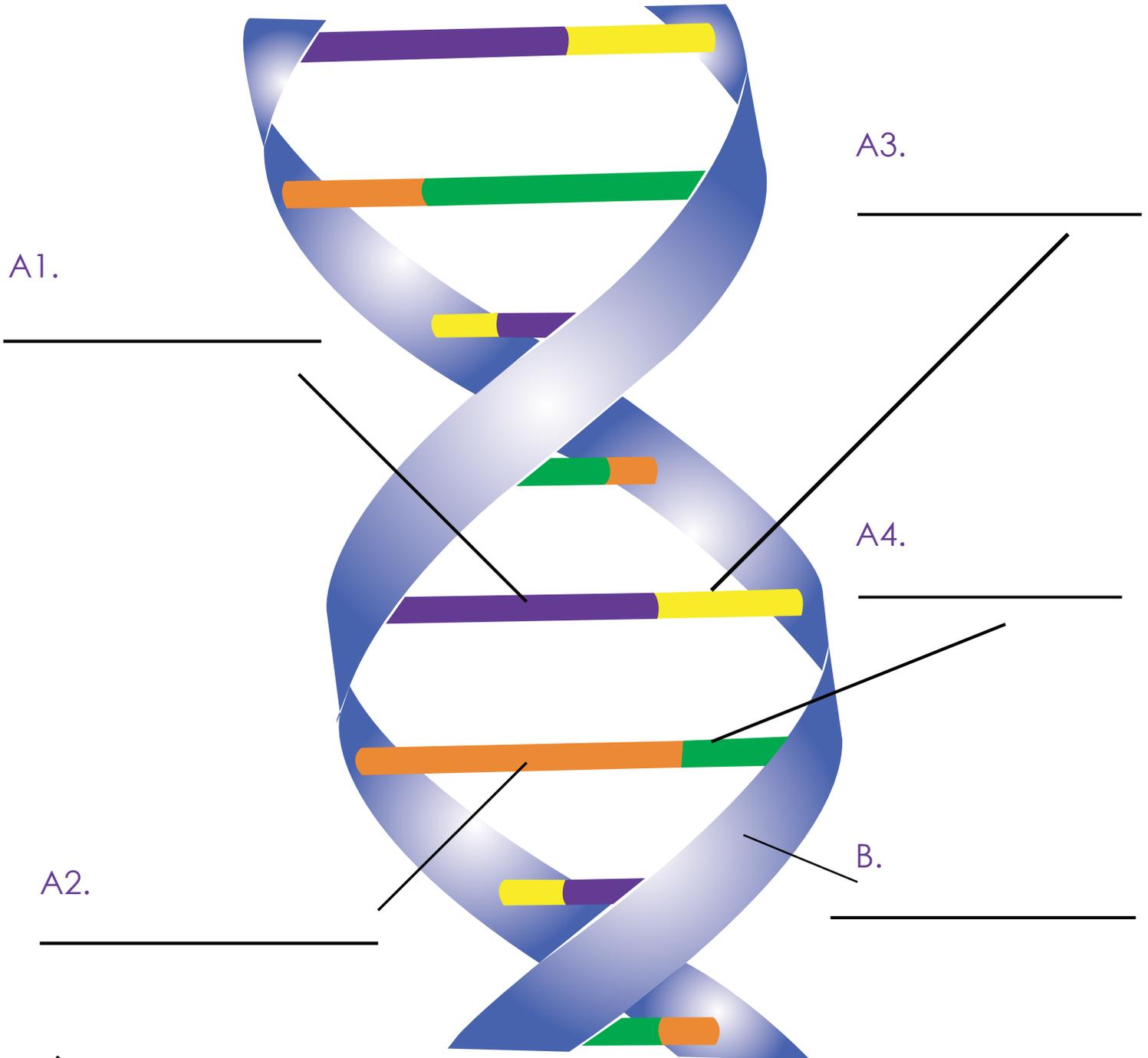


HOW MUCH DO YOU KNOW ABOUT DNA?

- A. Can you name the four different bases that make DNA?
- B. What makes up the backbone structure of DNA?

DNA is the blueprint for the cells of an organism.

It instructs them how to put together materials to produce certain traits.

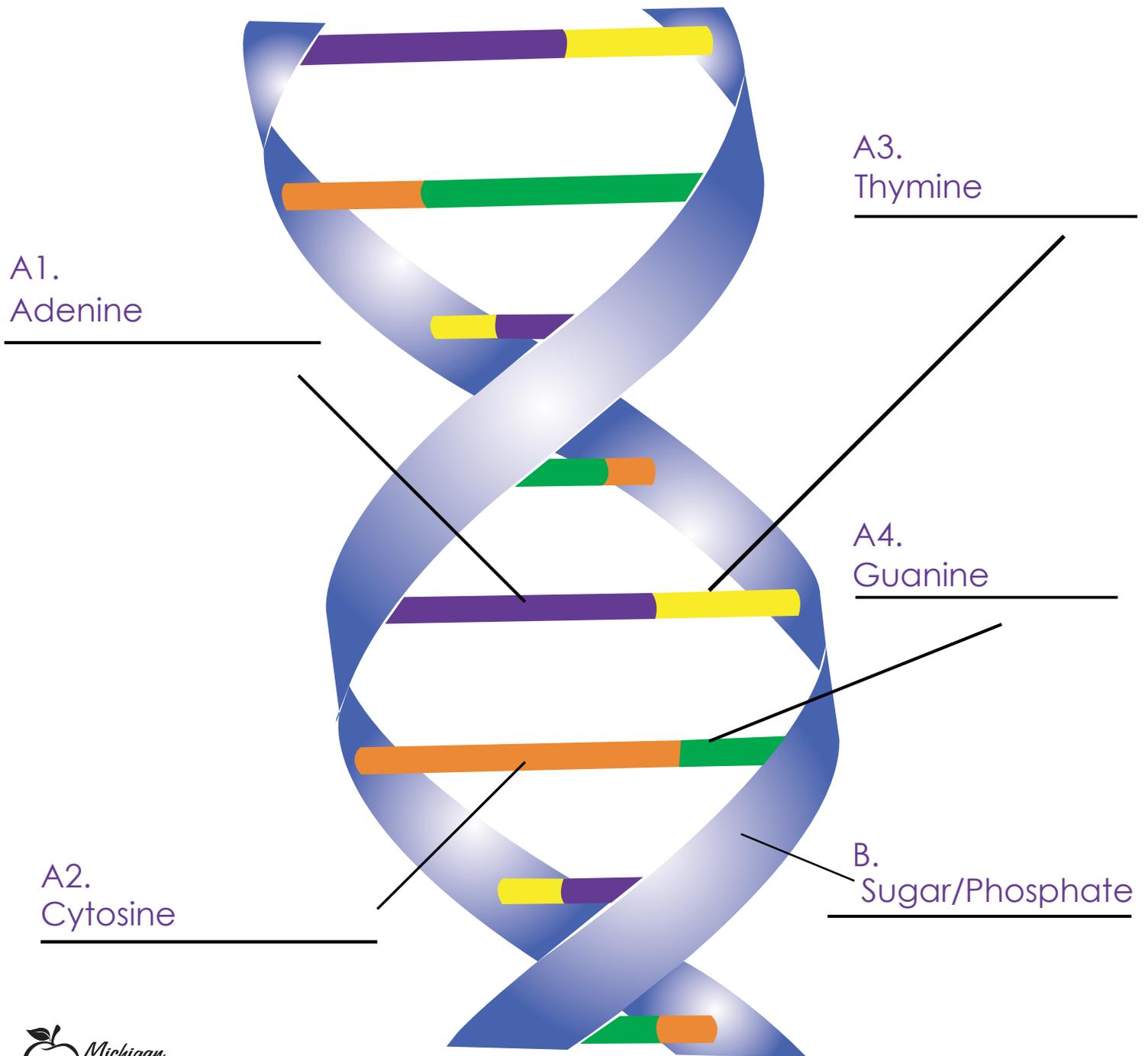


HOW MUCH DO YOU KNOW ABOUT DNA?

- A. Can you name the four different bases that make DNA?
B. What makes up the backbone structure of DNA? Sugar Phosphate Backbone

DNA is the blueprint for the cells of an organism.

It instructs them how to put together materials to produce certain traits.





Biotechnology & GMO's

Objective:

Students will:

1. Understand what biotechnology is and how it impacts them.
2. Learn facts about GMOs in their food supply.

Time: 10-15 minutes

Grade Level: 4-6

Curriculum Standards

Common Core:

- CCSS.ELS-Literacy.W.5.9

Fact or Fiction Answers:

1. Fiction- only 6 feet
2. Fact
3. Fact
4. Fiction- the Human cell is shaped like a ball and the Plant cell is a square.
5. Fiction- DNA is in all food that we eat
6. Fiction- Biotechnology helps protect farmers
7. Fact
8. Fiction- 90% instead of 20%

Lesson Extender:

1. Biotechnology Ag Mag
2. Word Bank Worksheet

Materials Needed

- If desired, copies of the background for each student
- A highlighter or marker for each student
- Copies of the golden rice infograph
- 1 candy with soy ingredient for each student (be aware of any allergies)

Background

Technology is using science to improve our lives. Biotechnology uses biology science to improve our lives. Technology is used in all of those places and devices because it makes things better or easier to use. The same is true of agriculture. We use technology to improve our crops and livestock and to take better care of our environment. One of the areas we use biotechnology is in genetics. We use biotechnology to do that and more on a larger scale.

For example, by combining two different varieties of corn, we developed hybrids, which are much hardier and healthier than the single varieties. Now that we have learned more about the genetics of living things, we can make changes in a plant's DNA that will produce a plant that could be healthier, stronger, more resistant to diseases or insects and more productive. We do this through a process called recombinant genetics

Activity Outline

1. Have students read the pg. 13 background individually or as a class and highlight key words.
 - Question: Where are some places that we see technology?
 - Question: How has technology improved our lives?
 - Discuss: Dissect the word bio-technology.
2. Pass out the Golden Rice infograph on pg. 14; discuss process and benefits.
3. Ask the students if they would like to try a GMO, then pass out the candy that has a GMO ingredient.
4. Have a wrap up discussion with the students.
 - When we make changes to the genetics of a plant, we call the new plant a genetically modified organism or a GMO. That means that although 99.9% of the plant is the same as the original, a small part has been changed genetically.
 - This process is carefully monitored and tested extensively. We have been doing this for over 20 years with no instances of health problems in humans or animals. In fact, about 90% of the processed food available in your grocery store has ingredients that have been genetically modified.

Biotechnology & GMO Background

Directions

Read the passage below and underline or highlight all of the terms that you believe are important.

Biotechnology sounds pretty complicated, but if we break the word down, the meaning of biotechnology becomes clear. Bio is a shortened term for biology, the study of all living things. Technology is the use of science to improve our lives. Biotechnology uses biology science to improve the products we use in every-day life.

Biotechnology is used in agriculture to improve our crops and livestock so we can feed more people with less land, water and nutrients, while taking care of our environment. One of the areas we use biotechnology is in genetics. In the past it took a lifetime to make a better sugar beet, corn plant or soybean plant, but with biotechnology scientists can use precise tools to develop a plant that will be more useful to humans and animals in a relatively short period of time. Through the use of this type of biotechnology, scientists have created genetically modified organisms or GMOs.

GMOs are created through a process called recombinant genetics. Gene splicing involves taking a gene, which is a section of DNA, from one plant and inserting it into the DNA of a different plant. About 90% of the food found in grocery stores contain ingredients that have been genetically modified. We use gene splicing in soybeans, sugarbeets, corn and other widely used crops.

There have been more than 1,700 reputable studies on GMO safety, the results of which have been affirmed by organizations like the American Medical Association, the World Health Organization, and the food regulatory bodies of numerous governments, including the United States and European Union.

Sources: USDA Agricultural Biotechnology, http://www.usda.gov/wps/portal/usda/usdahome?navid=BIOTECH&navtype=CO&edeployment_action=changenav

Nebraska Corn Kernels, Kernels of Truth--GMO Safety, <http://nebraskacorn.blogspot.com/2014/08/video-kernels-of-truthgmo-safety.html>

For more information about GMOs check out these websites:

• www.gmoanswers.com	• www.biotechinstitute.org
• www.bestfoodfacts.org	• www.bio.org

NEW PRODUCTS FROM BIOTECHNOLOGY



GENE



DNA

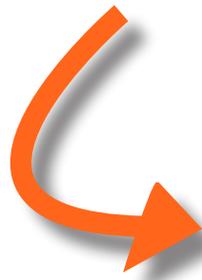


Take a **gene** for Vitamin A from carrots or daffodils and insert it into the rice DNA.

Recombinant Genetics



= New
"Golden Rice"
with Vitamin A



Fewer children with vision loss because Vitamin A is added to their diet.

Biotechnology: Fact or Fiction

Directions

Read the statements below and determine if they are factual information or if they are fiction. Once you have your answer, circle the word Fact or Fiction that is underneath each sentence. Use the technical reading handouts and information from discussion to help guide your answers.

1. Every cell in your body has 20 feet of DNA coiled up inside of it.

FACT or FICTION

2. Biotechnology has helped farmers improve their crops.

FACT or FICTION

3. Plowing fields to prevent weeds can cause erosion of the soil.

FACT or FICTION

4. A Plant cell is shaped like a sphere, or a soccer ball.

FACT or FICTION

5. Humans do not eat DNA.

FACT or FICTION

6. Farmers have no way to protect themselves from weeds and bugs.

FACT or FICTION

7. Humans have been using biotechnology to improve agriculture for over 20 years with no instances of health problems in humans or animals.

FACT or FICTION

8. About 20% of the processed food available in your grocery store has ingredients that have been genetically modified.

FACT or FICTION



Word Bank Activity

Objective:

Students will:

1. Learn important science terms as they relate to genetics

Time: 10-15 minutes

Grade Level: 4-6

Curriculum Standards

Reinforces curriculum learned from lessons:

- Traits and Heredity
- Natural Selection Activity
- DNA Model Activity
- Biotechnology and GMOs

Materials Needed

- 1 copy of pg. 17 for each student
- A writing utensil for each student

Background

Traits in living organisms are controlled by genes which are found in each of our cells. All living things are made of cells. The nucleus controls what the cell does and inside the nucleus are the structures we call chromosomes. Chromosomes look like squiggly x's and they are made up of a substance called DNA (deoxyriboneucleic acids). DNA is very tiny but if we were to stretch out the amount in each one of our cells, it would be about six feet long. Genes, which control our traits, are sections of the DNA and they are in every cell in your body.

DNA is what controls genetic information in all living things from humans to soybean plants and mosquitos to mushrooms. The structure of DNA looks like a twisted ladder and has just six major parts. Students will build a simple model so they can see what it looks like.

Activity Outline

1. Read and discuss the background.
2. Show the students the example model made from a fuzzy pipe cleaner.
3. Go over the answers to the handout (see answers below) and discuss any questions that the students may have.

Answers:

1. Artificial Selection
2. DNA
3. Trait
4. Natural Variation
5. Biotechnology
6. Chromosome
7. Cells
8. GMO
9. Natural Selection
10. Gene
11. Nucleus
12. Gene Splicing

Word Bank Activity

Directions:

Use the words provided in the space below to fill in the blank space that matches the correct definition.

Word Bank

Natural Variation	Artificial Selection	Natural Selection
Chromosome	Gene	Cell
Nucleus	DNA	GMO
Biotechnology	Trait	Gene Splicing

1. Choosing organisms with good traits to breed is called _____.
2. _____ is the acronym for Deoxyribonucleic acid.
3. A _____ is a characteristic of the species.
4. The differences within a species is called _____.
5. _____ is a tool that uses biology to improve products we use.
6. A _____ is tightly wound DNA wrapped around histones (proteins).
7. The basic unit of all living things is called _____.
8. A genetically modified organism is called a _____ for short.
9. Survival of the fittest or the process of nature selecting good traits is referred to as _____.
10. A section of DNA that codes for a specific trait is a _____.
11. The _____ is the control center of the cell and contains genetic information.
12. _____ is the removal of a section of DNA and inserting it in another strand of DNA.

Script

Introduction - (poster of mixed breed puppies)

Do all of you like puppies? I know that I do. There are lots of different puppies in this picture, aren't there? If you had your choice, how many of you would pick a yellow one? Maybe you like one of the darker ones best. Perhaps, you wouldn't pick your puppy based on color, maybe you would pick the biggest one, or the friskiest one. There sure are a lot of differences in this one group of puppies, even though they are all dogs and about the same age. Some of them might even be from the same litter, or family. In science, we call these differences within a species, natural variation. A species is a group of organisms that can reproduce and have offspring under natural conditions. Since these are all dogs, they belong to the same species.

When we choose one puppy over another, we are practicing something called artificial selection. Farmers, and other people have been using artificial selection for a long, long time. Let's see if you can guess why. If a farmer had three cows and one produced a pint of milk every day, the second produced a gallon of milk every day and the third produced two gallons of milk every day, which one would the farmer want to keep to raise calves with? That's right, they would choose the cow that gave the most milk; hoping that that trait would be passed on to her calves. A trait is a characteristic that can be inherited, or passed down from one generation to the next. So long ago, farmers tried to choose the fastest horse, the meatiest pig, the chickens who laid the most eggs and the biggest ears of corn so that those traits would be passed down to future generations of plants and animals.

Natural Selection Activity

There is another type of selection that happens all the time in nature and it is called natural selection. When certain plants and animals have traits that will help them survive in the wild, they are more likely to find a mate and pass that characteristic down. Let's think about a group of lions. What traits or characteristics might help a lion survive in the wild? (strongest, fastest, smartest, color that blends in with their surroundings, good hunter, healthy, etc.). Those are all great suggestions, so the lions continue to get stronger, smarter and better able to survive and reproduce. This process is sometimes called survival of the fittest.

We are going to do an activity now that helps you to see how populations can change through natural selection. Each of you are going to be the animals looking for food, and your food is the little pom poms. You need to collect four pom poms to survive and reproduce to live another year. There are both black and yellow pom pom foods. Because there is variation within the species, some of you have a spoon to collect pom poms with and others have a fork. Unfortunately, the pom pom food does not stay around for long. You will have to get your five food items in only 10 seconds. You cannot use your hands and you cannot share your food. We

will keep track of how many of you get what you need and how much of each food is left. If you do get your required food, it means you survived to have offspring and live another year. If you don't get the food you need that means you did not survive. (Run activity through three or four rounds, keeping track of how many of each pom pom are left and how many fork and spoon eaters are left, you should see a significant change).

So what did we see happen in that activity? We saw the populations of spoon eaters and black pompoms increase, didn't we? What traits did the black pompoms have that helped them survive? (blended with their environment, small, hard to see, etc..) This is an example of natural selection.

DNA Model Activity

So where do these traits in living organisms come from? They are controlled by structures called genes which are found in each of our cells. Let's see if I can help you understand how this works. You know that all living things are made of cells. Do you remember what part of the cell is the "control center"? That's right, the nucleus controls what the cell does. Inside the nucleus are structures we call chromosomes. We have 46 chromosomes in every one of our body cells. Chromosomes look like squiggly x's and they are made up of a substance called DNA. DNA is very small, but if we were to stretch out the amount in each one of our cells, it would be about six feet long. Now genes, which control those traits, are sections of that DNA and they are exactly the same in every cell in your body.

You see, DNA is what controls genetic information in all living things from humans to soybean plants and mosquitos to mushrooms. The structure of DNA looks like a twisted ladder and has just six major parts. Let's build a simple model so you can see what it looks like. The two sides of the ladder are made of alternating phosphate and sugar molecules. Show the model. We are using a fuzzy pipe cleaner to represent the sides, the fuzzy sections will be the sugar molecules and we will be putting two green beads between each fuzzy section to represent the phosphate molecule. Let me know when you have that part finished. Now it's time to construct the bases. There are four different bases that make up DNA and they go together in pairs. The four bases are adanine, thyamine, guanine and cytosine. Adanine always pairs with thyamine and guanine always pairs with cytosine. You have been given a few beads and you can see from the chart which colors represent which base. Using the small pieces of straight pipe cleaner, put on the two beads that should go together (yellow with purple and green with orange). Carefully attach the small pieces between the blue beads on your ladder. You should have three pieces to attach. Hold it up when you think you are done. Now if you hold both ends and twist them in opposite directions and you will get an idea of the actual shape of a DNA molecule. Collect the models and hand out and review the worksheet that shows the labeled DNA molecule.

Biotechnology and GMOs

So we've learned that there is natural variations within a species and that populations of organisms can change through both artificial and natural selection. You also learned that all living things have DNA that controls the traits or characteristics that they have. So let's talk a little bit about technology.

Technology is using science to improve our lives, so biotechnology would be using what kind of science to improve our lives? That's right, biology. Tell me some places that use technology? (cell phones, computers, tablets, cars, appliances-stoves, refrigerators and microwaves; hospitals, car repair shops, etc.). Technology is used in all of those places and devices because it makes things better or easier to use. The same is true of agriculture. We use technology to improve our crops and livestock and to take better care of our environment. One of the areas we use biotechnology in is genetics. Remember when we talked earlier about farmers choosing their largest ears of corn to save and plant the next year. We use biotechnology to do that and more on a larger scale.

For example, by combining two different varieties of corn, we developed hybrids, which are much hardier and healthier than the single varieties. By using what we know about the genetics of living things, we can make changes in a plant's DNA that will produce plants that are healthier, stronger, more resistant to diseases or insects and more productive.

We do this through a process called recombinant genetics. This involves taking a gene, which is a section of DNA, from one plant and inserting it into the DNA of a different plant. Let me share an example with you. Pass out Golden Rice worksheet and review process and benefits.

When we make changes to the genetics of a plant, we call the new plant a genetically modified organism or a GMO. That means that although 99.9% of the plant is the same as the original, a small part has been changed genetically.

Of course, this process is carefully monitored and tested extensively. We have been using biotechnology to improve agriculture for over 20 years with no instances of health problems in humans or animals. In fact, about 90% of the processed food available in your grocery store has ingredients that have been genetically modified. I brought a few samples with me, would any of you be interested in trying them? (pass out candy or chip samples).

Unfortunately, a lot of people don't understand how using biotechnology can help feed starving or sick people around the world or create products that are better for our environment or healthier to eat. Some of the crops we grow have been modified to resist certain insects, which means we don't have to use a pesticide to keep that insect from damaging the plant, grain, fruit or vegetable. We also use biotechnology to preserve our soil and water resources.

We are often afraid of things we don't understand. That is why it is important to learn about new things, so we can make informed decisions. That's what scientists try to do, they use the

scientific method to analyze and test things so they can get an accurate result. We need to think like scientists too. That means not believing everything that we read on the internet or that someone tells us. Sometimes it's hard to know what to believe, so don't be afraid to ask questions and to use reliable sources for information. To help you understand how easy it is to be misled, we have a fact vs fiction worksheet that we want you to fill out. See how well you can determine which statements are true and which are false. We'll tell you the answers when you're done so you know the correct answers.

Let's review what we've learned today.

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