

HUMAN SCIENCE Lesson Plan

Day 1 and 2 –What’s wrong with that doggie in the window?



Outcomes for Today

7. The frequency of an allele in a gene pool of a population depends on many factors and may be stable or unstable over time. As a basis for understanding this concept:
 - 7.a. Students know why natural selection acts on the phenotype rather than the genotype or an organism.

PREPARE

1. Background Background knowledge to engage the content

What is inbreeding? How can it harm species?

Inbreeding is the mating of closely related species. This is done to preserve certain traits in a species. However, over time inbreeding depletes diversity in the genetic pool creating organisms that have less vigor and chance of survival.

Historically, this has been a common occurrence in royal families in an effort to preserve royal blood lines.

In breeding also has been used in dog breeds. Over time inbred animals become genetically weaker than their counter parts.

2. Word Wall vocabulary words to teach and add to the Word Wall.

Allele:	An allele is an alternative form of a gene (one member of a pair) that is located at a specific position on a specific chromosome. These DNA codings determine distinct traits that can be passed on from parents to offspring
Natural Selection:	The process in nature by which, according to Darwin's theory of evolution, only the organisms best adapted to their environment tend to survive and transmit their genetic characteristics in increasing numbers to succeeding generations while those less adapted tend to be eliminated. Also known as “survival of the fittest”.
Phenotype:	The expression of a specific trait, such as stature or blood type, based on genetic and environmental influences.
Genotype:	The combination of alleles located on homologous chromosomes that determines a specific characteristic or trait.

READ

3. View

Video:

Go to: www.discoveryeducation.com (Subscription Based Website)

Search: Natural Selection

Locate: Biomes Islands and Evolution (approximate run time 56:00)

You may want to use the video over the course of two days. Using the remaining time to review vocabulary, take and review notes on the film, and to answer the key questions.

RESPOND

4. Visual Process.

There is no visual process in today's lesson

EXPLORE

5. Activity Explore more deeply with a visual or oral language activity.

There is no activity in today's lesson

6. Discussion Ask discussion questions that engage at many levels

Key Questions

- How do animals living in the Galápagos Islands help support the theory of evolution?
- How can isolation and time lead to evolutionary changes in animal species?
- How do certain island plants and animals form mutually beneficial relationships?
- How can cloning help restore extinct species?
- What is adaptation?
- Why are there differences within the same species from one location to the next?

EXTEND

7. Write, Draw or Speak.

Science Journal:

Draw or list reasons that animals and organisms need to adapt.

What can happen if they don't

Why did Darwin refer to natural selection as survival of the fittest.

8. Close

Close by extending today's lesson to what you can do in your life and the world.

Students should complete the chart below based on their learning from the day.

They should fill in the chart with one change and one habit per day.

- *Change I can make = decreasing bad habits and bad choices;*
- *Habit I can build = Increasing healthy habits and choices*

<i>Change I can make</i>	
Habit I can build	

HUMAN SCIENCE Video Notes



Name:

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HUMAN SCIENCE Lesson Plan

Day 3—What's wrong with that doggie in the window?



Outcomes for Today

7. The frequency of an allele in a gene pool of a population depends on many factors and may be stable or unstable over time. As a basis for understanding this concept:
 - 7.a. Students know why natural selection acts on the phenotype rather than the genotype or an organism.

PREPARE

1. Background Background knowledge to engage the content

What is the origin of the phrase; survival of the fittest?

The idea that species adapt and change by natural selection with the best suited mutations becoming dominant.

This expression is often attributed to Charles Darwin and, although it appears in the fifth edition of his *Origin of Species*, 1869, it is there attributed to Herbert Spencer: "The expression often used by Mr. Herbert Spencer of the survival of the fittest is more accurate..." Spencer had published *The principles of biology* in 1864. In that he referred to 'survival of the fittest' twice: "This survival of the fittest, implies multiplication of the fittest. "This survival of the fittest... is that which Mr. Darwin has called 'natural selection, or the preservation of favored races in the struggle for life'." By 'fittest', of course, Spencer and Darwin didn't have in mind the commonly used meaning of the word now, i.e. the most highly trained and physically energetic. The 'fittest' referred to here are those animals which are the most suited to their environment, i.e. those which are best fitted to survive

<http://www.phrases.org.uk/meanings/340400.html>

2. Word Wall

vocabulary words to teach and add to the Word Wall.

- Allele:** An allele is an alternative form of a gene (one member of a pair) that is located at a specific position on a specific chromosome. These DNA codings determine distinct traits that can be passed on from parents to offspring
- Natural Selection:** The process in nature by which, according to Darwin's theory of evolution, only the organisms best adapted to their environment tend to survive and transmit their genetic characteristics in increasing numbers to succeeding generations while those less adapted tend to be eliminated. Also known as "survival of the fittest".
- Phenotype:** The expression of a specific trait, such as stature or blood type, based on genetic and environmental influences.
- Genotype:** The combination of alleles located on homologous chromosomes that determines a specific characteristic or trait.

READ

3. View

Video:

Go to: www.discoveryeducation.com (Subscription Based Website)

Search: Natural Selection

Locate: Biologix: Gene Frequencies, Natural Selection, and Speciation
(approximate run time 29:00)

This video supports, why natural selection acts on the phenotype. You can use it in its entirety or use segments to fit your needs.

Article:

Go to: www.pbs.org

Search: Natural Selection

Locate: NOVA: Are We Still Evolving?

This article gives two sides to the question of Are Humans Still Evolving?

RESPOND

4. Visual Process.

There is no visual process in today's lesson

EXPLORE

5. Activity Explore more deeply with a visual or oral language activity.

Web Activities:

These are good activities for students to explore individually in class or at home.

Sex and the Single Guppy

Go to: www.pbs.org

Search: Natural Selection

Locate: The Evolution Library

Multi-media activities are located at the top of the screen.

- Sex and the Single Guppy

<http://www.pbs.org/wgbh/evolution/sex/guppy/index.html>

- Coral Reef Connections

<http://www.pbs.org/wgbh/evolution/survival/coral/index.html>

- The Mating Game

<http://www.pbs.org/wgbh/evolution/sex/mating/index.html>

6. Discussion Ask discussion questions that engage at many levels

Key Questions

- If you know you have a genetic mutation for a certain trait do you have the responsibility to not breed to ensure your child has a better chance of survival without that trait?
- Is it in a parents best interest to have genetic testing prior to pregnancy to determine if they want to conceive?
- If you found out your child was expected to inherit a certain defect that would harm it for the rest of its life –what would you do?
- Why do males and females of certain species have different coats, feathers, plumage, scales, etc? How does that affect each ones chance of survival?
- Based on today's article, do you think humans are still evolving? What about adapting? What is the difference?

EXTEND

7. Write, Draw or Speak.

Science Journal:

Why it important for a species to continue to evolve and adapt? If basic necessities like food, water, and shelter are easy to come by will a species be able to survive during a shortage? Explain?

8. Close

Close by extending today's lesson to what you can do in your life and the world.

Students should complete the chart below based on their learning from the day. They should fill in the chart with one change and one habit per day.

- *Change I can make = decreasing bad habits and bad choices;*
- *Habit I can build = Increasing healthy habits and choices*

<i>Change I can make</i>	
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HUMAN SCIENCE Video Notes



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HUMAN SCIENCE Lesson Plan

Day 4 & 5—What’s wrong with that doggie in the window? 2 day activity



Outcomes for Today

7. The frequency of an allele in a gene pool of a population depends on many factors and may be stable or unstable over time. As a basis for understanding this concept:
 - 7.a. Students know why natural selection acts on the phenotype rather than the genotype or an organism.

PREPARE

1. Background Background knowledge to engage the content

Background knowledge is imbedded in today’s activity. See section 5

2. Word Wall vocabulary words to teach and add to the Word Wall.

Allele:	An allele is an alternative form of a gene (one member of a pair) that is located at a specific position on a specific chromosome. These DNA codings determine distinct traits that can be passed on from parents to offspring
Natural Selection:	The process in nature by which, according to Darwin's theory of evolution, only the organisms best adapted to their environment tend to survive and transmit their genetic characteristics in increasing numbers to succeeding generations while those less adapted tend to be eliminated. Also known as “survival of the fittest”.
Phenotype:	The expression of a specific trait, such as stature or blood type, based on genetic and environmental influences.
Genotype:	The combination of alleles located on homologous chromosomes that determines a specific characteristic or trait.

READ

3. View

No video or article today. See section 5

RESPOND

4. Visual Process.

There is no visual process in today's lesson. See section 5.

EXPLORE

5. Activity

Explore more deeply with a visual or oral language activity.

The Perfect Cow

This activity will take 2-3 45 minute class periods

Go to: www.pbs.org

Search: Natural Selection

Locate: Nature—lessons—The Perfect Cow

6. Discussion

Ask discussion questions that engage at many levels

Key Questions

Key questions are imbedded in today's activity.

EXTEND

7. Write, Draw or Speak.

Science Journal:

Can a species be used for work and domestication?

Think of an animal that can do both. Were they able to perfect those traits without human intervention?

Describe a world in which there has been no human intervention as it relates to animals. What are the possibilities for that world?

8. Close

Close by extending today's lesson to what you can do in your life and the world.

Students should complete the chart below based on their learning from the day.

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- *Change I can make = decreasing bad habits and bad choices;*
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HUMAN SCIENCE Lesson Plan

Day 1—How shallow is your gene pool?

Day 2—optional class activity (section 5)



Outcomes for Today

7. The frequency of an allele in a gene pool of a population depends on many factors and may be stable or unstable over time. As a basis for understanding this concept:
 - 7.b. Students know why alleles that are lethal in a homozygous individual may be carried to a heterozygote and thus maintained in a gene pool.

PREPARE

1. Background Background knowledge to engage the content

What are codominant genes?

Not all alleles are dominant and recessive like the ones Mendel studied in his pea plants. Some alleles are equally strong and neither are masked by the other. When both alleles are present, they are both expressed in the phenotype. The hybrid is a blend of both alleles. Alleles which are equally strong are said to be "incomplete dominant" alleles. An example of this is found in carnations. When purebred white carnations are crossed with purebred red carnations, the result is a pink carnation. Incomplete dominant alleles are represented by different capitalized letters.

Codominance, is a situation in which both alleles are equally strong and both alleles are visible in the hybrid genotype. An example of codominance is found in chickens. When white chickens are crossed with black chickens, the result is not a grey chicken, but a chicken with both black and white feathers. When expressing incomplete alleles, both alleles are written as superscript capital letters placed above the letter "i".

2. Word Wall vocabulary words to teach and add to the Word Wall.

Homozygous:	Having identical pairs of genes for any given pair of hereditary characteristics
Heterozygous:	Having dissimilar pairs of genes for any hereditary characteristic
Dominant:	The one of a pair of alternative alleles that masks the effect of the other when both are present in the same cell or organism.
Codominant:	Pertaining to two different alleles that are fully expressed in a heterozygous individual.
Recessive:	That one of a pair of alternative alleles whose effect is masked by the activity of the second when both are present in the same cell or organism.

RESPOND

4. Visual Process.

Masked Recessives

Depending on gene pairing some genetic traits are masked by dominant ones.

Study possible recessive traits.

Draw that trait;

Overshadowing it (like a mask would) draw the dominant trait that could mask the recessive one.

Example: Sickle cell anemia being masked by a non-sickle cell blood type.
Tay-sacs disease

EXPLORE

5. Activity Explore more deeply with a visual or oral language activity.

Risky Genes (one class period)

Go to: www.pbs.org

Search: Allele

Locate: NOVA Science NOW: Risky Genetics

This activity encourages student teams analyze genetic test results for fictional characters, compare their characters' risks of developing specific diseases, and assess the risks for the next generation

6. Discussion Ask discussion questions that engage at many levels

Key Questions

- Is there a moral or ethical obligation for people who know they have (life threatening) genetic disorders to not reproduce?
- What changes can occur to the gene pool to threaten it?
- What happens to genes to make it possible for a gene with an issue is able to be passed on to the next generation?
- What diseases can be a result of a codominant gene situation?
- How can weak genes be taken from the gene pool?

EXTEND

7. Write, Draw or Speak.

Cartoon:

Using a cartoon strip format draw how a recessive gene is able to stay in the gene pool. Use thought bubbles if needed to convey the process.

8. Close

Close by extending today's lesson to what you can do in your life and the world.

Students should complete the chart below based on their learning from the day. They should fill in the chart with one change and one habit per day.

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HUMAN SCIENCE Lesson Plan

Day 1—Introducing, “A new mutation”

Day 2—Optional Activity see section 5

Day 3—Optional activity see section 5



Outcomes for Today

7. The frequency of an allele in a gene pool of a population depends on many factors and may be stable or unstable over time. As a basis for understanding this concept:
 - 7.c. Students know new mutations are constantly being generated in a gene pool.

PREPARE

1. Background Background knowledge to engage the content

What is genetic drift?

Genetic drift—along with natural selection, mutation, and migration—is one of the basic mechanisms of evolution.

In each generation, some individuals may, just by chance, leave behind a few more descendants (and genes, of course!) than other individuals. The genes of the next generation will be the genes of the “lucky” individuals, not necessarily the healthier or “better” individuals. That, in a nutshell, is genetic drift. It happens to ALL populations—there’s no avoiding the vagaries of chance.

Genetic drift affects the genetic makeup of the population but, unlike natural selection, through an entirely random process. So although genetic drift is a mechanism of evolution, it doesn’t work to produce adaptations.

2. Word Wall vocabulary words to teach and add to the Word Wall.

Mutation:	A change of the DNA sequence within a gene or chromosome of an organism resulting in the creation of a new character or trait not found in the parental type.
Genetic Variation:	Deviation from the genotype in structure, form, physiology, or behavior.
Random:	Having no specific pattern, purpose, or objective
Selective Breeding:	Breeding of animals or plants having desirable characters.

READ

3. View

Article/Video

Go to: www.pbs.com
Search: Beneficial Mutations
Locate: NOVA Science Now: Pardis Sabeti

RESPOND

4. Visual Process.

Graphic Representation:

- Draw a three to four panel representation of generic variation.
- Use your own words to explain what is happening at each stage.

EXPLORE

5. Activity Explore more deeply with a visual or oral language activity.

<http://evolution.berkeley.edu/evosite/evo101/IIIDGeneticdrift.shtml>

This is a good source of in class activities and class web activities and examples.

Click the link: Sampling Error and Evolution

You can have students recreate this activity with colored marbles, tabs, or coins

Click the link: Effects of Genetic Drift

Review with class

Click the link: Bottlenecks and Founder Effects

Have student's list species that may have been affected by a bottleneck. Students should be able to explain why.

All three of these sections have additional lesson plans attached to extend these principles.

6. Discussion Ask discussion questions that engage at many levels

Key Questions

- Why are mutations important in a gene pool?
- What is selective breeding? Why can't it eliminate genetic traits or diseases from a population?
- What are the ethical and moral issues that surround selective breeding among animal species and plants? What risks come with this process?
- How does the randomness of genetic variation ensure that you can never breed out certain traits?

EXTEND

7. Write, Draw or Speak.

Science Journal:

Explain:

What is an example of a beneficial mutation? How does it help?

What is an example of a harmful mutation? How does it help?

8. Close Close by extending today's lesson to what you can do in your life and the world.

Students should complete the chart below based on their learning from the day.
They should fill in the chart with one change and one habit per day.

- *Change I can make = decreasing bad habits and bad choices;*
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HUMAN SCIENCE Lesson Plan

Day 1—We look the same but are different

Day 2— Optional activity see section 5



Outcomes for Today

- 7. The frequency of an allele in a gene pool of a population depends on many factors and may be stable or unstable over time. As a basis for understanding this concept:
 - 7.d. Students know variation within a species increases the likelihood that at least some members of a species will survive under changed environmental conditions.

PREPARE

1. Background Background knowledge to engage the content

Why is genetic diversity important to a species?

Genetic diversity is important to species to help a species change and adapt to environmental or genetic changes. Genetic diversity promotes survival and if species can not adapt or change as needed the threat of extinction of a species can occur.

Genetic diversity within a species can help an animal survive changes in their environment and can better adapt and survive changes in food sources or disease.

2. Word Wall vocabulary words to teach and add to the Word Wall.

Natural Selection:	The process in nature by which, according to Darwin's theory of evolution, only the organisms best adapted to their environment tend to survive and transmit their genetic characteristics in increasing numbers to succeeding generations while those less adapted tend to be eliminated.
Adaptive Traits:	An alteration or adjustment in structure or habits, often hereditary, by which a species or individual improves its condition in relationship to its environment.
Extinction:	No longer existing or living
Probability:	Number expressing the likelihood that a specific event will occur, expressed as the ratio of the number of actual occurrences to the number of possible occurrences.

READ

3. View

Article:

Go to: www.pbs.com

Search: Genetic Diversity

Locate: Now with Bill Moyers; Science and Health the Earth Debate-Genetic Diversity

Read: As a class

Video:

Go to: www.discoveryeducation.com (Subscription Based Website)

Search: Genetic Diversity

Locate: Exploring the Diversity of Life; A World of Difference (approximate run time 10:00)

RESPOND

4. Visual Process.

KWL

The term genetic drift can be intimidating. Using other terms that refer to the same subject such as:

Species Variation

Genetic Diversity

Natural Selection

Create a KWL Chart to clarify the subject matter.

Once the chart is completed have students rephrase the “K” section of the chart into question and answer form.

EXPLORE

5. Activity

Explore more deeply with a visual or oral language activity.

Race: The Power of the Illusion—One Class Session

http://www.pbs.org/race/000_About/002_04-teachers-05.htm

In this computer-based lesson, students will measure genetic diversity within and between three subspecies of chimpanzees in order to gain a better understanding of genetic distinctiveness and explore race as a genetic concept.

6. Discussion Ask discussion questions that engage at many levels

Key Questions

- What is diversity of life?
- Why are there so many different types of plants and animals in our area and not just one type?
- How does a global economy and world affect diversity in certain areas?
- Why is it important to save biodiversity?
- Why is the rate of extinction increasing?
- How is the effect of globalization and a global economy effecting the biodiversity of the planet (think about critters/disease that travel with shipments).

EXTEND

7. Write, Draw or Speak.

Science Journal:

Think about the basic food chain or web of an ecosystem.

- Draw the food chain or web so it has at least 5 animals or species in it.
- Connect the web

What happens if you lose one element in a food chain or web?

Detail the effects of losing one animal or species in the web? What will happen to your ecosystem? What can happen to other ecosystems that rely on yours?

8. Close Close by extending today's lesson to what you can do in your life and the world.

Students should complete the chart below based on their learning from the day.

They should fill in the chart with one change and one habit per day.

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HUMAN SCIENCE Lesson Plan

Day 1—Hi Hardy, It's Nice to Meet You

Day 2 & 3—Optional Activity see section 5



Outcomes for Today

- 7. The frequency of an allele in a gene pool of a population depends on many factors and may be stable or unstable over time. As a basis for understanding this concept:
 - 7.e. Students know the conditions for Hardy-Weinberg equilibrium in a population and why these conditions are not likely to appear in nature.
 - 7f. Students know how to solve the Hardy-Weinberg equation to predict the frequency of genotypes in a population, given the frequency of phenotypes.

PREPARE

1. Background Background knowledge to engage the content

What is the Hardy Weinberg Equilibrium?

The Hardy-Weinberg Equilibrium is the unifying concept of population. It was named after the two scientists who simultaneously discovered the law. The law predicts how gene frequencies will be transmitted from generation to generation given a specific set of assumptions.

2. Word Wall vocabulary words to teach and add to the Word Wall.

Equilibrium:	A condition in which all acting influences are canceled by others, resulting in a stable, balanced, or unchanging system.
Natural Selection:	The process in nature by which, according to Darwin's theory of evolution, only the organisms best adapted to their environment tend to survive and transmit their genetic characteristics in increasing numbers to succeeding generations while those less adapted tend to be eliminated.
Predict:	To state, tell about, or make known in advance, especially on the basis of special knowledge.
Gene:	Specific area on an Allele
Allele:	Specific location on the gene

READ

3. View

Video:

Go to: www.discoveryeducation.com (Subscription Based Website)

Search: Hardy-Weinberg

Locate: Biologix: The Hardy-Weinberg Principle (approximate run time 15:00)
Segment 4: Applying the Hardy Weinberg Principle to Predict Coat Color in a Population of Fuzz Balls (05:33)
Segment 5: Basic Differences Between Medelian Genetics and Population Genetics (00:24)
Segment 6: Definitions of a population, A Gene Pool, and the Hardy Weinberg Principle (00:36)
Segment 7: Population Simulation: Testing the Hardy-Weinberg Theory (09:11)

RESPOND

4. Visual Process.

Sketch:

Sketch a diverse gene pool.

What does it look like and what traits does it have?

EXPLORE

5. Activity

Explore more deeply with a visual or oral language activity.

Hardy Weinberg Principle: This activity will take 1 1/2 – 2 class periods

Go to: http://education.llnl.gov/bep/math/10/sHardy_1.html

The Hardy-Weinberg Principle deals with the frequency, or percentage, of alleles in a population. It states that the frequency of an allele, or rather the number of times an allele is present in a population, is constant from one generation to the next. In order for this to occur certain conditions must be met. The conditions are:

1. The population must mate at random.
2. Alleles cannot be lost through migration.
3. Alleles are not changed by mutation.
4. Alleles are not lost by selective pressure or discrimination.

This lab will take 1 ½-2 class periods to complete. The formulas and supply list are imbedded in the lesson plan.

6. Discussion Ask discussion questions that engage at many levels

Key Questions

- Why is it important to be able to predict genetic outcomes?
- How can the ability to predict genetic outcomes help or hinder us?
- What is the basic principle of the Hardy Weinberg Principle?
- Why is the Hardy Weinberg principle a good indication of what could happen in nature? Why can't it be reproduced in nature?
- How can recessive traits be removed from the gene pool?
- Why is it important to be able to use the Hardy Weinberg Principle to make predictions about a species?

EXTEND

7. Write, Draw or Speak.

Science Journal:

Investigate Hardy Weinberg. How did their discovery of the Hardy Weinberg Principle affect science and the ability to make predictions about a species or population? Why is this important?

8. Close Close by extending today's lesson to what you can do in your life and the world.

Students should complete the chart below based on their learning from the day. They should fill in the chart with one change and one habit per day.

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HUMAN SCIENCE Lesson Plan

Day 4—Hi Hardy, It's Nice to Meet You



Outcomes for Today

- 7. The frequency of an allele in a gene pool of a population depends on many factors and may be stable or unstable over time. As a basis for understanding this concept:
 - 7.e. Students know the conditions for Hardy-Weinberg equilibrium in a population and why these conditions are not likely to appear in nature.
 - 7f. Students know how to solve the Hardy-Weinberg equation to predict the frequency of genotypes in a population, given the frequency of phenotypes.

PREPARE

1. Background Background knowledge to engage the content

What is Alzheimer's Disease?

Alzheimer's is a brain disease that causes problems with memory, thinking and behavior. Symptoms usually develop slowly and get worse over time, becoming severe enough to interfere with daily tasks.

Alzheimer's is the most common form of dementia, a general term for memory loss and other intellectual abilities serious enough to interfere with daily life. Alzheimer's disease accounts for 50 to 70 percent of dementia cases.

Alzheimer's is not a normal part of aging, although the greatest known risk factor is increasing age, and the majority of people with Alzheimer's are 65 and older. But Alzheimer's is not just a disease of old age. Up to 5 percent of people with the disease have early-onset Alzheimer's (also known as younger-onset), which often appears when someone is in their 40s or 50s.

2. Word Wall

vocabulary words to teach and add to the Word Wall.

Review words from day 1-3 lesson plan.

Equilibrium:	A condition in which all acting influences are canceled by others, resulting in a stable, balanced, or unchanging system.
Natural Selection:	The process in nature by which, according to Darwin's theory of evolution, only the organisms best adapted to their environment tend to survive and transmit their genetic characteristics in increasing numbers to succeeding generations while those less adapted tend to be eliminated.
Predict:	To state, tell about, or make known in advance, especially on the basis of special knowledge.
Gene:	Specific area on an Allele
Allele:	Specific location on the gene

READ

3. View

Article:

Go to: http://www.bio-medicine.org/biology-definition/Hardy-Weinberg_principle/

Search: Hardy Weinberg Principle; Alzheimer's Disease

Locate: Hardy Weinberg Principle

Read: As a class. This is a technical article you may want to review or highlight it for your class.

Video:

Go to: http://www.alz.org/alzheimers_disease_4719.asp

Search: Inside the Brain An Interactive Tour

Locate: The Interactive Tour

Click: Start the tour

RESPOND

4. Visual Process.

Sketch and Label

Sketch and label a healthy brain and a brain with Alzheimer's. What are the differences?

EXPLORE

5. Activity Explore more deeply with a visual or oral language activity.

Optional for teens and kids:

Go to: <http://www.alz.org>

Locate: Living with Alzheimer's

Click: Just for Teens and Kids

There is a short film clip and also resources and information for kids and teens on this site.

6. Discussion Ask discussion questions that engage at many levels

Key Questions

- What is the difference between the right and the left brain?
- How does Alzheimer's affect the brain?
- What are the stages of Alzheimer's and how do they affect you?
- How can you use the Hardy Weinberg Principle to study the effects of Alzheimer's on a given population?

EXTEND

7. Write, Draw or Speak.

Science Journal:

Re-state in your own words what happens to a person with Alzheimer's. What kind of prevention can be done to help your mind?

8. Close Close by extending today's lesson to what you can do in your life and the world.

Students should complete the chart below based on their learning from the day. They should fill in the chart with one change and one habit per day.

- *Change I can make = decreasing bad habits and bad choices;*
- *Habit I can build = Increasing healthy habits and choices*

<i>Change I can make</i>	
Habit I can build	

HUMAN SCIENCE Video Notes



Name:

Part I:

Note taking tips: (Cornell Notes)

- Write important details from the video, segment, article, or passage in the second column;
- After you write your notes, return to the first column and add phrases, words and questions related to the details. A sketch or picture may also be helpful.

Title:

Date:

Column 1: Phrases, words, questions or a sketch related to the details in column 2.	Column 2: Important Details

Part II:

Note taking tips: (Cornell Notes)

- Summarize the video, article, or passage in the space below. Use your own words.

HUMAN SCIENCE Lesson Plan

Day 5-8—Hi Hardy, It's Nice to Meet You (activities)



Outcomes for Today

- 7. The frequency of an allele in a gene pool of a population depends on many factors and may be stable or unstable over time. As a basis for understanding this concept:
 - 7.e. Students know the conditions for Hardy-Weinberg equilibrium in a population and why these conditions are not likely to appear in nature.
 - 7f. Students know how to solve the Hardy-Weinberg equation to predict the frequency of genotypes in a population, given the frequency of phenotypes.

PREPARE

1. Background Background knowledge to engage the content

Background information is imbedded in today's activity.

2. Word Wall vocabulary words to teach and add to the Word Wall.

Equilibrium:	A condition in which all acting influences are canceled by others, resulting in a stable, balanced, or unchanging system.
Natural Selection:	The process in nature by which, according to Darwin's theory of evolution, only the organisms best adapted to their environment tend to survive and transmit their genetic characteristics in increasing numbers to succeeding generations while those less adapted tend to be eliminated.
Predict:	To state, tell about, or make known in advance, especially on the basis of special knowledge.

READ

3. View

Review the following links with the class prior to starting the activity:

Activity 1:

Genetic Variation; Evolution 101

<http://evolution.berkeley.edu/evosite/evo101/IIICGeneticvariation.shtml>

Natural Selection; Evolution 101

<http://evolution.berkeley.edu/evosite/evo101/IIINaturalSelection.shtml>

Activity 2

See the above two websites and:

Adaption; Evolution 101

<http://evolution.berkeley.edu/evosite/evo101/IIINaturalSelection.shtml>

RESPOND

4. Visual Process.

There is no visual process in today's lesson

EXPLORE

5. Activity Explore more deeply with a visual or oral language activity.

Hardy Weinberg According to Hoyle (one class period)

Go to:

http://evolution.berkeley.edu/evosite/search/search_lessons.php?sort_by=audience_rank&topic_id=&keywords=teach+about+genetic+drift&Submit=Search

Locate: Teaching evolution concepts and lessons
Hardy-Weinberg Equilibrium According to Hoyle
Students achieve an understanding of the Hardy-Weinberg Equilibrium by using decks of playing cards without recourse to algebra.

This lesson covers the following concepts:

- New heritable traits can result from recombinations of existing genes or from genetic mutations in reproductive cells.
- Natural selection acts on phenotype as an expression of genotype.
- Populations evolve.
- Evolution may occur as a result of genetic drift.
- Speciation is the splitting of one ancestral lineage into two or more descendant lineages.

Activity 2—two class periods

Go to:

http://evolution.berkeley.edu/evosite/search/search_lessons.php?sort_by=audience_rank&topic_id=&keywords=teach+about+genetic+drift&Submit=Search

Locate: Teaching evolution concepts and lessons
The Natural Selection Game

This is a board game that simulates natural selection. It is suitable for an introductory biology class and for more advanced classes where you could go into more detail on important principles such as the role of variation and mutation.

Activity 3—one and one-half to two class periods

Go to: <http://www.accessexcellence.org/AE/AEPC/WWC/1995/fishtwist.php>

Locate: A Fishy Twist on Adaptions

"A Fishy Twist on Adaptions" is designed to allow students to think about specific adaptations and how they pertain to the survival of the individual and, ultimately, the species. Students design a fish based on certain criteria (adaptations) and determine the type of habitat which would be best suited for their fish's survival. After drawing the fish and its habitat, students exchange habitats with another group and must first decide and then explain if their fish could survive in the new environment.

6. Discussion Ask discussion questions that engage at many levels

Key Questions

Key questions are imbedded in the activity lesson plans.

EXTEND

7. Write, Draw or Speak.

Based on today's activity answer and explain the following questions:

Why is a smaller population more likely to go extinct?

What happens to the relationship between prey and predators over time? Other than consumption, what other factors increase or decrease the size of a population in a prey/predator relationship?

8. Close Close by extending today's lesson to what you can do in your life and the world.

Students should complete the chart below based on their learning from the day. They should fill in the chart with one change and one habit per day.

- *Change I can make = decreasing bad habits and bad choices;*
- *Habit I can build = Increasing healthy habits and choices*

<i>Change I can make</i>	
Habit I can build	

HUMAN SCIENCE Video Notes



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