

HUMAN SCIENCE Lesson Plan

Day 1: You're Under My Skin



Outcomes for Today

- 10. Organisms have a variety of mechanisms to combat disease. As a basis for understanding the human immune response:
 - 10.a. Students know the role of the skin in providing non-specific defenses against infection.

PREPARE

1. Background Background knowledge to engage the content

What is your first line of defense against infection and disease?

Before germs invade the inside of your body your body defends against germs on the outside. Your body's largest organ is the skin. Skin plays a major role in protecting your internal organs, muscles, and creates a barrier against infections and diseases.

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

Physical Barrier:	Definition
Pathogen:	A disease causing organism
Nonspecific defense:	One pathogen is not distinguished from another

READ

3. View

Video:

Go to: www.discoveryeducation.com (Subscription Based Website)
Search: Skin
Locate: The Ultimate Guide; The Human Body
Segment: The Skin (approximate run time 04:33)

Video:

Go to: www.discoveryeducation.com (Subscription Based Website)
Search: Skin
Locate: Elementary Video Adventure;
How Our Bodies Work—Skin (approximate run time 08:30)

**Note: this is a lower level video but filled with good information. Use it based on the needs and levels of your class and you students.

Images:

Go to: <http://www.medicinenet.com/skin/focus.htm>
Search: Skin
Locate: This web site has many images that relate to infected and broken skin.
This is an example of non-healthy skin.

Article:

Go to: www.sciencedaily.healthology.com
Search: Skin
Locate: Out Outer Layer; The Skin or
Healthy Skin Every Day (print the transcript or watch the video 15:24)

RESPOND

4. Visual Process.

Healthy Skin Poster

Based on today's learning create a poster that visually represents ways to keep your skin healthy.

EXPLORE

5. Activity

Explore more deeply with a visual or oral language activity.

There is no activity for today.

6. Discussion Ask discussion questions that engage at many levels

Key Questions

- What is the purpose and role of the skin?
- What happens if there is a break in the skin?
- What happens to a pregnant woman's skin? How?
- What is the function of the skin as an organ?
- How does skin help regulate heat? Why is sweat needed?

EXTEND

7. Write, Draw or Speak.

Science Journal:

List 5 elements of healthy skin?

Write a sentence that describes these elements?

Rephrase the above sentences in the form of a question?

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 2: You're Under My Skin



Outcomes for Today

10. Organisms have a variety of mechanisms to combat disease. As a basis for understanding the human immune response:
 - 10.a. Students know the role of the skin in providing non-specific defenses against infection.

PREPARE

1. Background Background knowledge to engage the content

What is your first line of defense against infection and disease? (review from yesterday)

Before germs invade the inside of your body your body defends against germs on the outside. Your body's largest organ is the skin. Skin plays a major role in protecting your internal organs, muscles, and creates a barrier against infections and diseases.

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

Physical Barrier: Definition

Pathogen: A disease causing organism

Nonspecific defense: One pathogen is not distinguished from another

Review words from yesterday.

READ

3. View

Images:

Go to: <http://www.medicinenet.com/skin/focus.htm>

Search: Skin

Locate: This web site has many images that relate to infected and broken skin.
This is an example of non-healthy skin.

Article:

Go to: www.sciencedaily.healthology.com

Search: Skin

Locate: Out Outer Layer; The Skin or
Healthy Skin Every Day (print the transcript or watch the video 15:24)

RESPOND

4. Visual Process.

No visual product today

EXPLORE

5. Activity

Explore more deeply with a visual or oral language activity.

What's Skin?

Create a diagram or poster that depicts the layers of skin that were in.

- Diagram the skin;
- Name the layers of the skin;
- Write a brief description of each of the layers of skin.

6. Discussion

Ask discussion questions that engage at many levels

Key Questions

- What are some tips for keeping skin healthy?
- What does healthy skin look like?
- What is the purpose of using a non-soap like product?
- The article/video from today was very specific on keeping our skin healthy. They had very basic advice. Why do you think there is so many health care products on the market when many of them are not needed?
- What is smoker's face? How is it caused?

EXTEND

7. Write, Draw or Speak.

Science Journal:

Based on today's reading a video describe a good skin care regimen?

Be specific for your type of skin?

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*

Change I can make	
Habit I can build	

HUMAN SCIENCE Video Notes



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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 1: The War Within



Outcomes for Today

10. Organisms have a variety of mechanisms to combat disease. As a basis for understanding the human immune response:
 - 10.b. Students know the role of antibodies in the body's response to infection.

PREPARE

1. Background Background knowledge to engage the content

What is an antibody?

Most people have the proper antibodies in their systems. Antibodies are the body's natural defense against any invasion of a foreign substance. This could be an infection or disease. There are millions of different types of antibodies in our systems to help protect us against the harmful effects of infections.

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

Antibodies:	A blood protein produced in response to an antigen, with which in combines specifically; antibodies block the ability of pathogens or foreign material to injure the body.
Antigens:	Any material, usually a protein, that is recognized as foreign and elicits an immune response.
Immune Response:	The body's response against specific pathogens or foreign materials; results in the production of proteins, called antibodies.
Infectious Disease:	A disease caused by viruses or microorganisms that can be transmitted directly from an affected individual to a healthy individual.
Pathogens:	A disease causing organism. Aka Germs
Non-specific Protection:	One pathogen is not distinguished from another. This type involves skin, mucous, inflammatory response.

READ

3. View

Article:

Go to: www.antibodyresource.co

Search: Educational Resources

Locate: What the Heck is an Antibody

Read: As a class

Video:

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

Search: Antibody

Locate: The Body's Defense Against Disease (view 00:00-13:59)

RESPOND

4. Visual Process.

How Do You Get Sick—Poster

Based on today's reading and video clips map the ways a person can get sick.

- Think about the ways germs enter the body.
- What happens if you have never been exposed to that germ before?
- What factors play into a higher risk of getting sick?
- What are some ways you can prevent disease?

EXPLORE

5. Activity

Explore more deeply with a visual or oral language activity.

There is no activity for today

6. Discussion

Ask discussion questions that engage at many levels

Key Questions

- How do toxins harm the body?
- How does the shape of proteins in antigens help the body fight disease?
- How do bacteria and viruses harm you? How do viruses reproduce?
- What is the difference between an infectious disease and a disease like cancer? How can you defend yourself against each?
- What is your body's first line of defense?
- How does a person get sick—what reactions happen in the body?
- How can you become immune to a disease?

EXTEND

7. Write, Draw or Speak.

In your own words:

- What is the role of antibodies as your body fights infection?
- Draw a small illustration that depicts the system.

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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Note taking tips: (Cornell Notes)

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HUMAN SCIENCE Lesson Plan

Day 2: The War Within



Outcomes for Today

10. Organisms have a variety of mechanisms to combat disease. As a basis for understanding the human immune response:
 - 10.b. Students know the role of antibodies in the body's response to infection.

PREPARE

1. Background Background knowledge to engage the content

Are some germs good?

The body has a very sophisticated defense system. The skin, mucous membranes, gastric juices, and immune system work well to fight off general bacteria.

If the body is invaded by an antigen the body produces antibodies to fight the “germ war” in your body. If you are not taking care of your body the germs can sometimes win, causing an illness. However, your body remembers the germs—makes antibodies, and next time you are infected can fight against the antigens.

There is a belief that a “little dirt can't hurt”. Exposing yourself and children to some germs (in small doses) and dirt can actually strengthen the immune system and help your body create antibodies to fight more diseases.

2. Word Wall

vocabulary words to teach and add to the Word Wall.

(review the words from day 1)

Antibodies: A blood protein produced in response to an antigen, with which it combines specifically; antibodies block the ability of pathogens or foreign material to injure the body.

Antigens: Any material, usually a protein, that is recognized as foreign and elicits an immune response.

Immune Response: The body's response against specific pathogens or foreign materials; results in the production of proteins, called antibodies.

Infectious Disease: A disease caused by viruses or microorganisms that can be transmitted directly from an affected individual to a healthy individual.

Pathogens: A disease causing organism. Aka Germs

Non-specific Protection: One pathogen is not distinguished from another. This type involves skin, mucous, inflammatory response.

READ

3. View

Article:

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

Search: Antibody

Locate: Encyclopedia Article

Read: As a class

Article:

Go to: www.PBS.org

Search: Antibody

Locate: The Buzz About Plastic Antibodies

Read: As a class

RESPOND

4. Visual Process.

There is no visual process today

EXPLORE

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

Your Body is Waging War Cartoon Strip

- Have students map the production of an antibody (you can use web sources or texts to aid in this step)
- Have students describe or map the action of an antibody to a diseased cell. They can draw and describe what happens if a body is invaded by a diseased cell.

Once completed students should describe how a body remembers diseased cells and forms an immunity to it.

6. Discussion Ask discussion questions that engage at many levels

Key Questions

- What is the process of manufacturing antibodies?
- How is this process beneficial? What are some potential drawbacks to the community and to the world?
- Would you rather have an antibody that is created naturally in your body or one that is plastic and manufactured in a lab?
- What makes or enables antibodies to be germ specific?
- Is there a need to be exposed to some germs? Do you think we are doing ourselves and kids an injustice by promoting the use of anti-bacterial products over basic hand washing? Why ?

EXTEND

7. Write, Draw or Speak.

Partner Share:

Do you think it is ethical for scientist to manufacture antibodies? What do you think are the benefits and the drawbacks of this technology?

Share your discussion with the class.

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

HUMAN SCIENCE Lesson Plan

Day 1: The vaccine war!



Outcomes for Today

- 10. Organisms have a variety of mechanisms to combat disease. As a basis for understanding the human immune response:
 - 10.c. Students know how vaccination protects an individual from infectious diseases.

PREPARE

1. Background Background knowledge to engage the content

What is a pandemic?

A pandemic is something that is widespread or general. In medicine it would refer to the widespread epidemic of a disease. Something that affects a large geographic area and a larger proportion of the population. The flu pandemic of 1918 is a pandemic that affected many. More recently, scientists were observing the swine flu or H1N1 for signs of a pandemic.

With the access and ease of foreign and domestic travel, lack of boarder enforcement, and people living and working in close quarters, diseases can be spread quickly. Diseases that were thought to be dormant many decades ago are now resurfacing.

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

Immunity:	Disease resistance, usually specific for one disease or pathogen
Vaccine:	A substance that contains antigens and is used to stimulate the production of antibodies
Pathogens:	A disease causing organism
Infectious Disease:	A disease caused by viruses or microorganisms that can be transmitted directly from an affected individual to a healthy individual
Spatial Diffusion:	Geographic spread of innovations, ideas, or disease

READ

3. View

Video

Go to: www.discoveryeducation.com (Subscription Based Website)
Search: Pandemic
Locate: Swine Flu: Anatomy of a Pandemic
Watch: Segment 1 Spread of H1N1 (approximate run time 03:09)
Segment 2 What is a Virus (approximate run time 01:52)
Segment 3 Computer Models of the Pandemic (approximate run time 01:52)
Segment 7 1918 Flu epidemic (approximate run time 02:41)
Segment 8 Spreading the Virus Through Global Travel (approximate run time 02:44)
Total approximate run time (12:00)

RESPOND

4. Visual Process.

There is no visual process for today.

EXPLORE

5. Activity

Explore more deeply with a visual or oral language activity.

Geographic Diffusion of disease: The Flu Pandemic of 1918-19

<http://www.nationalgeographic.com/xpeditions/lessons/17/q912/disease.html>

This activity will take two class periods.

You will need a blank outline map of the world. Map link is available on the above website.

6. Discussion

Ask discussion questions that engage at many levels

Due to the length of time needed for the activity there are no questions in today's lesson.

EXTEND

7. Write, Draw or Speak.

Due to the length of the activity there will be no science journal today.

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

HUMAN SCIENCE Video Notes



Name:

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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 2: The Vaccine War (con't)



Outcomes for Today

- 10. Organisms have a variety of mechanisms to combat disease. As a basis for understanding the human immune response:
 - 10.c. Students know how vaccination protects an individual from infectious diseases.

PREPARE

1. Background Background knowledge to engage the content

Review information from Day 1—lesson

What is a pandemic?

A pandemic is something that is widespread or general. In medicine it would refer to the widespread epidemic of a disease. Something that affects a large geographic area and a larger proportion of the population. The flu pandemic of 1918 is a pandemic that affected many. More recently scientist were observing the swine flu or H1N1 for signs of a pandemic.

With the access and ease of foreign and domestic travel, lack of boarder enforcement, and people living and working in close quarters diseases can be spread quickly. Diseases that were thought to be dormant many decades ago are now resurfacing.

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

Review words from Day 1

Immunity:	Disease resistance, usually specific for one disease or pathogen
Vaccine:	A substance that contains antigens and is used to stimulate the production of antibodies
Pathogens:	A disease causing organism
Infectious Disease:	A disease caused by viruses or microorganisms that can be transmitted directly from an affected individual to a healthy individual
Spatial Diffusion:	Geographic spread of innovations, ideas, or disease

READ

3. View

Article

Go to:

http://news.nationalgeographic.com/news/2005/11/1110_051110_thai_birdflu.html

Search: Pandemic

Locate: Killer Bird Flu Pandemic Is Preventable, Expert Says

Read: As a class

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.

Continue the activity started in the class from day 1 lesson.

Geographic Diffusion of disease: The Flu Pandemic of 1918-19

<http://www.nationalgeographic.com/xpeditions/lessons/17/g912/disease.html>

This activity will take two class periods.

You will need a blank outline map of the world. Map link is available on the above website.

6. Discussion

Ask discussion questions that engage at many levels

Key Questions

- Can a pandemic be stopped?
- How do volunteers in Thailand help curb the Avian Flu in Asia?
- Why is medical care for flu like symptoms free in some countries?
- Do you think Thailand is acting responsibly to the avian flu issues in its country? How? What do you think they could do better?
- How does disease forecast help watch and aid a pandemic spread? How is this data used to help us? (think about prevention, vaccination, and care)
- How do epidemics spread?
- How can an epidemic or pandemic be prevented? Think about the role of the individual, community, and government.

EXTEND

7. Write, Draw or Speak.

Science Journal

Use the information gathered in today's lesson to write or draw a cartoon about the spread of an epidemic or pandemic.

- Describe the steps that should be taken to prevent a pandemic from occurring.
- What is the responsibility of the individual, community, and government when it involves widespread illness?

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

HUMAN SCIENCE Lesson Plan

Day 3: The Vaccine War



Outcomes for Today

10. Organisms have a variety of mechanisms to combat disease. As a basis for understanding the human immune response:
 - 10.c. Students know how vaccination protects an individual from infectious diseases.

PREPARE

1. Background Background knowledge to engage the content

What is a vaccine?

A vaccine is a preparation of a weakened or killed pathogen, such as a bacterium or virus, or of a portion of the pathogen's structure that upon administration stimulates antibody production or cellular immunity against the pathogen but is incapable of causing severe infection.

The flu vaccine that is given each fall is a weakened version of the strain (they think) is going to be the most prevalent. The weakened version of the disease is given to people (most of the time in a shot) and your body has the opportunity to build antibodies to fight a stronger version of the disease if you are exposed to it.

Vaccines do not automatically prevent you from getting sick. You can still get the illness you were vaccinated against but it may not be as severe.

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

Immunity:	Disease resistance, usually specific for one disease or pathogen
Vaccine:	A substance that contains antigens and is used to stimulate the production of antibodies
Pathogens:	A disease causing organism
Infectious Disease:	A disease caused by viruses or microorganisms that can be transmitted directly from an affected individual to a healthy individual
Spatial Diffusion:	Geographic spread of innovations, ideas, or disease
Virulence:	The ability to cause a disease
Resistance:	The ability of an infected host to cope with a pathogen

READ

3. View

Video:

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

Search: Vaccine

Locate: Benefits and Drawbacks of Vaccines (approximate run time 02:54)
Advances in Vaccine Development (approximate run time 06:12)

RESPOND

4. Visual Process.

Poster:

As a class visit the Centers for Disease Control and Prevention website.

www.cdc.gov

Search for: Vaccine

Locate: Immunization: Why is it Important
Immunization: The Basics
Common Questions
Concerns about the Safety of Vaccines
Vaccines for Travelers
Vaccines for Specific Groups of People

Review the site as a class

Have students create a poster depicting the importance of vaccinations.

- What vaccines have students had: polio, MMR (measles, mumps, rubella, Tetus, Hep A,B, C
- Divide the class into groups. Have students create posters that educate the public on vaccinations. What population are they going to target? Parents? Teens? Children? The Community? Travelers?
- Your poster should answer the following questions:
 - What disease is this vaccine meant to prevent?
 - Describe the disease this vaccine prevents: What are the symptoms? Who is most susceptible? Is the disease caused by a virus or bacteria?
 - Who should be vaccinated? Who should not be vaccinated?
 - How does the vaccine work? How often should a person be vaccinated?
 - What are some possible side effects of the vaccine?
 - What are some other interesting facts about this vaccine?
- Based on your audience where would you post your poster?
- Present your findings to the class

EXPLORE

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

Due to the length of the visual process there is no activity today

6. Discussion Ask discussion questions that engage at many levels

Key Questions

- What is the relationship between a pathogen and a disease?
- Why is it important to vaccinate against rare diseases?
- Based on what you have learned about rare diseases, why are most vaccinations given in the first five years of life?
- Do you think there will be new vaccines in your lifetime? Explain?
- If vaccines are beneficial why don't we require everyone to get them?
- What factors should you consider prior to getting a vaccination?

EXTEND

7. Write, Draw or Speak.

Science Journal:

- Based on what you have learned about vaccinations in today's lesson list 5-10 reasons that all people should be vaccinated.

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:

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Date:

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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 4: The Vaccine War



Outcomes for Today

- 10. Organisms have a variety of mechanisms to combat disease. As a basis for understanding the human immune response:
 - 10.c. Students know how vaccination protects an individual from infectious diseases.

PREPARE

1. Background Background knowledge to engage the content

Vaccines are used in humans what other industries use vaccines?

Answer should be indented and regular font. Use your own words if possible. Should be a way to break the ice and introduce the days topic. Do not include websites unless using a source verbatim.

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

No new Word Wall words today

READ

3. View

Article:

Go to: <http://www.medicalnewstoday.com/articles/61874.php>
Search: Vaccine Industry
Locate: Vaccine Industry Growing Amid Increased Funding, Higher Profits
Read: As a class

Article

Go to: http://www.vaccineethics.org/issue_briefs/industry.php
Search: Vaccine Industry Ethics
Locate: The Vaccine Industry and Overview

Video

Go to: www.PBS.org
Search: Vaccines
Locate: The Vaccine War (approximate run time 10:11)

RESPOND

4. Visual Process.

Vaccine Risks:

Vaccines have distinct benefits and risks to people. As a class create a class poster depicting the risks of vaccines.

EXPLORE

5. Activity

Explore more deeply with a visual or oral language activity.

The Great Debate

Have your class do further research on the benefits and risks of vaccinations.

What are some problems associated with vaccines?

What are the recommendations for countering these risks?

Hold a class debate about whether certain vaccinations should be mandatory. Use the following resources to help your class research this topic.

Vaccine Safety: <http://www.vaccines.net/newpage114.htm>

CDC: Overview of Vaccine Safety

<http://www.cdc.gov/vaccinesafety/index.html>

6. Discussion

Ask discussion questions that engage at many levels

Key Questions

- Why are some parents hesitant to vaccinate their children?
- What are the benefits of vaccinations?
- Based on the benefits and the concerns what do you think? Should you vaccinate or should you not? Why?
- If people choose not to have vaccinations are they putting others at risk? How? Do they have an obligation to the general public or to others to vaccinate from common and communicable diseases?
- What other factors play into the great vaccination debate?
- What other industries use vaccinations? For what purposes?

EXTEND

7. Write, Draw or Speak.

Science Journal:

Based on the vaccination information you have received do you believe people should get vaccinations if they are able to? Explain your answer in full detail.

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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Part II:

Note taking tips: (Cornell Notes)

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HUMAN SCIENCE Lesson Plan

Day 5: The Vaccine War



Outcomes for Today

- 10. Organisms have a variety of mechanisms to combat disease. As a basis for understanding the human immune response:
 - 10.c. Students know how vaccination protects an individual from infectious diseases.

PREPARE

1. Background Background knowledge to engage the content

How have vaccines contributed to the overall health and safety of your family and community? Do you think vaccines are worthwhile for most people to have? (for class discussion)

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

No new Word Wall words today.

READ

3. View

Article:

Go to: <http://americanhistory.si.edu/polio/virusvaccine/history.htm>

Search: History of Vaccine

Locate: History of Vaccines

Read: As a class

There are activities and additional web support that accompany this article. Follow the link on the time line page to activities.

Article:

Go to: <http://content.healthaffairs.org/cgi/content/full/24/3/611>

Search: History of Vaccines

Locate: The History Of Vaccines And Immunization: Familiar Patterns, New Challenges

Article:

Go to:

http://www.fairus.org/site/PageServer?pagename=iic_immigrationissue_centers64bf

Search: Immigration and health risks

Read: Illegal Immigration and Public Health

RESPOND

4. Visual Process.

Time Line:

Create a class timeline that depicts the history of vaccinations. Include the following information:

- Date;
- Vaccination Name (what was it used to prevent or treat);
- Impact it had on the community and economy.

EXPLORE

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

Research:

Choose one of the historical figures in vaccination history. Do a research paper or project on that person.

- Who is the scientist? What is their basic history?
- What did they discover? Was that discovery their objective when they started or did they find the vaccination on accident?
- What impact did their vaccination have on the society and on history?
- What is your general impression of their discovery—how has it changed your life?
- Do you feel there is a need for medical research for more vaccines?
- If you could create a vaccine to cure anything, what would it be? Why?

6. Discussion Ask discussion questions that engage at many levels

Key Questions

- Historically speaking—why was the advent of vaccines so helpful?
- What other industries use vaccines? Why?
- How does legal and illegal immigration affect public health? Is there a need to do health screenings on immigrants and travelers prior to entering a new country? Why?
- What affect has global travel had on diseases? How can foreign diseases be transported and spread? How can they be prevented?

EXTEND

7. Write, Draw or Speak.

Science Journal or Class Discussion

Do you believe that people should be required to get vaccinations if they pose a risk to others and are able to get them? Why? How do you monitor who is vaccinated and who is not?

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 1: I am sick—now what?



Outcomes for Today

10. Organisms have a variety of mechanisms to combat disease. As a basis for understanding the human immune response:
 - 10.d. Students know there are important differences between bacteria and viruses with respect to their requirements for growth and replications, the body's primary defenses against bacterial and viral infections, and effective treatments of these infections.

PREPARE

1. Background Background knowledge to engage the content

What is the difference between the flu and a cold?

The cold and flu are both respiratory illnesses, but they are caused by different types of viruses. Flu symptoms usually come on quickly (within 3-6 hours) and consist of a fever, body aches, dry cough, and extreme tiredness. Cold symptoms are less severe and people experience a stuffy nose, productive cough, slight tiredness, and limited body aches.

Both are caused by viruses and both can be prevented. You can vaccinate against the flu (flu shot) but that doesn't mean that you won't get the flu. You may still get sick but the intensity or duration may be lessened. There is no vaccine for a cold.

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

Virus:	A submicroscopic pathogen composed of a core of nucleic acid surrounded by a protein coat that can reproduce only inside a living cell.
Benign:	A mild type or character that does not threaten life. (a benign tumor)
Ribosomes:	Any of the RNA-rich cytoplasmic granules that are sites of protein synthesis
Antiseptics:	Opposing sepsis, putrefaction, or decay. Preventing or arresting the growth of microorganisms (as on living tissue)

READ

3. View

Article:

Go to: www.pbs.org
Search: Virus
Locate: Killer Flu; The Evolution of a Virus
Read: As a class

Video:

Go to: www.discoveryeducation.com (Subscription Based Website)
Search: Virus
Locate: Swine Flu; Anatomy of a Pandemic (approximate run time 23:00)
View: What is a Virus (01:52)
Computer Models of the Pandemics Spread (01:52)
Dangerous Mutations (02:08)
Origins of New Diseases (02:45)
Advances in Vaccine Development (06:42)
Early Global Responses to Swine Flu (04:15)
Staying Ahead of the Curve (04:19)

RESPOND

4. Visual Process.

Virus (We Want to Get to Know You) Poster

What are the key characteristics of a virus? Create a poster that gives the key characteristics of a virus.

- Include how a virus attaches to a host;
- How it reproduces;
- How it spreads in the body?

EXPLORE

5. Activity

Explore more deeply with a visual or oral language activity.

Killer Virus

Go to: http://www.pbs.org/wnet/secrets/previous_seasons/lessons/lp_virus.html

Locate: Identifying Viruses; Lesson Plans
This lesson if done in its entirety takes 2—90 minute class periods. You will need to adjust your lessons accordingly.

6. Discussion Ask discussion questions that engage at many levels

Key Questions

- What components made the swine flu unique?
- How are viruses spread? How can they be prevented?
- How are vaccinations created?
- What is a surveillance network and what is its purpose?
- Is there any way to eradicate all viruses?
- What do antibodies do?
- Can antibiotics treat a viral infection? Why or why not?

EXTEND

7. Write, Draw or Speak.

- List three things you did not know about viruses or that you learned.
- Write a sentence about each fact.
- Re-write each sentence into a question.

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

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 2: I am sick; now what?



Outcomes for Today

10. Organisms have a variety of mechanisms to combat disease. As a basis for understanding the human immune response:
 - 10.d. Students know there are important differences between bacteria and viruses with respect to their requirements for growth and replications, the body's primary defenses against bacterial and viral infections, and effective treatments of these infections.

PREPARE

1. Background Background knowledge to engage the content

Is bacteria good or bad? (class discussion)

As students discuss this question have them think about bacteria—how it affects food (yogurt and bread), our digestive system, and what happens when something dies.

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

Bacteria:	Extremely small, relatively simple prokaryotic microorganisms traditionally classified with the fungi as Schizomycetes.
Prokaryotae:	An organism whose cells do not have membrane enclosed organelles, such as nuclei, mitochondria, and chloroplasts; a bacterium.
Infectious Disease:	Any disease caused by invasion by a pathogen which subsequently grows and multiplies in the body.

READ

3. View

Video

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

Search: Bacteria

Locate: Bacteria Friends or Enemies (approximate run time 20:23)

Video/Article

Go to: www.pbs.org

Search: Bacteria

Locate: Scientist Turn to Microscopic Bacteria to Help with Spreading Oil (approximate run time 04.40)

Note: There is a worksheet that goes with this segment

RESPOND

4. Visual Process.

Venn Diagram

Create a Venn Diagram comparing and contrasting viruses vs. bacteria

EXPLORE

5. Activity

Explore more deeply with a visual or oral language activity.

There is no activity for today.

6. Discussion

Ask discussion questions that engage at many levels

Key Questions

- What are some of the benefits of bacteria?
- How can bacteria or the lack of it impact your environment?
- What products are created by bacteria?
- There are many benefits to bacteria but there are also negatives. How do you manage bacteria so it doesn't make you sick?
- What makes certain bacteria and viruses resistant to antibiotics? What should we do to become stronger than the germs?
- Can germs be healthy? Explain?

EXTEND

7. Write, Draw or Speak.

- Draw 4-6 beneficial aspects of bacteria. Label your picture and write how bacteria can help you.
- List 3 ways bacteria can harm you and three ways you can prevent bacteria from having a negative impact on you.

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

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:

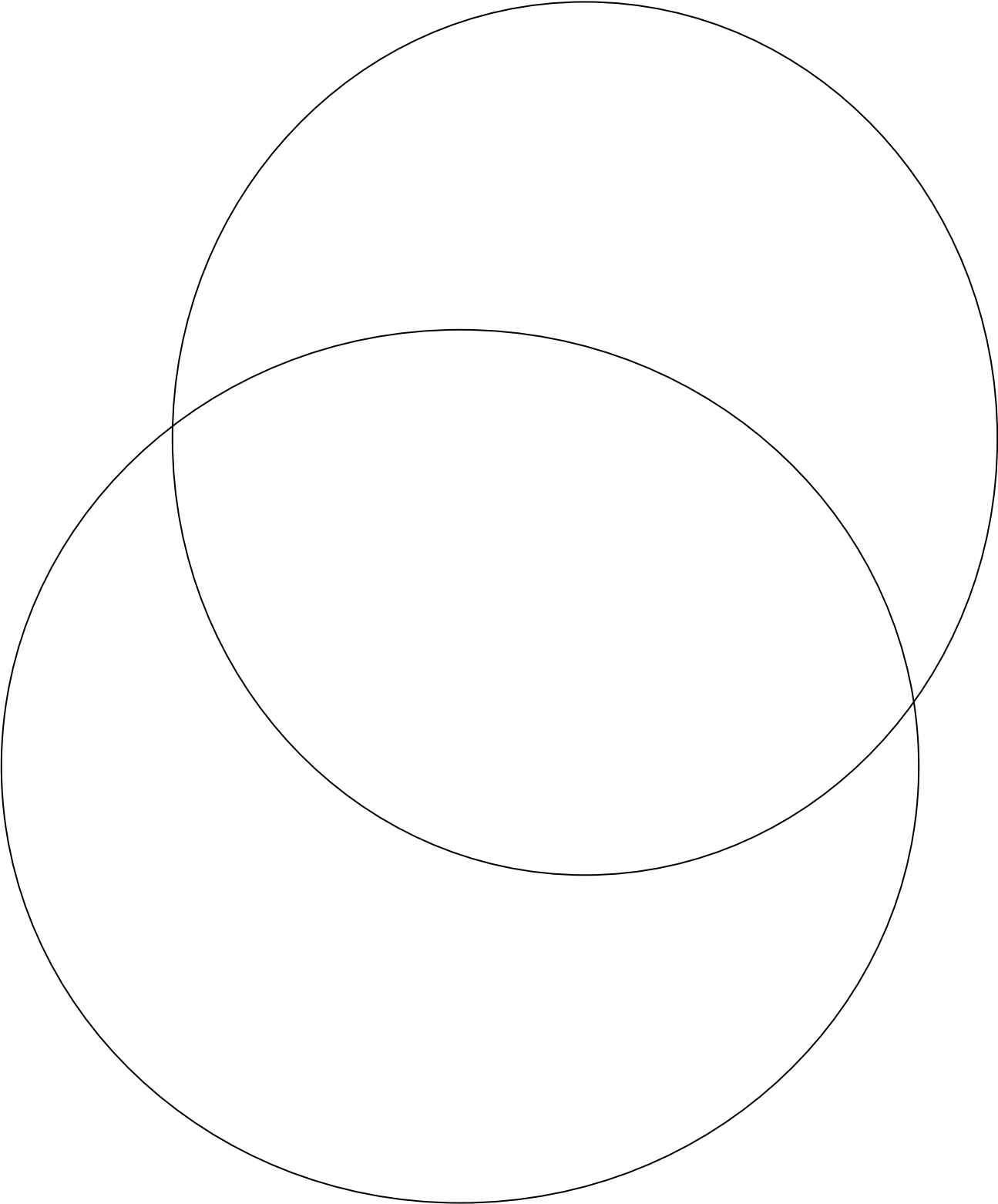
Column 1: Phrases, words, questions or a sketch related to the details in column 2.	Column 2: Important Details

Part II:

Note taking tips: (Cornell Notes)

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

6g6 Venn Diagram Chart



HUMAN SCIENCE Lesson Plan

Day 3 and 4: I'm sick; now what?



Outcomes for Today

10. Organisms have a variety of mechanisms to combat disease. As a basis for understanding the human immune response:
 - 10.d. Students know there are important differences between bacteria and viruses with respect to their requirements for growth and replications, the body's primary defenses against bacterial and viral infections, and effective treatments of these infections.

PREPARE

1. Background Background knowledge to engage the content

What are ways that the spread of infectious organisms can be slowed?

Hygiene is the science that deals with the promotion and preservation of health by reducing harmful levels of germs through cleanliness and sterilization. The two most common hygienic practices are: **1) washing hands and food preparation areas with soap**, and **2) cooking food and boiling drinking water**. Washing with soap removes oils and breaks up dirt particles so they may be washed away, whereas cooking and boiling kill harmful organisms that cannot be removed by washing. You can prevent diseases caused by viruses, bacteria, and parasites by keeping a clean environment and by handling food in a sanitary manner. Most intestinal parasites are transmitted by contact with feces from an infected person or pet. These are some of the most important sanitation practices to help you maintain your health:

2. Word Wall

vocabulary words to teach and add to the Word Wall.

- Protist:** Any of a group of eukaryotic organisms belonging to the kingdom Protista according to some widely used modern taxonomic systems. The protists include a variety of unicellular, coenocytic, colonial, and multicellular organisms, such as the protozoans, slime molds, brown algae, and red algae.
- Bacteria:** Extremely small, relatively simple prokaryotic microorganisms traditionally classified with the fungi as Schizomycetes.
- Virus:** Any of various simple submicroscopic parasites of plants, animals, and bacteria that often cause disease and that consist essentially of a core of RNA or DNA surrounded by a protein coat. Unable to replicate without a host cell, viruses are typically not considered living organisms.
- Pathogen:** An agent that causes disease, especially a living microorganism such as a bacterium or fungus.

READ

3. View

Article:

Go to: <http://www.scientificpsychic.com/health/hygiene.html>

Search: Infectious Organism; Growth and Reproduction

Locate: Hygiene - Viruses, Bacteria, and Parasites

Read: As a class

RESPOND

4. Visual Process.

Stop Sign:

Create a stop sign. Share with the class 2-3 ways the spread of infectious diseases can be stopped or slowed down.

- Visually represent the step and explain in detail how the process can help the spread of bacteria.
- Explain what can happen if the step is not taken.

Information for this activity can be located at:

<http://www.scientificpsychic.com/health/hygiene.html>

EXPLORE

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

Note this is a two day lesson plan. This should give you enough time to have students research their bacteria and create their project.

Wanted Poster:

Using the diseases listed below. Have students create a “Wanted Poster” Student’s posters should include but are not limited to the following:

- Photo of the disease/pathogen
- Description—include a Gram Stain
- How does the organism attack and spread
- Who are the most common victims
- Where is it most likely found
- What kind of injury is caused by the bacteria
- Is it dangerous? Rate the degree of damage that can be caused
- Number of victims
- Most effective weapon or preventative measure people can take

MONERAN DISEASES

pathogen

Bacillus anthracis
Bordetella pertussis
Clostridium botulinum
Clostridium perfringens
Clostridium tetani
Corynebacterium diphtheria
Escherichia coli
Francisella tularensis
Hemophilus influenzae
Lactobacillus acidophilus
Mycobacterium leprae
Mycobacterium tuberculosis
Neisseria gonorrhoeae
Neisseria meningitidis
Rickettsia rickettsii
Rickettsia prowazekii
Salmonella typhi
Salmonella typhimurium
Shigella dysenteriae
Streptococcus mutans
Streptococcus pneumoniae
Streptococcus (group A)
Streptococcus (group A)
Treponema pallidum
Treponema pertenue
Vibrio cholerae
Yersinia pestis

disease

anthrax
whooping cough
botulism
gas gangrene
tetanus
diphtheria
acute pyelonephritis
tularemia or rabbit fever
meningitis
cavities
leprosy (Hansen's disease)
tuberculosis
gonorrhoea
spinal meningitis
Rocky Mountain Spotted Fever
typhus
typhoid fever
food poisoning
dysentery
cavities
pneumonia
scarlet fever
rheumatic fever
syphilis
yaws
cholera
plague

6. Discussion Ask discussion questions that engage at many levels

Key Questions

- What are ways that you can stop the spread of bacteria?
- Why is basic hand washing so important?
- If you were teaching a child the principles of hygiene what 5 things would you consider the most important? Why?
- There are many diseases on the list above that have almost been eradicated from society. What factors played into those diseases going away? Do you think they can come back?
- What are the differences and similarities between a metabolic, genetic, and infectious disease? Are they all easily spread?
- If many diseases have been eradicated due to vaccinations why won't everyone get a vaccination?

EXTEND

7. Write, Draw or Speak.

Science Journal:

Think about the food industry. From the time food is grown, shipped, and prepared it is touched and inspected many times. However, there are still outbreaks of food borne illnesses and infections.

List 4-5 foods you think are the most vulnerable to bacteria?

What role does the food industry have in preventing and stopping the spread of infectious disease? Should the industry be doing more?

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

HUMAN SCIENCE Lesson Plan

Day 5: I am sick; now what?



Outcomes for Today

10. Organisms have a variety of mechanisms to combat disease. As a basis for understanding the human immune response:
 - 10.d. Students know there are important differences between bacteria and viruses with respect to their requirements for growth and replications, the body's primary defenses against bacterial and viral infections, and effective treatments of these infections.

PREPARE

1. Background Background knowledge to engage the content

What is resistance?

The basic definition of resistance as it pertains to science is the capacity of an organism to defend itself against a disease or the capacity of an organism or tissue to withstand the effects of a harmful environmental agent.

There was a time that when people got sick—regardless of the infection, viral or bacterial they would go to the doctor and get a prescription for their ailment, regardless of their ability to fight the disease on their own. As the diseases got used to the antibiotic it got stronger forcing us to make stronger antibiotics. Until the disease was stronger than the drug used to fight it.

The disease began to build a resistance to the cure.

2. Word Wall

vocabulary words to teach and add to the Word Wall.

- Protist:** Any of a group of eukaryotic organisms belonging to the kingdom Protista according to some widely used modern taxonomic systems. The protists include a variety of unicellular, coenocytic, colonial, and multicellular organisms, such as the protozoans, slime molds, brown algae, and red algae.
- Bacteria:** Extremely small, relatively simple prokaryotic microorganisms traditionally classified with the fungi as Schizomycetes.
- Virus:** Any of various simple submicroscopic parasites of plants, animals, and bacteria that often cause disease and that consist essentially of a core of RNA or DNA surrounded by a protein coat. Unable to replicate without a host cell, viruses are typically not considered living organisms.
- Over application:** Over use of a drug to kill a bacteria or disease. The disease is able to become resistant to the drug and becomes harder to control.

READ

3. View

Article:

Go to: www.nationalgeographic.org
Search: Drug Resistant Bacteria
Locate: Food Bacteria More Drug-Resistant in U.S., Europe, Study Suggests
Read: As a class

Article:

Go to: www.PBS.org
Search: Disease Resistant Bacteria
Locate: Spread of Antibiotic-Resistant 'Superbugs' Causes Global Concerns

Article:

Go to: www.PBS.org
Search: Disease Resistant Bacteria
Locate: Virus or Bacteria? Vaccine or Antibiotics?

Video:

Go to: www.discoveryeducation.com (Subscription Based Website)
Search: Disease Resistant Bacteria
Location: Resistance to Antibiotics: A Segment of Understanding Bacteria (approximate run time 04:58)

RESPOND

4. Visual Process.

There is no visual process for today's lesson

EXPLORE

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

Fight the Antibiotic—student investigation

Below is a list of factors that contribute to diseases becoming resistant to drugs.

- Do not insist on receiving antibiotic treatment for illnesses that your doctor feels your own immune system can combat.
- Take antibiotics properly when they are prescribed. The proper way to take antibiotics is to take the entire course, rather than stopping when symptoms are alleviated. Taking only a few doses of the medication and not completing the course encourages the development of resistant bacteria.
- Since viruses are not affected by antibiotics, no one should take antibiotic medication until it is established that he or she has a bacterial infection rather than a viral infection.
- No one should stockpile unused antibiotics and then self-prescribe the medication later on without the advice of a doctor.

Students should choose one of these factors and investigate it further. Write a 3-4 paragraph investigation that describes the following:

- Why factor is important to your overall health;
- History—what has happened in the past 10-20 years that makes us go to the doctor more often, and ask for certain prescriptions etc. (think about drug manufacture marketing, work duties, ect.)
- Does the lack of a family doctor (medical mobility/more medical clinics) affect this issue?
- Has the pace and competition of school, jobs, and life contributed to this issue? How?

6. Discussion Ask discussion questions that engage at many levels

Key Questions

- How has the medical industry especially drug marketing affected the way we are treated for illness?
- There was a time that people and kids stayed home when they were sick and got well without antibiotics. What societal pressures have changed that mindset?
- What other issues contribute to diseases being spread in schools faster? (Think about the lack of childcare—and both parents working ect.)
- Many cultures believe in natural cures and practices—acupuncture, acupressure, and herbal remedies. Why is the American culture so resistant to this practices that have worked for Asian counties for over 1000 years?
- Is there a responsibility of parents and yourself to maintain your overall health and to use antibiotics as a last resort? What?

EXTEND

7. Write, Draw or Speak.

Science Journal:

Think about your overall health. List 5 things you can do today to prevent the spread of disease, limit your use of antibiotics, and become more healthy.

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

HUMAN SCIENCE Lesson Plan

Day 1: I am too weak to fight



Outcomes for Today

10. Organisms have a variety of mechanisms to combat disease. As a basis for understanding the human immune response:
 - 10.e. Students know why an individual with a compromised immune system (for example a person with AIDS) may be unable to fight off and survive infections by microorganisms that are usually benign.

PREPARE

1. Background Background knowledge to engage the content

What things can compromise an immune system?

When you are healthy you never really think about what a strong immune system does for you until something happens and it is weakened. A compromised immune system allows germs that would normally not harm you to make you sick or can become life threatening.

Some people can be born with a condition that may cause them to have an abnormality in one or more cells and this compromises the immune system. Some acquire issues due to poor healthy conditions, poor diet, long or stressful situations, consistent lack of sleep, long term use of antibiotics or steroids, certain cancers, and cancer treatments like radiation or chemotherapy.

Many people seem to be constantly sick or never really get better. If this is the case, one should seek medical help. In many cases, drastic life changes can alleviate any long term damage. And you can retrain your body to be well and fight infections for you. In the case of serious illness a doctor would have to evaluate you and determine your chances of survival—however when undergoing any type of treatment a good lifestyle will enhance your chances of survival.

Many of the childhood disease can diminish the body's capabilities to stay healthy such as Chicken Pox and Measles. There are immunizations that prevent many more children from ever contracting these diseases. Tuberculosis and Hepatitis can also cause problems.

The elderly, young children, and pregnant women are at risk to acquire many illnesses that may become fatal due to compromised immune systems.

2. Word Wall

vocabulary words to teach and add to the Word Wall.

Compromise:	a concession to something derogatory or prejudicial; inability for the immune system to fight
Immune system:	The body's specific defense system; a response to foreign material
Benign:	A mild type or character that does not threaten health or life; <i>especially</i> : not becoming cancerous; a <i>benign</i> lung tumor.

READ

3. View

Video:

Go to: www.discoveryeducation.com (Subscription Based Website)
Search: Compromised Immune System
Locate: The Body's Defense Against Disease
(Approximate run time 23:46)—if time does not allow view the following segments:
Segment 7: The Immune System (03:57)
Segment 8: Immunity and Vaccination (03:06)
Segment 9: Antibiotics (01:33)
Segment 10: A Closer Look at Some Diseases (03:49)
Segment 12: Autoimmune Diseases (00:33)
Segment 13: HIV/AIDS (02:22)

Article:

Go to: www.pbs.org
Search: Compromised Immune System
Locate: The Boy in the Bubble (The David Vetter Story)

Article:

Go To: www.PBS.org
Search: Compromised Immune System
Locate: The Age of AIDS Interview with David Ho
Read: As a class

Article:

Go to: www.aidshealth.org
Search: About HIV/Aids
Use as a resource if needed

RESPOND

4. Visual Process.

Venn Diagram

Create a Venn Diagram. Compare and contrast how a person with a healthy immune system is able to fight a disease versus a person with a compromised immune system.

EXPLORE

5. Activity

Explore more deeply with a visual or oral language activity.

Who's Who of Risk Factors

The elderly, young children, and pregnant women are at risk to acquire many illnesses that may become fatal due to compromised immune systems—in addition to people with birth defects, long term illnesses, childhood diseases etc.

- Make a list of groups of people that may have a compromised immune system;
- List what factors contribute to their immune system being weakened. A small child has a weakened immune system because they have not been exposed to many germs.
- List ways each of these groups can strengthen their immune system in order to stay healthy.

6. Discussion

Ask discussion questions that engage at many levels

Key Questions

- What factors contribute to a weakened immune system?
- What lifestyle choices contribute to a person's immune system being compromised? Can these factors be changed?
- Has society changed its response to people who are sick?
- How can a person with a compromised immune system due to a birth defect or long term illness live a normal life? What things do they need to do to adapt?
- What can you do to prevent certain immune compromising diseases? (example: cancer, AIDS/HIV, polio or mumps)

EXTEND

7. Write, Draw or Speak.

Science Journal:

- Think about things you do to compromise your immune system.
- List 3-5 of them.
- Write 1-2 changes (per compromise) that you can do right now to increase your immune system's ability to fight disease.
- Draw or illustrate 2-3 of your best changes.

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

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:

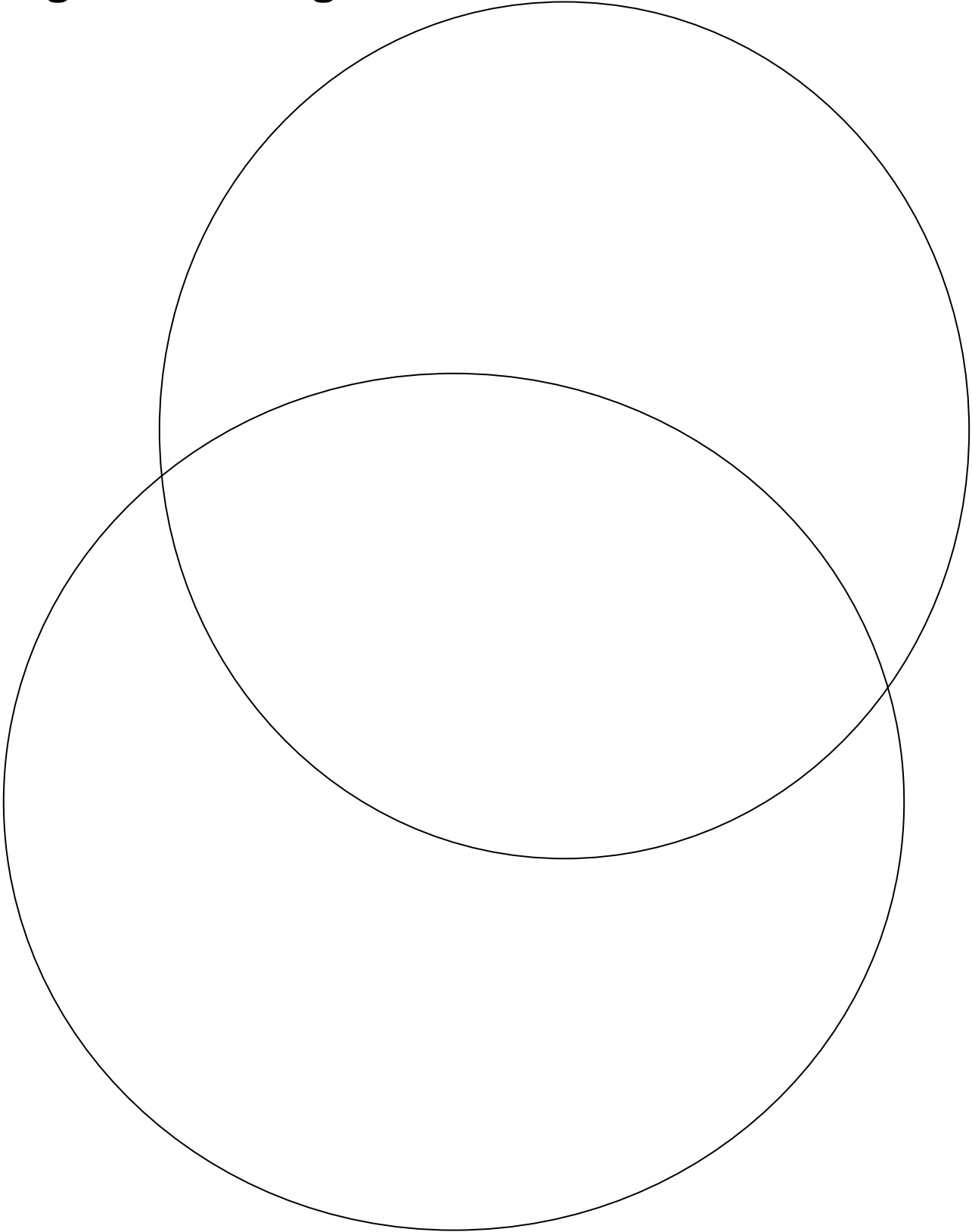
Column 1: Phrases, words, questions or a sketch related to the details in column 2.	Column 2: Important Details

Part II:

Note taking tips: (Cornell Notes)

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

6g6 Venn Diagram Chart



HUMAN SCIENCE Lesson Plan

Day 1 and 2: It's Trash Day in the Body



Outcomes for Today

10. Organisms have a variety of mechanisms to combat disease. As a basis for understanding the human immune response:
 - 10.f. Students know the roles of phagocytes, B-Lymphocytes, and T-Lymphocytes in the immune system.

PREPARE

1. Background Background knowledge to engage the content

How does your body clean itself?

The body is constantly on alert for germs and foreign invaders to attack. It has a series of systems in place to stop invaders from entering the body. But, what happens when germs get in and the immune system attacks them. What happens to the waster? There is a group of immune cells specialized in finding and "eating" bacteria, viruses, and dead or injured body cells. There are three main types, the granulocyte, the macrophage, and the dendritic cell.

The granulocytes often take the first stand during an infection. They attack any invaders in large numbers, and "eat" until they die. The pus in an infected wound consists chiefly of dead granulocytes. A small part of the granulocyte community is specialized in attacking larger parasites such as worms.

The macrophages ("big eaters") are slower to respond to invaders than the granulocytes, but they are larger, live longer, and have far greater capacities. Macrophages also play a key part in alerting the rest of the immune system of invaders. Macrophages start out as white blood cells called monocytes. Monocytes that leave the blood stream turn into macrophages.

The dendritic cells are "eater" cells and devour intruders, like the granulocytes and the macrophages. And like the macrophages, the dendritic cells help with the activation of the rest of the immune system. They are also capable of filtering body fluids to clear them of foreign organisms and particles.

2. Word Wall

vocabulary words to teach and add to the Word Wall.

- Phagocytes:** A cell, such as a white blood cell, that engulfs and absorbs waste material, harmful microorganisms, or other foreign bodies in the bloodstream and tissues.
- Amoebalike:** any of numerous freshwater, marine, or parasitic one-celled protozoa of the order Amoebida, characterized by a granular nucleus surrounded by a jellylike mass of cytoplasm that forms temporary extensions, or pseudopodia, by which the organism moves, engulfs food particles, and forms food vacuoles.
- Lymphocytes:** a type of white blood cell having a large, spherical nucleus surrounded by a thin layer of nongranular cytoplasm.
- B-Lymphocyte:** Also called **B lymphocyte**, a type of lymphocyte, developed in bone marrow, that circulates in the blood and lymph and, upon encountering a particular foreign antigen, differentiates into a clone of plasma cells that secrete a specific antibody and a clone of memory cells that make the antibody on subsequent encounters.
- T-Lymphocyte:** any of several closely related lymphocytes, developed in the thymus, that circulate in the blood and lymph and orchestrate the immune system's response to infected or malignant cells, either by lymphokine secretions or by direct contact: helper T cells recognize foreign antigen on the surfaces of other cells, then they stimulate B cells to produce antibody and signal killer T cells to destroy the antigen-displaying cells; subsequently suppressor T cells return the immune system to normal by inactivating the B cells and killer T cells.

READ

3. View

Interactive Cell Site

Go to: www.cellsalive.com

Search: Immune system or Immunology

Locate: Cell Structure

This site will take you through the basic structure of the system. It is interactive with work sheets, a quiz, and models of how the immune system works.

Article:

Go to:

<http://nobelprize.org/educational/medicine/immunity/immune-detail.html>

Search: The Immune System in More Detail

Read: The Article as a class

Article:

Go to: http://kidshealth.org/parent/general/body_basics/blood.html

Search: Blood

Locate: Blood; A Body Basics Article (in the for parents section)

The Teen Section has a lot of great blood information.

RESPOND

4. Visual Process.

Comic Strip

Create a comic strip that details the steps granulocytes, macrophages, and dendritic cells go through to fight bacteria and germs in your body.

Use the following article for additional support material.

Article:

Go to:

<http://nobelprize.org/educational/medicine/immunity/immune-detail.html>

Search: The Immune System in More Detail

EXPLORE

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

Web Search: Blood

Go To:

<http://www.cancer.org/Treatment/TreatmentsandSideEffects/TreatmentTypes/BloodProductDonationandTransfusion/index>

Search: Blood Product Donation and Transfusion

Complete: Complete the attached web quest on Blood .

6. Discussion Ask discussion questions that engage at many levels

Key Questions

- How does the body fight disease once it has entered your body?
- What things do we do to aid or harm this natural process? What things can you do to make this process more effective in your body?
- What is the role of the Phagocytes? Why are they important to our body? What would happen if they weren't there?
- What happens if your bone marrow system is not functioning properly? Can it be helped? How?
- What do memory cells do? How can we harm them? What happens if the memory cells stop fighting the intruders and start fighting against our own system?

EXTEND

7. Write, Draw or Speak.

There are many diseases that weaken the immune system. Most people have been touched by someone in our lives that has suffered from this condition. Write about a person in your life that has suffered from a compromised immune system. What happened to them? What did they do to combat the disease? It was the final outcome.

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	

Web Quest:

<http://www.cancer.org/Treatment/TreatmentsandSideEffects/TreatmentTypes/BloodProductDonationandTransfusion/index>

Blood:

Search the What are transfusions Link: What is a blood transfusion? How can it help you? Who can you get blood from? _____

Go to the Blood and Its Components link:

There are 6 components to blood. What are the components, how do they benefit you?

Component	Benefit	Sketch

Component	Benefit	Sketch

Search two other links of your choice. Name the link. Describe what you learned from the link. Based on that you learned from this site, is there anything you can do to help someone with cancer?

Link	What did you learn?	What can you do?