



***YOU! The Experience* and AAAS Benchmarks for Science Literacy**

This document details how the more than 50 interactive experiences and our collection of plastinated specimens complement national science education standards.

Each facet of *YOU! The Experience* has been matched with corresponding “Benchmarks for Science Literacy” from the American Association for the Advancement of Science. This helps to ensure that your students have educational experiences that are directly linked to what they’re learning in the classroom.

There are nine sections to this pdf document, one for each of the exhibit’s major thematic areas. You can access each section from the bookmarks to the left.

You can learn more about the “Benchmarks for Science Literacy” here:
<http://www.project2061.org/publications/bsl/online/index.php>.

YOU! The Experience is brought to you through the generosity of Abbott, the Abbott Fund and the Pritzker Foundation. Additional major funding provided by J. Ira and Nicki Harris Family, Mazza Foundation, and Robert S. and Susan E. Morrison

Exhibit Area: Your Appetite

AAAS Benchmarks for Science Literacy	Exhibit Experiences						
	Kitchen Table	Hungry Chicago	MSI Food Tally	Food Deserts	Twinkie Display	Real Food	Snack Attack
Raise questions about the world around them and be willing to seek answers to some of them by making careful observations and trying things out	X	X	X	X	X	X	
Various organs and tissues function to serve the needs of all cells for food, air, and waste removal							
Like other animals, human beings have body systems for obtaining and providing energy, defense, reproduction, and the coordination of body functions							
The brain gets signals from all parts of the body telling what is going on there. The brain also sends signals to parts of the body to influence what they do	X		X	X	X	X	X
The human body has parts that help it seek, find, and take in food when it feels hunger-eyes and nose for detecting food, legs to get it, arms to carry it away, and a mouth to eat it	X					X	X
In a free-market economic system, it is assumed that free competition produces the best allocation of resources, the greatest productivity and the lowest costs. Decisions are made naturally as consumers and businesses interact in the marketplace.	X	X		X	X		
Some industries are controlled by government agencies that decide which goods or services to provide and how to distribute them based on political considerations	X	X		X	X		
Sometimes a community decides to make certain services-such as schools, libraries, parks, mail service, and police and fire protection-equally available to all its members through government agencies	X	X	X	X			
Social distinctions are part of every culture, but take many different forms....differences in speech, dress, behavior or physical features are often taken by people to be signs of social class		X					
Cultural beliefs strongly influence the values and behavior of the people who grow up in the culture often without their being fully aware of it. Responses to these influences varies among individuals	X	X	X			X	

AAAS Benchmarks for Science Literacy	Exhibit Experiences						
	Kitchen Table	Hungry Chicago	MSI Food Tally	Food Deserts	Twinkie Display	Real Food	Snack Attack
Although within any society there is usually broad general agreement on what behavior is unacceptable, the standards used to judge behavior vary from different settings and subgroups, and may change with time and different political and economic conditions	X	X	X				X
What is considered to be acceptable behavior varies from culture to culture and from one time period to another, but there are some behaviors that are unacceptable in almost all cultures past and present.	X	X	X			X	X
People can learn about others from direct experience, from the media, and from listening to other people talk about their work and their lives. People also sometimes imitate people-or characters- in the media	X					X	X
Human beings tend to repeat behaviors that feel good or have pleasant consequences and avoid behaviors that feel bad or have unpleasant consequences	X		X			X	X
The way people act is often influenced by the groups to which they belong	X	X	X	X			
Sometimes social decisions have unexpected consequences, no matter how carefully the decisions are made.	X	X	X	X	X		X
The length and quality of human life are influenced by many factors, including sanitation, diet, medical care, sex, genes, environmental conditions, and personal health behaviors	X	X	X	X		X	X
Some things people take into their bodies from the environment can hurt them	X	X	X	X	X	X	X
The expectations, moods, and prior experience of human beings can affect how they interpret new perceptions or ideas. People tend to ignore evidence that challenges their beliefs and to accept evidence that supports them	X			X			X
Both external and internal conditions (chemistry, personal, history, values) influence how people behave						X	X
All behavior is affected by both inheritance and experience	X		X	X			X
What people expect to observe often affects what they actually do observe	X	X	X	X			X

AAAS Benchmarks for Science Literacy	Exhibit Experiences						
	Kitchen Table	Hungry Chicago	MSI Food Tally	Food Deserts	Twinkie Display	Real Food	Snack Attack
Some animal species are limited to a repertoire of genetically determined behaviors; others have more complex brains and can learn and modify a wide variety of behaviors	X						X
Reasoning can be distorted by strong feelings	X				X		X
Human beings can use the memory of their past experiences to make judgments about new situations	X				X	X	X
People can learn from each other by telling and listening, showing and watching, and imitating what others do	X	X	X			X	X
Physical health can affect people's emotional well being. Likewise, emotional well being can affect physical health	X	X	X	X	X	X	X
Regular exercise is important to maintain a healthy heart/lung system, good muscle tone, and bone strength	X						X
The amount of food energy (calories) a person requires, varies with body weight, age, sex, activity level, and natural body efficiency	X	X	X				X
Toxic substances, some dietary habits, and some personal behavior may be bad for one's health. Some effects show up right away, others years later. Avoiding toxic substances such as tobacco, and changing dietary habits increases the chance of living longer	X	X	X	X	X	X	X
As people grow up, the amounts and kinds of food and exercise needed by the body may change						X	X
Food provides energy and materials for growth and repair of body parts						X	X
Vitamins and minerals, present in small amounts in foods, are essential to keep everything working well		X	X	X		X	X
Eating a variety of healthy foods and getting enough exercise and rest help people to stay healthy	X	X	X	X		X	X
Like other animals, human beings have body systems for obtaining and deriving energy from food and for defense, reproduction, and the coordination of body functions							
Increased knowledge about nutrition had led to the development of diets containing the variety of foods that can help people live longer and healthier lives	X	X	X			X	X

AAAS Benchmarks for Science Literacy	Exhibit Experiences						
	Kitchen Table	Hungry Chicago	MSI Food Tally	Food Deserts	Twinkie Display	Real Food	Snack Attack
The human body is a complex system of cells, most of which are grouped into organ systems that have specialized functions. These systems can best be understood in terms of essential functions they serve for the organism: deriving energy from food, protection against injury, internal coordination, and reproduction							
To burn food for the release of energy stored in it, oxygen must be supplied to cells, and carbon dioxide removed. Lungs take in oxygen for the combustion of food and eliminate the carbon dioxide produced. The urinary system disposes of dissolved waste molecules, the intestinal tract removes solid wastes, and the skin and lungs aid in the transfer of thermal energy from the body. The circulatory system moves all these substances to or from cells, where they are needed or produced, responding to changing demands							X
For the body to use food for energy and building materials, the food must first be digested into molecules that are absorbed and transported to cells							X
Thinking about things as systems means looking for how every part relates to others. The output from one part of a system (which can include material energy or information) can become the input to other parts. Such feedback can serve to control what goes on in the system as a whole							
The indigestible parts of food are eliminated						X	
From food, people obtain fuel and materials for body repair and growth						X	X
In something that consists of many parts, the parts usually influence one another			X				X

Exhibit Area: Your Beginning

AAAS Benchmarks for Science Literacy	Exhibit Experiences		
	Prenatal Specimens	Fantastic Journey	Make Room for Baby
Heritable characteristics can be observed at molecular and whole organism levels- in structure, chemistry, or behavior	X	X	
Heritable characteristics can include details of biochemistry...and anatomical features that are ultimately produced in the development of the organism...By biochemical or anatomical means, heritable characteristics may also influence behavior		X	
As successive generations often embryo's cells form by division, small differences in their immediate environments cause them to develop slightly differently, by activating or inactivating different parts of the DNA information	X	X	
The DNA code is virtually the same for all life forms	X	X	
DNA molecules are long chains linking just four kinds of smaller molecules, whose precise sequence encodes genetic information	X	X	
The information passed from parents to offspring is coded in DNA molecules		X	
The same genetic information is copied in each cell of the new organism	X	X	
Following fertilization, cell division produces a small cluster of cells that then differentiate by appearance and function to form the basic tissues of an embryo		X	
The fertilized egg cell, carrying genetic information from each parent, multiplies to form the complete organism	X	X	
In sexual reproduction, a single specialized cell from a female merges with a specialized cell from a male	X	X	
Cells repeatedly divide to make more cells for growth and repair	X	X	
For offspring to resemble their parents, there must be a reliable way to transfer information from one generation to the next	X	X	X
Offspring are very much, but not exactly, like their parents and like one another	X	X	
Some protein molecules assist in replicating genetic information, repairing cell structures, helping other molecules get in or out of the cell, and generally catalyzing and regulating molecular interactions		X	
Complex interactions among the different kinds of molecules in the cell cause distinct cycles of activities, such as growth and division. Cell behavior can also be affected by molecules from other parts of the organism or even other organisms		X	
Every cell is covered by a membrane that controls what can enter and leave the cell		X	X
The genetic information encoded in DNA molecules provides instructions for assembling protein molecules	X	X	X
Different body tissues and organs are made up of different kinds of cells	X	X	
All living things are composed of cells, from just one to many millions, whose details are usually visible only through a microscope	X	X	
Cells repeatedly divide to make more cells for growth and repair	X	X	
Communication between cells is required to coordinate their diverse activities. Some cells secrete substances that spread to nearby cells or are carried in the bloodstream to all cells. Along nerve cells, electrical impulses carry information much more rapidly than is possible by diffusion or blood flow		X	X
Complex interactions among the different kinds of molecules in the cell cause distinct cycles of activities, such as growth and division. Cell behavior can also be affected by molecules from other parts of the organism or even other organism	X	X	X
Different parts of the instructions are used in different types of cells, influenced by the cell's environment and past history	X	X	X

Exhibit Area: Your Beginning

AAAS Benchmarks for Science Literacy	Exhibit Experiences		
	Prenatal Specimens	Fantastic Journey	Make Room for Baby
Every cell is covered by a membrane that controls what can enter and leave the cell		X	X
In addition to the basic cellular functions common to all cells, most cells in multicultural organisms perform special functions that others do not	X	X	
As successive generations of an embryo's cells form by division, small differences in their immediate environments cause them to develop slightly differently, by activating or inactivating different parts of the DNA information		X	X
The genetic information encoded in DNA molecules provides instructions for assembling protein molecules		X	X
The same genetic information is copied in each cell of the new organism	X	X	X
Following fertilization, cell division produces a small cluster of cells that then differentiate by appearance and function to form the basic tissues of an embryo	X	X	
The fertilized egg cell, carrying genetic information from each parent, multiplies to form the complete organism	X	X	
Cells repeatedly divide to make more cells for growth and repair	X	X	
Different body tissues and organs are made up of different kinds of cells	X	X	
Various organs and tissues function to serve the needs of all cells for food, air, and waste removal	X	X	
Like other animals, human beings have body systems for obtaining and providing energy, defense, reproduction, and the coordination of body functions	X	X	
Some organisms are made of a collection of similar cells that benefit from cooperating. Some organisms' cells vary greatly in appearance and perform very different roles in the organism	X	X	
Microscopes make it possible to see that living things are made mostly of cells		X	
The brain gets signals from all parts of the body telling what is going on there. The brain also sends signals to parts of the body to influence what they do		X	X
Most things are made of parts	X	X	
The brain enables human beings to think and sends messages to other body parts to help them work properly	X	X	
In deciding among alternatives, a major question is who will receive the benefits and who (not necessarily the same people) will bear the costs.		X	
Benefits and costs of proposed choices include consequences that are long-term as well as short-term, and indirect as well as direct. The more remote the consequences of personal or social decision, the harder it usually is to take them into account in considering alternatives. But benefits and costs may be difficult to estimate.		X	X
One generation may have to bear the costs and benefits of the decisions of another generation.		X	X
The decisions of one generation both provide and limit the range of possibilities open to the next generation.		X	X
Sometimes social decisions have unexpected consequences, no matter how carefully the decisions are made.		X	X
Faulty genes can cause body parts or systems to work poorly. Some genetic diseases appear only when an individual has inherited a certain faulty gene from both parents	X	X	
In organisms that have two sexes, typically half of the genes come from each parent	X	X	
Some likeness between children and parents are inherited. Other likeness are learned		X	

Exhibit Area: Your Beginning

AAAS Benchmarks for Science Literacy	Exhibit Experiences		
	Prenatal Specimens	Fantastic Journey	Make Room for Baby
People are alike in many ways and different in many ways	X	X	
The length and quality of human life are influenced by many factors, including sanitation, diet, medical care, sex, genes, environmental conditions, and personal health behaviors		X	X
Toxic substances, some dietary habits, and some personal behavior may be bad for one's health. Some effects show up right away, others years later. Avoiding toxic substances such as tobacco, and changing dietary habits increases the chance of living longer		X	X
The similarity of humans in their cell chemistry and DNA sequences reinforces the idea that all humans are part of a single species	X	X	
The complexity of the human brain allows humans to create technological, literary, and artistic works on vast scale, and to develop a scientific understanding of the world	X	X	
Like other complex organisms, people vary somewhat in size and shape, skin color, body proportions, body hair, facial features, muscle strength, handedness, and so on. But these differences are minor compared to the overall similarity of all humans, as demonstrated by the fact that people from anywhere can reproduce and donate blood or organs to one another	X	X	
Although social behaviors are affected by both genes and environmental factors, human beings are still able to invent, learn, and modify a wide variety of these behaviors		X	X
Interactions among the senses, nerves, and brain make possible the learning that enables human beings to predict, analyze, and respond to changes in their environment		X	X
People have different external features, such as the size, shape, and color of hair, skin, and eyes, but they are more like one another than like other animals	X	X	
Both genes and environmental factors influence the rate and extent of development		X	X
Development occurs with somewhat different timing for different individuals	X	X	
The developing embryo-and later the newborn infant-is subject to many risks from infection, faults in its genes, its mothers inadequate diet, or her use of cigarettes, alcohol, or other drugs. Inadequate child care may lead to lower physical and mental ability	X	X	X
Various body changes occur as adults age. Muscles and joints become less flexible, bones and muscles lose mass, energy levels diminish, and the senses become less acute. Women stop releasing eggs and hence can no longer reproduce	X	X	
Development sometimes involves dramatic biological changes. For example, puberty involves the maturation of the body to enable reproduction		X	
Contraception measures may incapacitate sperm, block their way to the egg, prevent the release of eggs, or prevent the fertilized egg from implanting successfully	X	X	
Human fertilization occurs when sperm cells from a male's testes are deposited near an egg cell from the female ovary, and one of the sperm cells enters the egg cell	X	X	
In the first few years after birth, most children make remarkable gains in their physical and mental abilities that allow them to interact with others and with their environment	X	X	

Exhibit Area: Your Beginning

AAAS Benchmarks for Science Literacy	Exhibit Experiences		
	Prenatal Specimens	Fantastic Journey	Make Room for Baby
It takes nine months for a human to develop inside its mother. The developing baby is nourished by the mother, so substances she takes in will affect how well or poorly the baby develops			
A human baby grows inside its mother until its birth. Even after birth, a human baby is unable to care for itself, and its survival depends on the care it receives from adults	X	X	X
The human body is a complex system of cells, most of which are grouped into organ systems that have specialized functions. These systems can best be understood in terms of essential functions they serve for the organism: deriving energy from food, protection against injury, internal coordination, and reproduction	X	X	X
In something that consists of many parts, the parts usually influence one another		X	X

Exhibit Area: Your Future

AAAS Benchmarks for Science Literacy	Exhibit Experiences				
	100 Things to Do...	Face Your Future	We All Change	Centenarians	Talk to Me
Heritable characteristics can be observed at molecular and whole organism levels-in structure, chemistry, or behavior		X			
Heritable characteristics can include details of biochemistry...and anatomical features that are ultimately produced in the development of the organism...By biochemical or anatomical means, heritable characteristics may also influence behavior		X	X		
Some likenesses between children and parents are inherited. Other likenesses are learned		X			X
Complex interactions among the different kinds of molecules in the cell cause distinct cycles of activities, such as growth and division. Cell behavior can also be affected by molecules from other parts of the organism or even other organisms		X	X	X	
The genetic information encoded in DNA molecules provides instructions for assembling protein molecules			X	X	
All living things are composed of cells, from just one to many millions, whose details are usually visible only through a microscope			X		
One generation may have to bear the costs and benefits of the decisions of another generation	X	X		X	X
The decisions of one generation both provide and limit the range of possibilities open to the next generation		X		X	X
Differences in the behavior of individuals arise from the interaction of heredity, culture, and experience-the effect of each depends on the other	X	X		X	X
By biochemical or anatomical means, heritable characteristics may influence behavior	X	X		X	X
Human beings can use the memory of their past experiences to make judgments about new situations		X		X	X
Some likeness between children and parents are inherited. Other likeness are learned				X	X
People are alike in many ways and different in many ways			X		X
Interactions among the senses, nerves, and brain make possible the learning that enables human beings to cope with changes in their environment	X			X	
Changes happen in everyone's life, sometimes suddenly, more often slowly. People cannot control some changes, but they can usually learn to cope with them	X		X	X	X
As people grow up, the amounts and kinds of food and exercise needed by the body may change		X		X	X
The similarity of humans in their cell chemistry and DNA sequences reinforces the idea that all humans are part of a single species					
The complexity of the human brain allows humans to create technological, literary, and artistic works on vast scale, and to develop a scientific understanding of the world					X

Exhibit Area: Your Future

AAAS Benchmarks for Science Literacy	Exhibit Experiences				
	100 Things to Do...	Face Your Future	We All Change	Centenarians	Talk to Me
Like other complex organisms, people vary somewhat in size and shape, skin color, body proportions, body hair, facial features, muscle strength, handedness, and so on. But these differences are minor compared to the overall similarity of all humans		X		X	X
Although social behaviors are affected by both genes and environmental factors, human beings are still able to invent, learn, and modify a wide variety of these behaviors	X	X		X	X
Interactions among the senses, nerves, and brain make possible the learning that enables human beings to predict, analyze, and respond to changes in their environment	X				X
People have different external features, such as the size, shape, and color of hair, skin, and eyes, but they are more like one another than like other animals		X	X	X	X
Both genes and environmental factors influence the rate and extent of development		X	X	X	X
Development occurs with somewhat different timing for different individuals			X		X
The developing embryo-and later the newborn infant-is subject to many risks from infection, faults in its genes, its mothers inadequate diet, or her use of cigarettes, alcohol, or other drugs.					
In the first few years after birth, most children make remarkable gains in their physical and mental abilities that allow them to interact with others and with their environment					
The human body is a complex system of cells, most of which are grouped into organ systems that have specialized functions. These systems can best be understood in terms of essential functions they serve for the organism: deriving energy from food, protection against injury, internal coordination, and reproduction		x			
Communication between cells is required to coordinate their diverse activities. Cells may secrete molecules that spread locally to nearby cells or that are carried in the bloodstream to cells throughout the body. Nerve cells transmit electrochemical signals that carry information much more rapidly than is possible by diffusion or blood flow					
Some drugs mimic or block the molecules involved in communication between cells and therefore affect operations of the brain and body					
Interactions among the senses, nerves, and brain make possible the learning that enables human beings to predict, analyze, and respond to changes in their environment					
In something that consists of many parts, the parts usually influence one another					

Exhibit Area: Your Heart

AAAS Benchmarks for Science Literacy	Exhibit Experiences		
	Giant Heart	Heart Lounge Part 1	Heart Lounge Part 2
Psychological distress may also affect an individual's vulnerability to biological disease	X	X	
The length and quality of human life are influenced by many factors, including sanitation, diet, medical care, sex, genes, environmental conditions, and personal health behaviors	X	X	
A healthy body can fight most germs that do get inside. However, there are some germs that interfere with the body's defenses	X	X	
The length and quality of human life are influenced by many factors, including sanitation, diet, medical care, sex, genes, environmental conditions, and personal health behaviors	X	X	
Regular exercise is important to maintain a healthy heart/lung system, good muscle tone, and bone strength	X	X	
Toxic substances, some dietary habits, and some personal behavior may be bad for one's health. Some effects show up right away, others years later. Avoiding toxic substances such as tobacco, and changing dietary habits increases the chance of living longer	X	X	
Eating a variety of healthy foods and getting enough exercise and rest help people to stay healthy	X	X	
Some things people take into their bodies from the environment can hurt them	X	X	
The human body is a complex system of cells, most of which are grouped into organ systems that have specialized functions. These systems can best be understood in terms of essential functions they serve for the organism: deriving energy from food, protection against injury, internal coordination, and reproduction	X	X	X
Thinking about things as systems means looking for how every part relates to others. The output from one part of a system (which can include material energy or information) can become the input to other parts. Such feedback can serve to control what goes on in the system as a whole	X	X	
In something that consists of many parts, the parts usually influence one another	X	X	X

Exhibit Area: Your Mind

AAAS Benchmarks for Science Literacy	Exhibit Experiences					
	Attention	Creative Self	Brain Activity	Shocker	Mirror Mirror	Create an Ad
Raise questions about the world around them and be willing to seek answers to some of them by making careful observations and trying things out	X	X		X	X	X
The brain gets signals from all parts of the body telling what is going on there. The brain also sends signals to parts of the body to influence what they do	X		X	X	X	X
The brain enables human beings to think and sends messages to other body parts to help them work properly	X		X	X	X	X
The human body has parts that help it seek, find, and take in food when it feels hunger-eyes and nose for detecting food, legs to get it, arms to carry it away, and a mouth to eat it			X			X
In a free-market economic system, it is assumed that free competition produces the best allocation of resources, the greatest productivity and the lowest costs. Decisions are made naturally as consumers and businesses interact in the marketplace.						X
Some industries are controlled by government agencies that decide which goods or services to provide and how to distribute them based on political considerations.						X

AAAS Benchmarks for Science Literacy	Exhibit Experiences					
	Attention	Creative Self	Brain Activity	Shocker	Mirror Mirror	Create an Ad
Sometimes a community decides to make certain services-such as schools, libraries, parks, mail service, and police and fire protection-equally available to all its members through government agencies						X
Human beings tend to repeat behaviors that feel good or have pleasant consequences and avoid behaviors that feel bad or have unpleasant consequences	X			X	X	X
The way people act is often influenced by the groups to which they belong		X		X		X
In making decisions it helps to take time to consider benefits and drawbacks of alternatives				X		X
Choices have consequences, some more serious than others				X	X	X
In making decisions, benefits and drawbacks of alternatives can be taken into account more effectively if the people who will be affected are involved				X	X	X
There are trade-offs that each person must consider in making choices-about person popularity, health, family, relations, and education for example- that often have life-long consequences				X		X
Benefits and costs of proposed choices include consequences that are long-term as well as short-term, and indirect as well as direct. The more remote the consequences of personal or social decision, the harder it usually is to take them into account				X		X

AAAS Benchmarks for Science Literacy	Exhibit Experiences					
	Attention	Creative Self	Brain Activity	Shocker	Mirror Mirror	Create an Ad
The length and quality of human life are influenced by many factors, including sanitation, diet, medical care, sex, genes, environmental conditions, and personal health behaviors				X		X
Some things people take into their bodies from the environment can hurt them						X
The expectations, moods, and prior experience of human beings can affect how they interpret new perceptions or ideas. People tend to ignore evidence that challenges their beliefs and to accept evidence that supports them		X	X	X	X	X
By biochemical or anatomical means, heritable characteristics may influence behavior			X			X
Both external and internal conditions (chemistry, personal, history, values) influence how people behave		X	X	X	X	X
All behavior is affected by both inheritance and experience			X	X	X	X
What people expect to observe often affects what they actually do observe	X	X	X		X	X
Some animal species are limited to a repertoire of genetically determined behaviors; others have more complex brains and can learn and modify a wide variety of behaviors				X	X	X
Reasoning can be distorted by strong feelings		X	X	X	X	X

AAAS Benchmarks for Science Literacy	Exhibit Experiences					
	Attention	Creative Self	Brain Activity	Shocker	Mirror Mirror	Create an Ad
Learning means using what one already knows to make sense out of new experiences or information, not just storing the new information in one's head	X		X			X
People can learn about others from direct experience, from the media, and from listening to other people talk about their work and their lives. People also some-times imitate people-or characters-in the media				X	X	X
Human beings can use the memory of their past experiences to make judgments about new situations	X	X	X	X		X
Some likeness between children and parents are inherited. Other likeness are learned				X		
People can learn from each other by telling and listening, showing and watching, and imitating what others do				X	X	
Stresses are especially difficult for children to deal with and may have long lasting effects						
Biological abnormalities, such as brain injuries or chemical imbalances, can cause or increase susceptibility to psychological disturbances			X			
Individuals differ greatly in their ability to cope with stressful situations,. Both external and internal conditions (chemistry, personal history, values) influence how people behave			X	X		

AAAS Benchmarks for Science Literacy	Exhibit Experiences					
	Attention	Creative Self	Brain Activity	Shocker	Mirror Mirror	Create an Ad
Although within any society there is usually broad general agreement as to what behavior is unacceptable, the standards used to judge behavior for different settings and sub grouping and they may change with time according to different political and economical						X
Interactions among the senses, nerves, and brain make possible the learning that enables human beings to cope with changes in their environment			X	X	X	X
Different individuals handle their feeling differently, and can have different feelings in the same situation	X		X		X	
Often human beings don't understand why others act the way they do, and sometimes they don't understand their own behavior and feelings	X		X	X	X	X
Changes happen in everyone's life, sometimes suddenly, more often slowly. People cannot control some changes, but they can usually learn to cope with them		X	X			
Some drugs mimic or block the molecules involved in transmitting nerve or hormone signals and therefore disturb the normal operations of the brain and body			X			

AAAS Benchmarks for Science Literacy	Exhibit Experiences					
	Attention	Creative Self	Brain Activity	Shocker	Mirror Mirror	Create an Ad
Toxic substances, some dietary habits, and some personal behavior may be bad for one's health. Some effects show up right away, others years later. Avoiding toxic substances such as tobacco, and changing dietary habits increases the chance of living longer				X		X
Tobacco, alcohol, other drugs and certain poisons in the environment (pesticides, lead) can harm human beings and other living things			X	X		X
Eating a variety of healthy foods and getting enough exercise and rest help people to stay healthy				X		
Some things people take into their bodies from the environment can hurt them						X
The complexity of the human brain allows humans to create technological, literary, and artistic works on vast scale, and to develop a scientific understanding of the world		X	X			X
Hormones are chemicals from glands that affect other body parts. They are involved in helping the body respond to danger and in regulating human growth, development, and reproduction			X	X		
In something that consists of many parts, the parts usually influence one another						X
People use their senses to find out about their surroundings and themselves. Different senses give different information			X	X	X	X

Exhibit Area: Your Movement

AAAS Benchmarks for Science Literacy	Exhibit Experiences					
	Get in the Action	No Excuses	Hamster Wheel	Stay Active Gallery	Echolocation	Sports Personality Quiz
Various organs and tissues function to serve the needs of all cells for food, air, and waste removal	X		X	X		
Lungs take oxygen for the combustion of food and they eliminate the carbon dioxide produced. The urinary system disposes of dissolved waste molecules, the intestinal tract removes solid wastes, and the skin and lungs rid the body of heat energy	X		X	X		
Various organs and tissues function to serve the needs of all cells for food, air, and waste removal	X		X	X		
Like other animals, human beings have body systems for obtaining and providing energy, defense, reproduction, and the coordination of body functions	X		X	X		
The human body has parts that help it seek, find, and take in food when it feels hunger-eyes and nose for detecting food, legs to get it, arms to carry it away, and a mouth to eat it	X		X	X		
A healthy body can fight most germs that do get inside. However, there are some germs that interfere with the body's defenses	X		X	X		
Physical health can affect people's emotional well being. Likewise, emotional well being can affect physical health	X		X	X	X	
New medical techniques, efficient health care delivery systems, improved sanitation, and a fuller understanding of the nature of disease give today's humans a better chance of staying healthy than their forebears had.	X		X			
The length and quality of human life are influenced by many factors, including sanitation, diet, medical care, sex, genes, environmental conditions, and personal health behaviors	X		X	X	X	
Regular exercise is important to maintain a healthy heart/lung system, good muscle tone, and bone strength	X	X	X	X		X
The amount of food energy (calories) a person requires, varies with body weight, age, sex, activity level, and natural body efficiency	X		X			
As people grow up, the amounts and kinds of food and exercise needed by the body may change	X		X	X		X
Eating a variety of healthy foods and getting enough exercise and rest help people to stay healthy	X		X	X		
Like other animals, human beings have body systems for obtaining and deriving energy from food and for defense, reproduction, and the coordination of body functions	X		X			
Technology has helped people with disabilities survive and live more conventional lives	X	X		X		

AAAS Benchmarks for Science Literacy	Get in the Action	No Excuses	Hamster Wheel	Stay Active Gallery	Echolocation	Sports Personality Quiz
Human beings have made tools and machines to sense and do things that they could not otherwise sense, or do at all, as quickly, or as well		X		X		
Technology has made it possible to repair and replace some body parts	X	X		X	X	
The human body is a complex system of cells, most of which are grouped into organ systems that have specialized functions. These systems can best be understood in terms of essential functions they serve for the organism: deriving energy from food, protection against injury, internal coordination, and reproduction	X		X			
To burn food for the release of energy stored in it, oxygen must be supplied to cells, and carbon dioxide removed. Lungs take in oxygen for the combustion of food and eliminate the carbon dioxide produced. The urinary system disposes of dissolved waste molecules, the intestinal tract removes solid wastes, and the skin and lungs aid in the transfer of thermal energy from the body. The circulatory system moves all these substances to or from cells, where they are needed or produced, responding to changing demands	X					
For the body to use food for energy and building materials, the food must first be digested into molecules that are absorbed and transported to cells	X		X			
Thinking about things as systems means looking for how every part relates to others. The output from one part of a system (which can include material energy or information) can become the input to other parts. Such feedback can serve to control what goes on in the system as a whole	X		X			
By breathing, people take in oxygen they need to live	X		X	X		
From food, people obtain fuel and materials for body repair and growth	X		X			
In something that consists of many parts, the parts usually influence one another	X		X	X	X	

Exhibit Area: Your Vitality

AAAS Benchmarks for Science Literacy	Exhibit Experiences					
	Mindball	Support Networks	Laugh Garden	Happiness Myths	Sleepers	Stress Chart
Some atoms and molecules are highly effective in encouraging the interaction of others			X			X
The configuration of atoms in a molecule determines the molecule's properties. Shapes are particularly important in how large molecules interact with others			X			
Communication between cells is required to coordinate their diverse activities. Some cells secrete substances that spread to nearby cells or are carried in the bloodstream to all cells. Along nerve cells, electrical impulses carry information much more rapidly	X		X		X	X
Complex interactions among the different kinds of molecules in the cell cause distinct cycles of activities, such as growth and division. Cell behavior can also be affected by molecules from other parts of the organism or even other organism						X
Different parts of the instructions are used in different types of cells, influenced by the cell's environment and past history					X	
In addition to the basic cellular functions common to all cells, most cells in multicultural organisms perform special functions that others do not	X		X		X	X
The brain gets signals from all parts of the body telling what is going on there. The brain also sends signals to parts of the body to influence what they do	X		X		X	X
The brain enables human beings to think and sends messages to other body parts to help them work properly	X		X		X	X
In making decisions it helps to take time to consider benefits and drawbacks of alternatives.	X	X			X	X
When a group of people wants to build something or try something new, they should figure out ahead of time how it might affect other people		X		X		
Current ethics in science hold that research involving human subjects may be conducted only with the informed consent of the subjects, even if this constraint limits some kinds of potentially important research or influences the results					X	
Funding influences the direction of science by virtue of the decisions that are made on which research to support. Research funding comes from various federal government agencies, industry and private foundations					X	
Psychological distress may also affect an individual's vulnerability to biological disease	X	X	X	X		
A healthy body can fight most germs that do get inside. However, there are some germs that interfere with the body's defenses		X	X		X	X
What people expect to observe often affects what they actually do observe		X				
Reasoning can be distorted by strong feelings		X			X	X
People can learn about others from direct experience, from the media, and from listening to other people talk about their work and their lives. People also some-times imitate people-or characters-in the media		X	X	X		
Human beings tend to repeat behaviors that feels good or have pleasant consequences and avoid behaviors that feel bad or have unpleasant consequences	X	X	X	X	X	X
Human beings can use the memory of their past experiences to make judgments about new situations		X		X		

AAAS Benchmarks for Science Literacy	Exhibit Experiences					
	Mindball	Support Networks	Laugh Garden	Happiness Myths	Sleepers	Stress Chart
Stresses are especially difficult for children to deal with and may have long lasting effects	X	X	X			X
Reactions of other people to an individual's emotional disturbance may increase its effects		X		X		
Ideas about what constitutes good mental health and proper treatment for abnormal mental states vary from one culture to another and from one time period to another		X	X		X	X
Psychological distress may also affect an individual's vulnerability to biological disease	X	X	X	X	X	X
Biological abnormalities, such as brain injuries or chemical imbalances, can cause or increase susceptibility to psychological disturbances	X					
Individuals differ greatly in their ability to cope with stressful situations,. Both external and internal conditions (chemistry, personal history, values) influence how people behave	X	X	X	X	X	X
Interactions among the senses, nerves, and brain make possible the learning that enables human beings to cope with changes in their environment					X	
Physical health can affect people's emotional well being. Likewise, emotional well being can affect physical health	X	X	X	X	X	X
Different individuals handle their feeling differently, and can have different feelings in the same situation		X	X	X		
Often human beings don't understand why others act the way they do, and sometimes they don't understand their own behavior and feelings		X		X		
People have many different feelings about events, themselves, and other people		X		X		
People react to personal problems in different ways. Some ways are more likely to be helpful than others		X		X		X
Changes happen in everyone's life, sometimes suddenly, more often slowly. People cannot control some changes, but they can usually learn to cope with them	X	X	X	X	X	X
Some drugs mimic or block the molecules involved in transmitting nerve or hormone signals and therefore disturb the normal operations of the brain and body					X	X
The length and quality of human life are influenced by many factors, including sanitation, diet, medical care, sex, genes, environmental conditions, and personal health behaviors	X	X	X	X	X	X
Like other complex organisms, people vary somewhat in size and shape, skin color, body proportions, body hair, facial features, muscle strength, handedness, and so on. But these differences are minor compared to the overall similarity of all humans		X				
Interactions among the senses, nerves, and brain make possible the learning that enables human beings to predict, analyze, and respond to changes in their environment	X		X			X
The human body is a complex system of cells, most of which are grouped into organ systems that have specialized functions. These systems can best be understood in terms of essential functions they serve for the organism: deriving energy from food, protection against injury, internal coordination, and reproduction	X	X	X		X	X
Hormones are chemicals from glands that affect other body parts. They are involved in helping the body respond to danger and in regulating human growth, development, and reproduction	X	X	X		X	X
In something that consists of many parts, the parts usually influence one another	X	X	X		X	X

AAAS Benchmarks for Science Literacy	Exhibit Experiences					
	Mindball	Support Networks	Laugh Garden	Happiness Myths	Sleepers	Stress Chart
People use their senses to find out about their surroundings and themselves. Different senses give different information	X		X			

Exhibit Area: Medical Innovations

AAAS Benchmarks for Science Literacy	Exhibit Experiences							
	Body Slices	Imaging-Graphics	Personalized Medicine	Vein Viewer	21st Century Body	Future Forum	Otto Bock	Bionic Arm video
Investigations are conducted for different reasons, including to explore new phenomena, to check on previous results, to test how well a theory predicts, and to compare theories	X	X	X	X	X	X		
People alone or in groups, are always inventing new ways to solve problems and get work done. The tools and ways of doing things that people have invented affect all aspects of life		X	X	X	X	X	X	X
Technology is an intrinsic part of human culture, it both shapes society and is shaped by it. The technology available to people greatly influences what their lives are like...	X	X	X	X	X	X	X	X
Technology is largely responsible for the great revolutions in agriculture, manufacturing, sanitation and medicine, warfare, transportation, information processing, and communications that have radically changed how people live	X	X		X	X	X	X	X
Progress in science and invention depends heavily on what else is happening in society, and history often depends on scientific and technological developments.	X	X		X	X	X	X	X
Technology usually affects society more directly than science because it solves practical problems and serves human needs (and may cause new problems and needs)	X	X	X	X	X	X	X	X
Technology, especially in transportation and communication, is increasingly important in spreading ideas, values, and behavior patterns within a society and among different societies. New technology can change cultural values and social behavior	X	X		X		X	X	X
New medical techniques, efficient health care delivery systems, improved sanitation, and a fuller understanding of the nature of disease give today's humans a better chance of staying healthy than their forebears had.	X	X		X	X	X		
Human beings use technology to match or exceed many of the abilities of other species	X	X		X	X	X	X	X
Technology has helped people with disabilities survive and live more conventional lives			X		X	X	X	X
Human beings have made tools and machines to sense and do things that they could not otherwise sense, or do at all, as quickly, or as well				X	X	X	X	X
Technological problems and advances often create a demand for new scientific knowledge, and new technologies make it possible for scientists to extend their research in new ways or to undertake entirely new line of research	X	X		X	X	X	X	X
Design usually requires taking into account not only physical and biological constraints, but also economic, political, social, ethical, and aesthetic ones					X		X	X
Engineers, architects, and others who engage in design and technology use scientific knowledge to solve practical problems. They also usually have to take human values and limitations into account		X		X	X		X	X
Tools such as thermometers and X-ray machines are used to help figure out whether a person is healthy	X	X		X				
Owing to the large amount of information that computers can process, they are playing an increasingly larger role in medicine. They are used to analyze data and keep track of and communicate diagnostic information		X		X			X	X
Biotechnology has contributed to health improvement in many ways, but its cost and application have led to a variety of controversial social and ethical issues			X		X	X		

Exhibit Area: Medical Innovations

AAAS Benchmarks for Science Literacy	Exhibit Experiences							
	Body Slices	Imaging-Graphics	Personalized Medicine	Vein Viewer	21st Century Body	Future Forum	Otto Bock	Bionic Arm video
Knowledge of genetics is opening whole new fields of health care. In diagnosis, mapping of genetic instructions in cells makes it possible to detect defective genes that may lead to poor health. In treatment, substances from genetically engineered organism			X			X		
It is possible to manufacture complex chemical substances such as insulin and hormones that are normally found in the body					X	X		
If the body's immune system cannot suppress a bacterial infection, an antibacterial drug may be effective-at least against the types of bacteria it was designed to combat. Less is know about the treatment of viral infections, especially the common cold								
Current health practices emphasize sanitation, the safe handling of food and water, the pasteurization of milk, isolation, and aseptic surgical techniques to keep germs out of the body; vaccinations to strengthen the body's immune system against subsequent						X		
As the knowledge of how cells in the body detect and fight invaders has grown, the transplantation of tissue or whole organs has become increasingly common. New materials that are durable and less likely to be rejected by the immune system now make it possible								
Technology has made it possible to repair and replace some body parts			X		X	X	X	X
The development and use of technologies to sustain, prolong, or terminate, life raise social, moral, ethical, and legal issues					X	X	X	X

Exhibit Area: Plastinates

AAAS Benchmarks for Science Literacy	Exhibit Experiences												
	Expanded Body	Male Torso	Female Torso	Digestive System	Brain and Nervous System	Blood Vessels	Arteries of Heart, Liver, Kidneys, Uterus	Normal and Enlarged Heart	Nonsmokers vs. Smokers Lungs	Normal and Diseased Livers	Normal Weight and Obese Weight	Aged Knee Joint	Leg/Hip Specimen with Artificial Replacement
Explain how cells function as "building blocks" of organisms and describe the requirements for cells to live					X		X	X					X
Explain how genetic combinations produce visible effects and variations among physical features and cellular functions of organisms		X	X					X		X	X	X	
Describe the structures and organization of cells and tissues that underlie basic life functions including nutrition, respiration, cellular transport, biosynthesis and reproduction				X			X		X				
Identify and describe ways that science and technology affect people's everyday lives								X	X	X	X	X	X
Identify and explain ways that science and technology influence the lives and careers of people													X
Describe how occupations use scientific and technological knowledge and skills	X	X	X	X	X	X	X	X	X	X	X	X	X
Describe the benefits of maintaining a health-enhancing level of fitness						X		X	X		X	X	X
Engage in sustained physical activity that causes increased heart rate, muscle strength and range of movement													
Describe immediate effects of physical activity of the body					X	X		X			X	X	X
Identify general signs and symptoms of an illness	X	X	X	X	X	X	X	X	X	X	X	X	X
Describe benefits of early detection and treatment of illness								X	X	X	X	X	X
Identify and describe ways to reduce health risks common to adolescents								X	X	X	X	X	
Identify how positive health practices and relevant health care can help reduce health risks				X	X	X		X	X	X	X	X	X
Analyze possible outcomes of effective health promotion and illness prevention								X	X		X		
Encourage and support others in making positive health choices								X	X	X	X		
Explain interrelationships between the environment and individual health					X	X		X	X	X	X	X	X
Identify basic parts of body systems and their functions	X	X	X	X	X	X	X	X	X	X	X	X	X
Identify basic body systems and their functions	X	X	X	X	X	X	X	X	X	X	X	X	X
Explain how body systems interact with each other	X	X	X	X	X	X	X	X	X	X	X	X	X
Differentiate between positive and negative effects of health-related actions on body systems					X	X		X	X	X	X	X	X
Explain the effects health-related actions upon body systems	X	X	X	X	X	X	X	X	X	X	X	X	X

Explain immediate and long-term effects of health habits on the body system	X	X	X	X	X	X	X	X	X	X	X	X	X
Understand the effects of healthy living on individuals and their future generations	X	X	X	X	X	X	X	X	X	X	X	X	X
Identify individual differences in growth and development among people		X	X		X	X		X	X	X	X	X	X
Describe changes in physical health and body functions at various stages of the life cycle		X	X					X			X		X
Explain how the aging process affects body systems						X		X		X	X	X	X
Identify stages in growth and development	X	X	X	X	X	X	X	X	X	X	X	X	X
Recognize how choices can affect health					X	X		X	X	X	X	X	X