

Chapter 1 : DrugFacts: Genetics and Epigenetics of Addiction | National Institute on Drug Abuse (NIDA)

Introduction to Heredity and Traits Five easy-to-implement classroom activities teach the basics of heritable traits. Three take-home activities help students share what they're learning with their families.

NGSS Available Preview of Power of Flowers This unit develops the idea that by studying how plants reproduce and pass on their traits, we human beings have figured out how to make food plants even more useful t More This unit develops the idea that by studying how plants reproduce and pass on their traits, we human beings have figured out how to make food plants even more useful to us. Students first discover how plants reproduce by exploring the process of pollination and fruiting. Then students are introduced to the process of plant domestication selection of traits based on inheritance and variation. Why do plants grow flowers? Why do plants give us fruit? Why are some apples red and some green? How could you make the biggest fruit in the world? Close Reserve free membership to view Mysteries Preview of Spinning Sky This unit helps students develop the idea that the sun, moon, and stars change position in the sky in ways that are fun to watch and predict. More This unit helps students develop the idea that the sun, moon, and stars change position in the sky in ways that are fun to watch and predict. Why do you have to go to bed early in the summer? Why do the stars come out at night? How can stars help you if you get lost? Why do builders need so many big machines? How can you knock down a wall made of concrete? How can you knock down the most bowling pins? How can we protect a mountain town from falling rocks? How could you invent a trap? Close Reserve free membership to view Mysteries Preview of Weather Watching This unit helps students develop the habit of becoming weather watchers who take pleasure in noticing weather patterns and predicting changes. More This unit helps students develop the habit of becoming weather watchers who take pleasure in noticing weather patterns and predicting changes. Have you ever watched a storm? How can you get ready for a big storm? What will the weather be like on your birthday? How do you know what to wear for the weather? How could you warm up a frozen playground? How could you walk barefoot across hot pavement without burning your feet? More This unit helps students develop the idea that by exploring the properties of light and sound, human beings create fun and useful things. How do they make silly sounds in cartoons? Where do sounds come from? What if there were no windows? Can you see in the dark? How could you send a secret message to someone far away? How do boats find their way in the fog? Knowing how they meet their needs can even help students find plants and animals near them. Why do woodpeckers peck wood? Where do animals live? How can you find animals in the woods? How do animals make their homes in the forest? How do plants and trees grow? Why would you want an old log in your backyard? More This unit about plant and animal survival helps students develop the idea that, just like a superhero has special powers, every animal and plant has special parts and behaviors that help them to grow and meet their needs. Why do birds have beaks? Why do baby ducks follow their mother? Why are polar bears white? Why do family members look similar to one another? Close Reserve free membership to view Mysteries Preview of Animals Through Time In this unit students will develop an appreciation for how animals and the places they live their habitats are not constantâ€”they have changed over time. More In this unit students will develop an appreciation for how animals and the places they live their habitats are not constantâ€”they have changed over time. Fossils give us a window to the animals and habitats of the past. Selective breeding shows us not only how some animals of the past became domesticated, but allows us to imagine how they might look in the future. Where can you find whales in a desert? How do we know what dinosaurs looked like? Can you outrun a dinosaur? What kinds of animals might there be in the future? Can selection happen without people? Why do dogs wag their tails? Close Reserve free membership to view Mysteries Preview of The Birth of Rocks This unit takes the perspective that every rock has a story. More This unit takes the perspective that every rock has a story. After considering where volcanoes form and how they erupt, they turn to investigations of rocks breaking apart and creating potential hazards. Through hands-on investigation, students explore the world of rocks and design ways of protecting humans from their dangers. Could a volcano pop up in your backyard? Why do some volcanoes explode? Will a mountain last forever? How could you survive a landslide? Close Reserve free

membership to view *Mysteries Preview of Plant Adventures* This unit develops the idea that plants are truly alive and face challenges every bit as dramatic as those of animals. Students will learn that plants have needs, and More This unit develops the idea that plants are truly alive and face challenges every bit as dramatic as those of animals. Students will learn that plants have needs, and will reason from evidence to understand how plants meet their needs. Their attention will be drawn to exciting connections they can observe in their everyday world: How did a tree travel halfway around the world? Do plants eat dirt? Why do trees grow so tall? Should you water a cactus? Where do plants grow best? Close Reserve free membership to view *Mysteries Preview of Energizing Everything* This introductory energy unit will encourage students to think about the energy that things need to move. Students will explore how energy makes things go, from power More This introductory energy unit will encourage students to think about the energy that things need to move. Students will experiment with rubber band racers to discover the relationship between how much energy is stored in a material and how much is released. They will investigate the role that hills play in making roller coasters move and the energy transfer that happens when two objects collide. Students will realize that thinking about the world in terms of energy helps them make sense of how and why things speed up and slow down. Hands-on activities focus on engineering, testing hypotheses and using results to develop their ideas. How can a car run without gas? What makes roller coasters go so fast? Why is the first hill of a roller coaster always the highest? Could you knock down a building using only dominoes? Can you build a chain reaction machine? What if there were no electricity? How long did it take to travel across the country before cars and planes? Where does energy come from? They will be given evidence that the Earth beneath our feet is actually They will be given evidence that the Earth beneath our feet is actually moving through space, both spinning on its axis, and traveling in a great orbit around the Sun. They will see how these movements account for the patterns we see in our sky the paths of our Sun across the sky, the changing seasons, and the changing constellations. Accompanying us on this journey are the Moon and planets, which the students will observe have their own patterns of movement in the sky. Throughout this investigation students will engage in actual and simulated observations of the sky, and they will engage in the process of inquiry: Why does the sun rise and set? Who set the first clock? Why do the stars change with the seasons? How can the sun tell you the season? Why does the moon change shape? What are the wandering stars?

Chapter 2 : Genetics - Inherited Traits

Genetics lesson plans designed for high school, middle school, and elementary school science teachers are downloadable here. The Punnett square worksheets lets students practice the probability of inheritance.

In this lesson, students will discuss the merits of heredity rule. After using various games, features, and video clips from the Web site, students should have learned basic information about each of nine featured emperors. For their final project, students will create campaign posters for a selected emperor. Participate in a class discussion focused on key aspects of hereditary rule and various ideas related to the absolute power that an emperor has. Complete the "Who Are You? Work as a group to describe the historical leader they most resemble using a single sentence and share these descriptions with the other groups in the class. Critically view video clips and read Web site content about nine featured emperors to learn more about their individual achievements, personality, leadership style and other key elements of their reign over ancient Rome. Participate in class discussion activities where they share what they have learned from their research and their personal opinions about each emperor. World History Standard 9: Historical Understanding Standard 2: Understands the historical perspective. Language Arts Standard 4: Gathers and uses information for research purposes. Uses the general skills and strategies of the reading process. Uses reading skills and strategies to understand and interpret a variety of informational texts. Listening and Speaking Standard 8: Uses listening and speaking strategies for different purposes. Thinking and Reasoning Standard 1: Understands the basic principles of presenting an argument. Effectively uses mental processes that are based on identifying similarities and differences. Working with Others Standard 4: Displays effective interpersonal communication skills. This should take two to three minutes class periods or four to five minute class periods plus additional time for extension activities. Internet access for completing the Who Are You? To generate student interest and help them access their prior knowledge, distribute the Anticipation Guide [[Download PDF here k](#)] and review the directions. Remind students that completing the guide quietly on their own will be of key importance. Provide students with approximately five minutes to complete the activity. Using the statements from the Anticipation Guide, conduct a class discussion that addresses topics such as: What is heredity rule and what are its positive and negative aspects? Can you give examples of times when leaders have been forcibly removed from power because of discontent by the people? What do you think was the most common method the ancient Romans used to remove emperors from power? Can murdering a political leader be justified if it is for the good of a large group of people or a whole country? Explain and give examples to support your ideas. What are the negative aspects of having a leader who rules until the death with absolute power? If you had been an emperor in ancient Rome, who would have considered trustworthy and why? They should be prepared to discuss the person they were most like with their classmates. After all students have taken the quiz and written their facts, divide the class into groups based upon who they most resembled in the quiz. Have each group discuss what they learned about the person they represent using questions such as: What role did this person play in Roman history? Do you think this person was a good leader? How would you describe this person in a single sentence? How are you most like this person? Least like this person? After groups have had several minutes to discuss the person they represent, have each group elect a spokesperson to describe the person they represent using a single sentence. One by one, call on groups to share their one-sentence descriptions of each person. Distribute the hunt, and view the following video clips as a large group, stopping to discuss the significance of each one and record information on the History Hunt. The Peace of Rome [[Watch clip, duration 1: The Emperor Claudius](#)] [Watch clip, duration 2: Claudius Expands the Empire, and Rome Burns](#) [[watch clip, duration 2: Point out various sections including the Emperors and Timeline](#). Have students use these to record information about each of the emperors in the hunt. Facilitate a class discussion about what students learned about each emperor. Students should refer back to their History Hunt notes when participating in the discussion. Use questions such as: What type of leadership style and skills did each emperor have? In your opinion, who was the best emperor? If the nine emperors you studied were running for public office today, do you think any of them would be elected? Why or why not? If you

could choose one emperor to be, which would you choose, and why? After completing the class discussion, students should have a basic understanding of each emperor. Encourage students to use what they learned from the History Hunt and the class discussion to assist them as they play the game. As a final activity, have students choose one emperor to represent. Students should create a campaign poster for their emperor based upon what they have learned about him through the various classroom activities. Have students compare the posters and choose the one they believe captures the best qualities of the emperor and presents him in a positive way. Keep the posters on display in the classroom or a public area for others to view. Participation grades could be assigned for class discussion activities. Accuracy or completion grades could be given for the Emperors of Rome History Hunt. A percentage or letter grade or a scoring guide could be used to evaluate the effectiveness of the Putting a Positive Spin on the Emperors campaign poster project. Compare and contrast the nine emperors you learned about in the lesson by creating Venn Diagrams, T-charts, or some other graphic organizer that illustrates the similarities and differences between the various leaders. Students could focus on two or three individual emperors or place the emperors into groups such as "good" emperors and "bad" emperors for making their comparisons. Teach other students and audiences about the Roman emperors of the first century by working in groups to research individual emperors in more detail. These performances could be videotaped and shared with students from other classes or as part of an open house for parents and community members to see and learn from.

Chapter 3 : Health Lesson Plans and Health Education Lesson Plans

Explore Pam Watson's board "Genetics and Heredity" on Pinterest. | See more ideas about Teaching biology, Biology lessons and Life Science. They also have some.

Although this is the case, there are certain topics that are discussed at different ages so that the students are able to understand the concept behind them. For middle school students, some of the more common health education lesson plans that are discussed include food, nutrition, physical education, mental and emotional health, drug and alcohol abuse, disease and growth and development. This article briefly discusses these topics and gives some lesson plans that are available online to incorporate in a classroom setting. Food, Nutrition and Physical Education When middle school students are learning about health, most of the time the health lesson plans begin with food, nutrition and physical education. Students learn about the importance of eating a well-balanced diet, how to read labels in the grocery stores, and from the cabinets. Students also learn what foods should be staple foods in our everyday diet. The importance of physical fitness is also taught within the health education lesson plans, so that students know how important it is in the overall health of an individual. Lesson plan that teaches students how to read food label for nutrition information. Lesson plan that discusses the importance of fitness and how to make your own fitness plan. Milk - The Complete Food: Lesson plan that teaches students the importance of milk. Lesson plan that focuses on organic food. Lesson plans on the body and how it needs nutrition and physical activity. Mental and Emotional Health Mental and emotional health is an extremely important part of the health education curriculum. In this part of the curriculum, students are learning about the various states of mental and emotional health. They also learn how their emotions affect their body and the way they view certain things. Lesson plans in this area teach students about body image and self-esteem as well as how to make the right decisions. Lesson on body image and how it affects an individual. Lesson plans on self-esteem and taking an inward look into themselves. Teaching students how to make responsible decisions. Lesson plans on the effects of bullying. Students learn the effect of music on behavior. Alcohol, Tobacco and Other Drugs Health education lesson plans that deal with alcohol, tobacco and other drugs teach students about these substances and how they affect the body. Students learn and begin to understand how dangerous these substances are and how peer-pressure can make them want to try certain drugs. Students come out of these lesson plans with the information they need to make the right decisions on abstaining from smoking and other substance abuse. Lesson plan that discusses second hand smoke and why it is dangerous. A Drug Free Me: Students learn all information and how to make the right decisions when it comes to drugs and drug abuse. Drug and Alcohol Abuse: Lesson plan for drug and alcohol abuse including the health effects and consequences. Alcohol and Other Drugs: Students learn about alcohol and other drugs and how they affect the body. The Dangers of Drug Abuse: Lesson plan that teaches students about drugs and the dangers of drug use and abuse. California College DUI awareness project about drunk driving and designated drivers. Growth and Development In the growth and development health lesson plans, students learn about various aspects of the body. They learn about how the body changes over time in both visible physical aspects as well as internal ways that we cannot always see. Students learn about genetics and heredity and the affect they have on certain traits and diseases. In these health education lesson plans, students learn about the effect that emotions have on the body. Students learn the acquired traits of genes and heredity. Lesson plan that teaches students the effect that emotions have on the physical body. Lesson plan that teaches students about puberty. The Ultimate Guide to the Human Body: Lesson plan that discusses the human body. Lesson plan that teaches students what goes on in the human body. Health-Body System Lesson Plans: Lesson plans on the body systems and growth and development. Disease Health education lesson plans cannot be complete without the discussion of disease. These health lesson plans combine a number of other topics and discuss how heredity, nutrition, lack of physical activity and emotions can have on the development of certain diseases. Students also learn about individual diseases separately and how to help prevent the development of these diseases. They will also participate in experiments that give visual examples of how diseases work on the body. Skeletal and Muscular Disease: Web quest lesson plan on skeletal and muscular disease. Lesson plan

DOWNLOAD PDF SOME LESSONS OF HEREDITY.

that discusses skin cancer and how to prevent it. Experiment lesson that tests digestion. Examining Ideas About Body Image: Lesson plan that teaches students about body image and eating disorders.

Chapter 4 : Mystery Science: Lessons for elementary teachers

Hi all, I'm working with a teacher who is planning a semester on genetics, DNA and heredity for a pre-HSE level class. We have some lesson plans (could always use more), but we're looking for a good book to pair with the lesson plans.

Pinning down the biological basis for this risk is an important avenue of research for scientists trying to solve the problem of drug addiction. Research on the human genome has shown that, on average, the DNA sequences of any two people are 99.9% identical. These differences contribute to visible variations, like height and hair color, and invisible traits, such as increased risk for or protection from certain diseases such as heart attack, stroke, diabetes, and addiction. Some diseases, such as sickle cell anemia or cystic fibrosis, are caused by an error, known as a mutation, in a single gene. Medical researchers have had striking success at unraveling the genetics of these single-gene disorders, though finding treatments or cures has not been as simple. The good news is that scientists are actively pursuing many more paths to treatment and prevention of these more complex illnesses. Linking Genes to Health: Technologies such as genome-wide association studies GWAS, whole genome sequencing, and exome sequencing looking at just the protein-coding genes identify subtle variations in DNA sequence called single-nucleotide polymorphisms SNPs. SNPs are differences in just a single letter of the genetic code from one person to another. If a SNP appears more often in people with a disease than those without, it is thought to either directly affect susceptibility to that disease or be a marker for another variation that does. GWAS and sequencing are extremely powerful tools because they can find a connection between a known gene or genes and a disorder, and can identify genes that may have been overlooked or were previously unknown. Through these methods, scientists can gather more evidence from affected families or use animal models and biochemical experiments to verify and understand the link between a gene and the risk of addiction. These findings would then be the basis for developing new treatment and intervention approaches. For example, both genetics and lifestyle factors—such as diet, physical activity, and stress—affect high blood pressure risk. However, different software systems and measurement formats have made sharing data sets difficult. NIH has created "Big Data" policies that will enable better sharing of information <https://www.nih.gov/health-topics/big-data>: When the data can be combined and harmonized, a process called data integration, the chances of identifying new genetic information that could give rise to new disease insights is amplified. For example, a community that provides healthy after-school activities has been shown to reduce vulnerability to drug addiction, and recent data show that access to exercise can discourage drug-seeking behavior, an effect that is more pronounced in males than in females. Research also suggests that genes can play a part in how a person responds to his or her environment, placing some people at higher risk for disease than others. Over time, as they are exposed to differences in their environments and make choices of their own, their DNA gets marked with information that can affect their behavior, their risk of addiction, and even their response to treatment. Some of these changes can be passed on to later generations. This is called epigenetics. Epigenetics is the study of functional, and sometimes inherited, changes in the regulation of gene activity and expression that are not dependent on gene sequence. So, although each cell type in the human body effectively contains the same genetic information, epigenetic regulatory systems enable the development of different cell types e. These epigenetic marks can affect health and even the expression of the traits passed to children. For example, when a person uses cocaine, it can mark the DNA, increasing the production of proteins common in addiction. Increased levels of these altered proteins correspond with drug-seeking behaviors in animals. Histones, as another example, are like protein spools that provide an organizational structure for genes. Genes coil around histones, tightening or loosening to control gene expression. Drug exposure can affect specific histones, modifying gene expression in localized brain regions. Current research suggests that smokers with high-risk genotypes are more likely to receive greater benefits from certain medications. Also, the rate of nicotine metabolism can help inform treatment decisions. Studying and using these data types to identify biological factors involved in substance abuse is increasingly important because technologic advances have improved the ability of researchers to single out individual genes or brain processes that may inform new prevention and treatment interventions. Genetics and Precision Medicine Clinicians often find substantial variability in how

individual patients respond to treatment. Part of that variability is due to genetics. Learning more about the genetic, epigenetic, and neurobiological bases of addiction will eventually advance the science of addiction. Scientists will be able to translate this knowledge into new treatments directed at specific targets in the brain or to treatment approaches that can be customized for each patient—called pharmacogenomics. The Genetics, Epigenetics, and Developmental Neuroscience Branch supports research on the genetics, epigenetics, and developmental mechanisms that underlie substance abuse and addiction. The DNB accomplishes its mission by developing and supporting an extramural research program that provides an understanding of the neurobiological and behavioral mechanisms of drugs of abuse and its consequences. Citation of the source is appreciated, using the following language: Department of Health and Human Services. Cholinergic nicotinic receptor genes implicated in a nicotine dependence association study targeting candidate genes with SNPs. Chipping away at the genetics of smoking behavior. Multiple cholinergic nicotinic receptor genes affect nicotine dependence risk in African and European Americans. Genome-wide meta-analyses identify multiple loci associated with smoking behavior. Habenular alpha-5 nicotinic receptor subunit signaling controls nicotine intake. A genetically modulated, intrinsic cingulate circuit supports human nicotine addiction. The habenulo-interpeduncular pathway in nicotine aversion and withdrawal. The role of the habenula in drug addiction. *J Natl Cancer Inst.* CYP2B6 non-coding variation associated with smoking cessation is also associated with differences in allelic expression, splicing, and nicotine metabolism independent of common amino-acid changes. Nicotinic acetylcholine receptor variation and response to smoking cessation therapies. Pharmacotherapy effects on smoking cessation vary with nicotine metabolism gene CYP2A6. Use of the nicotine metabolite ratio as a genetically informed biomarker of response to nicotine patch or varenicline for smoking cessation: Access to a running wheel inhibits the acquisition of cocaine self-administration. The effects of post-extinction exercise on cocaine-primed and stress-induced reinstatement of cocaine seeking in rats. Effects of the combination of wheel running and atomoxetine on cue- and cocaine-primed reinstatement in rats selected for high or low impulsivity. Animal models of social contact and drug self-administration. Social preference and drug self-administration: Locus-specific epigenetic remodeling controls addiction- and depression-related behaviors. Essential role of the histone methyltransferase G9a in cocaine-induced plasticity. Renthal W, Nestler EJ. Histone acetylation in drug addiction. *Semin Cell Dev Biol.* A role for repressive histone methylation in cocaine-induced vulnerability to stress. This page was last updated February More DrugFacts.

Chapter 5 : The Roman Empire: in the First Century. For Educators. Lesson 2 | PBS

Genetics is the study of how heritable traits are transmitted from parents to offspring. The theory of natural selection states that variations occur, but Charles Darwin couldn't explain how.

Martin Fugate and family are shown in this undated, colorized black and white photo. Their ancestral line began six generations earlier with a French orphan, Martin Fugate, who settled in Eastern Kentucky. Cawein died in , but his family charts and blood samples led to a sharper understanding of the recessive diseases that only surface if both parents carry a defective gene. Hemoglobin is responsible for distributing oxygen to the body and without oxygen, the heart, brain and muscles can die. In methemoglobinemia, the hemoglobin is unable to carry oxygen and it also makes it difficult for unaffected hemoglobin to release oxygen effectively to body tissues. The carcinogen benzene and nitrites used as meat additives can also be culprits, as well as certain antibiotics, including dapsone and chloroquine. The genetic form of methemoglobinemia is caused by one of several genetic defects, according to Tefferi. The Fugates probably had a deficiency in the enzyme called cytochrome-b5 methemoglobin reductase, which is responsible for recessive congenital methemoglobinemia. Normally, people have less than about 1 percent of methemoglobin, a type of hemoglobin that is altered by being oxidized so is useless in carrying oxygen in the blood. When those levels rise to greater than 20 percent, heart abnormalities and seizures and even death can occur. But at levels of between 10 and 20 percent a person can develop blue skin without any other symptoms. Most of blue Fugates never suffered any health effects and lived into their 80s and 90s. Many other recessive gene diseases, such as sickle cell anemia, Tay Sachs and cystic fibrosis can be lethal, he said. Such was the case with the Fugates. Martin Fugate came to Troublesome Creek from France in and family folklore says he was blue. He married Elizabeth Smith, who also carried the recessive gene. Of their seven children, four were reported to be blue. There were no railroads and few roads outside the region, so the community remained small and isolated. The Fugates married other Fugate cousins and families who lived nearby, with names like Combs, Smith, Ritchie and Stacy. One of their sons, Levy, married a Ritchie girl and had eight children, one of them Luna. Luna married John E. Stacy and they had 13 children. Benjy descended from the Stacy line. Trost writes that he eventually lost the blue tint to his skin, but as a child his lips and fingernails still got blue when he was angry or cold. His mother Hilda Stacy, who is 56, appears to still live in Hazard, Ky. Other relatives are scattered throughout Virginia and Arkansas. Later in he was famous for another reason. His wife was murdered by chemical poisoning , but no one was ever indicted. She remembered a dark blue woman who had come to the county health department on a frigid afternoon seeking a blood test. She looked like she was having a heart attack. She told me that her family was the blue Combses who lived up on Ball Creek. She was a sister to one of the Fugate women. Cawein and Pendergrass began to ask questions -- "Do you have any relatives who are blue? The doctor suspected methemoglobinemia and uncovered a report in the Journal of Clinical Investigation. Scott, who worked in public health at the Arctic Research Center in Anchorage, had seen a recessive genetic trait among Alaskans that turned their skin blue. That suggested an inbred line that had been passed from generation to generation. To get the disorder, a person would have to inherit two genes -- one from each parent. When both parents have the trait, their children have a 25 percent chance of getting the disorder. Scott speculated these people lacked the enzyme diaphorase in their red blood cells. Normally diaphorase converts methemoglobin back to hemoglobin. All of the blue Fugates he tested had the enzyme deficiency, just like the Alaskans Scott had observed. Their blood had accumulated so much of the blue molecule that it over-powered the red hemoglobin that normally turns skin pink in most Caucasians. The bluest of the bunch was Luna, and she lived a healthy life, bearing 13 children before she died at the age of As coal mining arrived in Kentucky in and the Fugates moved outside of Troublesome Creek, the blue people began to disappear. Doctors say Benjy likely carried only one gene for methemoglobinemia, because he eventually had normal skin tones, and the likelihood of him marrying a woman with the same recessive gene would have been small. By the time reports appeared in the media on the disorder, the Stacy family was upset with insinuations about in-breeding that fed into stereotypes of backwoods Appalachia.

Chapter 6 : Genetic/Genome Lesson Plans

Word Match Activity Match the genetic terms to their corresponding parts of the illustration. $\hat{\epsilon}$ base pair $\hat{\epsilon}$ cell $\hat{\epsilon}$ chromosome.

Try this middle school activity for teaching genetics and environmental science called "Toothpick Fish". Have students do this "An Inventory of My Traits" activity. Students flip coins to determine traits for their smiley faces in this "Genetics with a Smile" activity. Directions for using Microsoft Word drawing tools are here , wrap-up activities are here , and teacher instructions are here. Try these "Genetics with Sponge Bob" worksheets: Do the "World of Genetics" Wordsearch Puzzle. Print this " Basic Principles of Genetics " crossword puzzle with solution. Have students do Mrs. If you happen to be covering this unit around Easter, try " Easter Egg Genetics. This version, called "Plastic Egg Genetics" , includes a student worksheet. Genes and Gender " from the Howard Hughes Medical Institute and try any of the numerous activities in this " Biointeractive " site. The site also has online videos with transcripts. In this activity, by randomly choosing strips of paper that represent DNA, students create then decode a "DNA recipe" to complete a drawing of a dog. In "Generations of Traits," a hands-on activity from Genetic Science Learning Center, students track and record the passage of colored "pom-pom traits" through three generations of ginger-bread people. Students explore " Bioengineered Foods? It includes videos, readings and flash animations. This "Marshmallow Meiosis" lab is a "Breeding Rebops" lab. Adapted from "Breeding Rebops," "The Inheritance Patterns in Dragons" has students create a dragon of the Harry Potter books fame from the chromosomes of both parents. The original activity was created by Vanderbilt Student Volunteers for Science. I simply added the chromosomes to it. The activities, "Zork Genetics" , "More Zork Genetics" , and "Zork Inheritance" , should be done in conjunction with one another, but it is not necessary. You can email Rodger at home, rodger rougien. It has music in the background with the words that Annette M. Students can sing along as the presentation plays. You may need to download the presentation and save it on your own computer for the music to play. These teacher notes are included. Try an activity called "Codon Analogies" with answers Have students try this "Genetic Engineering" crossword puzzle with answers. The user can breed ladybugs to estimate the heritability of spot number, then conduct a selective breeding experiment to see if the heritability multiplied by the selection differential predicts the response to selection. It includes a tutorial and worksheet. It includes PowerPoint presentations, student worksheets in pdf and Word and their explanation of the Magic ability shows the complexity of the trait to include what causes "Squibs," those with magical parents who have little magical ability.

Chapter 7 : Blue-Skinned People of Kentucky Reveal Today's Genetic Lesson - ABC News

Genetic Lesson Plans from teacher participants in the Human Genome Networking Project prior to October Ethical, Legal, and Social Implications of the Human Genome Project General Genetics, Inheritance Patterns, Genetic Counseling & Biotechnology.

Chapter 8 : Heredity | Define Heredity at calendrierdelascience.com

"Genetic Traits in Harry Potter" from the National Institute of Health's National Library of Medicine's website is a very extensive lesson on gentics and the genetics of the Harry Potter characters.

Chapter 9 : Some genes are dominant :: DNA from the Beginning

Why do some people become addicted while others don't? Family studies that include identical twins, fraternal twins, adoptees, and siblings suggest that as much as half of a person's risk of becoming addicted to nicotine, alcohol, or other drugs depends on his or her genetic makeup.