



## Teacher's Guide

# FALCONIUM

### ORIGAMI

#### Projects

1. The article mentions several other applications of origami, such as satellite antenna, solar sails, pots, and artery stents. Research and create an advertisement for one of these applications.
2. What are some other objects that could be made using principles of origami? Write a detailed description of two proposed inventions and include diagrams.

#### True/False

1. Chimpanzees learn how to perform observed actions through the use of mirror neurons.
2. Mirror neurons are hypothesized to be key parts in human feelings and sympathy.
3. Mirror neurons are exclusively found in the Angular Gyrus.

### MIRROR NEURONS

### VIOLIN

#### Comprehension

1. What are the components of a sound wave and how do they relate to elements of sound?
2. Why is possible to distinguish two different instruments when they are playing the same note?
3. What is the relationship between the strength of the fundamental harmonic and the sound quality as suggested by the research findings?

### ASPIRIN

#### Comprehension

1. The active ingredient in aspirin is: \_\_\_\_\_
2. What are the two functional groups present in an acetyl group?
3. Prostaglandin is synthesized from enzymes called: \_\_\_\_\_
4. When is COX-2 produced?

### H1N1 (SWINE FLU)

#### Project

Research the Spanish flu of 1918 or the bird flu of 2005, paying attention to the behavior of the responsible virus, the symptoms of the disease, and the long-term impacts of the epidemic. Write a brief informational brochure about this disease targeted at the general public. Include diagrams and graphics.

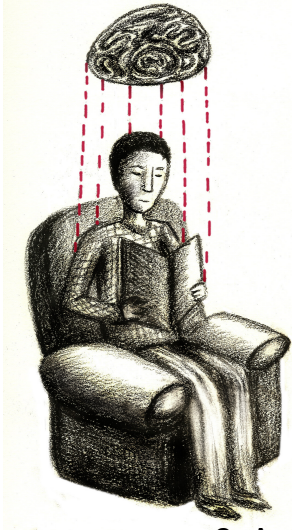


### COMPULSORY IMMUNIZATIONS

#### Comprehension

1. Why is it potentially immoral and unjust to mandate H1N1 or any other immunization?
2. Do the advantages of immunization outweigh its potential risk factors?
3. How should H1N1 immunizations be distributed to efficiently protect the population?

## THE BRAIN – WHO'S IN CONTROL?



### **Unscramble these words.**

1. Structure of the brain that controls emotions: dygaamal
2. Scientist who first proposed the theory of the unconscious: drufe
3. Structure of the brain that is responsible for higher level thinking: rperfntloa xteroc

### **Comprehension**

1. What is the difference between the “brain” and the “mind”?
2. What is the importance of the enlarged prefrontal cortex in human beings?

## ANTITHROMBIN III

### **True/False**

1. ATryn is the first biological drug produced from transgenic animals.
2. Antithrombin IV is an important regulatory mechanism of the coagulation cascade.

### **Comprehension**

1. What is Thrombosis and why is it potentially harmful?
2. How is coagulation regulated in the event of an open wound?

## SUPERHEATED DROP DETECTORS

### **Fill in the blank.**

1. The Cold Dark Matter (CDM) theory states that a small amount of dark matter is composed of \_\_\_\_\_.
2. Particles collide with the \_\_\_\_\_ of atoms in the liquid droplet, while photons collide with the \_\_\_\_\_ of atoms.
3. It is possible to use SDDs to hear a gas bubble because of the \_\_\_\_\_ in the droplet.
4. A \_\_\_\_\_ value is used to determine the characteristics of a particle that created a certain signal.

## OFFSHORE DRILLING

### **Comprehension**

1. How does offshore drilling promote marine life?
2. How is the oil industry beneficial for the United States economy?
3. In your opinion, should our energy needs take precedent over marine preservation?

## SURVIVING THE FLU SEASON

### **Comprehension**

1. Which of the traditional flu treatments appears to be the most beneficial? Why?
2. Do you think traditional medicines in general are genuinely effective? Explain.

### **Project**

What have been some other unusual or non-standard forms of medicine used throughout history? Create a timeline listing the main herbs and treatments administered to ill patients from the ancient to the current day.

## MIND OVER BODY

### **Project**

Write a 500-word essay about your views on the topic. Do you agree that we can be trained to endure and ignore pain, or are the examples cited by the author rare and unusual occurrences? Support your arguments with scientific facts and examples.