

# Genetics and Addiction

## In This Installment:

- How genetics plays a role in drug addiction
- How biological and environmental factors influence a person's risk of becoming addicted to drugs
- How learning about addiction science can help students make smarter choices



## Assessment Tool

Use the Worksheet as an assessment quiz to determine what your students have learned about genetics and drug addiction.

## Dear Teacher:

This issue of your Scholastic classroom magazine launches an exciting new year of *Heads Up*, featuring articles that bring students relevant and cutting-edge news about drug abuse and their health.

Our newest article, “Genetics and Addiction,” outlines connections scientists are making between genetics and drug addiction. These findings can help teens understand some of the main factors that play a role in their individual risk for drug addiction.

In addition to showing how drug abuse can run in families, the article outlines other biological and environmental factors that play a part in determining whether or not a person will become addicted to drugs.

I hope you share this article with your students—to provide them with important facts and information that will help them make smart choices in their lives.

Sincerely,



Nora D. Volkow, M.D.  
Director,  
National Institute on Drug Abuse (NIDA)

## Lesson Plan and Worksheet

### NATIONAL STANDARDS

**Science** (NSES, NRC): Life Science: Regulation and Behavior; Science in Personal and Social Perspectives: Risks and Benefits

**Language Arts** (IRA/NCTE): Evaluation Strategies; Evaluating Data

### KEY CONCEPTS

- Studies of identical twins show that genes can contribute as much as half of the risk of addiction. No single factor determines whether a person will develop substance-abuse problems. Biological factors, including genetics, as well as a person's environment and drug availability, all influence a person's susceptibility to addiction.

### BEFORE READING

- Introduce the topic of “genetics of addiction” by asking students to discuss common physical traits that run in families, such as eye and hair color, or height. What other types of traits—both seen and unseen—do students think are controlled by genes and run in families?

### AFTER READING

- How can genes make a person less or more susceptible to addiction?
- Name specific environmental factors that can increase or decrease the risk of addiction.
- In addition to genetics, what are some other biological factors that can contribute to the risk of addiction?

### CRITICAL THINKING

- How can genetics research help treat people struggling with addiction?
- Why is it important for teens to know the facts about genetics and other risk factors for drug abuse and addiction?
- How can knowing facts help someone make smarter choices?

### WRITING PROMPT

Ask students to write an essay or a journal entry about traits they may have inherited from their parents and grandparents.

ANSWERS to “Vocabulary” in the Student Magazine: 1. c; 2. d; 3. e; 4. b; 5. a.

ANSWERS to Student Worksheet: 1. a; 2. a; 3. a; 4. a; 5. a; 6. a; 7. d; 8. d; 9. d; 10. c.

For printable past and current articles in the **HEADS UP** series, as well as activities and teaching support, go to [www.drugabuse.gov/parent-teacher.html](http://www.drugabuse.gov/parent-teacher.html) or [www.scholastic.com/HEADSUP](http://www.scholastic.com/HEADSUP).

## What Do You Know About Genetics and Addiction?

Answer the questions below to find out what you know about genetics and its role in addiction.

- Genes can influence how a person responds to drugs.  
 (A) True  
 (B) False
- Genes can significantly contribute to the risk of addiction.  
 (A) True  
 (B) False
- Genes come in different forms, or “variants.”  
 (A) True  
 (B) False
- Addiction is a chronic yet treatable disease that affects the brain and behavior.  
 (A) True  
 (B) False
- Some genes can make people more likely to abuse drugs.  
 (A) True  
 (B) False
- No single factor determines whether a person will become addicted to drugs.  
 (A) True  
 (B) False
- Genes carry instructions to make  
 (A) proteins  
 (B) bones  
 (C) hair  
 (D) all of the above
- Which of the following is a risk factor for substance abuse?  
 (A) peers who use drugs  
 (B) substance abuse at home  
 (C) a chaotic home environment  
 (D) all of the above
- Which of the following is a protective factor that reduces the risk of drug abuse?  
 (A) parental involvement  
 (B) strong community or school attachments  
 (C) strong family connections  
 (D) all of the above
- A genetic variation that decreases the enzyme CYP2A6 can protect a person against \_\_\_\_\_ addiction:  
 (A) heroin  
 (B) cocaine  
 (C) nicotine  
 (D) alcohol