

Common Core State Standards for English Language Arts: K-12 Close Reading Task

Text grade band placement: 6-10	
Text	Text Complexity Analysis
<p>Title: “What’s On Your Genes?”</p> <p>Author: Sharon Pochron</p> <p>Citation/Publication info: Pochron, Sharon. “What’s On Your Genes?” 21 September 2011. 23 July 2013. <http://www.sciencenewsforkids.org/2011/09/what%E2%80%99s-on-your-genes/>.</p> <p>Link: http://www.sciencenewsforkids.org/2011/09/what%E2%80%99s-on-your-genes</p>	<p>Quantitative: Lexile: 1090L</p>
	<p>Qualitative:</p> <p>Meaning/Purpose: Implied, but easy to identify based upon the context</p> <p>Text Structure: Connections between ideas are clear. Graphics are mostly supplementary.</p> <p>Language Features: Largely explicit with some occasions for more complex meaning. Vocabulary is somewhat complex, subject-specific, and overly academic. Many complex sentences with several subordinate phrases.</p> <p>Knowledge Demands: Complex. Moderate levels of discipline-specific content knowledge. Many references to outside ideas and theories.</p>
	<p>Reader and Task:</p> <p>Students may have difficulty with domain-specific vocabulary and tier 2 words.</p> <p>Students have limited understanding/knowledge of the chemical structure of DNA and methyl groups.</p>

ELA/Literacy Common Core Standards addressed by task

CCSS.ELA-Literacy.RST.6-8.1 Cite specific textual evidence to support analysis of science and technical texts.

CCSS.ELA-Literacy.RST.6-8.2 Determine the central ideas or conclusions of a text; provide an accurate summary of the text distinct from prior knowledge or opinions.

CCSS.ELA-Literacy.RST.6-8.4 Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to *grades 6–8 texts and topics*.

CCSS.ELA-Literacy.RST.6-8.6 Analyze the author's purpose in providing an explanation, describing a procedure, or discussing an experiment in a text.

CCSS.ELA-Literacy.RST.6-8.7 Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table).

CCSS.ELA-Literacy.WHST.6-8.1 Write arguments focused on *discipline-specific content*.

CCSS.ELA-Literacy.WHST.6-8.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

CCSS.ELA-Literacy.WHST.6-8.9 Draw evidence from informational texts to support analysis reflection, and research.

What key insights should students take from this text?

1. Although genes are passed from parent to offspring, other factors may contribute to the behavior of genes.
2. Scientists are studying ways to turn genes on or off by altering methyl groups on DNA without changing the actual genetic sequence.
3. Epigenetics – meaning “above the gene” - is the relatively new science of studying and altering methyl groups to “flip” the switches on our genes that cause traits to be displayed.
4. The epigenetics research done with mice could one day help scientists treat disorders like leukemia and autism by turning off the genes that cause them.
5. Environmental factors that affect what’s on our genes could explain how organisms are able to cope with changes in the environment even when their genes remain the same.

Text-Dependent Questions

1. What is the author’s purpose for writing this article?
2. Individual traits have often been attributed to what is *in* your genes. Describe how the prefix in “epigenetics” conveys the author’s idea that traits are dependent on what’s *on* your genes as well.
3. According to the author, why might two genetically identical mice display completely different traits?
4. How does the picture of the two genetically identical mice illustrate the effects of the presence or absence of methyl groups on genes?
5. What does the author mean when she states that “the behavior of one animal can sculpt the epigenetic clay of another animal?” Cite evidence in the text that supports the author’s claim.
6. What message does the author convey about the usefulness of epigenetics in the future study and treatment of diseases?
7. What are some other uses of “flipping” the genetic switch that you think could be important to society?

Writing Mode	Writing Prompt
Argument	According to the article, Gregor Mendel theorized that the passing of traits from parents to offspring follows “very precise laws of nature.” Does the behavior of genes seem to follow “precise laws of nature” or can genes be affected by outside factors? Write a scientific argument to address this question. Cite evidence from the text to support your claim.

Scaffolding and support for special education students, English language learners, and struggling readers:

- Prior knowledge of DNA structure and function is necessary to understand the text.
- Pre-teach vocabulary.
- Allow extended time for the reading and writing tasks.
- Pair up struggling reader with a partner to read and discuss the text.
- Allow foreign language-English dictionary.

How this task supports the content standards for relevant subject area courses in this grade band:

This task is relevant for grade 7 biology. The task will address standards pertaining to heredity, the structure and function of DNA, and gene technology.