# **SN** May 27, 2017 **The Difference Makers**

#### About this Issue

The article "<u>The difference makers</u>" (10.9 readability score) gives an overview of transposons, or "jumping genes," and how these bits of genetic material have affected genetic variety and evolution in humans and other organisms. Students can focus on details reported in the article, follow connections

to earlier articles about transposons and human evolution, explore crosscurricular connections to other major science topics, and construct a phylogenetic tree of primate evolution based on the locations of retroviral sequence insertions in chromosome 21.

*Science News for Students* provides related articles written at lower Lexile levels: "<u>Scientists say: DNA sequencing</u>" (8.2 readability score), "<u>The rest of</u> <u>your DNA</u>" (8.5 readability score), "<u>Scientists say: Mutation</u>" (8.5 readability score) and "<u>How a moth went to the dark side</u>" (7.2 readability score).

Want to introduce your students to an interesting STEM career using genetic research? Check out "<u>Cool jobs: Crime scene investigators</u>" (8.5 readability score), by *Science News for Students*.

## Connections to Curricula:

Transposons
DNA and DNA replication
Evolution
Genome and chromosomes
RNA and RNA replication
Population ecology
Genetics
Epidemiology
DNA metabolism

#### What's in this Guide?

- Article-Based Observation: These questions focus on reading and content comprehension by drawing on information found in the article "<u>The difference makers</u>." Questions focus on defining transposons and their effect on evolution.
- Quest Through the Archives: With Internet access and your school's digital access to Science News, your students can use this short section to explore the history of research on transposons and genetic variations as reported by Science News since 1924.
- Cross-Curricular Discussion: These questions and extension prompts connect to the article "The difference makers" and encourage students to think in more detail about scientific areas related to the article. The section is divided roughly by science subdiscipline for educators who would like to focus on one topic area. The extension prompts are either more topic-specific or more conceptually advanced. Chemical and Biological Sciences questions cover a range of areas from the basics of DNA and RNA to the implications of transposons for evolution. Engineering and Experimental Design questions focus on potential applications of transposons.
- Activity: Students can analyze data showing the locations of retroviral insertions in chromosome 21 for humans and several other apes and monkeys, and use that data to construct a phylogenetic tree for these primates.

### Standards Alignment

Next Generation Science	Common Core
From Molecules to Organisms: Structures and Processes: <u>HS-LS1-1, HS-LS1-2, HS-LS1-3, HS-LS1-4, HS-LS1-6, HS-LS1-7</u>	ELA Standards: <u>Reading Informational Text</u> (RI): 1, 2, 4, 5, 7
Heredity: Inheritance and Variation of Traits: <u>HS-LS3-1,</u> <u>HS-LS3-2</u>	ELA Standards: <u>Writing</u> (W): 1, 2, 3, 4, 6, 7, 9
Biological Evolution: Unity and Diversity: <u>HS-LS-4-1, HS-</u> <u>LS-4-2, HS-LS-4-3, HS-LS-4-4</u>	ELA Standards: <u>Speaking and Listening</u> (SL): 1, 2, 4, 6
Engineering Design: <u>HS-ETS1-1, HS-ETS1-2</u>	ELA Standards: <u>Reading for Literacy in Science and Technical</u> <u>Subjects</u> (RST): 1, 2, 3, 4, 5, 7, 8, 9
Matter and Its Interactions: <u>HS-PS1-2</u>	ELA Standards: <u>Writing Literacy in History/Social Studies and</u> <u>Science and Technical Subjects</u> (WHST): 1, 2, 4, 6, 7, 9

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