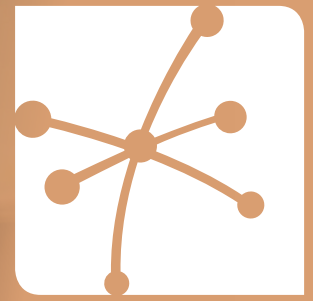
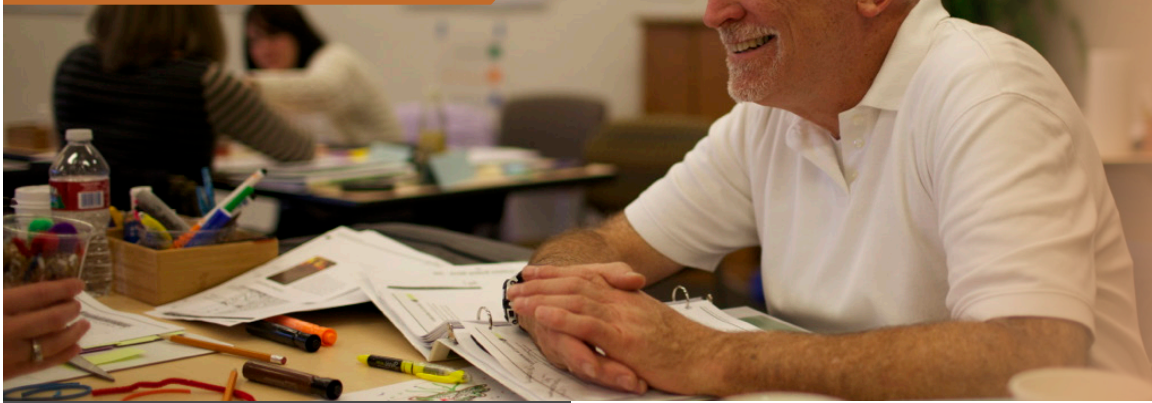


# GENES & TRAITS



Making Sense of  
**SCIENCE**

## FORMAT

5-day face-to-face professional learning courses.

## AUDIENCE

Teachers of science in grades 5–12

## SEQUENCING

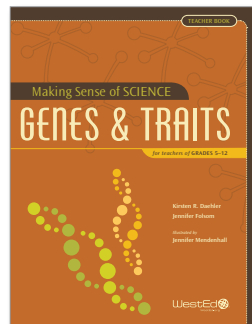
All the 5-day courses are complementary and they can be taken in any order.

## RELATED MATERIALS

The *Making Sense of Student Work* protocol is available for teachers to use with their school-based professional learning communities as follow-up to the 5-day courses.

## Implementing NGSS?

An optional next generation science toolkit is available that supports teaching toward the Next Generation Science Standards (NGSS). It provides a framework for exploring core properties of next generation science including the use of phenomena-based instruction and the equitable engagement of all students in multidimensional science learning. It also takes a dive deep into the NGSS Science and Engineering Practices (SEPs) and the Crosscutting Concepts (CCCs).



When we observe an organism, the first thing we typically notice are its traits. In this course, participants dive into the mechanics behind how organisms obtain the traits they have. Each Science Investigation tackles a new concept related to genes and traits. The science learning begins with an exploration of traits as properties of biological systems and uses a series of models to explore proteins and the role of genes, alleles, and traits.

Then participants dig deeper into the structure and function of DNA and the mechanisms by which an organism's genetic code is used by cells. Participants then use a new model to explore the reproduction of cells and of entire organisms. In the final session, participants compare genetic variation across individuals in a population, and consider how the genetic diversity of a population changes over time.

Throughout the course, participants engage in active discourse as they work to understand the science for themselves. Literacy Investigations provide participants with an opportunity to be metacognitive about their discourse — they examine the characteristics of their science talk, work to identify the things that support and hinder productive conversations, and explore a framework for supporting discourse in their own classroom.

The Teaching Investigations in this course provide participants with the opportunity further connect to the classroom. Through analysis of teaching cases, participants get a glimpse into other teachers' classrooms, unpack the value of different instructional moves and strategies, analyze the qualities of good formative assessment tasks, and explore common student misconceptions and how to support students moving toward more complete, accurate, and precise understanding.

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