**HS-LS3 Heredity: Inheritance and Variation of Traits**

**HS-LS3-1 Ask questions to clarify relationships about the role of DNA and chromosomes in coding the instructions for characteristic traits passed from parents to offspring**

Further explanation: Emphasis is on the asking of clarifying questions about the general principles of genetics. An example is how cystic fibrosis (one of the most common autosomal recessive inherited diseases in Maine) is passed from parents to child.

Asking Questions and Defining Problems, Structure and Function, Inheritance of Traits, Cause and Effect

**HS-LS3-2 Make and defend a claim based on evidence that inheritable genetic variations may result from: (1) new genetic combinations through meiosis, (2) viable errors occurring during replication, and/or (3) mutations caused by environmental factors.**

Further explanation: Emphasis is on using data to support arguments for the way variation occurs. Provide data on specific mutations caused by environmental factors.

Engaging in Argument from Evidence, Variation of Traits, Cause and Effect

**HS-LS3-3 Apply concepts of statistics and probability to explain the variation and distribution of expressed traits in a population.**

Further explanation: Emphasis is on the use of mathematics to describe the probability of traits as it relates to genetic and environmental factors in the expression of traits. An example would be the population of red fox in Maine and the incidences of the red allele vs. the sable allele.

Analyzing and Interpreting Data, Variation of Traits, Scale, Proportion, and Quantity