**Wheat genetics presentation** 2016 PAAE Summer Conference

**Keystone Exam Eligible Content:**

BIO.B.2.1.2 Describe processes that can alter composition or number of chromosomes (i.e., crossing-over, nondisjunction, duplication, translocation, deletion, insertion, and inversion).

BIO.B.2.4.1 Explain how genetic engineering has impacted the fields of medicine, forensics, and agriculture (e.g., selective breeding, gene splicing, cloning, genetically modified organisms, gene therapy).

**Broad Learning Goals:**

* Understand how changes in chromosome number and hybridization can affect phenotype.
* See how humans can affect the evolution of a crop plant

**Learning Outcomes:**

* Define hybridization and allopolyploidy.
* Explain how polyploidy can enhance favorable characteristics for agriculture.
* Using a diagram or model, show that chromosome pairing requires matching of similar DNA sequences.
* Demonstrate that pairing and recombination are necessary for correct chromosome segregation.
* Show that genome doubling is required for meiosis in hybrids.
* Demonstrate how humans influenced evolution of wheat in the past and continue to do so.

**Supplies:**

Chromosome models

Powerpoint slides

Sugar cookies made with diploid, tetraploid, and hexaploid wheat flour

Einkorn, emmer (farro), and wheat grains