

### 3.3.7 Crossing over and random orientation promotes genetic variation

Offspring of sexual reproduction are always an *unpredictable blend* of the characteristics of the two parents – much of this randomness is due to **Meiosis**

Each gamete produced by a parent has a different combination of alleles due to two major features of Meiosis:

1. **Crossing Over:** Swapping of alleles between homologous chromosomes means infinite new combinations of alleles can be created and passed down to offspring
2. **Random Orientation of Bivalents:** Which *one* chromosome of each homologous pair that a gamete receives is random based on their orientation in Metaphase I.



# Genes And Variation Study Guide Answer Key

**Ying Liu**



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