

Incredible Edible DNA

Simple STEM Activity

Purpose:	The purpose of this activity is to construct an edible model of DNA
Standard(s):	<p>S7L3. Obtain, evaluate, and communicate information to explain how organisms reproduce either sexually or asexually and transfer genetic information to determine the traits of their offspring.</p> <p>a. Construct an explanation supported with scientific evidence of the role of genes and chromosomes in the process of inheriting a specific trait.</p> <p>b. Develop and use a model to describe how asexual reproduction can result in offspring with identical genetic information while sexual reproduction results in genetic variation. (Clarification statement: Models could include, but are not limited to, the use of monohybrid Punnett squares to demonstrate the heritability of genes and the resulting genetic variation, identification of heterozygous and homozygous, and comparison of genotype vs. phenotype.)</p>
Materials:	2 Twizzlers or licorice ropes, 10 toothpicks, colored mini marshmallows, or other soft candy (at least four colors)
Procedures:	<ol style="list-style-type: none"> 1. Begin by sorting your marshmallows by color into four groups 2. Assign each color to a specific chemical base: <ul style="list-style-type: none"> • Adenine (A) - Green • Thymine (T) - Pink • Cytosine (C) - Yellow • Guanine (G) - Orange 3. Using your toothpicks, create pairs of chemical bases for building your Incredible Edible DNA. Remember: Adenine and Thymine are always paired together, and Cytosine and Guanine are always paired together. 4. Insert the pairs into the Twizzlers backbone on both sides in whatever pattern you would like. 5. When you are finished attaching your pairs, hold up your Twizzlers and twist clockwise to create the double helix shape.
Science Behind It:	DNA stands for deoxyribonucleic acid and is a molecule made of two backbones and four types of chemicals bases. The backbone is composed of a chain of phosphates and sugars. The sugar molecules

	<p>provide a place for the chemical bases to attach. There are four types of chemical bases: adenine, thymine, guanine, and cytosine.</p> <p>DNA provides ‘instructions’ to the cells on how to make specific proteins which are used by the cell to function, grow, and survive. In groups of three, these are called codons. In larger sections they are called genes. These genes are passed down to offspring during DNA replication. During DNA replication, the double helix untwists, and the two strands separate, and a copy is made. This must happen before cell division occurs so that the new cell will have the same genetic information as the old cell.</p>
Questions to Ask:	<ul style="list-style-type: none">• Why is DNA important?• How does DNA explain the transfer of genetic information from an organism to determine the traits of their offspring?