



Hands-on Genetics Activity 1

Topic: DNA, its structure, and the importance of DNA in genetics.

Learning Objective: After completing the lesson, the group will be able to recognize nucleotide pairing patterns, the amount of nucleotides in a codon, and the structure of DNA.

Alignment with NGSS Grades 3-5

Science and Engineering Practices

Developing and Using Models

- Modeling in 3–5 builds on K–2 experiences and progresses to building and revising simple models and using models to represent events and design solutions.
- Develop models to describe phenomena.
- Connections to Nature of Science

Scientific Knowledge is Based on Empirical Evidence

- Science findings are based on recognizing patterns.

Materials:

- Glue options: Glue guns and hot glue sticks, Burn Gel
- Rungs of Ladder: Craft Sticks
- Middle Support: Kabob Sticks, Straws
- Backbone: Ribbon
- Other: scissors, markers

Detailed Description:

After a lesson on DNA and codons, all the groups will create a 3D DNA model (examples below).

- Have them color the straws/craft sticks to resemble the different **nucleobases/rungs** of the ladder (4 different colors, two colors always pair together). Two colors will separate each stick.
 - Example: Guanine and Cytosine pair so that stick would always be half red and half green.
- Glue **craft sticks** to **support** in spiral fashion
- Glue **ribbon** to outside of rungs to create **backbone** (glue can go on tip of craft stick)

How will you conclude the lesson to enforce the learning objective:

Ask general questions about the subject (which nucleotides pair together, how many in a codon, shape of structure, etc.). If time allows and a student or two would like to, they can talk about their DNA model and how they made it.

What science process skills will this lesson exercise?

Formulating Models, Classifying, Predicting

Safety precautions: Scissors, Hot glue, sharp end of kabob sticks



