Teacher Guide: Introduction to DNA and genetic engineering workshop

Introductory questions for brainstorming with the class (about 10 minutes)

- Who knows what DNA is?
- Where is it located? -- in the nucleus in cells, and would be just floating around a bacteria/virus
- What is the function of the DNA?

Watch the video and ask kids to annotate their worksheets while watching the video (5:30)
https://www.youtube.com/watch?v=zwibgNGe4aY&list=PLGj6nvYMOYEC8ZNnp33LOr355SwrKfXhk&index=1

Go over the video worksheet. Ask the class to contribute with the answers to fill in the blanks.

Important rules of DNA construction - compatibility of nucleotides:

"A" nucleotide can only join with "T" nucleotide , and "C" can only join with "G"

Activity: Everyone received a pre-made Puzzle-Piece with a letter on it. Your goal is to find a partner with whom you can combine your puzzle piece. (let kids spread into pairs and combine their puzzle pieces, Ask them to stay in the same pairs and sit down at one of the desks) This activity is designed to visualize that A and G for example can't join together in the DNA ladder.

Who have heard of what the gene is?

Gene - a part of the DNA that codes for specific traits. You might have heard of the blue-eye gene, or the height gene, these are the traits of a human that are coded for by the sequence of As, Cs, Ts and Gs. So while stains of DNA are very long, they consist of the segments or genes that code for specific characteristics of the organism.

Activity: You are now going to prepare your own gene sequence of a plant. Think about what characteristic of the plant would your gene code for. Examples are size of the crop, how quickly it grows, how many crops one plant can give, what range of temperatures it survives in. (refer to instructions worksheet)

Who here knows what genetic engineering is?

Genetic Engineering is a process of selecting the gene with desired trait and combining it (almost sewing it into) the DNA code of another organism.

Activity: You are going to now engineer a plan with 2 distinct traits by joining your own gene with another groups gene (make sure that their gene codes for different trait). You are then going to share which 2 characteristics your plant posses with the class. (refer to instructions worksheet)