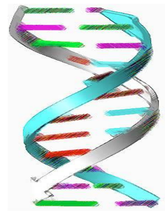
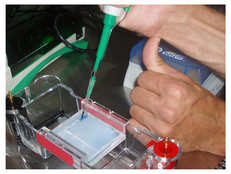
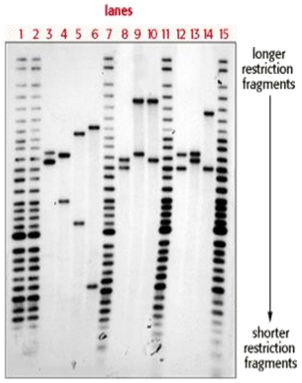
Green Genes: A DNA Curriculum



Curriculum & resources available at www.mass4h.org

"The visit to the Biotech lab was great"-Jose 6th grade





Content Objective: Learn about DNA, how it is extracted and what it can tell us

- DNA is the "Blueprint" of life and what that means
- Genes are read and expressed in traits such as hair color, rolled tongues…
- DNA has a specific Structure & Function: Our DNA is unique like our fingerprints
- All living things have DNA
- Be able to complete a DNA extraction using simple science techniques
- Complete a model of DNA that show its structure and be able to explain the parts.
- Make a simple "DNA fingerprint" and be able to compare and contrast it to a regular DNA fingerprint.

Genes Can….
- control traits (hair color, eye color, skin color, etc.)
- cause disease (sickle cell, hemophilia, cancer, etc.)
- influence personality, talents, weaknesses, hobbies, likes, dislikes
- increase risk for heart disease, stroke, alcoholism, Alzheimer's, etc.

Genes Can't…
- make your decisions for you
- force you to be a criminal or do things against your will
- excuse poor life choices or lack of personal responsibility

Genes ALWAYS…
- work together with your environment
Example: genes for growth are influenced by nutrition

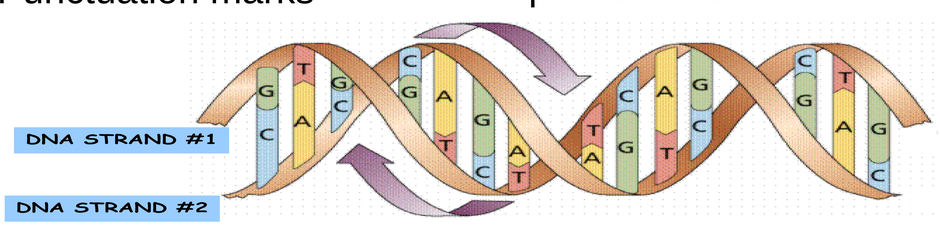
Chromosomes –
46 "Books" of Life

English Language Books

Written on paper
26 characters
Words of varying length
Punctuation marks

DNA Language "Books"

Written on DNA
4 characters
Three letter words
Special words



3 Billions Bases or "Letters" – 98% of the Human Genomeis Gibberish

I worked with students who were on IEP's. The hands on materials provided them with "visuals" and additional background to help them bridge the gap to information being taught in class and prior knowledge – 6th grade teacher

Look around the room and see how different we all look.

The DNA letters are almost the **identical order** (sequence) between any two human genomes!

A very small number **(0.1%)** of the DNA letters **differ** between any two human genomes.

What about identical twins?

More materials and activities
- Ethics -Cloning –"Why clone a cow?"
- Probability
- Heritage Breeds
- Background Materials & Slides
- Barnyard Mystery Game
- On-line activities
  - Cut Genes
  - Run a Gel
  - DNA fingerprint