Vocabulary for Bacterial Transformation and GMOs lab:

Genes
A gene is a section of DNA that contains the information for making one particular kind of protein. Proteins determine a lot about you. You have the color hair you have because of proteins. Your hair is straight or curly because of proteins. Your eye color? You guessed it. Proteins!

> **Analogy**: You can think of a gene as a recipe for the protein. You have over 20,000 genes in each cell!

DNA- The chemical that contains ALL of your genes and genetic information. Only 3% of our DNA codes for protein. We aren't sure what all the rest of the DNA does yet…

Chromosome: Your DNA is packaged into chromosomes. Human cells have 2 copies of 23 different chromosomes for a total of 46. You get one of each type of chromosome from your mom and one of each type from your dad

> **Analogy**: Think back to the recipe analogy. If your DNA is the letters that spell the words in the recipes—or genes— for all of your body's proteins, then the chromosomes are separate volumes of recipe encyclopedia. Each "book" is a different chromosome.

Genes
A gene is a section of DNA that contains the information for making one particular kind of protein. You can think of a gene as a recipe for the protein. You have over 20,000 genes in each cell!

Did you know?

DNA is mainly found in the nucleus of your cell but tiny amounts are also found in your mitochondria.
Every cell in your body (with a few exceptions) has the same DNA. A skin cell looks different than a muscle cell, because different genes are turned "on" or "off" in different cell types. If a gene is turned "off" in a cell, then the protein that gene codes for won't be made. If a gene is turned "on" in a cell, then the protein will be made!

Repressor: a protein that binds to the DNA and keeps a gene (recipe) from being read. If your cell can't read the gene, then no protein can be made!

Activator: a protein that binds to the DNA and encourages more copies of a particular protein to be made. It's like a tab marking one of your favorite recipes (genes). Make me! Make me!

Central Idea of Molecular Biology:
DNA→ RNA→ Protein
Your DNA has all the recipes for all the proteins in your body! Ribosomes are the little machines that make your proteins. Only one problem, your DNA is inside your nucleus and your ribosomes are located in the cytoplasm or on the Rough ER (both outside of the nucleus).
Your cell overcomes this by making a copy of the DNA recipe for a gene. RNA is a copy of the DNA recipe that travels outside of the nucleus and finds a ribosome!

Transcription: DNA→RNA
The process of making an RNA copy of a gene. The RNA copy is called the mRNA for messenger RNA.

Translation: RNA→Protein
The process of making a protein from the mRNA of the gene.

http://blog.nrse.net/content/protein-synthesis-cookery-analogy
This site gives a great analogy for the process of protein synthesis and all the structures of your cell that play a part.

Nucleus: Eukaryotic cells have an organelle that contains the genetic information. This cellular organelle is called the nucleus! Its contents are kept separate from the cytoplasm by two membranes.

Nucleoid: Prokaryotic cells like bacteria don't have a nucleus but they do have a general region in the cell where the DNA is found. This region is called the nucleoid.

Plasmid: Small, circular pieces of DNA found in bacteria. Just like the DNA in chromosomes, they contain the recipes for proteins—they just don't contain as many.

GMO: Genetically Modified Organisms
Most of our crop plants are very different than their ancestors because we have changed them through years of conventional breeding and selection. GMOs are different in that they have been modified using recombinant DNA techniques and contain genes or parts of genes from different species.