Name:__Justin Barry_____ Date:___7-21-08_____ Period:_____ Lab Title:___Genes in a Bottle_____

Focus Question: How can DNA be isolated from cells?

Word List:
-bases
-double helix
-nucleotide
-genes
-proteins
-chromosomes
-genome
-ribosomes

Items Used:
-water bath at 50 ºC
-ice cold 91% isopropanol or 95% ethanol

Hypothesis: If a detergent, protease, salt solution, and cold alcohol are added to spit, then DNA can be isolated from your cells.

Concept Map: (attached)

Procedures:
1. Chew inside of mouth for 30 sec.
2. Rinse mouth for 30 sec.
3. Spit into 15 mL tube.
4. Invert tube 5 times.
5. Add 5 drops of protease. Invert 5 times.
6. Put in 50 ºC water bath for 10 minutes.
7. Carefully fill tube with ~10 mL of alcohol. Leave for 5 min.
8. Write down observations.
9. Invert 5 times.
10. Write down observations about your white, stringy DNA

Conclusion:
DNA can be isolated from cells by adding lysis buffer to break down the lipids in the cell membrane, adding protease to break down the proteins that hold DNA together, and then add cold ethanol to make DNA insoluble (thus precipitating the DNA molecules).

Data and Analysis:
-After addition of lysis buffer, white clumps showed up in red (bloody) solution
-After addition of ethanol (cold), white, stringy substance formed
-After 5 minutes, tupe was inverted and white, stringy DNA enlarged (aggregated)

8. Carbohydrates, Lipids, & Proteins can be found in a cell (besides DNA).
9. You can add lysis buffer to break down the lipids in the cell membranes. You can add Protease to break down the proteins.
10. Histones are the proteins in the DNA, which helps to 'package' the DNA.
11. Protease would not likely be found in E. coli. because our body temperature is approximately ~37 degrees Celsius, a temperature not warm enough to activate Protease.
12. Meat tenderizer must be made with an enzyme to break down the tough protein structure.
13. A, C., D, B, E (in order, top to bottom)