

Date: _____ Name: _____

Online DNA ExtractionGo to <http://learn.genetics.utah.edu/content/labs/extraction/>

You will complete this online simulation lab as “practice” for an in-class DNA extraction lab. It will also give you an inside-view into what is going on with each step.

1. (a) Name three reasons the lab gives for why DNA is extracted from human cells.

Genetic Testing

Body Identification

Analysis of Forensic events

- (b) Name two additional ways you think DNA extraction from human cells might be useful.

Identifying genetic disorders or diseases, looking for cures by experimenting with DNA, look for bio-threats, to analyze and classify organisms based on their DNA

2. As you complete the simulation fill in the chart on **page 2** with lists of equipment you use as well as the steps you take to complete the extraction.
3. What are some questions you had during the lab simulation? (2-3) Were any of these questions answered throughout the simulation? If so, write the answers. If not, search online for a possible answer to one of your questions.

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Next we will be completing an in-class strawberry DNA extraction lab. Briefly list what you expect to be similar to the online simulation and what you expect to be different (2-3 each).

4. Similarities

- gathering a kind of cell

- will use some of the same chemicals (lysis solution, detergent, concentrated salt solution)

- will use a warm water bath

Differences

- probably don't have a microcentrifuge to put the tube with DNA in

- will not use all of the chemicals the simulation used (isopropyl alcohol, proteinase K)

2 (CONT.)

Equipment / Tools	Steps / Procedure
<ul style="list-style-type: none"> - buccal swab -cheek cell -eppendorf tube -lysis solution -micropipette -warm water bath -detergent -proteinase K -concentrated salt solution -micro centrifuge -isopropyl alcohol 	<ol style="list-style-type: none"> 1. Collect cheek cell (using buccal swab) 2. Cut off the end of the end of the swab 3. add lysis solution to the swab 4. place the tube in a warm water bath 5. The detergent disrupts the membrane and nuclear envelope causing the DNA to burst from the cell 6. the DNA is still coiled around histones so the proteinase K pulls the DNA from the histones 7. After the DNA is out of the cell, I add some concentrated salt solution to the tube and the DNA and other cell parts clump together 8. I place the tube in the micro centrifuge along with another tube filled with water to balance it out 9. In the centrifuge, the tubes are spun at top speed so that the protein and debris clump at the bottom while the DNA stays distributed through the liquid 10. use the micropipettor to extract the liquid containing the DNA and put it into a different tube while the protein and debris stay behind 11. Add some isopropyl alcohol to the tube 12. The alcohol now makes it so you can see the DNA with your naked eye 13. place tube in the centrifuge again, this time so the DNA will sink to the bottom 14. Once the liquid is removed the DNA can dry and you now can store the DNA for many years