

NAME _____
DATE _____

DNA MURDER MYSTERY REQUIREMENTS
FINAL PROJECT #1

This is your final project for Unit 1. In it, you will demonstrate your mastery of how to design the protocol for an experiment, along with a graphic organizer to house the process and your ideas before, during, and after the experiment. You will demonstrate your mastery of an image processing program; in this case the program is Photoshop. Finally, you will demonstrate your knowledge of DNA Fingerprinting and the process of analyzing DNA. In short, you will create a DNA Murder Mystery using Photoshop as your means of communicating it to another group. Then your groups will switch mysteries and attempt to solve them by conducting an experiment to identify the killer. Both the DNA Murder Mystery in Photoshop and the results of the lab experiment you completed will go in your portfolio, as a demonstration of your mastery of the concepts and skills you learned in this unit. In order to receive full credit for this project, you must complete each step on the requirements sheet, turn in your original DNA Fingerprint photograph, turn in your Photoshop DNA Fingerprint, turn in a hard copy of your Photoshop page, turn in a copy of your DNA Fingerprint on disk, turn in your Murder Mystery Solving Graphic Organizer, and turn in this completed and signed requirements sheet.

Follow the steps below to successfully complete your project.

STEP 1: CREATING YOUR CRIME SCENARIO – In lesson 39, your group must create a crime scenario. Include the following in your crime scenario:

- a) a crime scene that includes a DNA sample (e.g. blood, a piece of hair, skin or saliva) with which the murderer could be identified
- b) a break down of how the crime scene appeared and what appeared to have taken place.
- c) a suspect represented by each of your group members (all groups should have at least 4 individuals) – in other words, you will pretend you are the suspects.
- d) a motive for each suspect
- e) an activity at the time of the murder/probable cause for each suspect
- f) an alibi for each suspect
- g) a description of each suspect
- h) relation of each suspect to the victim
- i) a victim and a description of the victim
- j) the victim's time of death
- k) the cause of the victim's death
- l) murderer (name of your murder should not be written here, but written on a piece of paper and given to your teacher in secret so no one will know in advance who your murderer is. You will not be able to identify the murderer until you have completed your DNA Fingerprint at the end of Lesson 40, but you can get started on the rest of the requirements for your crime scene today.

Note: Remember that a DNA match on a DNA fingerprint doesn't necessarily determine that the suspect is the murderer. All information available must be analyzed to determine who the murderer is. Therefore, it will be necessary that your group create a crime scenario that requires some investigative abilities in order to solve it. Also, remember the assumption here is that each of you represents one of the murder suspects. You should pay special attention to your suspects and ensure that their descriptions and their alibis are excellent.

Remember that you are going to analyze your DNA fingerprint to determine which member of your group is the murderer at the end of Lesson 40 so you will have to create your crime scenario without knowing which one of you is the murderer beforehand. Make sure one suspect is the murderer and decide whether that will be the suspect that has DNA matching that found at the crime scene or not. If it doesn't, then your crime scenario needs to be such that those solving it can PROVE that it is another suspect. Above all, be creative, but remember your crime scenario must be plausible.

Review your crime scenario and make sure you have included accurate descriptions of all of the above.



Choose an original title for your crime scenario and add it here:

_____ TITLE

Make sure you have all the requirements above written out clearly and accurately on a separate sheet of paper. Get your teacher's approval below.

_____ teacher initials

STEP 2: COMPLETION OF CRIME SCENE – In lesson 40 you will be reviewing and improving your crime scenario. Get your teacher's initials when you have finished.

_____ teacher initials

STEP 3: ANALYSIS OF DNA FINGERPRINT AND CREATING A DNA FINGERPRINT IN PHOTOSHOP – In Lesson 41, you will analyze the photograph of your DNA Fingerprint to determine which suspect's DNA sample matches the DNA sample found at the crime scene. Write this information on a piece of paper to give secretly to the teacher. Then keep this information secret so that the other groups don't have information they can use to solve the crime. Afterwards, use the photograph of the DNA fingerprint to create a visual representation of it in Photoshop. Each person in your group will create a Photoshop DNA fingerprint. Then, your group will choose the best one to use in your group Photoshop page for the DNA Murder Mystery. Remember that your visual representation must be as accurate as possible in order for the other students to analyze it when they are solving your mystery. You can use color in the image if you like. From the ESubjects website, download the **Blank DNA Fingerprint Analysis** sheet. Using the tools in Photoshop, you will fill this in to resemble your DNA Fingerprint. Use your knowledge of Photoshop tools to create the DNA Fingerprint. Do not forget to save it and title it with your name. In the space below, list the Photoshop tools you used to create your DNA Fingerprint. Next to the tools, list which piece of your DNA Fingerprint you used the tool to create or modify.

TOOLS USED	PORTION OF DNA FINGERPRINT THE TOOL WAS USED TO CREATE
1.	1.
2.	2.
3.	3.
4.	4.
5.	5.
6.	6.
7.	7.
8.	8.
9.	9.
10.	10.

When you have finished your DNA Fingerprint, get your teacher's approval below.

_____ teacher initials

Print out your DNA Fingerprint and save it to a safe place where no one else can find it or view it. You will need it again when you are creating your group Photoshop page of the crime scenario.

STEP 4: CREATING A MOCK GROUP PHOTOSHOP PAGE – In lesson 42, you will create your Mock Group Photoshop page, which will be used as a layout to create the actual Photoshop page in lesson 43. You must first create the mock Photoshop page on a separate sheet of paper. Together, your group must decide on the layout of the page, where all of the content of the page will be placed, how you will morph it, the colors you will use, the font size, style and color you will use and what Photoshop tools you will use to create each piece of this page to make it interesting, clear, and legible to your audience. Keeping in mind that your audience is other teenagers, design your page layout on a separate sheet of paper. Check off each of the things listed below as you include them in your page layout. You must include the following criteria:

Content

- a crime scene that includes a DNA sample (e.g. blood, a piece of hair, skin or saliva) with which the murderer could be identified



- a break down of how the crime scene appeared and what appeared to have taken place.
- a suspect for each of your group members (all groups should have at least 4 individuals)
- a motive for each suspect
- an activity at the time of the murder/probable cause for each suspect
- an alibi for each suspect
- a description of each suspect
- relation of each suspect to the victim
- a victim and a description of the victim
- the victim's time of death
- the cause of the victim's death
- evidence that provides a DNA sample for identifying the murderer (e.g., a piece of hair or saliva)
- Accurate Photoshop representation of the murderer's DNA Fingerprint
- An appealing title for the page
- All group member's names as the author of the Photoshop page

Photoshop Tools

Make sure that you decide which tool you will be using and how you will be using that tool to design your page. For example, in the column for how the Color/Color Picker will be applied to your page, you may write, foreground color white, background color blue, text color black. Remember to include all of the colors and where you will be placing them. You will need to think this through as you draw out your mock page. Everyone in the group should be drawing up the mock page you decide upon and writing out all of the ways your tools will be applied here.

Photoshop Skill/Tool	How it will be applied to your page
Anti-Aliasing/Pencil	
Anti-Aliasing/Line	
Anti-Aliasing/Scale Field	
Anti-Aliasing/Air Brush	
Anti-Aliasing/Paint Brush	
Anti-Aliasing/Text	
Anti-Aliasing/Text Outline	
Color/Color Picker	
Color/Eye Dropper	
Filters/Filters	
Filters/Render Layer	

When you have finished designing your mock Photoshop page and filling out the chart above, decide which role each of you will take on below and place your name next to it. This step is important because there will only be one day (Lesson 43) in the computer lab to complete your task and put together your whole Photoshop page based on the mock Photoshop page you create today.

Text Editor _____ **Name:** _____

This person will be responsible for typing up accurately in Microsoft Word ALL of the text to be used on the Photoshop page. Then this person will give it to the Text Processor to place it on the Photoshop page. This means absolutely NO mistakes.

Text Processor _____ **Name:** _____

This person will be responsible for placing ALL of the text on the Photoshop page. Making sure the correct font and size of the font has been used. Creating the correct color for the text and using any images or tools that will help the text to stand out and be visually pleasing to the eye.

Image Processor _____ **Name:** _____

This person will be responsible for placing all of the images on the Photoshop page. Making sure the size of the image is correct. Creating the correct color for the image and using any tools that will help the image to stand out and be visually pleasing to the eye.

Page Editor _____ **Name:** _____

This person will be responsible for the overall look of the page and the final product, making sure that everything has been placed according to the mock layout, creating and placing the title of the page in Photoshop, creating and placing all background and foreground colors on the page, and making sure that all group member's names have been placed on the page as the authors.

Get your teacher's initials here _____

STEP 5: CREATE YOUR PHOTOSHOP PAGE – In lesson 43, you will create your group's Murder Mystery Photoshop Page in Photoshop based on the Mock Group Photoshop Page you created in lesson 42. You will have one class period only to complete this portion of your final project. Work fast and efficiently. When you have finished your Photoshop page, print out a copy for each group member to turn in and save a copy to each member's floppy disk which will go in all group member's portfolios. Staple the hard copy to this sheet. Get your teacher's initials below to demonstrate that you completed it on time.

_____ teacher's initials

STEP 6: CREATE A GRAPHIC ORGANIZER FOR YOUR FINAL PROJECT: Now that the different groups in your class have created murder mysteries, you will be required to solve one of the other group's mysteries. In lesson 44, using all the scientific data you have learned about DNA Fingerprinting and criminal investigations, as well as your personal skills at analyzing data and solving problems, create a graphic organizer showing each of the steps you will use to scientifically determine who the murderer is. Remember, a criminal investigation is like an experiment; they both use logical steps to come to a conclusion. Thus, you must use the logical, stepwise process of the scientific method you have been taught all semester to create the graphic organizer. You must create your graphic organizer individually. No two should look alike. If they do, it will be considered cheating and both parties will receive an F on this portion of their final project. Be sure to bring this with you to class for Lesson 45, as you will use it to conduct your experiment and solve the murder mystery. This will be considered your final exam. You create the process to solve the DNA Murder Mystery based on a scientific experiment and analysis of data and then you conduct it. Get your teacher's initials below to signify you finished creating the graphic organizer on time.

_____ teacher's initials

Note: Remember to look over the information on the suspect you represent since another class member will interview you during lesson 45.

STEP 7: SOLVE THE MYSTERY: Now that you have created your graphic organizer to document your ideas about how to solve the mystery using scientific methods you must follow your steps to determine who the murderer is. As

a group, you will switch mysteries with another group. You will read their murder mystery on their Photoshop page and take notes, as you will only view the page one time. Then you will complete the steps in your graphic organizer. Finally, your group will reconvene when you have finished your individual identification of the DNA and you will work together to solve the mystery.

Each of your group members will choose one suspect from the group of 4 suspects of the murder mystery you are trying to solve. Then you will follow the steps in your graphic organizer to determine if your suspect is the murderer. You will come back together as a group when you have finished, compare each other's notes, ideas found in their scenario, and the scientific evidence you have collected to identify the murderer. Write in the name of the person you believe to be the murderer below and in your graphic organizer.

Murderer's Name _____

List the evidence that led you to believe this person was the murderer in your graphic organizer.

STEP 8: TURNING EVERYTHING IN – This completes Final Project #1. Staple your copy of the photograph of the original DNA Fingerprint, a copy of the mock Photoshop DNA Fingerprint of your original, the Group Photoshop Murder Mystery scenario page, and your completed Murder Mystery Solving Experiment graphic organizer. Turn it all in for your final grade. After it has been graded, it will be placed in your portfolio.

GRADING PROCEDURE:	TOTAL POINTS:	YOUR GRADE:
DNA Fingerprint Photograph or copy	4 points	_____
Individual Photoshop DNA Fingerprint	6 points	_____
Group Murder Mystery Photoshop Page	8 points	_____
Murder Mystery Photoshop Page Rubric Grade	12 points maximum (Average Points x 2)	_____
Graphic Organizer	8 points	_____
Graphic Organizer Rubric Grade	12 <u>points maximum</u> (Average Points x 2)	_____
TOTAL POSSIBLE	<u>50</u>	YOUR TOTAL _____

To figure out your grade, divide your total points by the total points possible and multiply by 100. This will give you a percentage. See table below for grade percentages.

A- to A+	90% - 100%
B- to B+	80% - 89%
C- to C+	70% - 79%
D- to D+	58% - 69%
F	57% and below