Distance Learning Assignment Week 2 (April 27- May 1st) Due May 4<sup>th</sup> (Mon)

Class: ELD Biology

Teacher: Mrs. Ceja

Content: Genetics Ch. 14

## Student Assignment:

1) "Who gets the money?" Activity

2) "Bloody Mystery" Activity

## **Student Instructions:**

All Assignments are to be copied into your notebooks. You will later take pictures of your completed work and send them to me via remind.

- 1) "Who gets the money?"
  - Copy all of the information into your notebook along with the boxes or data tables.
  - In this story, Mr. Jones and Mrs. Jones had one son. When they died without a will, all these men (Carl, Ray, Dale, Earl, Robert) say they are that son. Your job is to use your knowledge of Genetics to solve the mystery of who is the true son and should inherit their money.
  - Part 1- Monohybrid Cross: Based on eye color determine who can be eliminated as their son. Fill out the Punnett squares and data tables to show your work.
  - Part 2- <u>Co-dominance and Incomplete Dominance:</u> Based on blood types eliminate more of the men as the potential son. Fill out the Punnett squares and data tables
  - Part 3-<u>Sex linked Inheritance</u>: Using your knowledge of Sex linked traits fill out the Punnett squares and data table.
- 2) Bloody Mystery (pg 3 and pg 4)
  - Copy down the questions in your notebook (answer the questions)
  - Take pictures of your work and send back to me via remind.

Name:	
Maille.	

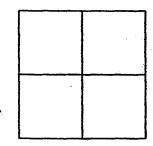
# Who Gets the Money? Worksheet

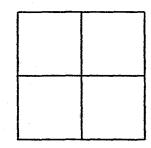
# **Part One: Monohybrid Cross**

Brown eyes are dominant over blue eyes, free earlobes are dominant over attached earlobes.

Mr. Jones	heterozygous, free earlobes, and homozygous brown-eyed.
Mrs. Jones	heterozygous, free earlobes, and heterozygous brown-eyed.
Carl	homozygous brown-eyed, and attached earlobes
Ray	homozygous free earlobes, blue-eyed
Dale	heterozygous free earlobes, homozygous brown-eyed,
Earl	heterozygous free earlobes, and heterozygous brown-eyed.
Robert	homozygous free earlobes, blue-eyed

In the space below, draw two Punnett Squares showing the possible offspring of Mr. and Mrs. Jones: one for eye color and one for earlobes.





Write each person's genotypes in the chart below.

Person	Eye Color	Earlobes
Mr. Jones	#	
Mrs. Jones		
Carl		
Ray		
Dale		
Earl		
Robert	-	

Which men can be eliminated by these traits? Explain your reasoning for each man.

Name:		
Hailie.		

# Who Gets the Money? Worksheet

# Part Two: Co-dominance and Incomplete dominance

Now that \_\_\_\_\_ have been eliminated, lawyers order blood tests to try to prove their claims. The lawyers have also done some research and read that hair texture is inherited.

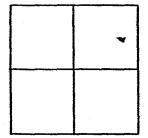
Type A and type B blood are co-dominant over type O.

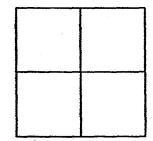
Rh + blood is dominant over Rh- blood.

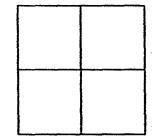
Hair texture exhibits incomplete dominance. Homozygous dominants (HH) have curly hair. Homozygous recessives (hh) have straight hair. Heterozygotes (Hh) have wavy hair.

Mr. Jones	homozygous type A blood, heterozygous Rh+, straight hair	
Mrs. Jones	heterozygous type B blood, homozygous Rh+, wavy hair	
· Carl	heterozygous type A blood, heterozygous Rh+, wavy hair	
Dale	heterozygous type A blood, homozygous Rh+, wavy hair	
Earl	type O blood, Rh-, straight hair	

In the space below, draw three Punnett Squares showing the possible offspring of Mr. and Mrs. Jones: for blood type, Rh type, and hair texture.







Write each person's genotypes in the chart below.

Person	Blood Type	Rh Type	Hair Texture
Mr. Jones			
Mrs. Jones			
Carl			
Dale			
Earl			

Which men can be eliminated now? Justify your answers for each man.

Name:	

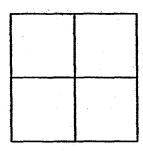
# Who Gets the Money? Worksheet

# Part Three: Sex-linked Inheritance

We're down to just \_\_\_\_\_\_. The lawyer now orders that a vision test be performed to test for red-green color blindness.

Mr. Jones	color blind
Mrs. Jones	homozygous for normal vision
Carl	color blind
Dale	normal vision

In the space below, draw a Punnett Squares showing the possible offspring of Mr. and Mrs. Jones for color blindness.



Write the genotypes of the persons in the table below:

Person	Vision
Mr. Jones	
Mrs. Jones	
Carl	
Dale	· ·

SO: WHO GETS THE MONEY? (Don't forget to justify your answer!)

# Lesson 5: Multiple Alleles Using Blood Types to Solve a Mystery

**Purpose:** The purpose of this lesson is to explore Multiple Allele Traits. Students will learn how to perform Punnett Square crosses for blood type, a multiple allele trait. They will then apply this knowledge to mystery scenario.

### **Objectives:**

The Students Will Be Able To:

- ~Explain what a Multiple Allele Trait is.
- ~Identify blood type as a multiple allele trait.
- ~Create Punnett Squares to interpret crosses of Multiple Allele Traits.

#### **Related Standards:**

SOLs: BIO.5 The student will investigate and understand life functions of archaebacteria, monerans (eubacteria), protsits, fungi, plants, and animals including humans. Key concepts include:

e) human health issues, human anatomy, body systems, and life functions.

BIO.6 The student will investigate and understand common mechanisms of inheritance and protein synthesis. Key concepts will include:

- d) Prediction of inheritance of traits based on the Mendelian laws of heredity.
- h) use, limitations, and misuse of genetic information

NSES Content Standard A: Science as Inquiry

- Abilities necessary to do scientific inquiry
- Understandings about scientific inquiry

NSES: Life Science Content Standard C

Molecular basis of heredity

NSES Content Standard F: Science in Personal and Social Perspectives

• Personal and community health

#### **Materials and Resources:**

Multiple Allele Activity Sheet; Books and other resources on Multiple Alleles; *A Bloody Mystery* activity sheet

For "Bloody Hand" demonstration: Large beaker, Ammonia, Goldenrod paper, Paper towels, goggles

### **Class Management and Safety:**

The "Bloody Hand" demonstration involves the use of the household chemical, Ammonia. A MSDS for this chemical should be obtained, and teacher should take safety precautions when handling the chemical. Teacher will wear safety goggles. In addition, if students are in close vicinity to the demonstration, they should also wear safety goggles.

#### **Procedures:**

### Engage (5 min, 5 min)

1. Opening Question (on board):

What is your blood type?

What other blood types are there?

What do you think determines blood type?

2. "Bloody Hand" demonstration (ammonia on goldenrod paper)

#### Explore (20 min)

2. Students will be given an Activity Sheet. Using their book and other resources, they are to determine the possible phenotypes and genotypes involved in blood typing. Students will also attempt a Multiple Allele Punnett Square for blood typing

### Explain (10 min.)

3. Mini-Lecture: Multiple Alleles

## Elaborate (10 min. in class, finish for HW)

4. Students will be given a *A Bloody Mystery*, a mystery scenario in which they will apply their knowledge of blood typing and Punnett Squares to solve the mystery.

#### **Evaluate**

Students will be evaluated on the completion of the *A Bloody Mystery* activity sheet.

Performance Criteria	Evidence	Points Awarded*
Student can construct a Punnett	Accurate construction of at least two	/ 10
Square for multiple allele traits	Punnett Squares related to the	
	mystery	
Student can interpret Punnett Squares	Student correctly identifies the	/ 5
as they relate to multiple allele traits.	genotype of each individual in the	
	mystery	
Student can draw conclusions from	Student correctly identifies whether	/ 5
Punnett Squares.	Charlie is a son or an imposter.	
Student can apply scientific evidence	Student explains, in detail, a case	/ 5
to defend conclusions.	defending their conclusions; Student	
	uses evidence from Punnett squares	
	to defend their case.	
		/25
	Total Score	,

# Multiple Alleles Investigation: Blood Types

1. What is a multiple allele trait?
2. What are the possible alleles for blood groups?
3. What are 4 the possible phenotypes for blood? What are the possible genotypes for each of these phenotypes?
4. What is Co-dominance, and how does this term relate to blood groups?
5. Construct a Punnett Square for the cross between a man with type O blood and a woman with type AB blood.
If this man and woman have a baby, what possible blood types could the baby have?
What is the probability that the baby will have each of these blood types?

# MULTIPLE ALLELES INVESTIGATION: A BLOODY MYSTERY

You are a lawyer for the following:

Mr. Cash died and left all of his money to his two children. Because of Mr. Cash's prominent role in society, his death made headlines. Shortly after, a young man named Charlie, who claims to be Mr. Cash's long lost son arrives and demands his share of the inheritance. Mr. Cash's two children and their lawyers are skeptical and refuse this young man the money, so he sues. The judge orders blood tests for all of the family. Mr. Cash's blood type, as it appears on his hospital records, is AB. His wife had blood type A. Mr. Cash's two known children were both type B. The young man claiming to be a long lost son had blood type O.

Based on the blood tests, prove to the judge whether or not Charlie could be a child of Mr. Cash. Create a case (1 paragraph) defending your conclusion. Determine the genotypes for each individual involved, and use at least two Punnett Squares as evidence.

Distance Learning Assignment Week 3 (May 4-8) Due May 11th (Mon)

Class: ELD Biology

Teacher: Mrs. Ceja

Content: Evolution Ch. 15 (pg.369-386)

# **Student Assignment:**

- 1) Ch. 15 Outline (pg. 369-386)
- 2) Assessment Questions
  - Ch. 15.1 ( questions 1-4 pg.372)
  - Ch. 15.2 (questions 1-4 pg. 377)
  - Ch. 15.3 (questions 1-3 pg.386)

**Student Instructions**: Outline format should be in this manner. (1 sentence per paragraph summarizing what that paragraph was about. I have made the format with all the bold headings, students should fill out the "P's" with one sentence summarizing each paragraph from the book)

#### I. The Puzzle of Life's diversity (15.1)

#### A. Voyage of the Beagle

P1:

P2:

#### **B.** Darwin's Observations

1) Patterns of Diversity

P1:

P2:

2) Living Organisms and Fossils

P1:

3)	The Galapagos Islands
	P1:
	P2:
	P3:
4)	The Journey Home
	P1:
II. Ideas	that shaped Darwin's Thinking
	P1:
	P2:
	P3:
	A. An Ancient Changing Earth
	P1:
1)	Hutton and Geological Change
	P1:
2)	Lyell's Principles of Geology
	P1:
	P2:
	P3:
	B. Lamarck's Evolution Hypothesis
	P1:
1)	Tendency Towards Perfection P1:
2)	<u>Use and Disuse</u> P1:
3)	Inheritance of Acquired Traits P1:
4)	Evaluating Lamarck's Hypothesis P1:

	<u>C. F</u>	Population Growth		
	P1: P2: P3:			
III. Darwin Presents His Case				
P1:				
	A.	Publication of "On the Origin of Species"		
		P1:		
		P2:		
		P3:		
	В.	Inherited Variation and Artificial Selection		
		P1:		
		P2:		
	C.	Evolution by Natural Selection		
		P1:		
		1) The Struggle for Existence		
		P1:		
		2) <u>Survival of the Fittest</u>		
		P1: P2:		
		P3:		
		3) <u>Descent with Modification</u>		
		P1:		
	_	P2:		
	D.	Evidence of Evolution		
		P1:		
		1) <u>The Fossil Record</u> P1:		
		P2:		
		<ul><li>2) Geographic Distribution of Living Species</li><li>P1:</li></ul>		
		P2:		

	3)	<u>Homologous Body Structures</u>	
		P1:	
		P2:	
		P3:	
		P4:	
		P5:	
	4)	Similarities in Embryology	
		P1:	
		P2:	
E.	Summary of Darwin's Theory P1:		
	P2:		
	P3:		
	P4:		
	P5:		
F. Strengths and Weaknesses of Evolutionary Theory			
		P1:	
		P2:	