

Extension Lab: Genetic Variation within Populations

(Data Tables & Analysis Questions)

Biology 12

Name: _____

Observation & Data

Table 1. Observations of human genetic traits observed in your group.

Trait		Genotype	Your Phenotype	Phenotype totals for your group
Widow's peak	Yes	WW or Ww		
	No	ww		
Earlobes	Free	EE or Ee		
	Attached	ee		
Tongue rolling	Yes	RR or Rr		
	No	rr		
Hair	Straight	ss		
	Wavy	Cs		
	Curly	CC		
Hitchhiker's thumb	No	HH or Hh		
	Yes	hh		
Fold hands	Left thumb over right	FF or Ff		
	Right thumb over left	ff		
Little finger	Bent	BB or Bb		
	Straight	bb		
Mid-digit hair	Yes	MM or Mm		
	No	mm		

Table 2: Observations of bead populations observed in your group.

Generation	red	orange	yellow	green	Dark blue	Light blue	purple	pink	white	black
1	12	12	12	12	12	12	12	12	12	12
2										
3										
4										
5										

*Each row should add up to 120 after reproduction

Table 3: Observations of bead populations observed with another group.

Generation	red	orange	yellow	green	Dark blue	Light blue	purple	pink	white	black
5										

*Each row should add up to 120 after reproduction

Analysis Questions

1. In your own words, what did the individual bead colours represent in this population?

2. Why do you think some colour variants of beads survived predation in the first environment (Generations 1-3) better than other colour variants?

3. What was the effect of changing to a different environment after Generation 3? Explain this effect using the observed phenotype composition of the population after Generation 3 and Generation 5.

4. Explain why the observed phenotype composition of Generation 5 is different between your group and the other group. Remember that you both began with an identical starting population and that both populations of seeds were both ultimately subjected to the same two environments and the same kind of selective pressure.

5. Assume that the environment had not been exchanged, and that the two populations on your table (originally identical) were kept in different environments for many generations. Would you expect a greater difference or a smaller difference between the phenotype composition of the two populations over time? Explain.

Case Studies: Peppered Moth

*Use the Nelson Textbook (blue one with polar bear on front)

1. Page 691-692: Read the story of the Peppered Moth and answer the questions that follow (Letters A-F, as well as "Case study" #'s 1 + 2). (Room for answers on next page)
2. Page 696-697: Read the story of resistance to DDT and answer the questions that follow (Letters A-F, as well as "Case study" #'s 1a + 1b) (Room for answers on next page)

EACH student's completed lab assignment should include the following:

-Stapled title page

-All data tables (filled out)

-Your responses to questions 1-5

-Your responses to the Case Studies on Peppered Moths and DDT resistance

Answers for Case Study: Adaptation and the Peppered Moth

*If any additional room for writing is required, please add to an attached piece of loose-leaf.

Nelson Biology Textbook (old Bio Book/also on Teams) Page 691:

a) _____

b) _____

c) _____

d) _____

e) _____

f) _____

Case Study Application Questions on Page 692:

1. _____

2.i) _____

ii) _____

iii) _____

Answers for Case Study: Resistance to DDT

Nelson Biology Textbook (old Bio Book/also on Teams) Page 696:

a) _____

b) _____

c) _____

d) _____

e) _____

f) _____

Case Study Application Questions on Page 697:

1.a) _____

b) _____

