Complex Traits Activity

DATA NOTEBOOK

Introduction to Physical Anthropology Professor Julie J. Lesnik

TABLE 1a Female Genotype

		Maternal Genome		Paternal Genome						Table 1	b Phenotyp	<u>oe</u>
Locus #	Alleles	Result	Value	Result	Value	Rule		Result				
1	3					Co-Dom	1=A, 2=B, 3=0					
							H/T					
2	6					Random						
3	6					Random						
4	6					Random						
5	20					Random						
	$BOX 1 \longrightarrow$											

TABLE 2 Female gametes

		Egg 1			Egg 2	
Locus #	Result H/T	Maternal/ Paternal	Value	Result H/T	Maternal/ Paternal	Value
1						
2						
3						
4						
5						

TABLE 3a Offspring Genotype Table 3b Offspring Phenotype

		Egg #	Sperm #
Locus #	Alleles	Value	Value
1	3		
2	6		
3	6		
4	6		
5	20		

		Result
Rule		
Mendel	1=A, 2=B, 3=0	
	H/T	
Random		

BOX 2 ___

TABLE 4 Environmental Effects

	Mat	Maternal		Offspring	
SKIN COLOR Does the adult lifestyle include:	d20 roll	adjust	d20 roll	adjust	
Lots of time outdoors in strong sunlight?					
Lots of vegetables rich in carotenoids?					
вох з	→				
				1	
				BOX	

TABLE 5 PKU Screening

PKU probability 1/8000 = same number on the d20 three times in a row.

Offspring

Roll #	d20 result
1	
2	
3	

Does the offspring have PKU?

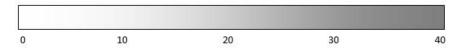
YES	NO

TABLE 6 Final phenotypes

6a	Mother	
	Box 1	
	Box 3	
	Final Mother	
	Phenotype	

6b Offspring	
Box 2	
Box 4	
Total	
If yes for PKU,	
multiply the Total	
by 0.90	
Final Offspring	
Phenotype	

Continuous variation in skin pigmentation



Dis		

<u> </u>
What is the blood type for each: mother, father, and offspring?
How much did your offspring's pre-environment phenotype (Box 2) differ from the mother's (Box 1)? What factors could have affected this?
How much did your offspring's phenotype get modified by the environment?
In what environment would your offspring be best fit? Why? If you take away the environmental factors, would they still be fit for that environment?
What result did you get for locus 5 for the offspring's phenotype? What if a mutation occurred here that meant this locus could not longer contribute to melanin production how would that affect your individual's overall phenotype? What if that mutation happened at locus 3 instead?
If you had to try to convey the concepts of genetic complexity to someone unfamiliar with the terminology used in this activity (such as a younger sibling), how would you explain it?