

Genetics Review 2011

DNA Fingerprinting:

- 1) Based on the DNA below, draw the fingerprint if you cut at G ↓AATTC
GAATTCGTGCGAATTCGAATTC
- 2) List the steps involved in DNA fingerprinting. Uses of DNA fingerprinting?

Genetics:

1) Vocabulary:

Genotype	Independent assortment
Phenotype	Segregation
Genotype ratio	Punnett square
Phenotype ratio	Foil method
Gene vs. Allele	Figuring out the possible alleles mom and dad would give to child for a single and double punnett
Autosomal	Homozygous
Incomplete inheritance	Heterozygous
Polygenic inheritance	Pedigree
Codominance	Blood types: antigen, antibody, donate/receive?
X linked traits	Probability (extra credit)

- 2) Use the following chart to answer some of the questions below:

Genotype	Phenotype	Genotype	Phenotype	Genotype	Phenotype
CC	curly hair	Cc	wavy hair	cc	straight hair
BB	Bushyeyebrow	Bb	Bushyeyebrow	bb	smalleyebrow
WW	widow's peak	Ww	widow's peak	ww	no widow's
HH	Huntington's	Hh	Huntington's	hh	Healthy
EE	eyes far apart	Ee	eyes medium	ee	eyes close

- 3) Who is Mendel and what were his contributions to genetics?
- 4) Which of the following traits have autosomal d/r inheritance?
- 5) Which of the following traits have incomplete dominance?
- 6) What is polygenic inheritance? Benefits?
- 7) What is codominance? Give an example.
- 8) What is sex-linked inheritance? Give an example. Why are the symptoms more prevalent in men?
- 9) Someone has blood type O+. Who could they donate to? Why? Use antigen and antibody in your answer. What about O+?
- 10) A person is AB and heterozygous for Rh+ mates with a person who is blood type O and heterozygous for Rh+. What are the chances of them having a child who is A+? Show a punnett square to support your answer.
- 11) Define independent assortment and crossover. When do they occur? Benefits?
- 12) A person is Bb and mates with Bb. Use a punnett square to solve for the genotype and phenotype ratio of the offspring.
- 13) In the above example, what are the possible alleles each parent could give their child?
- 14) How does meiosis relate to genetics?
- 15) A person that is WwCc and mates with someone who is wwCc. Use a double punnett to determine the phenotype ratio of the F1 generation (Remember to look at the type of inheritance to help you with the variety of phenotypes).
- 16) A person is HhEebb and mates with someone who is hhEeBb. What are the chances of having a child that is healthy, medium eyes, and bushy eyebrows? Extra credit.
- 17) What is homozygous? heterozygous?
- 18) What is the relationship between a gene and an allele and a chromosome and DNA?
- 19) How does a mutation in the DNA sequence result in a genetic disorder?
- 20) Select a trait with autosomal or X-linked inheritance and write out the pedigree for three generations. Write the genotypes of the individuals.