Review Packet: Genetics

1. Where is genetic information carried?

DNA

1. How much of your genetic information is passed from your mother? How much is passed from your father?

50% mother

50% father

1. One possible trait passed from a parent is called an \_\_\_\_\_\_\_\_\_\_\_.

Allele

1. Who was Gregor Mendel

A monk that kept a garden at his monastery. He is often considered the father of genetics. He is also a cheater and a liar. He probably smelled bad too…

1. What were his jobs? Where did he live?

He lived in a monastery and he was in charge of the gardens

1. What organisms did he study? Why?

Peas, because they had a large amount of visible traits he could study

1. Why did he study these organisms?

Many visible traits

1. What traits did he study from these organisms?

Flower color, plant height, pod color, pod shape, seed color, seed shape, type of budding

1. In this family label the generations using Mendel’s labeling methods. Great Grandfather, Grandfather, Father and Grandson.

P 🡪 F1 🡪 F2 🡪 F3 (Great grandfather🡪 Grandfather 🡪 Father 🡪 Grandson)

1. What does it mean to cross organisms?

Cause them to mate.

1. What did Mendel see when he crossed two pure breeding P organisms?

Offspring that had a heterozygous genotype. Also one trait disappeared.

1. What did Mendel see when he crossed two organisms from the F1 generation?

Offspring that were in a 3:1 (dominant:recessive) ratio phenotypically and a 2:1:1 ratio (Heterozygous:homozygous recessive:Homozygous dominant). Also the reappearance of the lost trait from the P cross

1. Define genotype and phenotype. What is the difference?

Genotype is the allele makeup

Phenotype is the physical outcome of the allele makeup

1. Define dominant and recessive. What is the difference

Dominant alleles will be show in a heterozygous genotype

Recessive alleles will be hidden in a heterozygous genotype

1. What does it mean to be heterozygous for a trait? Give an example with a genotype and phenotype.

Two different alleles (one dominant and one recessive) for a gene - Rr

1. What does it mean to be homozygous recessive for a trait? Give an example with a genotype and phenotype.

Two recessive alleles for a gene - rr

1. What does it mean to be homozygous dominant for a trait? Give an example with a genotype and phenotype.

Two dominant alleles for a gene - RR

1. A mother with a Rr genotype and wavy hair is crossed with a father that is RR genotype with wavy hair. What are the possible genotypes and phenotypes of their children?

50% Heterozygous and 50% Homozygous Dominant

100% wavy hair

1. A mother with a gg genotype and no widows peak is crossed with a father that is Gg genotype with a widows peak. What are the possible genotypes and phenotypes of their children?

50% heterozygous and 50% homozygous recessive

50% widows peak and 50% non-widows peak

1. A tall and heavy elephant with the genes BBLL is crossed with a short and light elephant with the genes bbll. What are the possible combinations of genotypes and phenotypes of their young?

FOIL – BL, BL, BL, BL

FOIL – bl, bl, bl, bl

Genotypes – BbLl

Phenotype – Tall and Heavy

1. A Hhjj brown eyed and blond hair mother crosses with a hhJj blue eyed and brown hair father. What are the possible combinations of genotypes and phenotypes of their young?

FOIL – Hj, Hj, hj, hj

FOIL - hJ, hj, hJ, hj

Genotypes – HhJj, Hhjj, hhJj, hhjj

Phenotypes – Brown Eye brown hair, brown eye blond hair, blue eye brown hair, blue eyes blond hair

1. Define incomplete dominance.

Two alleles that blend

1. Define codominance.

Two alleles that both show

1. What are the results of a cross with a brown cow and white cow that show codominance?

100% CbCw Brown and white spotted

1. What are the results of a cross with a brown cow and brown and white cow that show codominance?

50% - CbCb– Brown

50% - CbCw – Brown and white spotted

1. Snap dragon exhibit incomplete dominance. A red plant is crossed with a white plant. What are the genotypes and phenotypes of their offspring?

100% - CRCW  - Pink

1. Snap dragon exhibit incomplete dominance. A pink plant is crossed with a pink plant. What are the genotypes and phenotypes of their offspring?

25% - Red - CRCR

25% - White - CwCw

50% - Pink - CRCw

1. What is a carrier?

Someone who does not have a double recessive disorder, but can still pass it on

1. What is an autosomal pedigree?

Pedigree for a double recessive disorder that is located on chromosomes 1 - 22

1. What is a sex linked pedigree?

Pedigree for a double recessive disorder that is located on chromosome 23