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BIOLOGY MODULE 8 STUDY GUIDE

1.

a. True breeding - If an organism has a certain characteristic that is always passed on to its offspring, we say that this organism is bred true with respect to that characteristic

b. Allele - One of a pair of genes that occupies the same portion on homologous chromosomes

c. Genotype - Two-letter set that represents the alleles an organism possesses for a certain trait

d. Phenotype - The observable expression of an organism's genes

e. Homozygous genotype - A genotype in which both alleles are identical

f. Heterozygous genotype - A genotype with two different alleles

g. Dominant allele - An allele that will determine phenotype if just one is present in the genotype

h. Recessive allele - An allele that will not determine the phenotype unless the genotype is homozygous in the allele

i. Pedigree - A diagram that follows a certain phenotype through several generations

j. Monohybrid cross - A cross between two individuals, concentrating on only one definable trait

k. Dihybrid cross - A cross between two individuals, concentrating on two definable traits

l. Autosomes - Chromosomes that do not determine the sex of an individual

M. sex chromosomes - Chromosomes that determine the sex of an individual

n. Antigen - A protein that, when introduced in the blood, trigers the production of an antibody

o. Autosomal inheritance - Inheritance of a genetic trait not on a sex chromosome

p. Genetic disease carrier - A person who is heterozygous in a recessive genetic disorder

Q. Sex linked inheritance — Inheritance of a genetic trait located on the sex chromosome

r. Mutation — A radical chemical change in one or more alleles

s. Change in chromosome structure — A situation in which a chromosome loses or gains genes during meiosis

t. Change in chromosome number — A situation in which abnormal cellular events in meiosis lead to either none of a particular chromosome in the gamate or more than one chromosome in the gamate

u. Mendels principles of genetics —

I. The traits of an organism are determined by its genes.

II. Each organism has two alleles that make up the genotype for a given trait.

III. In sexual reproduction, each parent only contributes one of it's alleles to its offspring.

IV. In each genotype, there is a dominant allele. If it exists in an organism, the phenotype is determined by that allele.

2. a) YY is the rusltof a yellow pea witha homozygous genotype
b) Yy is the result of a yellow pea with a heterozygous genotype
c) yy is the result of a green pea with a homozygous genotype

3. Meiosis separates the two alleles.

4.

	A	A
A	AA	AA
a	Aa	Aa

50% of the offspring have the AA genotype, and 50% with the Aa genotype.

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5.

	R	r
r	Rr	rr
r	Rr	rr

50% will be able to roll their tongues

6. the genotype is Bb

7. No wings is the dominant allele, 1 and 2 must have the Nn genotype, so 3 and 4 must also have the Nn genotype

8. 100% of the offspring have the SsYy genotype and the smooth yellow phenotype.

9.

	SY	Sy	sY	sy
SY	SSYY	SSYy	SsYY	SsYy
Sy	SSYy	SSyy	SsYy	Ssyy
sY	SsYY	SsYy	ssYY	ssYy
sy	SsYy	Ssyy	ssYy	ssyy

Smooth yellow peas - genotypes SSYY, SsYy, SSYy, SsYY. 9 of 16 (56.25%)
smooth green peas - genotypes SSyy, Ssyy. 3 of 16 (18.75%)
wrinkled yellow peas - genotypes ssYY, ssYy. 3 of 16 (18.75%)
wrinkled green peas - genotype ssyy. 1 of 16 (6.25%)

10.

	X^R	Y
X^R	X^RX^R	X^RY
X^r	X^RX^r	X^rY

X^RY

11.

	X^R	Y
X^R	X^RX^R	X^RY
X^r	X^RX^r	X^rY

50% of the femeales will have white eyes, and 50% of the males will have white eyes

12. change in chromosome number

13. The genetic disorder must be recessive

14. Sex-linked disorders affect men more frequently than women because men have only one allele in sex-linked traits.

15. While the genetics were the same, the spiritual/enviromenal factors were probably different.

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MODULE 8 O.Y.O

8.1 a) it will produce wrinkled peas
b) it will produce smooth peas
c) it will produce smooth peas

8.2 YY, or Yy

8.3 yy factors

8.4 SS offspring will be genotype SS, and will be homozygous with a phenotype for smooth peas.
Ss offspring will be genotype Ss, and will be heterozygous with a phenotype for smooth peas.
ss offspring will be genotype ss, and will be heterozygous with a phenotype for wrinkled peas.

8.5

	P	p
P	Pp	Pp
p	Pp	pp

50% will have Pp genotype, and 50% pp genotype.
That means 50% will have purple flower phenotype, and 50% with white flower phenotype.

8.6 No-tail allele is dominant

8.7 SY, Sy, sY, and sy

8.8 pleiotraphy

MODULE 8 NOTES

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Mendelian Genetics:

True breeding is when a parents offspring has the same charectaristics.

Pea plants are an example of self pollination

Mendels Principles

1. The traits of an organism are determined by packets of information called "factors".

2. Each organism has not one, but two factors that determine its trait.

3. In sexual reproduction, each parent contributes ONLY ONE of its factors to the offspring.

4. In each defineable trait, there is a dominant factor. If it exists in an organism, the trait determined by that dominant factor will be expressed.

Phenotype is an observable expression of an organism's genetics.

Homozygous genotype is a genotype were both alelles are the same

Heterozygous genotype is a genotype with two different alelles

Punnet Squares:

	P	P
P	P_P	P_P
P	P_P	P_P