

Genetics((drosophila)) - lab report example

[Science](#), [Biology](#)



Genetics((Drosophila))

Genetics (Drosophila) Task: According to Mendel's Law, every organism has two factors. Every gamete has one factor. During segregation, the factors join up in twos to allow for variability of the new daughter cells. Mendel's Law describes that an organism with genes, A and B, has factors, A, a, B, and b. there are only four possible combinations that can arise as a result of the gametes. These include AB, Ab, aB, and ab. The variety in combination is useful in producing genetic variability in offspring. Otherwise, for the combination to be perfectly independent, the genes are assumed to be on different chromosomes.

Introduction

Drosophila which is the common fruit fly has been used extensively in carrying out genetic research. This is due to the fact that the species is relatively stable. There are many factors that make Drosophila suitable for carrying out genetic research. They have mutations that can easily be differentiated from one another. They are able to produce large number of offspring which can be easily calculated into ratios. Furthermore, they are small and have four pairs of chromosomes which make it easy to discern them. They are convenient to work with as far as study period is concerned by the fact that they have a life cycle of 12 days. In this practical Drosophila is used to study Mendel's Law in organisms.

Genotypes

Phenotypes

P

Vgvg * wtw

Vestigial wing * wild type

F1

Vgwt * vgw

Normal wing and Normal type

F2

VgVg * Vgwt * Vgwt * wtwt

Vestigial wings * Normal wing and Normal type * wild type

F2:

Males

Females

Vestigial wings

1/4

1/4

Wild type

1/4

1/4

(normal wings)

1/2

1/2

Total

1

1

Genotypes

Phenotypes

P

$XY * xx$

White males * type females

F1

$xY * Xx$

Normal males and white females

F2

$xX * xx * YX * Yx$

White females * wild type females * white males * wild male

F2:

Males

Females

White-eyed

1/3

1/3

Wild type

1/3

1/3

(red eyes)

1/3

1/3

Total

1

1

Genotypes

Phenotypes

P

XY/wtwt * xx/vgvg

White males * vestigial females

F1

Xx/wtwt * Xx/vgvg * xY/vgvg * xY/wtwt

Vestigial and white females* vestigial and white males

F2

XY/wtvg * xx/wtvg *Xx/wtwt

White vestigial male * white vestigial female

F2 Phenotype

Males

Females

Wild type' (normal wings, red eyes)

1/4

1/4

White-eyed, (normal wings, white eyes)

3/8

5/8

Vestigial-winged, (vestigial wings, red eyes)

1/4

1/4

White-eye - vestigial-winged, (vestigial wings, white eyes)

2/3

4/7

MALE ONLY

Observed ratio

Expected numbers

Expected ratio

$(O-E)^2/E$

Wild type(wings & eye normal)

1/4

2/3

3/8

4/5

White-eyed(Normal wing)

3/4

2/3

1/2

3/7

Vestigial-winged(Normal eyes)

4/5

3/4

1/2

1/2

White-eyed and Vestigial-winged

1/2

3/4

1/2

1/2

FEMALE ONLY

Observed ratio

Expected numbers

Expected ratio

$(O-E)^2/E$

Wild type(wings & eye normal)

3/5

2/5

1/2

7/9

White-eyed(Normal wing)

2/5

2/3

3/4

5/7

Vestigial-winged(Normal eyes)

4/7

1/2

3/4

2/3

White-eyed and Vestigial-winged

2/3

1/2

2/3

4/5

The degrees of freedom is one

Discussion

I would accept the hypothesis as the results are logical with it. The results, of course, make sense as they are consistent with theories of Mendel's Law. They have occurred as expected. The subsequent generations inherit the traits of their parents. The inheritance takes place according to the predictions of Mendel's law. Combination of alleles is useful in producing variability of offspring. It is assumed that the alleles occur in separate chromosomes. Otherwise, the combination would not be effective if the factors come from the same chromosome.

References

- Orel, V. (1996). Gregor Mendel: The first geneticist. New York: Oxford University Press.
- Russell, P. J. (1998). Genetics. Menlo Park, Calif: Benjamin/Cummings.
- Stansfield, D., & Hademenos, J. (2003). Genetics. New York: McGraw-Hill.
- Bottom of Form