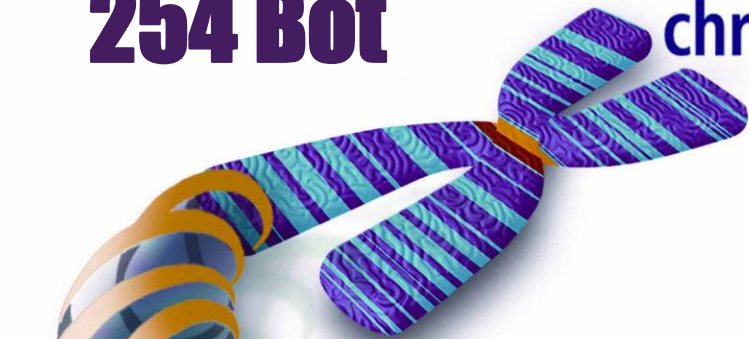


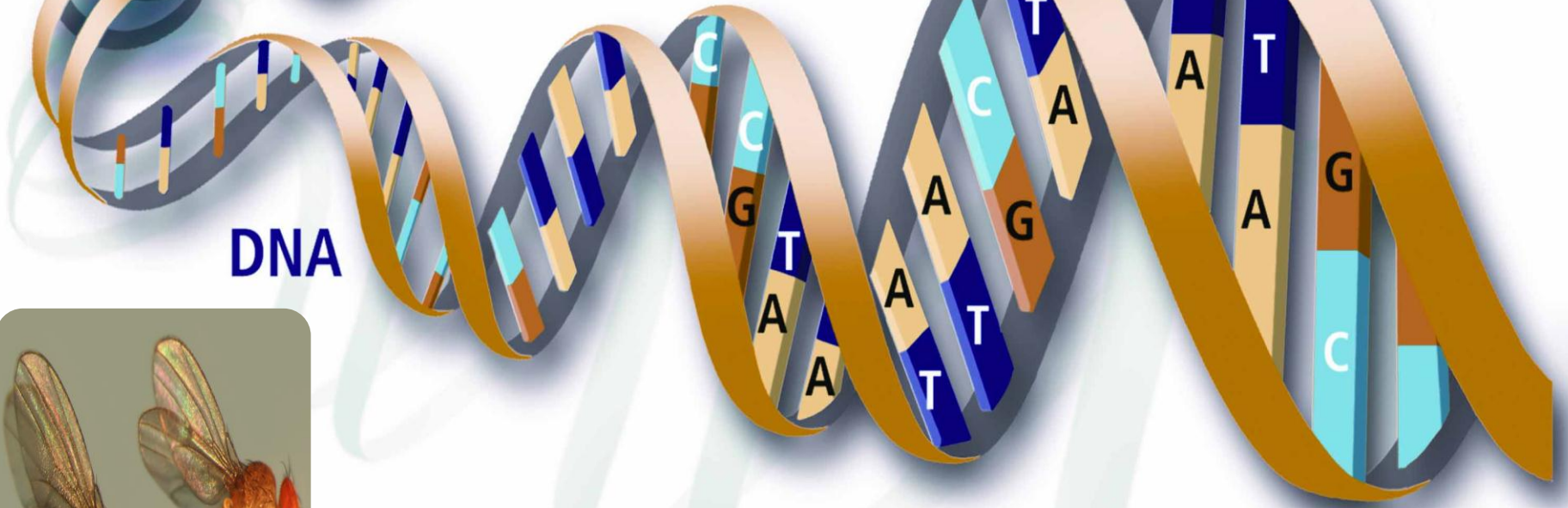
254 Bot

chromosome

Mutation



DNA

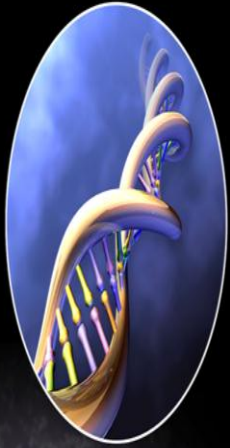


GENETIC MUTATIONS

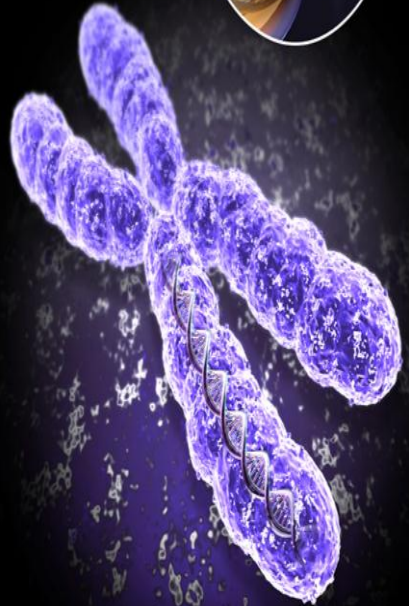
LAB 3



Mutation



- ❖ **Any sudden change occurring in hereditary material is called as mutation.**
- ❖ **They may be harmful, beneficial or neutral.**
- ❖ **Passed on to future generations.**
- ❖ **We each inherit hundreds of genetic mutations from our parents, as they did from their forebears.**



Mutant :

a mutant is an organism or a new genetic character arising or resulting from an instance of mutation, which is generally an alteration of the DNA sequence of the genome or chromosome of an organism.

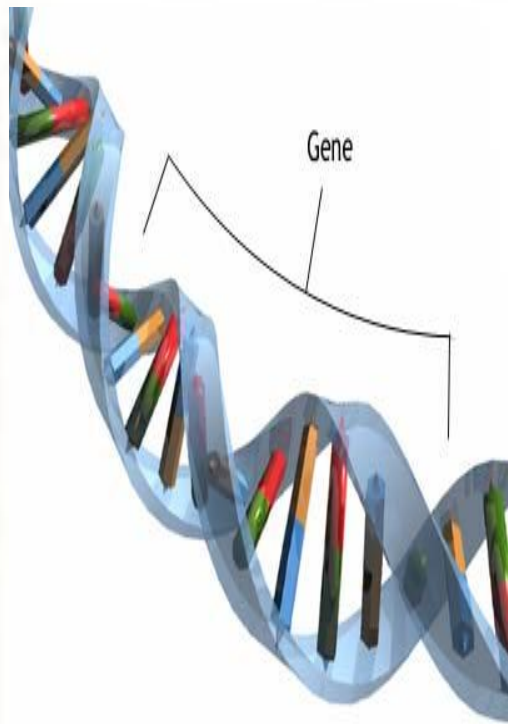
Mutagen :

a mutagen is a physical or chemical agent that changes the genetic material, usually DNA, of an organism and thus increases the frequency of mutations above the natural background level.

Reverse mutation (reversion):

a mutation that changes a mutant phenotype back in to the wild type.





Wild type:

Wild type refers to the phenotype of the typical form of a species as it occurs in nature.

Originally, the wild type was conceptualized as a product of the standard "normal" allele at a locus, in contrast to that produced by a non-standard, "mutant" allele

The Importance of Mutations

- **Source of all genetic variation, which further provides the raw material for evolution**
- **Source of many diseases and disorders**
- **Useful for probing fundamental biological processes**

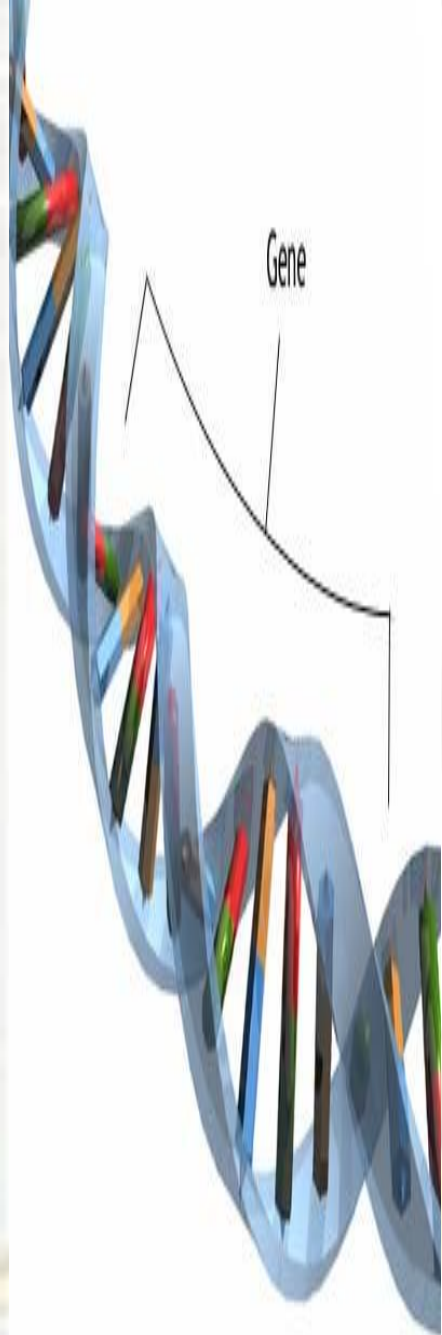
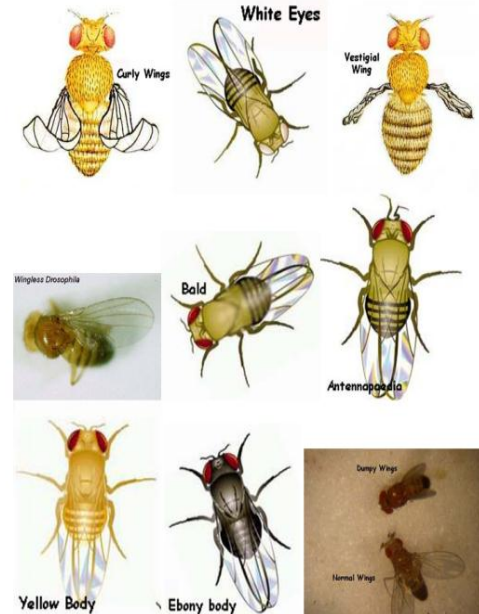


Morphological mutations

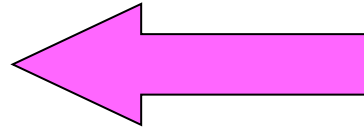
Morphological mutants affect the outward appearance of an individual.

Drosophila melanogaster mutations

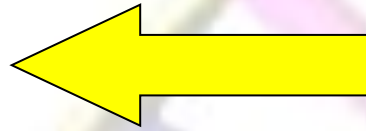
1. Wings.
2. Eye and body colour .
3. Eye Shape.



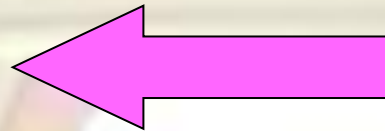
Wing Shape



Vestigial



Dumpy

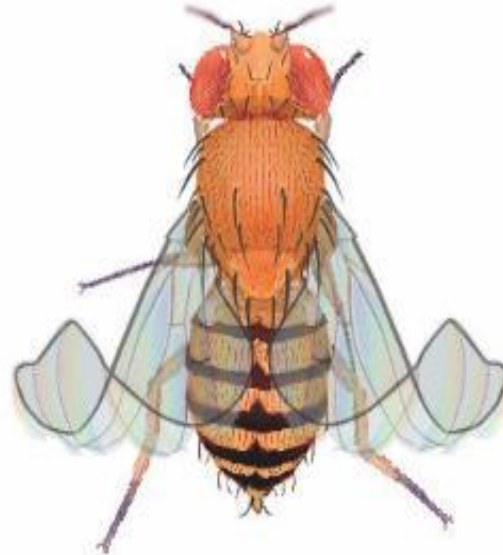


Apterous

(Wing Shape)



Vestigial



Curly

Vestigial



(Eye Colour)



White Eye



Sepia



Vermilion

(Eye Colour)



Plum Eye



Eosin



Purple

(Eye Colour)

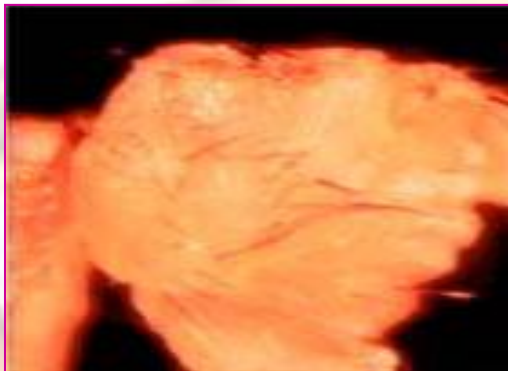
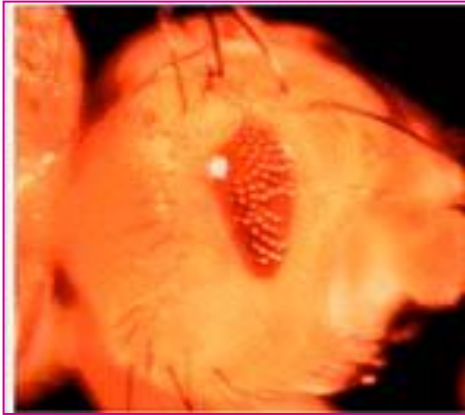


White Eye



Orange Eye

(Eye Shape)



Bar

Lobe

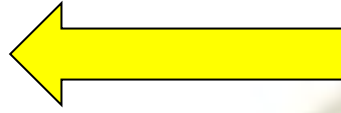
sine oculis

Eye mutation



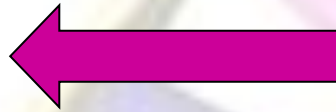
White Eye

-1



Sepia

-2



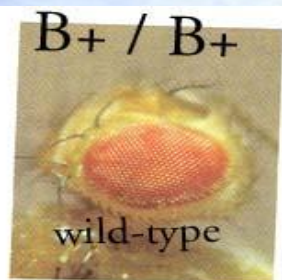
Scarlet

-3



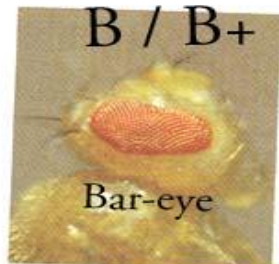
Eosin

-4



B^+ / B^+

wild-type



B / B^+

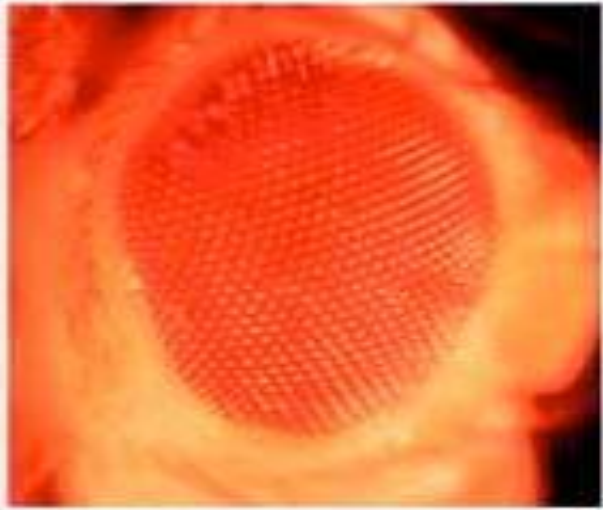
Bar-eye



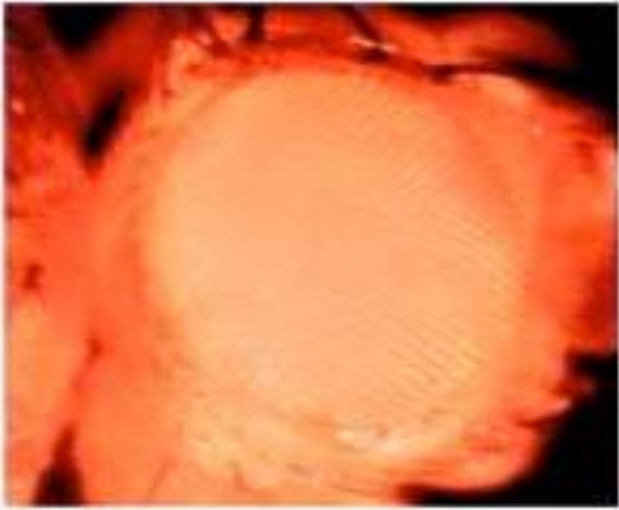
Bar

-5

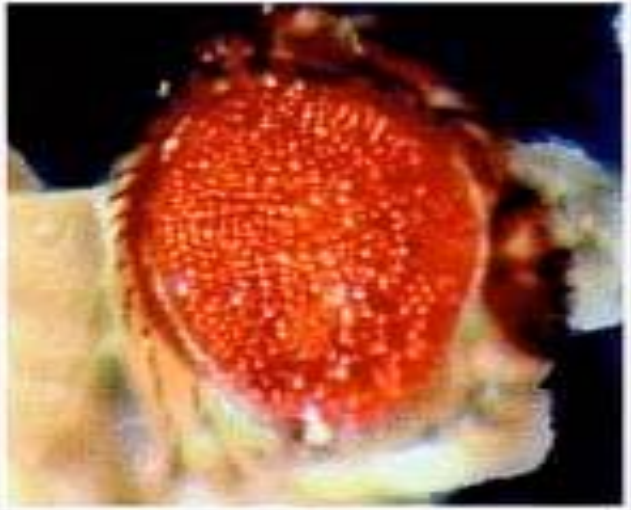
Eye mutation



WT



white



rough

Eye Shape Mutations



Wild Type

Bar Eyes

Eyeless

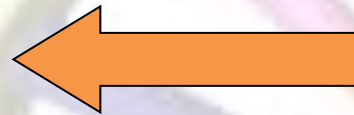
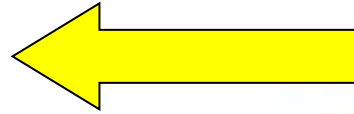
Lobe Eyes

Star Eyes

Body Color

Yellow Body

-1



Ebony

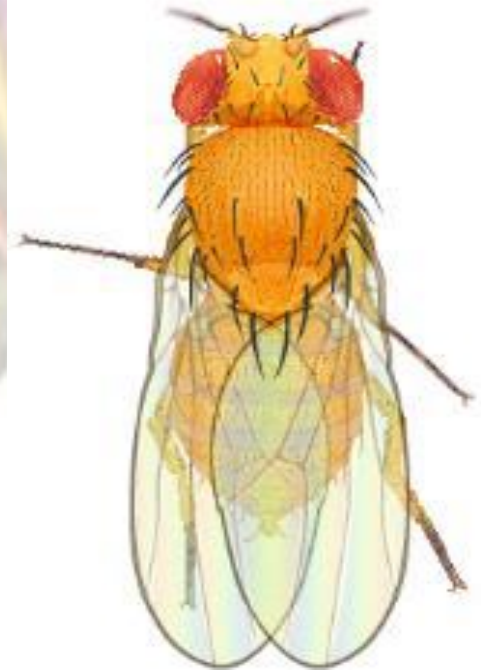
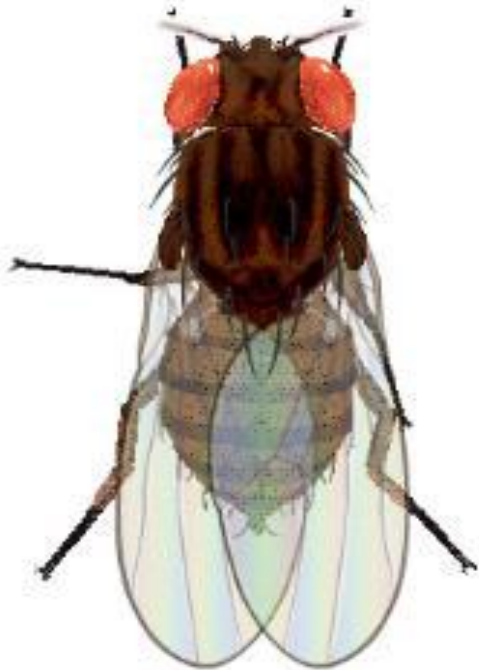
-2



Body Color

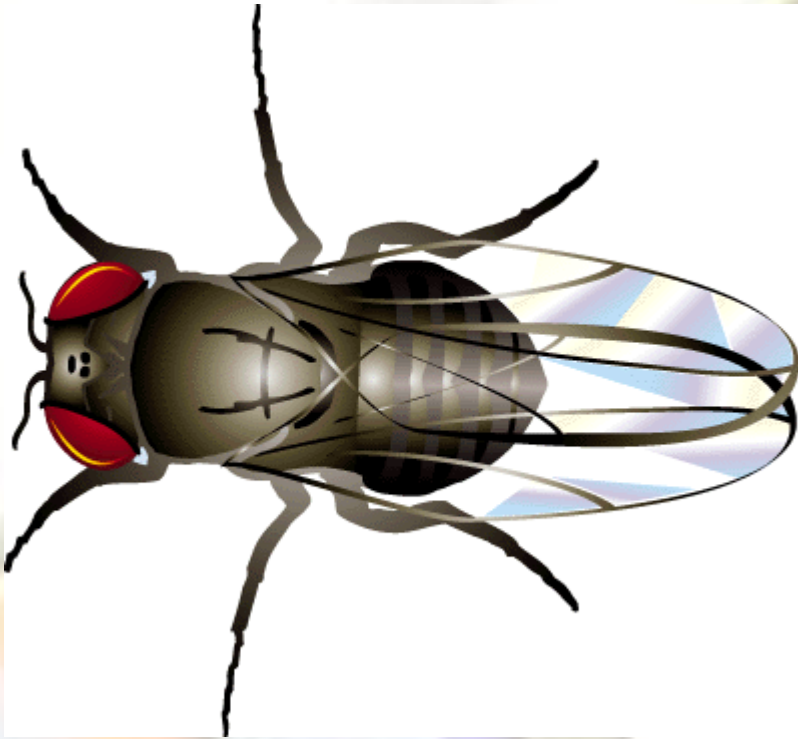
Ebony

Yellow

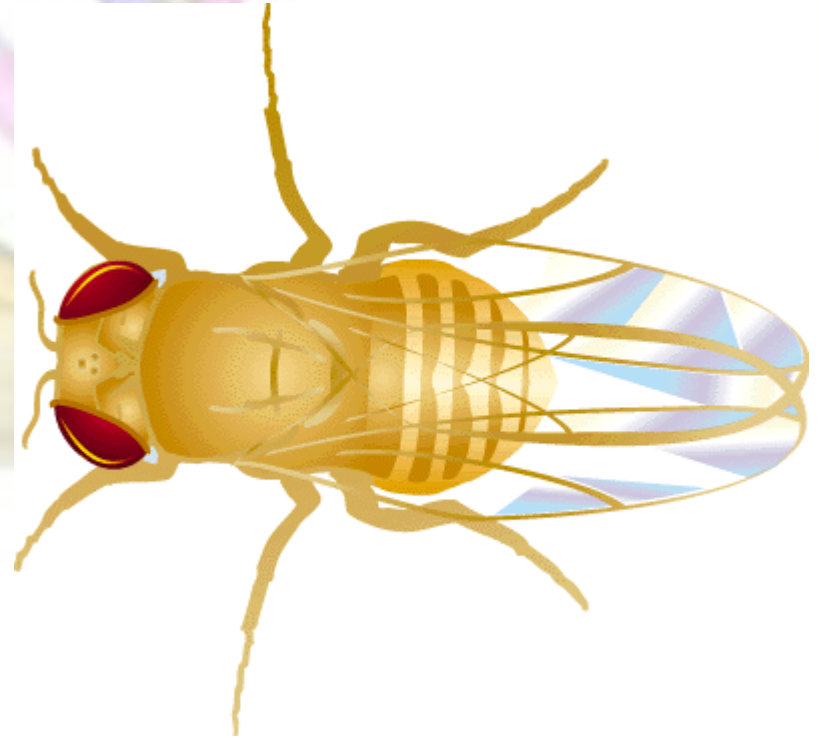


Body Color

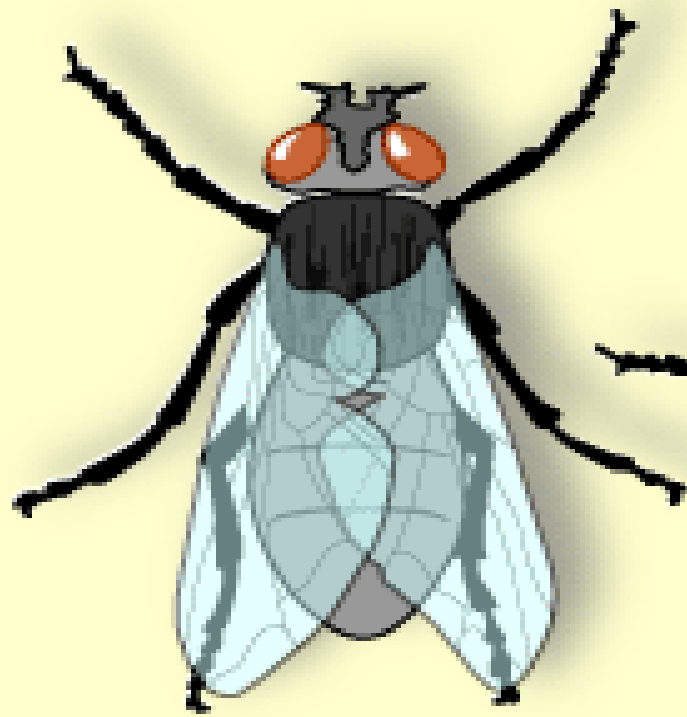
Ebony



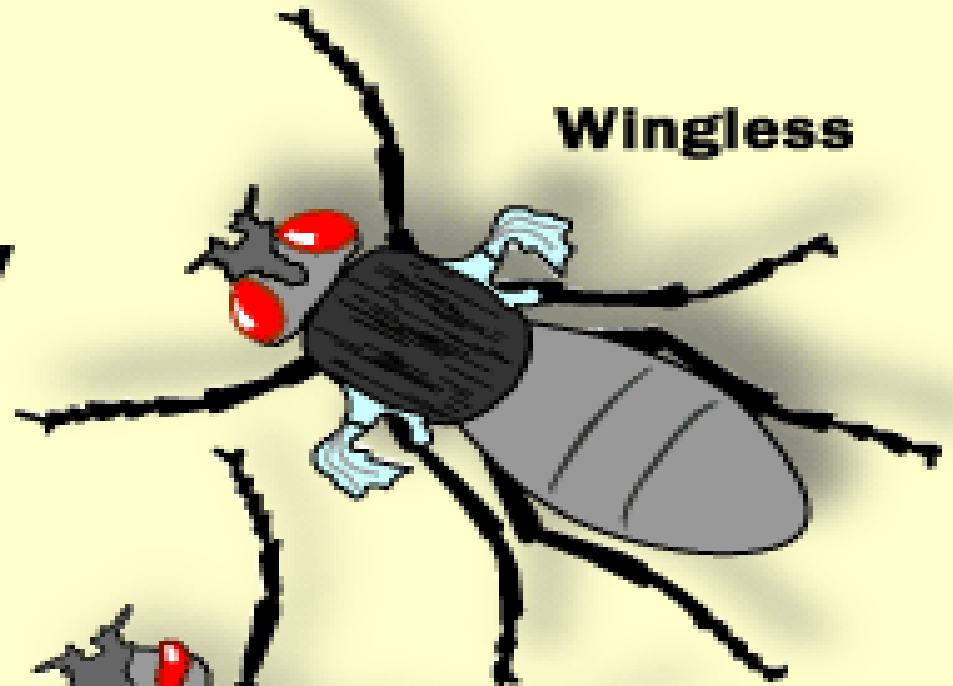
Yellow



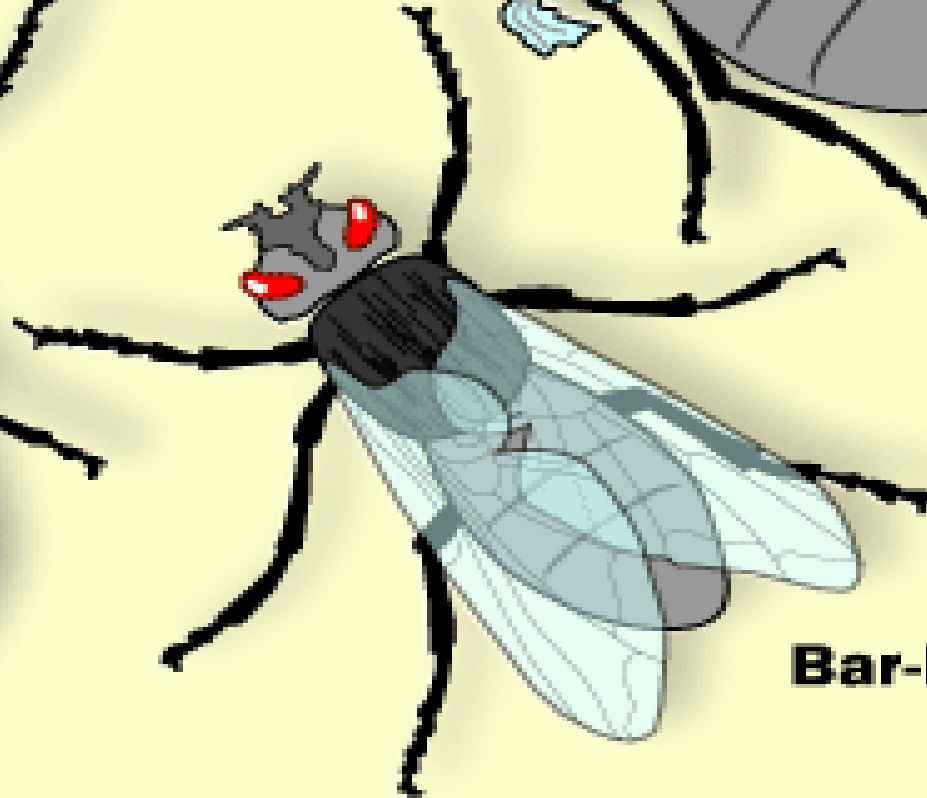
Genetic Mutations of the Fruit Fly



Sepia Eyed



Wingless



Bar-Eyed

Drosophila melanogaster Phenotypes

Wild Female



Wild Male



Eye Colour

Wild



Plum



Purple



Sepia



Vermilion



White



Eye Shape

Wild



Bar



Wide-Bar



Eyeless



Lobe



Body Colour

Wild



Black



Ebony



Yellow



Body Bristles

Wild



Forked



Shaven



Spineless

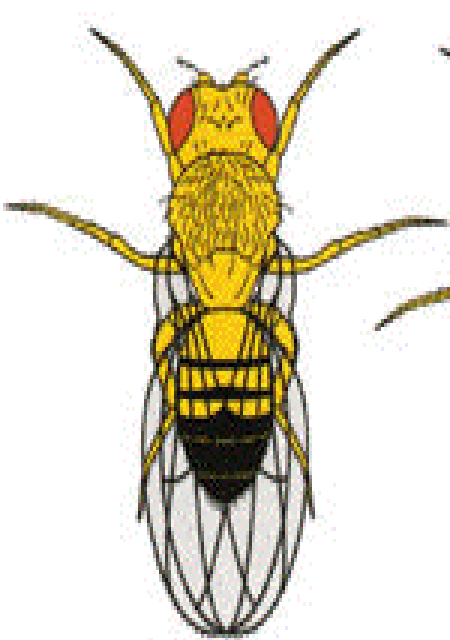


Stubble

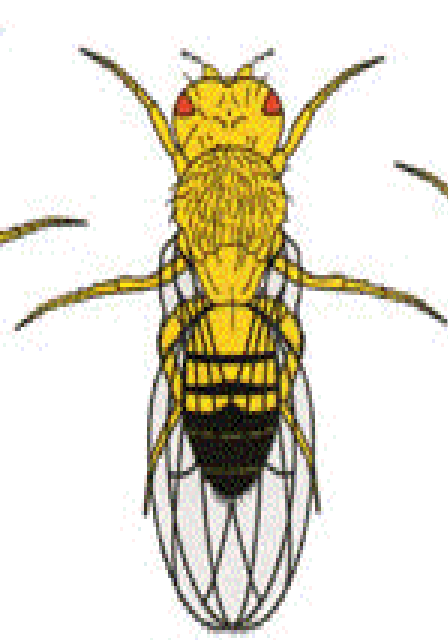


Singed

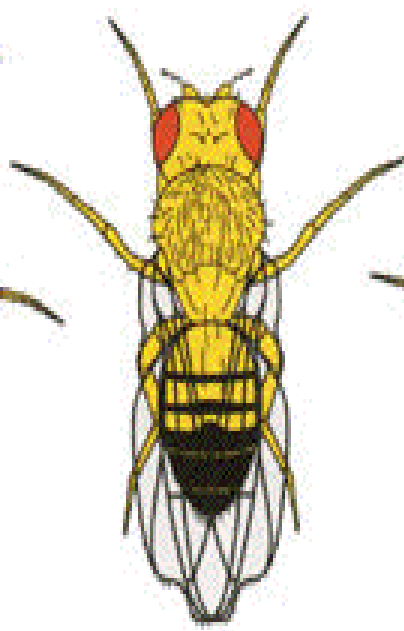




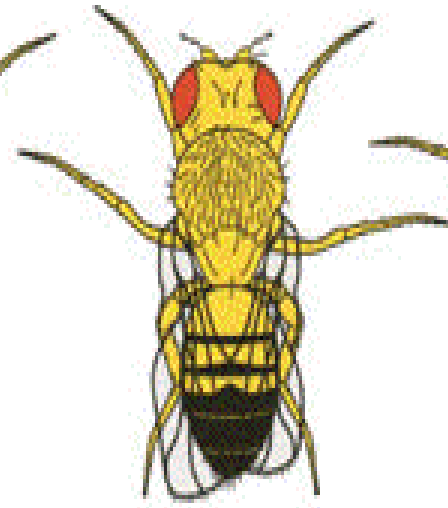
Wild type



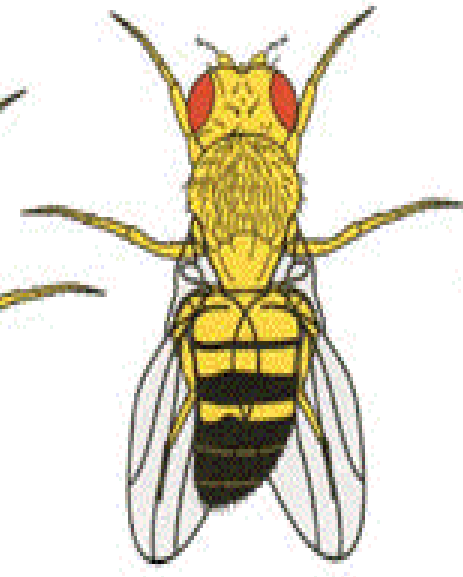
Bar eyes



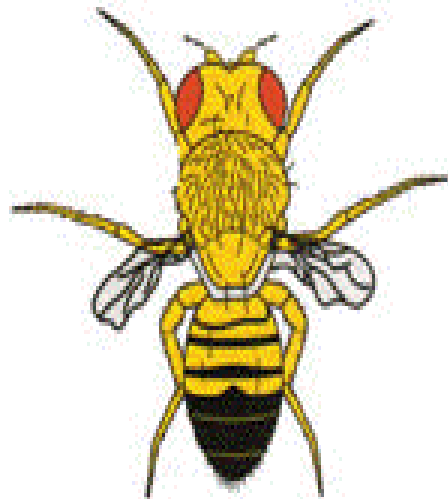
Cut wings



Rudimentary wings



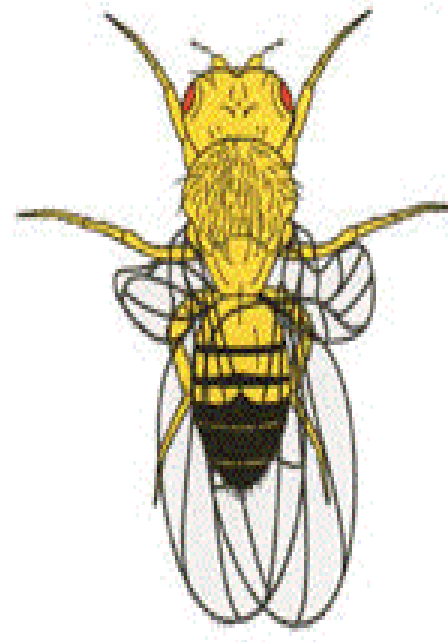
Rotated abdomen



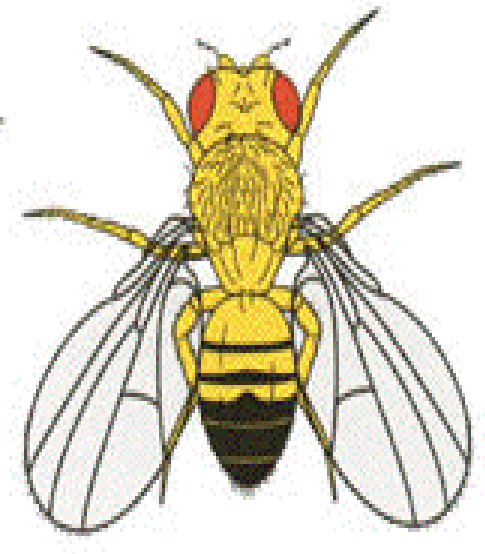
Vestigial wings



Curly wings

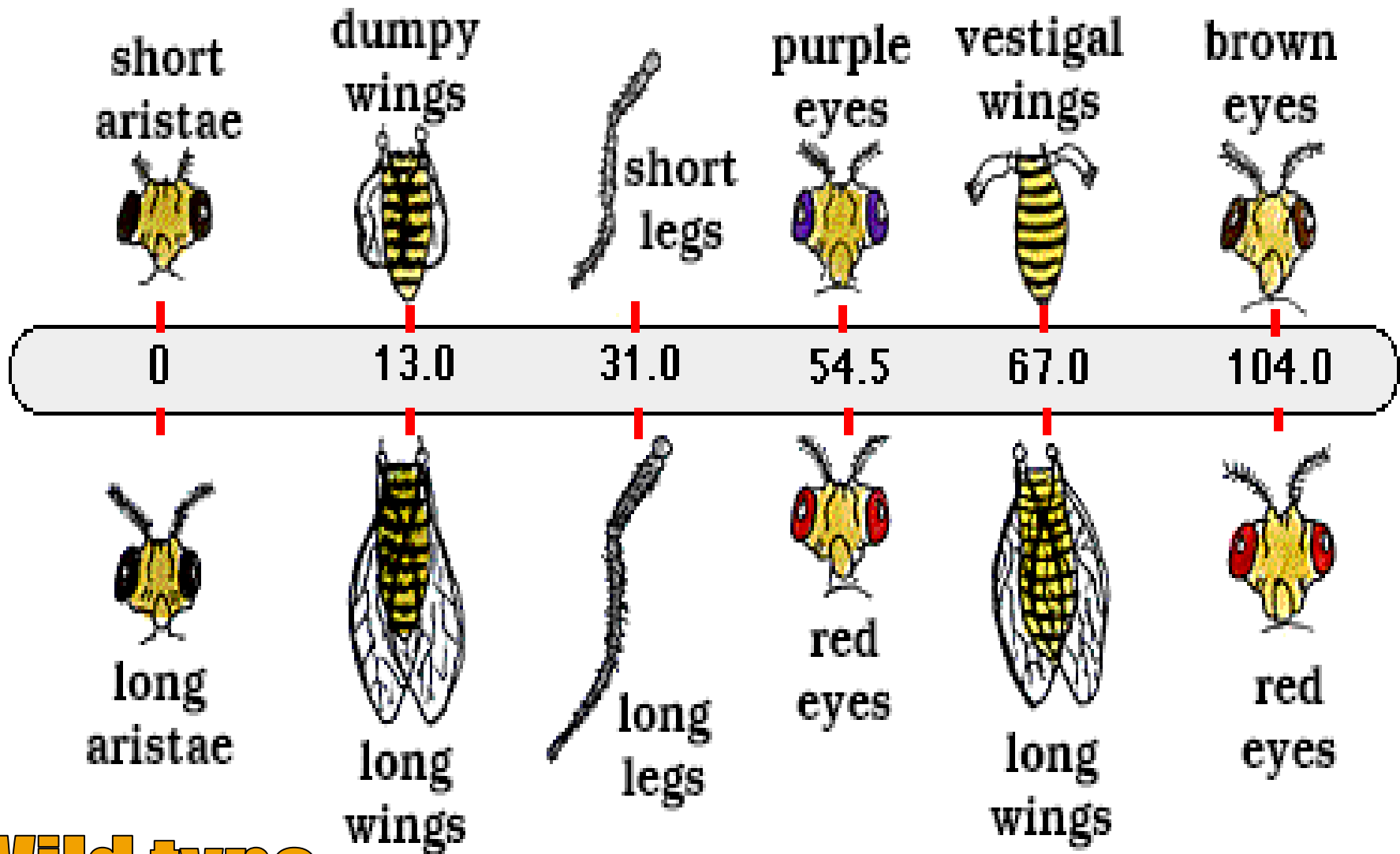


Bithorax



Dichaeete

Mutation



Wild type

types *D. melanogaster* (clockwise): brown eyes with black body, cinnabar eyes, sepia eyes with ebony body, vermilion eyes, white eyes, and wild-type eyes with yellow body



مختبره الوبسي

thank
you!

