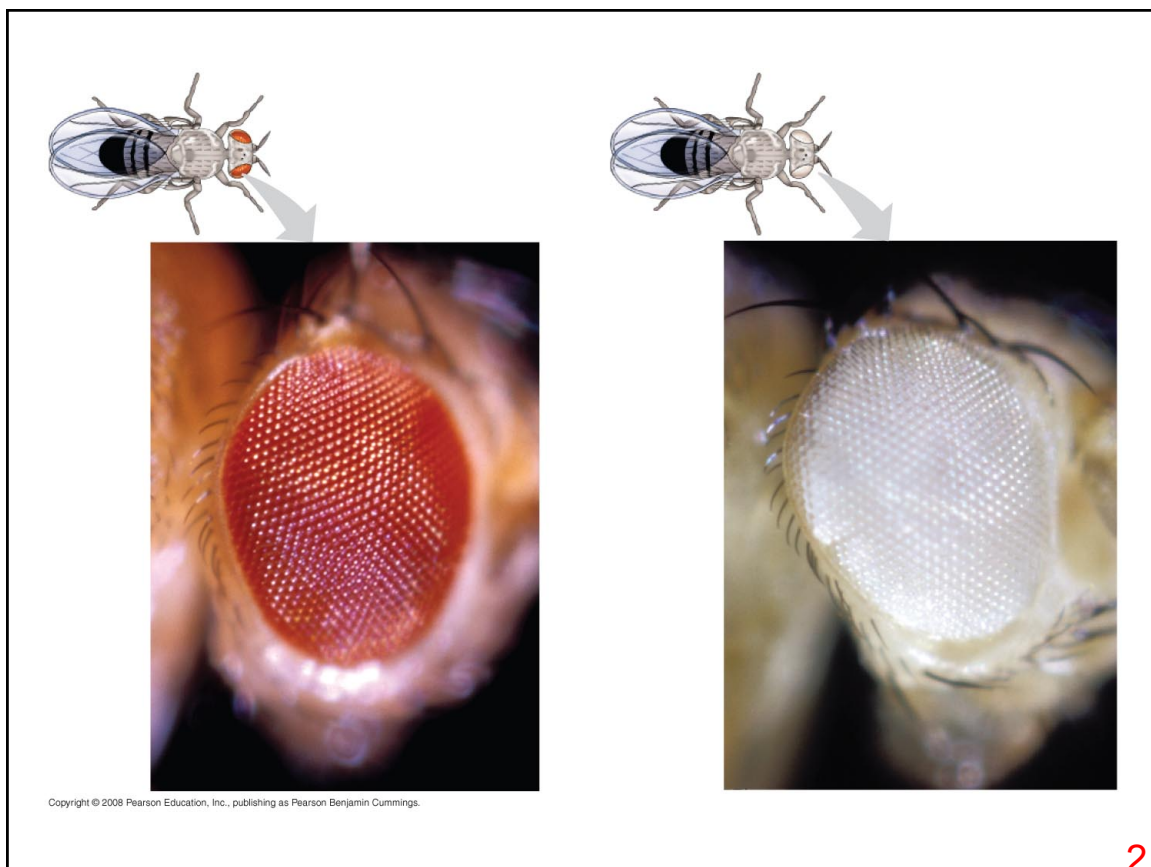
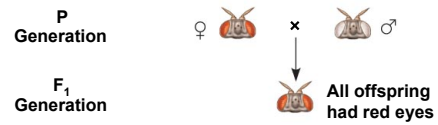


1



2

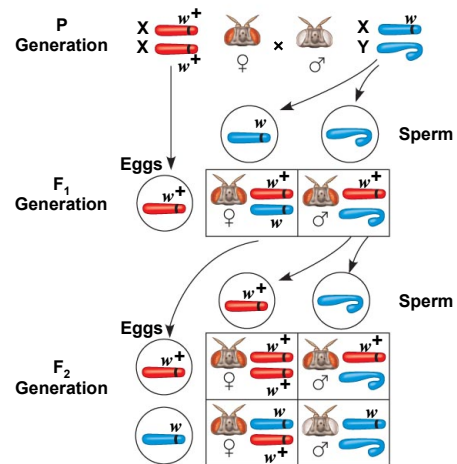
EXPERIMENT



RESULTS

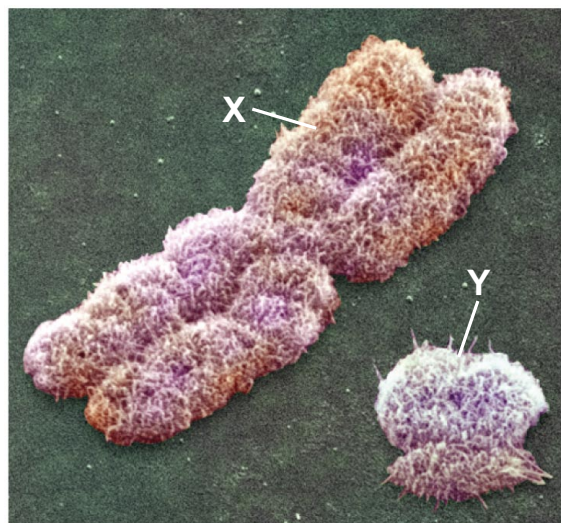


CONCLUSION



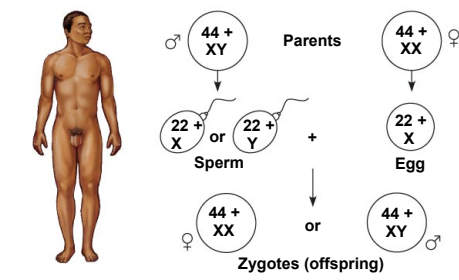
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3

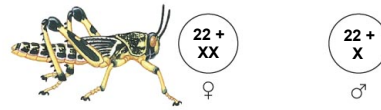


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4



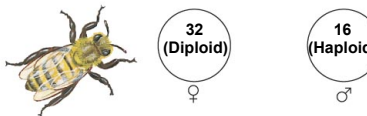
(a) The X-Y system



(b) The X-0 system

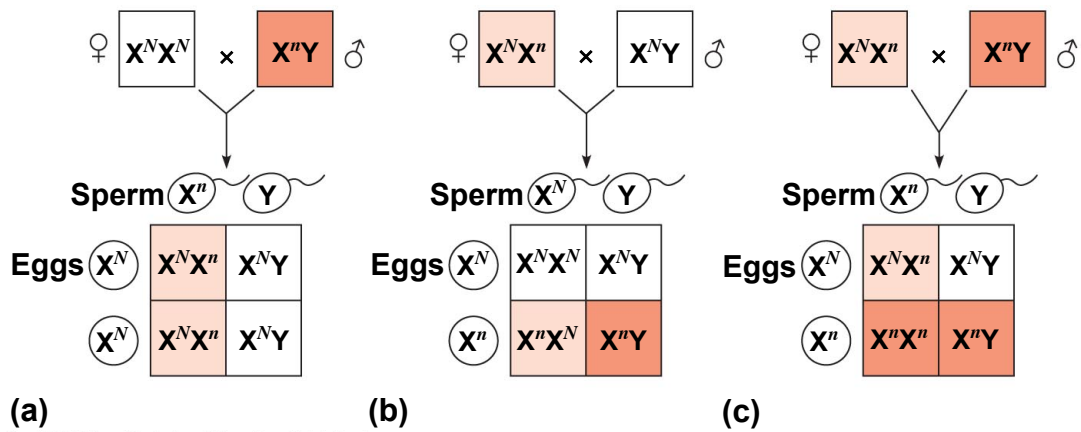


(c) The Z-W system

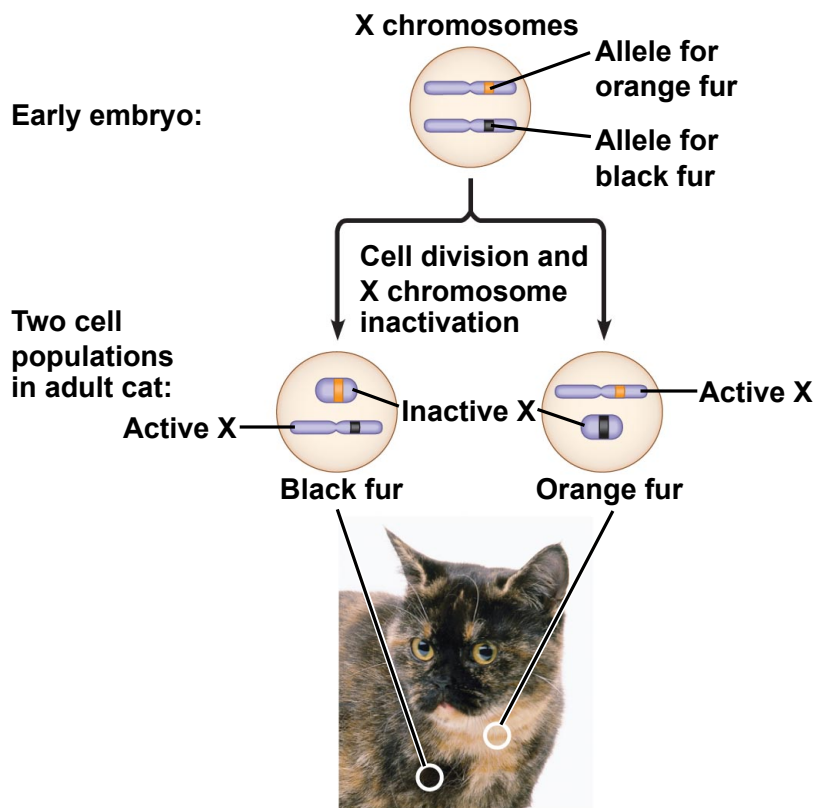


(d) The haplo-diploid system

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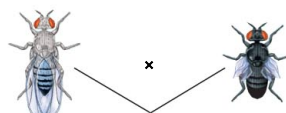
7

EXPERIMENT

P Generation (homozygous)

Wild type
(gray body,
normal wings)

$b^+ b^+ vg^+ vg^+$



Double mutant
(black body,
vestigial wings)

$b b vg vg$

**F₁ dihybrid
(wild type)**

$b^+ b vg^+ vg$



Double mutant

$b b vg vg$

**Testcross
offspring**

Eggs	$b^+ vg^+$	$b vg$	$b^+ vg$	$b vg^+$
Sperm	<p>Wild type (gray-normal)</p> <p>$b^+ b vg^+ vg$</p>	<p>Black-vestigial</p> <p>$b b vg vg$</p>	<p>Gray-vestigial</p> <p>$b^+ b vg vg$</p>	<p>Black-normal</p> <p>$b b vg^+ vg$</p>

PREDICTED RATIOS

If genes are located on different chromosomes:

1 : 1 : 1 : 1

If genes are located on the same chromosome *and*
parental alleles are always inherited together:

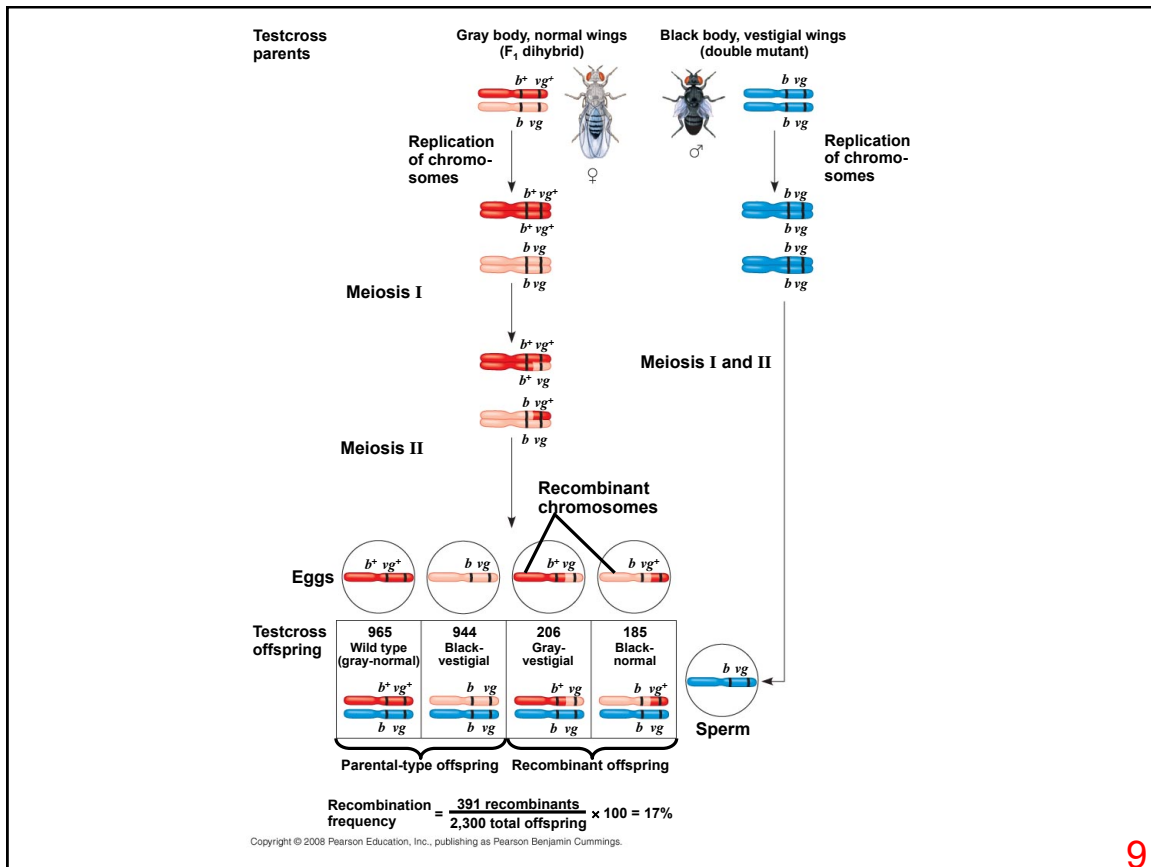
1 : 1 : 0 : 0

RESULTS

965 : 944 : 206 : 185

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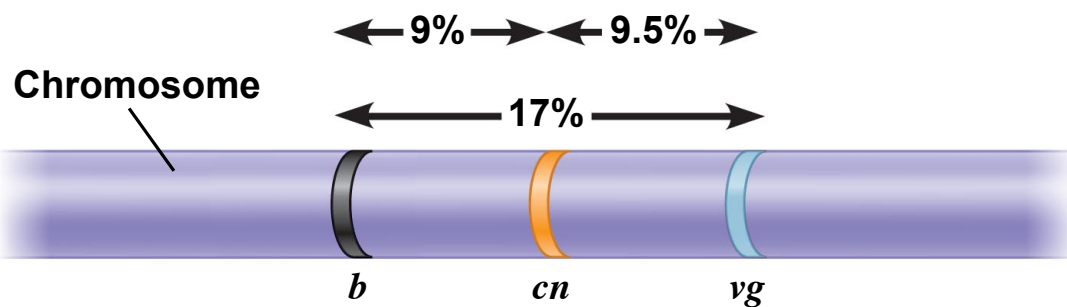
8



9

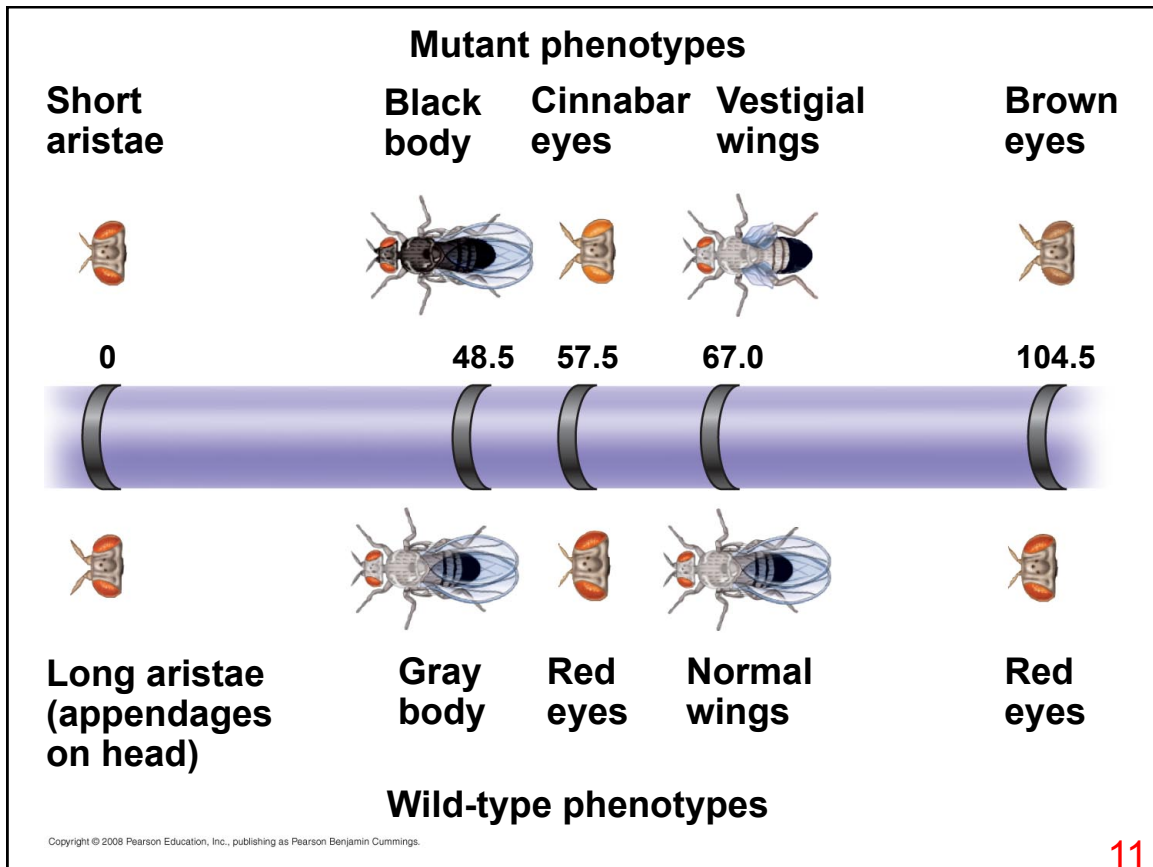
RESULTS

Recombination frequencies

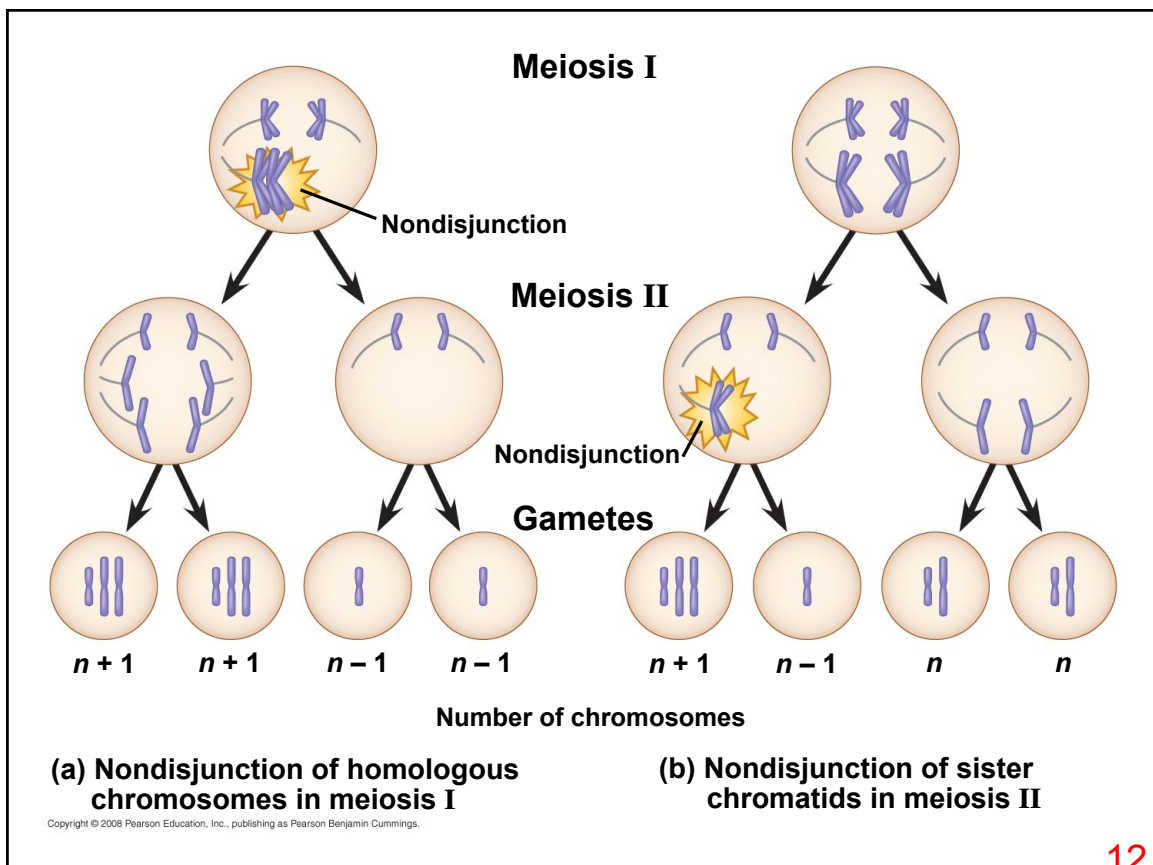


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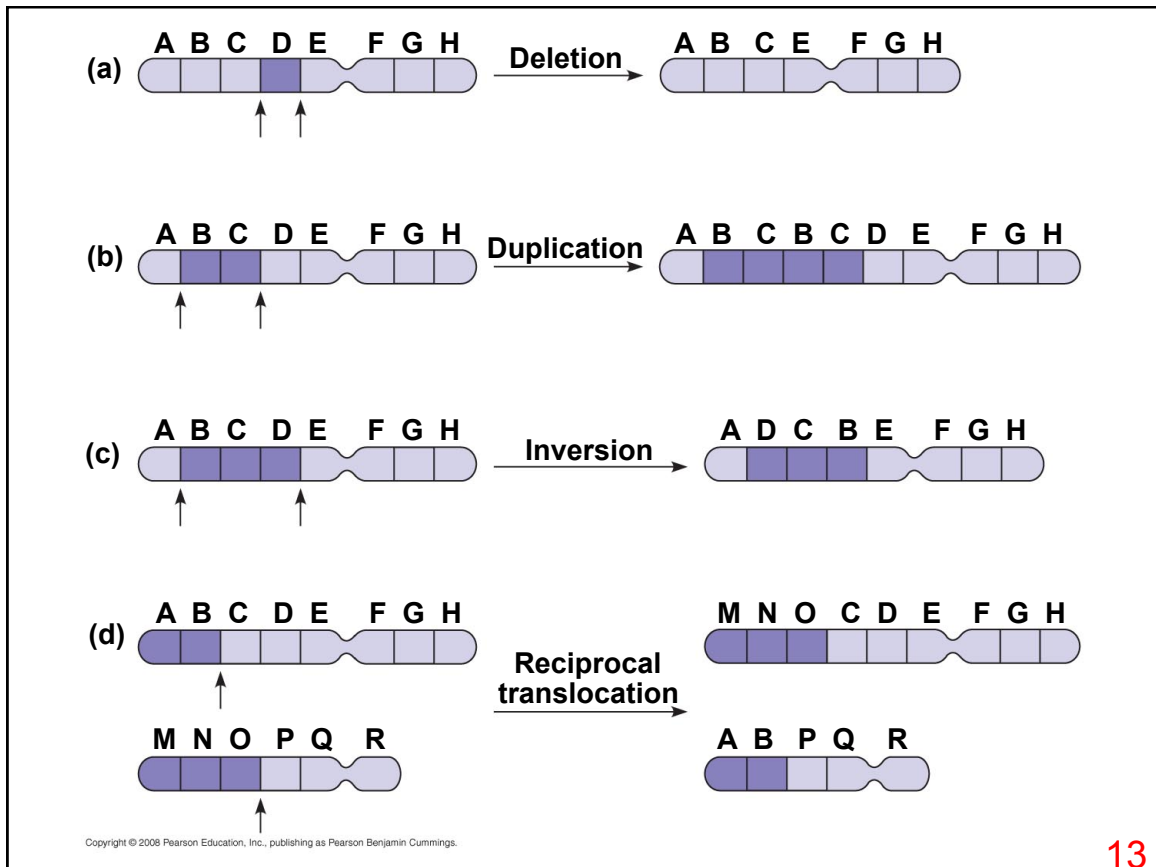
10



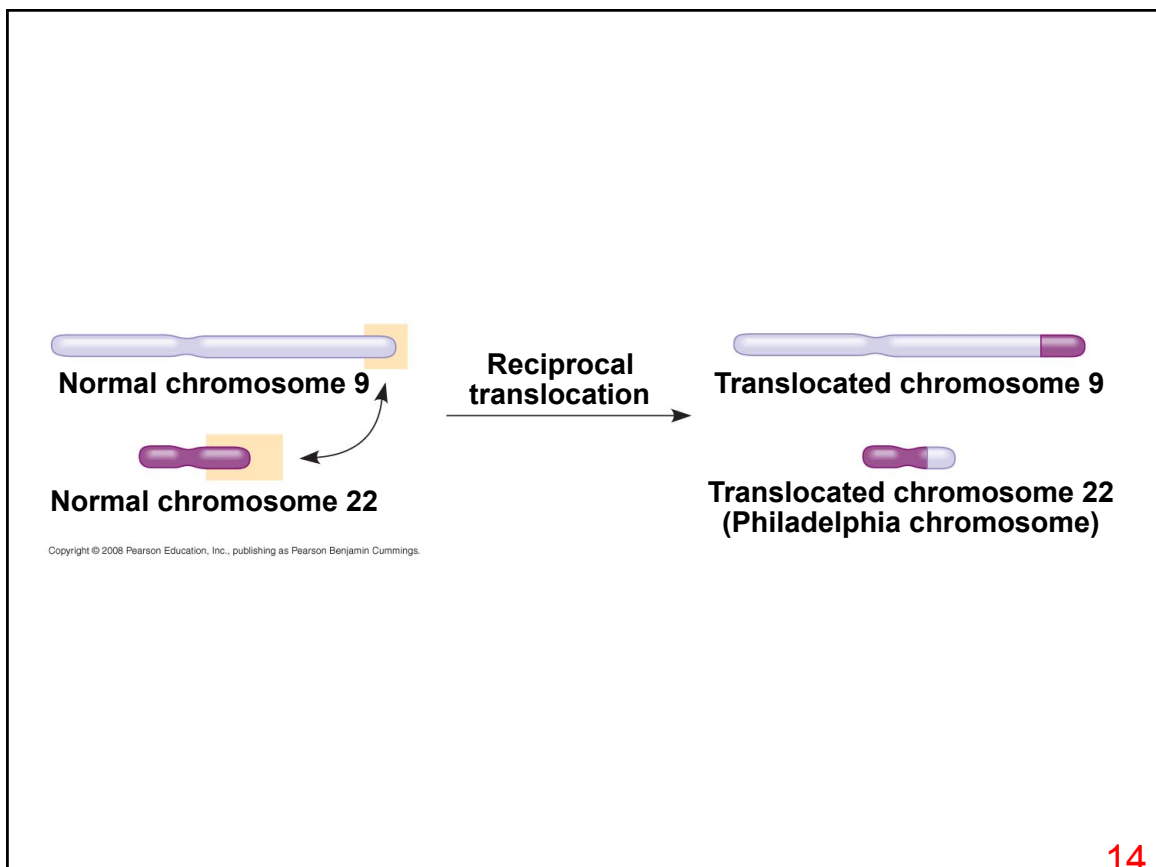
11



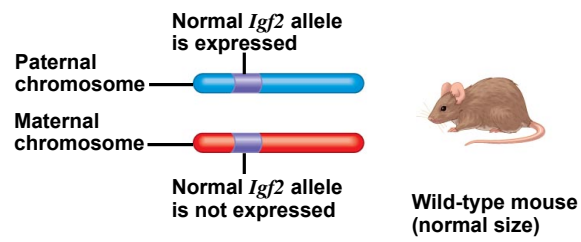
12



13



14



(a) Homozygote

Mutant *Igf2* allele inherited from mother



Normal size mouse (wild type)

Mutant *Igf2* allele inherited from father



Dwarf mouse (mutant)

Normal *Igf2* allele is expressed



Mutant *Igf2* allele is not expressed

Mutant *Igf2* allele is expressed



Normal *Igf2* allele is not expressed

(b) Heterozygotes

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