

Monohybrid Cross Practice

1. Cross a heterozygous black mouse with a white mouse

	B	b
b	Bb	bb
b	Bb	bb

2. Cross two heterozygous black mice

	B	b
B	BB	Bb
b	Bb	bb

KEY

B = black
b = white

R = round ears
r = pointed ears

Dihybrid Cross Practice

3. Cross a homozygous black mouse who has round ears (heterozygous) with a white mouse with round ears (heterozygous).

Parent Mice	Mouse #1	Mouse #2
Genotype	BBRr	bbRr
Allele combinations	BR, Br	bR, br

	BR	Br
bR	BbRR	BbRr
br	BbRr	Bbrr

Offspring Mice

Genotype	Fraction
BbRR	1/4
BbRr	1/2
Bbrr	1/4

Phenotype	Fraction
Black, round ears	3/4
Black, pointed ears	1/4

4. Cross two heterozygous black mice with round ears (heterozygous).

Parent Mice	Mouse #1	Mouse #2
Genotype	BbRr	BbRr
Allele combinations	BR, Br, bR, br	BR, Br, bR, br

Offspring Mice

Genotype	Fraction
BBRR	1/16
BBRr	1/8
BbRR	1/8
BbRr	1/4
BBrr	1/16
bbRR	1/16
bbRr	1/8
bBrr	1/16
Bbrr	1/8

Phenotype	Fraction
Black, Round ears	9/16
Black, pointed ears	3/16
White, round ears	3/16
White, pointed ears	1/16

	BR	Br	bR	br
BR	BBRR	BBRr	BbRR	BbRr
Br	BBRr	BBrr	BbRr	Bbrr
bR	BbRR	BbRr	bbRR	bbRr
br	BbRr	Bbrr	bbRr	bbrr

Sex-linked Cross

KEY

R = red eyes
r = white eyes

5. Cross a red-eyed female (homozygous) with a red-eyed male.

Female parent genotype: $X^R X^R$

Male parent genotype: $X^R Y$

	X^R	X^R
X^R	$X^R X^R$	$X^R X^R$
Y	$X^R Y$	$X^R Y$

Female offspring:

Genotype	Fraction
$X^R X^R$	100%

Phenotype	Fraction
red eyes	100%

Genotype	Fraction
$X^R Y$	100%

Phenotype	Fraction
Red Eyes	100%

6. Cross a red-eyed female (heterozygous) with a white-eyed male.

Female parent genotype: $X^R X^r$

Male parent genotype: $X^r Y$

	X^R	X^r
X^r	$X^R X^r$	$X^r X^r$
Y	$X^R Y$	$X^r Y$

Female offspring:

Genotype	Fraction
$X^R X^r$	1/2
$X^r X^r$	1/2

Phenotype	Fraction
red eyes	1/2
white eyes	1/2

Genotype	Fraction
$X^R Y$	1/2
$X^r Y$	1/2

Phenotype	Fraction
red eyes	1/2
white eyes	1/2

Blood Types

7. Cross someone with B+ (BO+-) with someone with A+ (AA+-).

Blood type cross

	B	O
A	AB	AO
A	AB	AO

Phenotypes(%):

TYPE AB 50%
Type A 50%

Rh-factor cross

	+	-
+	++	+-
-	+-	--

Phenotypes(%):

Positive 75%
Negative 25%