

GENE INTERACTION

- Collaborative Gene
- Complementary Gene
- Supplementary Gene
- Epistasis → One gene alters effect of other gene, that is inherited independently.

EPISTASIS

→ Bateson 1910 → Father of modern Genetics.

Epi

↓
On

Stasis

↓
Standing still

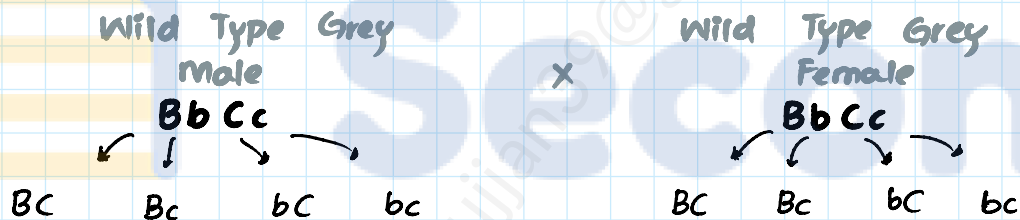
Phospho Gene

9 : 3 : 3 : 1 ✗

- Recessive Epistasis
- Dominant Epistasis

RECESSIVE EPISTASIS

→ Fur Colour of Rats.



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Male
Gamete

	BC	Bc	bC	bc
BC	$BBCC$ Grey	$BBcC$ Grey	$BbCC$ Grey	$BbCc$ Grey
Bc	$BBcC$ Grey	$BBcc$ White	$BbCc$ Grey	$Bbcc$ White
bC	$BbCC$ Grey	$BbCc$ Grey	$bbCC$ Black	$bbCc$ Black
bc	$BbCc$ Grey	$Bbcc$ White	$bbCc$ Black	$bbcc$ White

Grey colour → 9
White colour → 4
Black colour → 3

9 : 3 : 4
↓

$Bb\textcircled{cc}$ → \textcircled{cc} Recessive allele. $\textcircled{\text{White}}$

$bbCc$ → Black

LABRADORE

(Black) $BbEe$

$BbEe$ (Black)

BE bE Be be

BE bE Be be

B b

• Recessive Epistasis

Male Gamete

Female Gamete

	BE	bE	Be	be
BE	BBEE (Black)	BbEE (Black)	BBEe (Black)	BbEe (Black)
bE	BbEE (Black)	bbEE (Brown)	BbEe (Black)	bbEe (Brown)
Be	BBEe (Black)	BbEe (Black)	Bbee (White)	Bbee (White)
be	BbEe (Black)	bbEe (Brown)	Bbee (White)	bb ee (White)

Black colour → 9

Brown colour → 3

White colour → 4

9 : 3 : 4

DOMINANT EPISTASIS

Fur colour of Guinea Pig

Dominant Fur Colour = Black = B

Recessive Fur Colour = Brown = b

Dominant Epistatic allele = I

Recessive Epistatic allele = i

$BbIi \times BbIi$

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BI Bi bI bi

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Female Gamete

Male Gametes

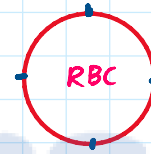
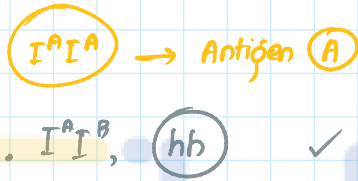
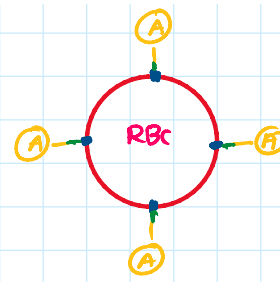
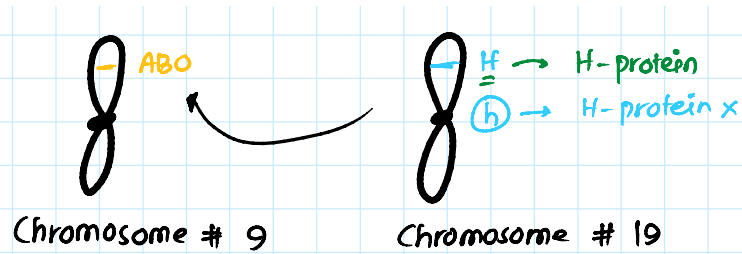
	BI	Bi	bI	bi
BI	BBIi (White)	BBIi (White)	BbII (White)	BbIi (White)
Bi	BBIi (White)	BBii (Black)	BbIi (White)	Bbii (Black)
bI	BbII (White)	BbIi (White)	bbII (White)	bbIi (White)
bi	BbIi (White)	Bbii (Black)	bbIi (White)	bbii (Brown)

White → 12

Black → 3

Brown → 1

BOMBAY PHENOTYPE



Phenotypically
Blood Group
O

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