GENE INTERACTION

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

EPISTASIS → Bateson 1910 → Father of modern Genetics.

Epi → On

Stasis → Standing still

- Phopho Gene

9 : 3 : 3 : 1 ✗

- Recessive Epistasis
- Dominant Epistasis

RECESSIVE EPISTASIS → Fur Colour of Rats.

Wild Type Grey Male: **Bb Cc**

Gametes: BC, Bc, bC, bc

×

Wild Type Grey Female: **Bb Cc**

Gametes: BC, Bc, bC, bc

Female Gametes

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(cc) → (cc) Recessive allele. (White)

bb Cc → Black

LABRADORE

(Black) BbEe × BbEe (Black)

BE bE Be be BE bE Be be

B b

- Recessive Epistasis

Female Gamete

Male 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	bbee 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

Bb Ii × Bb Ii

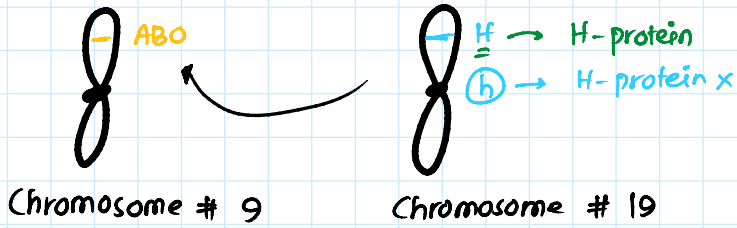
BI Bi bI bi BI Bi bI bi

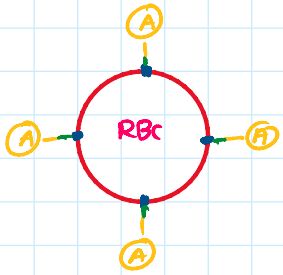
Female Gamete

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

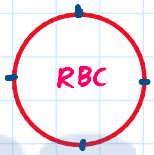
BOMBAY PHENOTYPE





I^AI^A → Antigen (A)

. I^AI^B, (hh) ✓



Phenotypically Blood Group (O)