

Chromosomes and Heredity :

New Developments...

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1902 - Walter Sutton / Theodore Boveri

Observed cells during meiosis, noticed that chromosome movement matched Mendel's conclusions decades earlier...

1. Parents have pairs of factors for each trait (homologous chromosomes)
2. Pairs of factors separate to end up in separate cells (anaphase)
3. Traits are inherited independently (they are on different chromosomes)

Sutton / Boveri concluded.....

Factors (genes) are on these chromosomes, and how they separate

during meiosis determines inheritance patterns.

= The Chromosome Theory of Inheritance

1910 - Thomas Morgan

Studied inheritance patterns in common fruit flies (*Drosophila melanogaster*)

Crossed 2 red eyed flies, got a white eyed male and a lot of red eyed flies...expected that...white must be recessive

BUT...

F1 red eyed female X normal red eyed male....All females had red eyes, 50 % of males had white eyes.

White eyed flies were

White-eyed mutant fly



Red-eyed wild-type fly

all male !

Concluded :

- the gene for eye color must be on the same chromosome that determines sex
- sometimes traits are inherited as a package.....they do not follow the Law of Independent Assortment....they are on the SAME chromosome, so are less likely to separate. They are “LINKED GENES”