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1300s - The Middle Ages

Plague devastates Europe in 1300s
→ development of a public health system

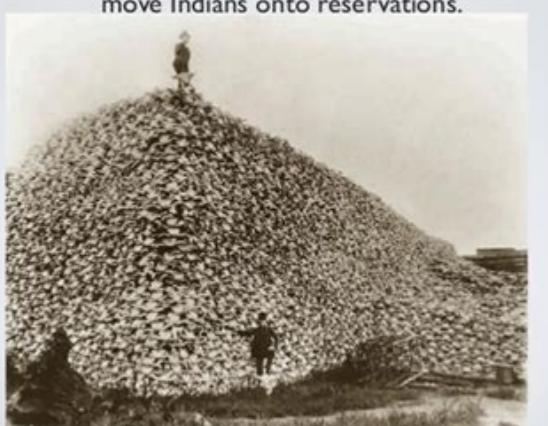
Parliament passes an act forbidding the throwing of filth and garbage into ditches, rivers and waters in the 1300s
→ first urban sanitary laws in England

Engraving showing dumping (and "dumping") into waterways in 1300s England



1900 - Wild buffalo population

drops to fewer than 40 animals from an estimated 30 million a century beforehand. Most are killed in the years just after the Civil War, when the US Army hopes to remove the buffalo in order to move Indians onto reservations.



Genetics: X Linked Genes

1. In fruit flies, eye color is a sex linked trait. Red is dominant to white. What are the sexes and eye colors of flies with the following genotypes:

- XX red eyed female
- XY red eyed male
- XX red eyed female
- XY white eyed male
- XX white eyed female
- XY white eyed male

2. What are the genotypes of these flies:
white eyed, male $X^W Y$
white eyed, female $X^W X^W$

3. Show the cross of a white eyed female $X^W X^W$ with a red eyed male $X^R Y$.

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

4. Show a cross between a pure red eyed female with a white eyed male.
What are the genotypes of the parents? $X^R X^R$ & $X^W Y$
How many are:
white eyed, M $\frac{0}{2}$
white eyed, F $\frac{1}{2}$
red eyed, M $\frac{1}{2}$
red eyed, F $\frac{0}{2}$

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

5. Show the cross of a red eyed female (heterozygous) and a red eyed male.
What are the genotypes of the parents? $X^R X^W$ & $X^R Y$
How many are:
white eyed, M $\frac{0}{2}$
white eyed, F $\frac{1}{2}$
red eyed, M $\frac{1}{2}$
red eyed, F $\frac{1}{2}$

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

What if in the above cross, 100 males were produced and 200 females. How many total red-eyed flies would there be?
 $100 \text{ males} \times 50\% \text{ red} = 50 \text{ red males}$ / $200 \text{ females} \times 100\% \text{ red} = 200 \text{ red females}$
 $50 + 200 = 250$

6. In humans, hemophilia is a sex linked trait. Females can be normal, carriers, or have the disease. Males will either have the disease or not (but they won't ever be carriers)

$X^H X^H$ = female, normal
 $X^H X^L$ = female, carrier
 $X^L X^L$ = female, hemophiliac
 $X^H Y$ = male, normal
 $X^L Y$ = male, hemophiliac

Show the cross of a man who has hemophilia with a woman who is a carrier.

$X^L Y$ $X^H X^L$

What is the probability that their children will have the disease? $\frac{1}{2}$

15

