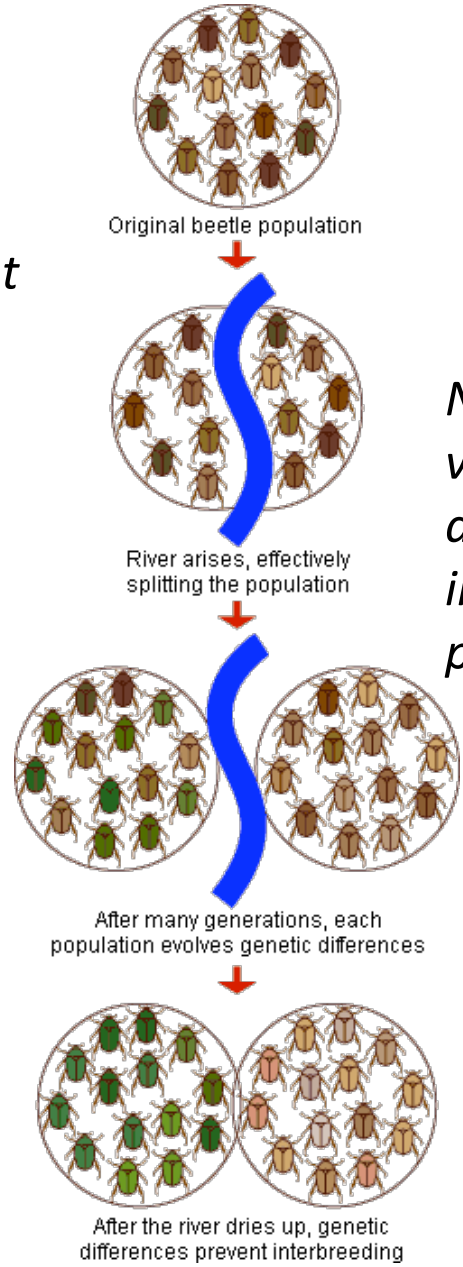
Genetic Drift

Populations experience unique, random mutations, becoming less alike over time



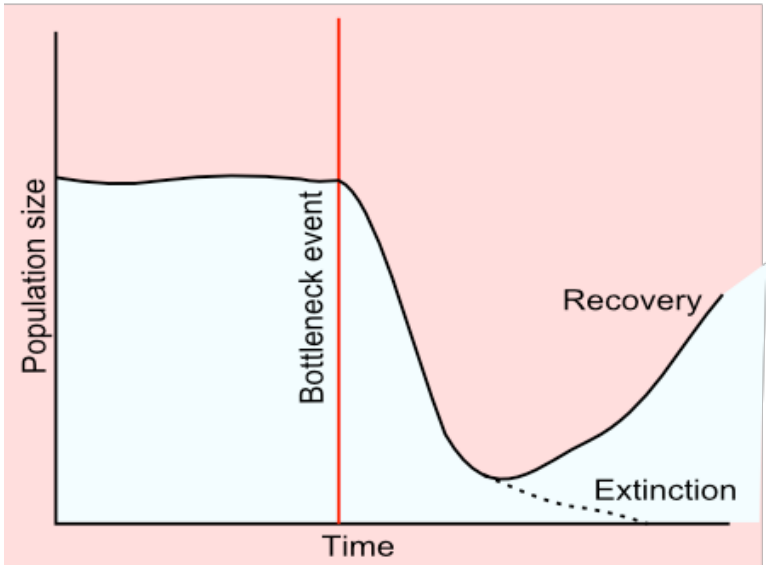
Environment divides the population

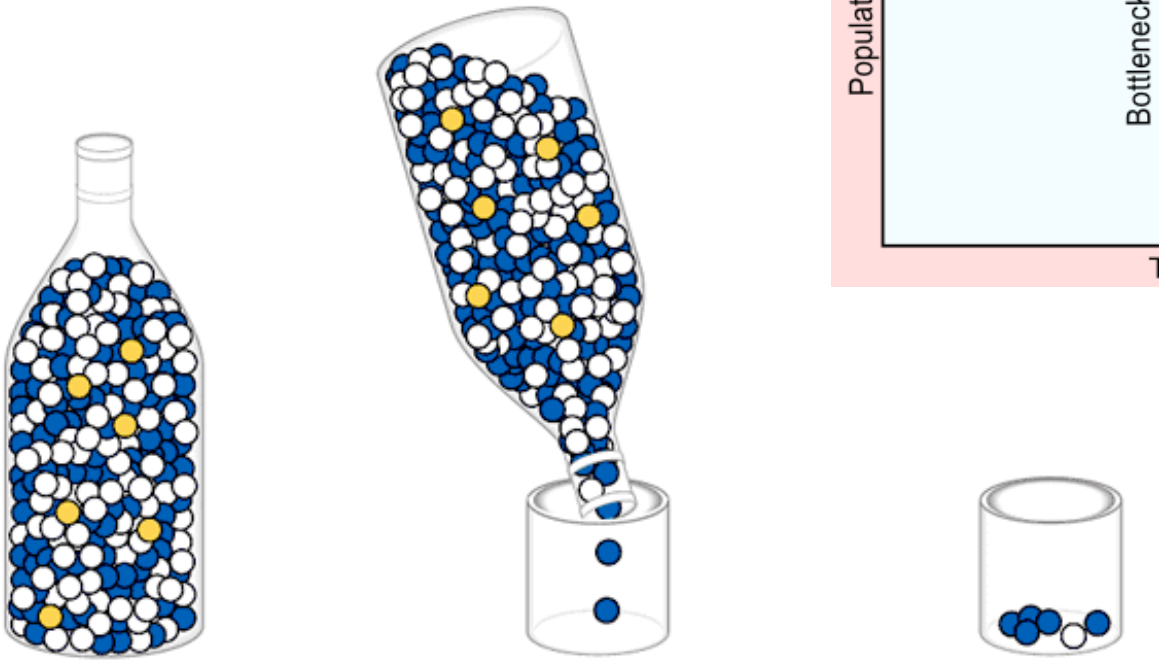
Not all variations are present in divided populations

New & unique mutations appear

Genetic Drift

The Bottleneck Effect





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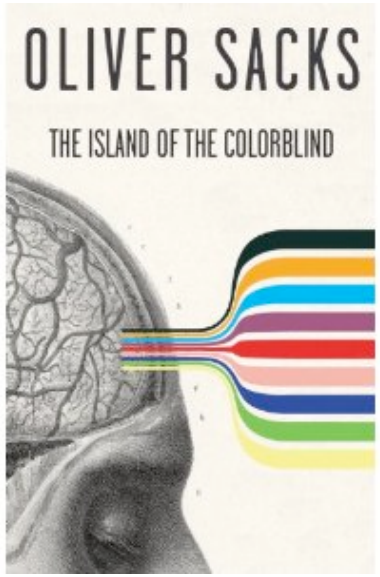
- 1775 typhoon ~ twenty islanders survive

- Founders + geographic + cultural isolation



Audio link posted

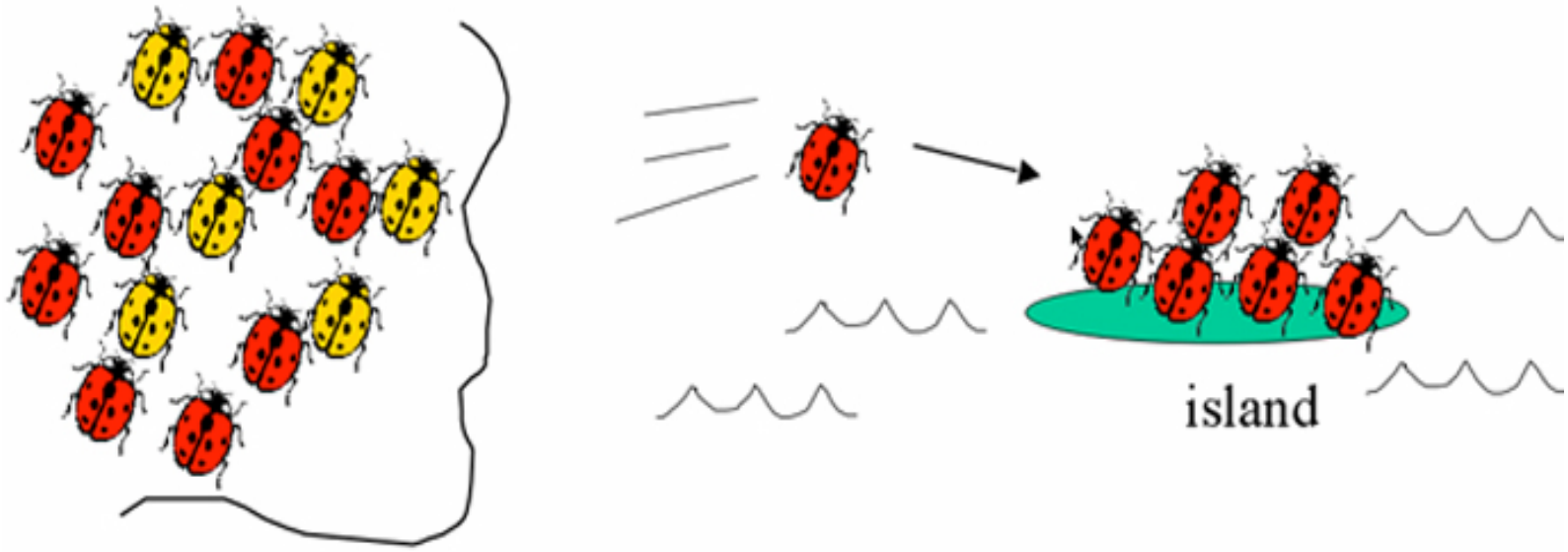
- 10% of the population on Pingelap have rod monochromatism.

1/30,000+ in the rest of the world

- All can be traced back to one survivor (the ruler at that time)

Founders Effect

A few individuals are the founders of a new population; this group lacks all the variations of the original population



Amish - closed population stemming from about 200 individuals

Amish carry high concentrations of gene mutations that are rare in the general population, including Ellis-van Creveld syndrome

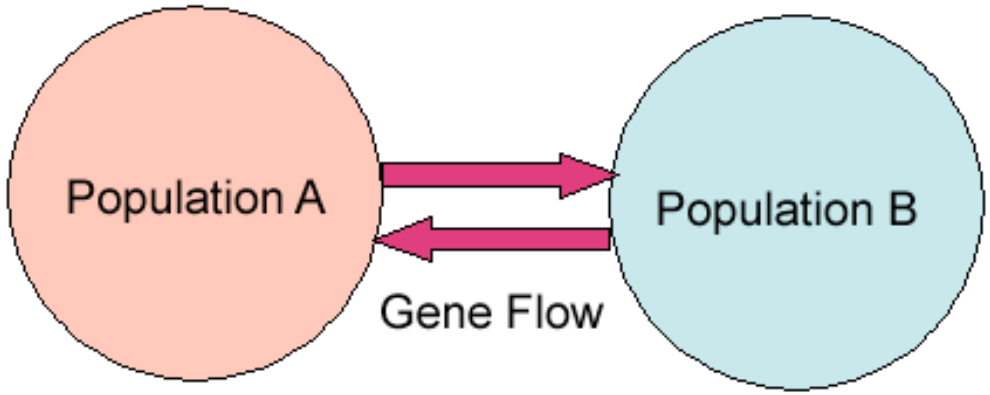
general population 1 /60,000 live births
Old Order Amish 5/1000 live births

EVC in the Amish traced to one couple immigrated in 1744.
The frequency of carriers today ~13%

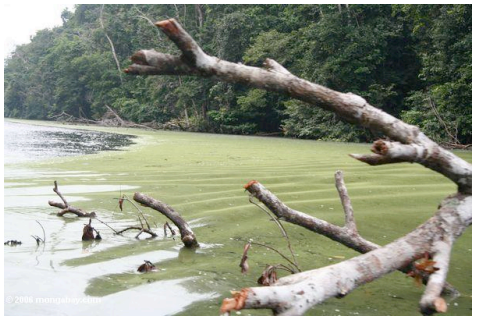
Polydactyly, dwarfism, dermal abnormalities (hair, palate, nails, teeth) Are symptoms of Ellis-van Creveld

Gene Flow

Genes are exchanged between two populations; genetic variety is reduced

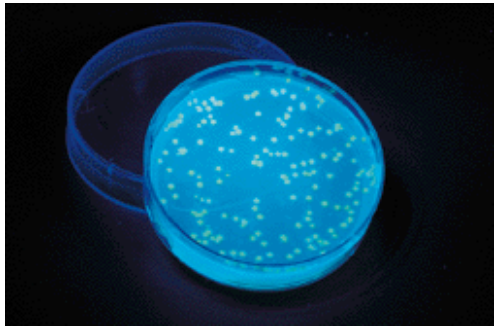


Gene Flow



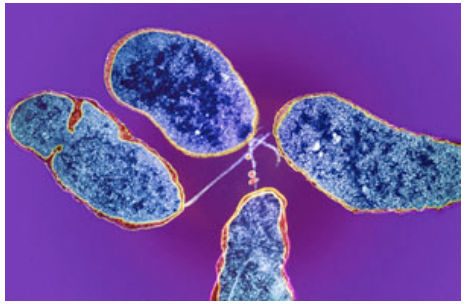
seeds, pollen

hybridization



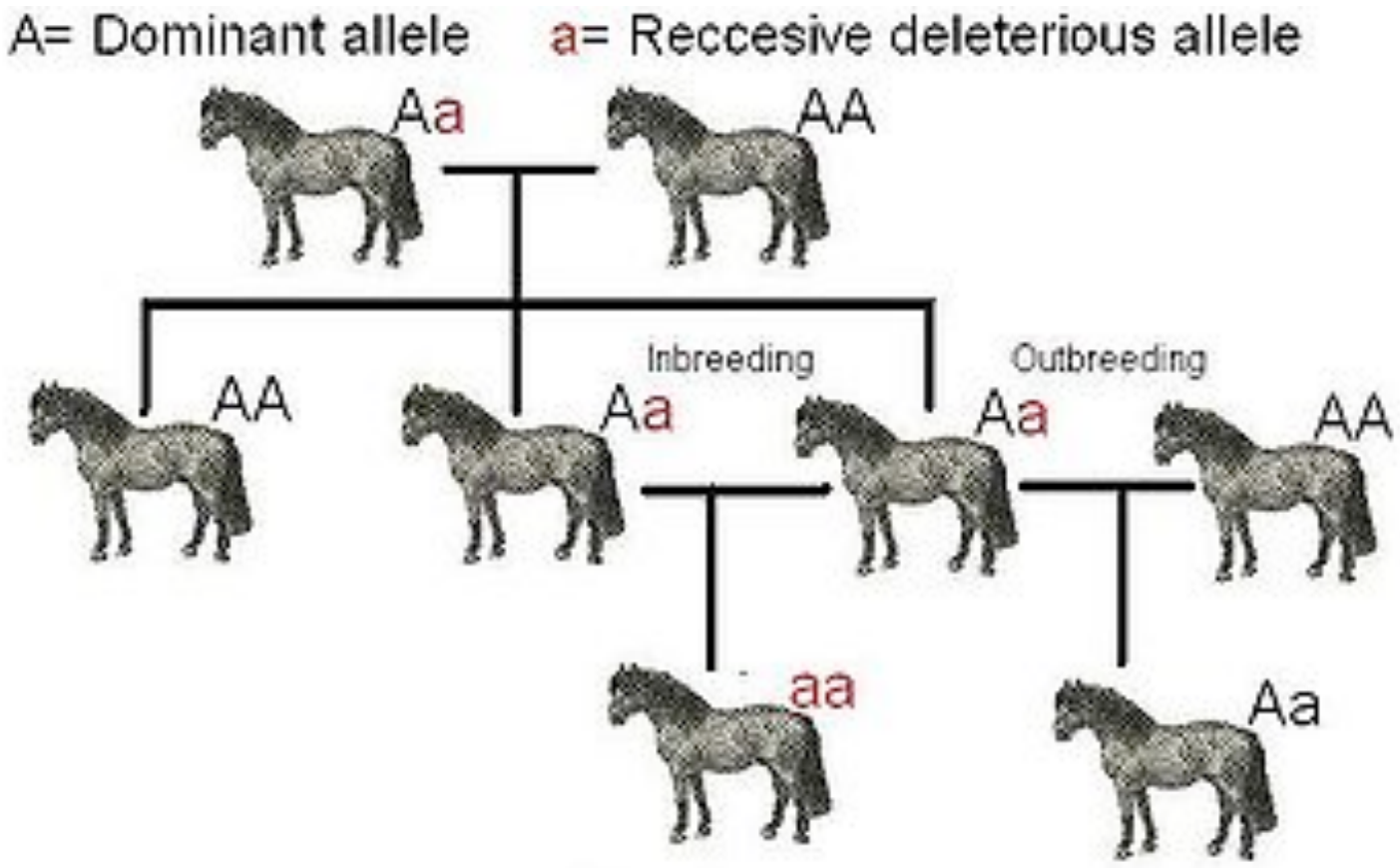
Genetic engineering

plasmid exchange



hitch-hikers

Inbreeding


A= Dominant allele
a= Reccesive deleterious allele
Aa
AA
AA
Inbreeding
Aa
Outbreeding
Aa
AA
aa
Aa