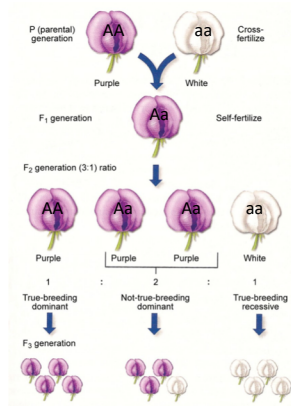


## Population Sequencing Exercise

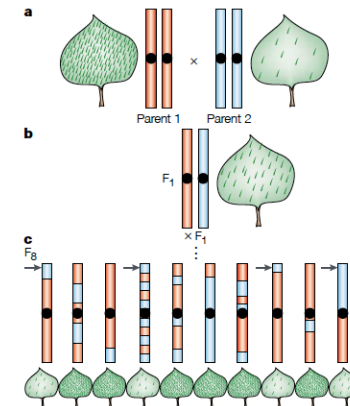
“Quantitative genetics is **the study of the genetic basis underlying phenotypic variation among individuals**, with a focus primarily on traits that take a continuous range of values. Some familiar examples include height, weight, and longevity” - O'Brien, Hung, Wolf

## Genetics Review



Qualitative Single Gene Segregation

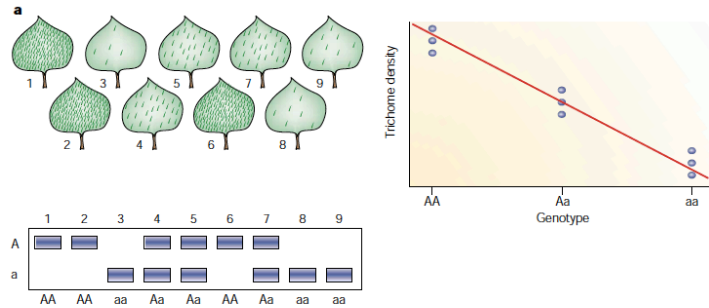
## Genetics Review



Quantitative Multi Gene Segregation

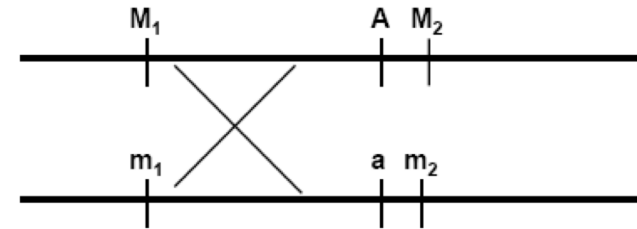
(Mauricio, Nature Genetics Reviews 2001)

## Genetics Review – Genetic Mapping



(Mauricio, Nature Genetics Reviews 2001)

## Genetics Review - Markers



- Markers are often linked, but not causative
- Identifying markers that are as closely linked as possible is ideal

## Genetic Mapping

Identify markers linked to a trait or identify genes associated with a trait

### Need

Germplasm with phenotypic variation for the trait of interest

Reliable and often high throughput phenotyping method

### **Polymorphic markers**

### Considerations for genotyping based on

- 1) Need for large number of markers
- 2) Need for large number of accessions
- 3) Cost
- 4) Resolution
- 5) Expected variation, mating system (degree of LD), etc.

## Discuss In Groups

- 1) Review the population structure
- 2) Important population properties to consider with regards to genotyping technologies
- 3) Ideal genotyping method and why

### Population type for each group

- Room 1:  $F_2$  mapping population
- Group 2: Recombinant inbred line population
- Group 3: Near isogenic lines (pair of lines or population)
- Group 4: Diversity panel