Microevolution

1) Natural Selection ACTS on individuals but populations evolve.

2) Population = any group of organisms that....
   a) Belong to the same species
   b) Live in same area
   c) Interbreed

3) Gene Pool = all alleles for all traits of a population

4) Microevolution = change in allele freq. over ~~time~~
   - AKA Δ in gene pool freq.
   - used to predict nat. selec., speciation, macroevolution

HARDY-WEINBERG EQUILIBRIUM

▶ Hypothesis... that populations will NOT evolve (stay in equilibrium)

All five NEVER true, therefore all pops. are prone to evolve.

1) Very large population size (infinite)
2) Random Mating (no selection)
3) No mutations
4) No natural selection (no environ. pressu
5) No movement (immigration/emigrations)

EQUATIONS

- Allele freq

(A) (a)

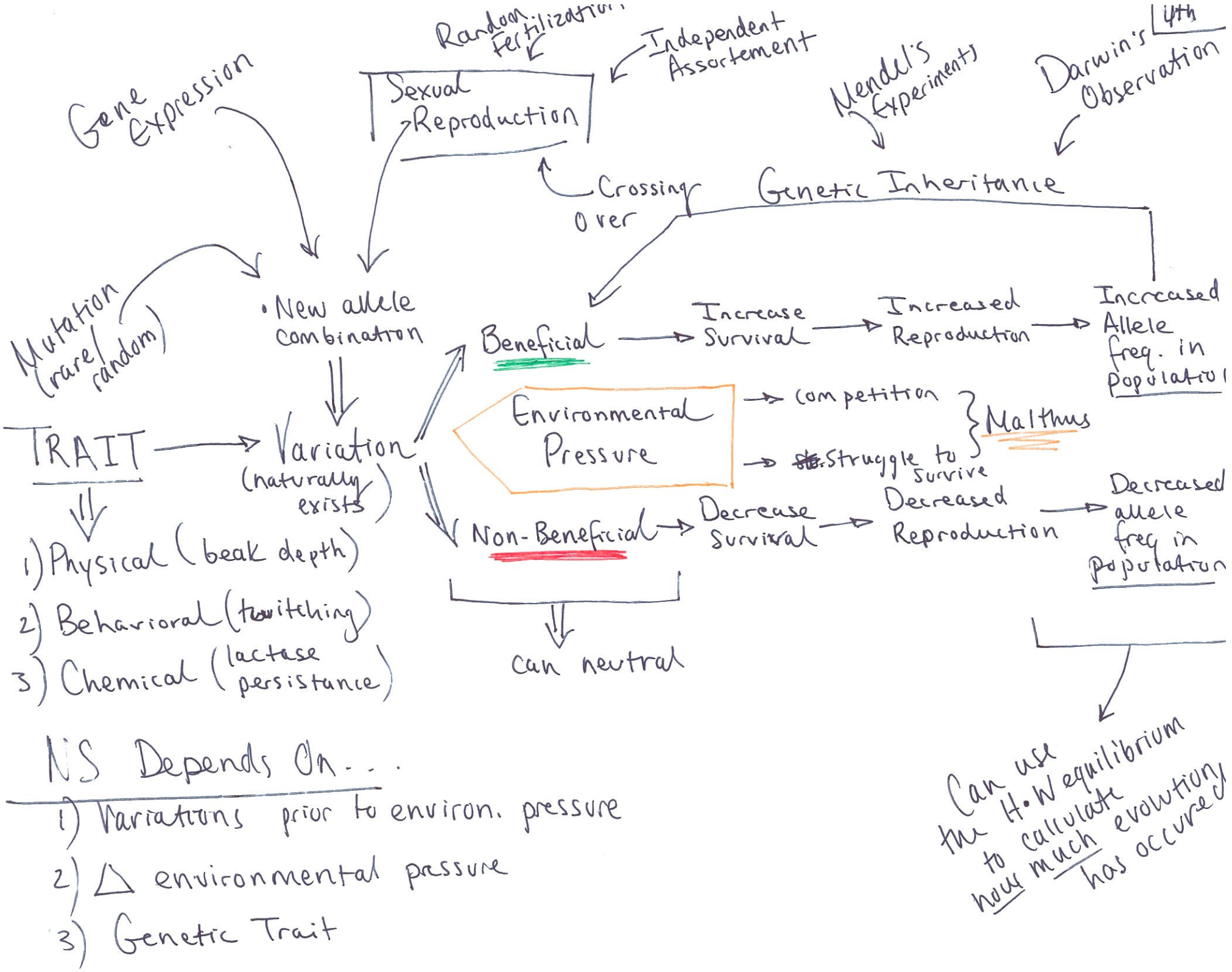
$p + q = 1$ (100%)

(Freq. dom.) (Freq. rec.)

- Genotype Freq.

$p^2 + 2pq + q^2 = 1$ (100%)

(p^2 homo. dom) (2pq hetero) (q^2 hom. rec)


Gene Expression
Random Fertilization
Independent Assortement
Sexual Reproduction
Mendel's Experiments
Darwin's Observation
4th
Crossing Over
Genetic Inheritance
Mutation (rare/random)
• New allele combination
Beneficial
Increase Survival
Increased Reproduction
Increased Allele freq. in Population
Environmental Pressure
competition
Struggle to survive
Malthus
TRAIT
Variation (naturally exists)
1) Physical (beak depth)
2) Behavioral (twitching)
3) Chemical (lactase persistance)
Non-Beneficial
Decrease Survival
Decreased Reproduction
Decreased allele freq in Population
can neutral
Can use the H-W equilibrium to calculate how much evolution has occured
NS Depends On...
1) Variations prior to environ. pressure
2) △ environmental pressure
3) Genetic Trait