

Hardy Weinberg formula

23
46

$$(p+q)^2 = p^2 + 2pq + q^2$$

$$p+q=1 \quad q=1-p$$

Hardy-Weinberg law - The relative frequencies of alternative genotypes reach an equilibrium and then remain constant from generation to generation in a large random mating population. p147

$$p+q=1 \quad (p+q)^2 = p^2 + 2pq + q^2$$

Srb + Owen ¹⁹⁵² ch 20

$$p+q+r+s=1 \quad (p+q+r+s)^2 = p^2 +$$

Edm 399

$$p = .36 \quad q = .64$$

$$.13p^2 + .48pq + .41q^2$$

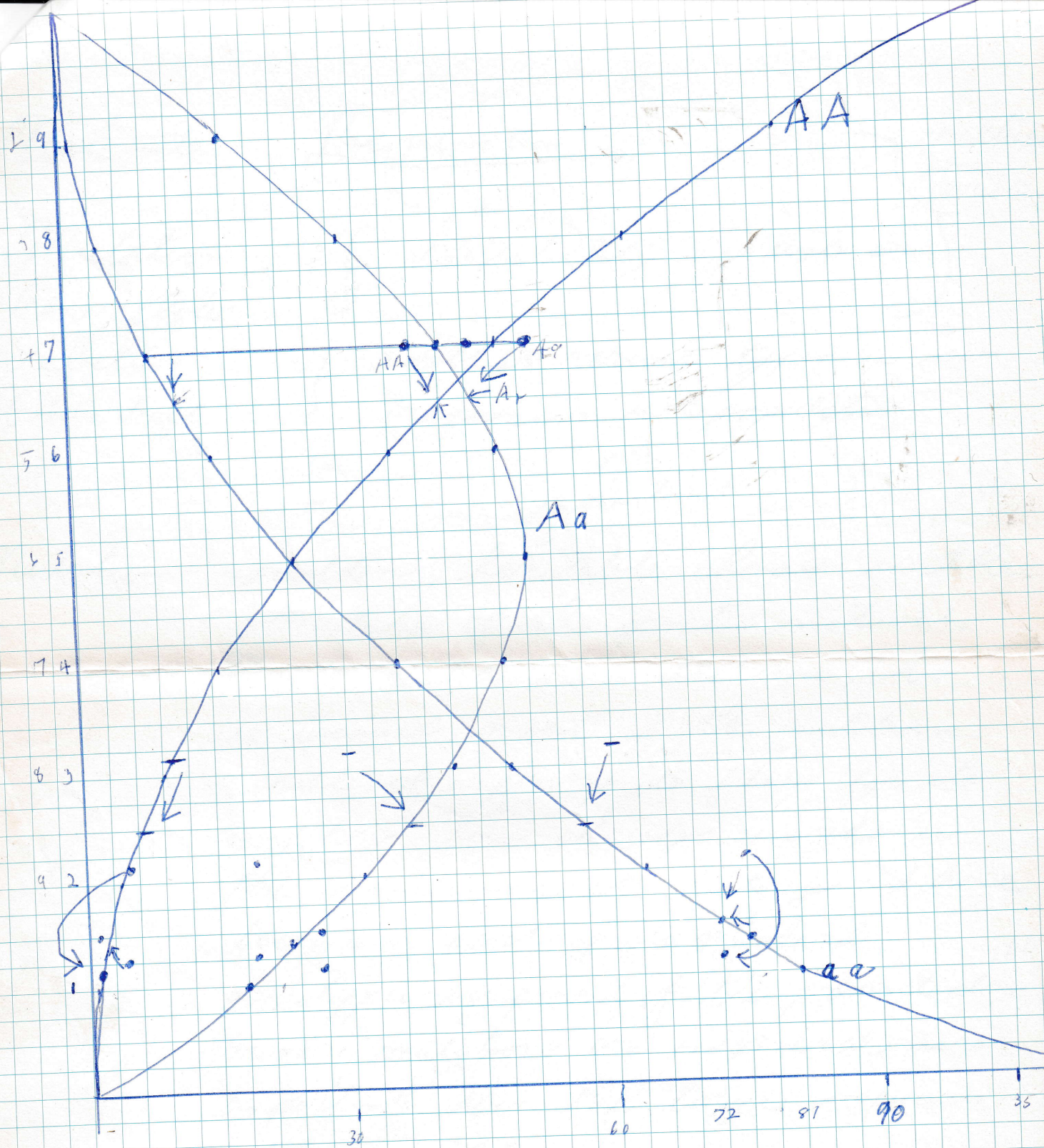
$$p = .72 \quad q = .28$$

$$.52 + .40pq + .08$$

$$p = .50 \quad q = .50$$

$$= .25p^2 + .50pq + .25q^2$$

frequency of alleles A, a



$$(P+Q)^2$$

Handwritten notes at the bottom of the page, partially obscured and difficult to read.

Natural

Recombination

multiple gene variation

Mutation	}	variability in a single gene
Gene flow		
N. Selection	}	establish various types in new frequencies in a population
Genetic drift		

important

SOE 239

Mutation - sudden, heritable changes in the structure of the genetic material. Most mutations are deleterious. This is because most of the mutations capable of improving its fitness for its conditions ^(environment) have already occurred in the organisms past history and have become a part of its standard genotypic equipment of the present day. ¹⁶⁰⁶

Minor mutations are in general more important than the large conspicuous mutations ¹⁵⁴⁶

Chromosomal mutations or aberrations

1 a aneuploidy a change in number by

1 or 2

1 Changes in no of chromosomes

3, 0, Ed.

see P 211

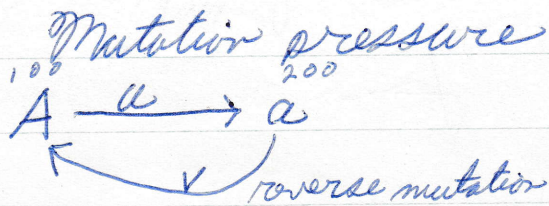
a Aneuploidy - incomplet genomes

b Polyploidy - changes in complet haploid sets

2 Changes in the structure of individual chromosome

- 1 lost - deletion deficiencies
 - 2 Duplications - repeats
 - 3 Inversion
 - 4 Translocations
- } SOE Chap 191

3 Spontaneous Gene Mutations Random mutation
see Glenn 1455 Borglund



$u = 2\%$

$v = 1\%$

$P = \frac{v}{u+v} = \frac{.01}{.03} = 33\frac{1}{3}\%$

$Q = \frac{u}{u+v} = \frac{.02}{.03} = 66\frac{2}{3}\%$

10	12	14			
6	7	8	50	150	0
9	16			149	5
18		8	150	148	4
5				147	6
4				146	8
				145	10
				144	12

Point in a large population

Pages 187 - 189 in grand

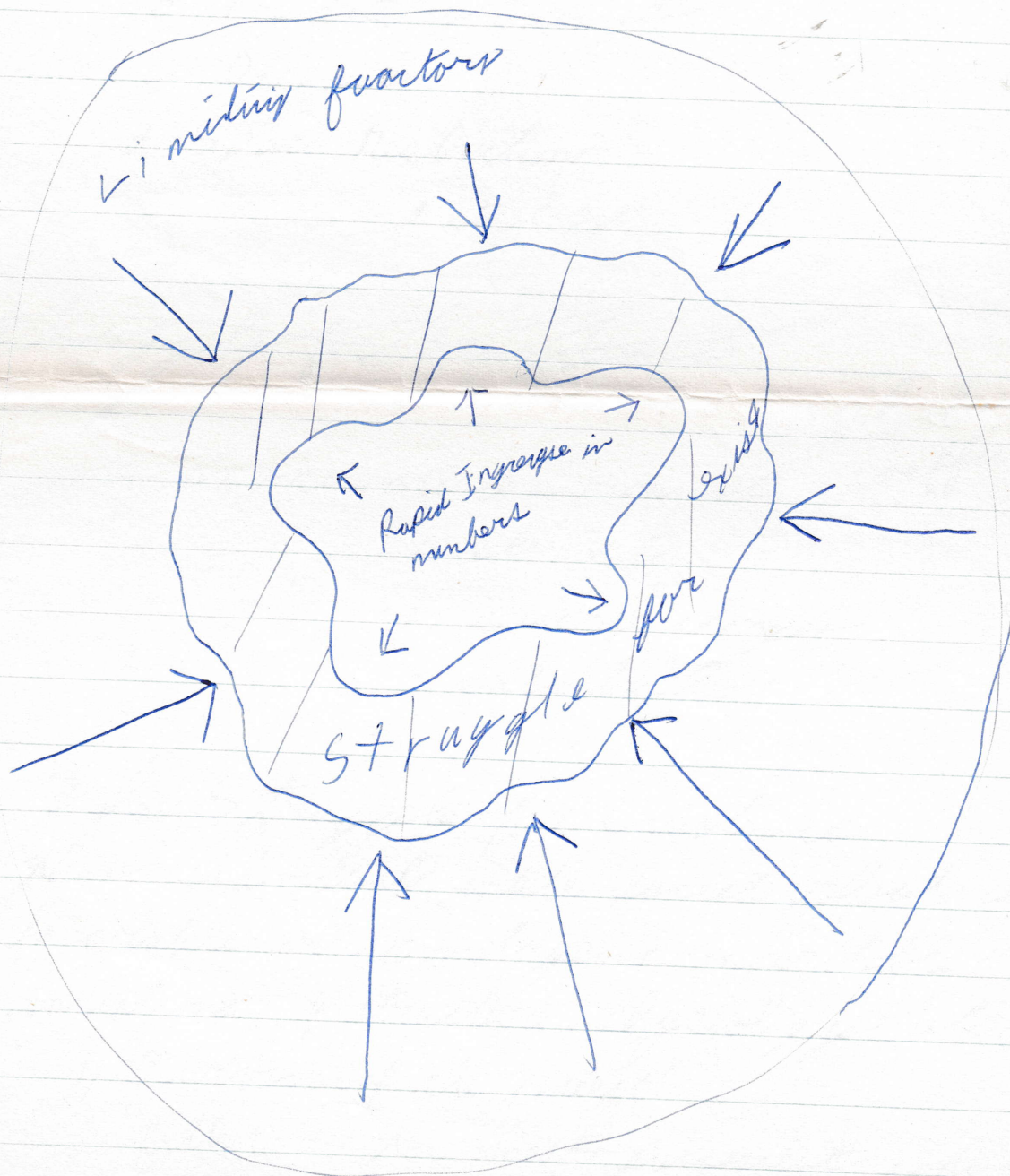
Recombination is not a force

Gene flow - passage of a gene by migration from one population into another

2 intraspecific competition
interspecific "

Odum page 225

woody page 357



1 Natural Selection - most important
 tendency to rapid increase in numbers
 sometimes greater than post-zygotic

- 2 Limiting factors
- a limited food supply
 - b predatory animals
 - c disease
 - d space restrictions
 - e old age

~~3 The Struggle for Existence~~

- a inanimate environment
 - 1 climate
 - 2 animal hunger
 - 3 cataphoresis
- Robertson
 coefficient

3 The Struggle for Existence

These individuals will prevail which have favorable or advantageous inheritance variations of structure, physiology etc.

1 "Survival of the fittest"

"Fittest" - the most successful individuals or groups are those which contribute their genes in greatest number to the building of the next generation