

Lecture 10: 9 Oct 2018

Andrew

1. Mendel and Darwin. P Generation ($PP \times pp$), F1 Generation ($Pp \times Pp$), F2 ($PP, 2Pp, pp$)
2. Genotype vs Phenotype (non-blending inheritance)
3. Mendel: physics in Vienna. First paper was in German - Darwin still around - but probably would not have understood it even if he could read German or was aware of it
 - (a) Mendelian Characteristics
 - i. Discrete States - BUT Francis Galton argues there's no such thing as discrete states. You see a bell curve of continuous states. Ex. Galton's argument with human height
 - ii. RA Fischer: Not determined by just one or two loci but by polygenic inheritance. Not a single locus that contributes to height, for example. Andrew uses ABC example. Height is determined by the number of upper case alleles you have. Can take Mendel and get the bell curve through polygenism.
 - (b) Family (parents and offspring) to Population: Hardy-Weinberg
 - i. Assumptions:
 - A. Can't have selection - differential mortality by phenotype
 - B. Can't have mutation
 - C. Can't have migration - needs to be a steady population size
 - D. No sexual selection or assortative mating: blue eyes prefer to mate with blue eyes. Assumes that mating is a random process.
 - E. Statistical: need a very large population if to be predicted
 - ii. $p + q = 1$
 - iii. H-W population level expression of mendelian inheritance. No blending
 - iv. Permits translation btw allele and genotype
 - v. ensures genetic variation
 - vi. provides evidence of evolutionary action - via departures of H-W
 - vii. marriage between Darwin and Mendel: various terms... neo-Darwinism, modern synthesis or the new synthesis.
 - (c) Sewall Wright: guinea pig coloration, population geneticist
 - (d) Ernst Myer: biological species concept

(e) Huxley: grandson of Thomas Henry Huxley