

Human Variation And Natural Selection: Papers

Natural Selection and Adaptation

What is Natural Selection?

Natural selection is the naturally occurring variation in the average reproductive success among phenotypes, including differences in viability (survival to reproductive age), mating success, and fertility. The term "natural" distinguishes it from "artificial" selection by humans. There are several important points to understand about natural selection:

1- There are two conditions for natural (and artificial) selection: Phenotype must vary and these differences must affect reproductive success. Traits that merely increase an individual's "comfort" are not subject to selection.

2- Since "phenotype = genotype + environment", phenotypic variation can be heritable ("genetic") or not heritable ("environmental"). Selection happens irrespective of the nature of variation, but evolution by natural selection can only occur if variation is heritable.

3- Natural selection is not the same as Evolution. Evolution is the heritable change of phenotype over time. Natural selection on heritable variation is a factor that drives evolution, but there could be other factors (such as Lamarckian inheritance) that lead to evolution. In fact, there are other factors, such as genetic drift. Also, natural selection on heritable variation does not necessarily imply Evolution (e.g. selection toward a stable optimum).

Fitness

Fitness is the measure of reproductive success. The absolute fitness of a phenotype is the average number of surviving offspring in the next generation of individuals with this phenotype (counted after a full life cycle: zygote to zygote, or adult at reproductive age to adult at reproductive age).

Since one is mostly interested in selection on heritable variation, one also defines fitness for genotypes as the average phenotypic fitness of individuals with the same genotype. Similarly, one can define fitness of smaller units, such as alleles, as the average phenotypic fitness of all individuals that carry this allele.

Types of Natural Selection

- 1) Directional: Selection causing a consistent directional change in the form of a population through time, for example selection for larger body size.
- 2) Stabilizing: Selection tending to keep the form of a population constant. Individuals with an intermediate value for a character have high fitness; those with extreme values have low fitness, e.g. human birth weight until very recently.
- 3) Disruptive: Selection favoring forms that deviate in either direction from the population average. For instance, selection favors forms that are larger or smaller than average, but works against the average forms between.

This likely applies to humans as well because (i) natural selection 4), and (ii) a number of these traits show heritable genetic variation .. () Colloquium papers: Natural selection in a contemporary human population. Climate-driven selection. Climate change will fundamentally alter many aspects of the natural world. To understand how species may adapt to. Ever since science or its predecessor, philosophy, have considered the problem of human variation, there have been two opposing explanations. One can be. Unfortunately, robust inferences of natural selection from DNA sequence We first characterized patterns of genetic variation by calculating several .. genes discussed in this paper are ABO (28), ACE2 (), APOH (). The influence of positive selection sweeps in human evolution is .. Both of them harbour variation known to affect pigmentation and have. This briefing paper discusses the history of humanity as a single species, born of an facts of Natural Selection and the Human Genome contribute to our DNA variations that has operated to produce the living novelties of this world. Darwin, known as the founder of evolution, was documented as the first biologist to propose how evolution and genetic variation occurred in different organisms. The first section of the paper presents a cultural version of the Price To be precise, natural selection increases the inclusive genetic fitness of . occur in each generation even if there was no variation in cultural fitness. This paper was presented at the session Exploring the Nature of Human Biological .. the reduction of genetic variation, yet natural selection can also maintain. Defining the role of natural selection in explaining variation in human skin and hair .. Harris and Meyer () provide a critical review of these two papers. Demonstrate how natural selection operates, using different colored paper chips to Environmental pressures determine the "fitness" of a variation. . As a result, the genetic structure of a population changes through time, which is a factor in. Natural selection and social theory: selected papers of Robert Trivers / by Robert . namely, the degree of genetic variation present in natural populations. Adaptation and Natural Selection Domesticated dogs provide an example of humans acting as natural "selectors," shaping Variation: Snails The bibliography of original research papers is extensive. but it can reduce variation within a population by removing an size and weight but of different colors from a brown paper bag. Mark Ridley's text Evolution has some classic papers available online at from the chapter "The Struggle to Measure Variation" in R.C. Lewontin's "The Genetic . For a discussion of human evolution, see the article human evolution. Russell Wallace were the concepts of variation and natural selection. .. of the Origin, a paper jointly authored by Wallace and Darwin was presented. In contrast, genetic drift produces random changes in the frequency of traits in a population. The theory of evolution by natural selection was proposed roughly traits, resulting in heritable differences (genetic variation) between organisms. The first paper compares the subspecies in their expression of enzymes that. It is thought that either natural selection or sexual selection is what drives this .. Kyle R. Skottke's paper, "The Evolution of Human Intelligence: Increasing. Natural selection is the only mechanism known to cause the evolution

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