

Likelihood ratios for the infinite alleles model

by

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Abstract

The stationary distribution for the population frequencies under an infinite alleles model is described as a random sequence (x_1, x_2, \dots) such that $\sum x_i = 1$. Likelihood ratio theory is developed for random samples drawn from such populations. As a result of the theory, it is shown that any parameter distinguishing an infinite alleles model with selection from the neutral infinite alleles model cannot be consistently estimated based on gene frequencies at a single locus. Furthermore, the likelihood ratio (neutral versus selection) converges to a nontrivial random variable under both hypothesis. This shows that if one wishes to test a completely specified infinite alleles model with selection against neutrality, the test will not obtain power one in the limit.

INFINITE ALLELES MODEL, EXCHANGEABLE EQUIVALENCE RELATIONS, LIKELIHOOD RATIOS, MARTINGALES.

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