

Purpose:

Apply the Likelihood Principle to obtain maximum likelihood estimates of recombination between linked loci.

Keywords: Linkage Disequilibrium, Recombination, Likelihood

References:

Captivate: Population Genetics – Gametic and Linkage Disequilibrium

ALA:

For the following data set determine if alleles (C,c,S,s) at two loci are in equilibrium. Your assay for each locus is a dominant marker (such as DART). Determine the maximum likelihood estimate of recombination between the C and S loci. Assume the assay was conducted on an F2. Hint: Create an EXCEL file similar to “Gamete and LD Expected frequencies with linkage and selfing.xlsx”.

LOD is maximized @ $r=.22$, although it does not change much for values of r between .2 and .25, indicating that there is not enough information in the data to choose among these values of r . If we had a co-dominant marker system we would have more information from the data.

Assay	Observed	LOD(Obs $r=.22$)
C_S_	266	18
C_ss	45	-13
ccS_	40	-12
ccss	70	28
Total	421	20.12