Abstract Submitted
for the MAR14 Meeting of
The American Physical Society

Modeling the expected lifetime and evolution of a deme's principal genetic sequence. BRIAN CLARK, Illinois State University — The principal genetic sequence (PGS) is the most common genetic sequence in a deme. The PGS changes over time because new genetic sequences are created by inversions, compete with the current PGS, and a small fraction become PGSs. A set of coupled difference equations provides a description of the evolution of the PGS distribution function in an ensemble of demes. Solving the set of equations produces the survival probability of a new genetic sequence and the expected lifetime of an existing PGS as a function of inversion size and rate, recombination rate, and deme size. Additionally, the PGS distribution function is used to explain the transition pathway from old to new PGSs. We compare these results to a cellular automaton based representation of a deme and the drosophila species, D. melanogaster and D. yakuba.

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Date submitted: 15 Nov 2013 Electronic form version 1.4