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Evolution of the Ancestral Recombination Graph along the genome in case
of selective sweep.

Abstract

We consider the genome of a sample of n individuals taken at the end of a selective sweep, which is the fixation of an advantageous allele in the population. When the selective advantage is high, the genealogy at a locus under selective sweep can be approximated by a comb with n teeth. However, because of recombinations, the effect of selection decreases as the distance from the selected site increases, so that far from this locus, the tree is a Kingman coalescent tree, as in the neutral case. We first give the distribution of the tree at a given locus. Then we focus on the evolution of this tree along the genome. Since this tree-valued process is not Markovian, we study the Ancestral Recombination Graph. We finally obtain its evolution along the genome in case of selective sweep.