

**Title: Game Changing Mutations**

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Abstract: We present a model of the effect of mutation on haploid sexually reproducing populations by modelling the reproductive dynamic as occurring in the context of a common interests game played by the loci, with the alleles in the role of pure actions. Absent mutations, the population will deterministically converge to a pure Nash equilibrium of the game. A mutation event adds new alleles, hence is tantamount to a change of the game by the addition of new actions. If the new game defined by the mutation removes the former pure Nash equilibrium it is a true 'game changer', as the population will then move to a new equilibrium with an increase in fitness. A lattice of common interests games is defined, and evolutionary paths through genotype space via mutations are paralleled by paths through this lattice of games.