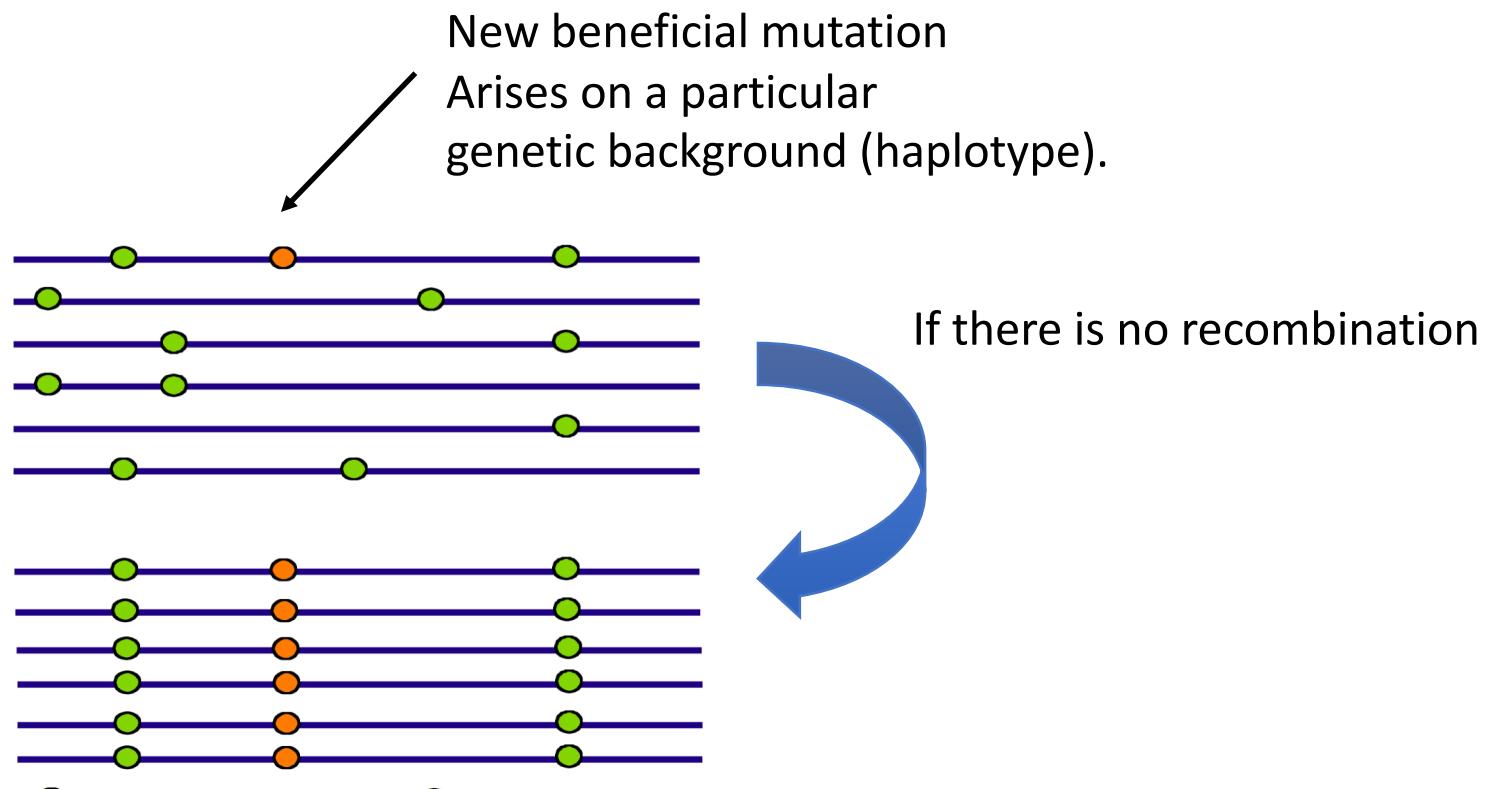


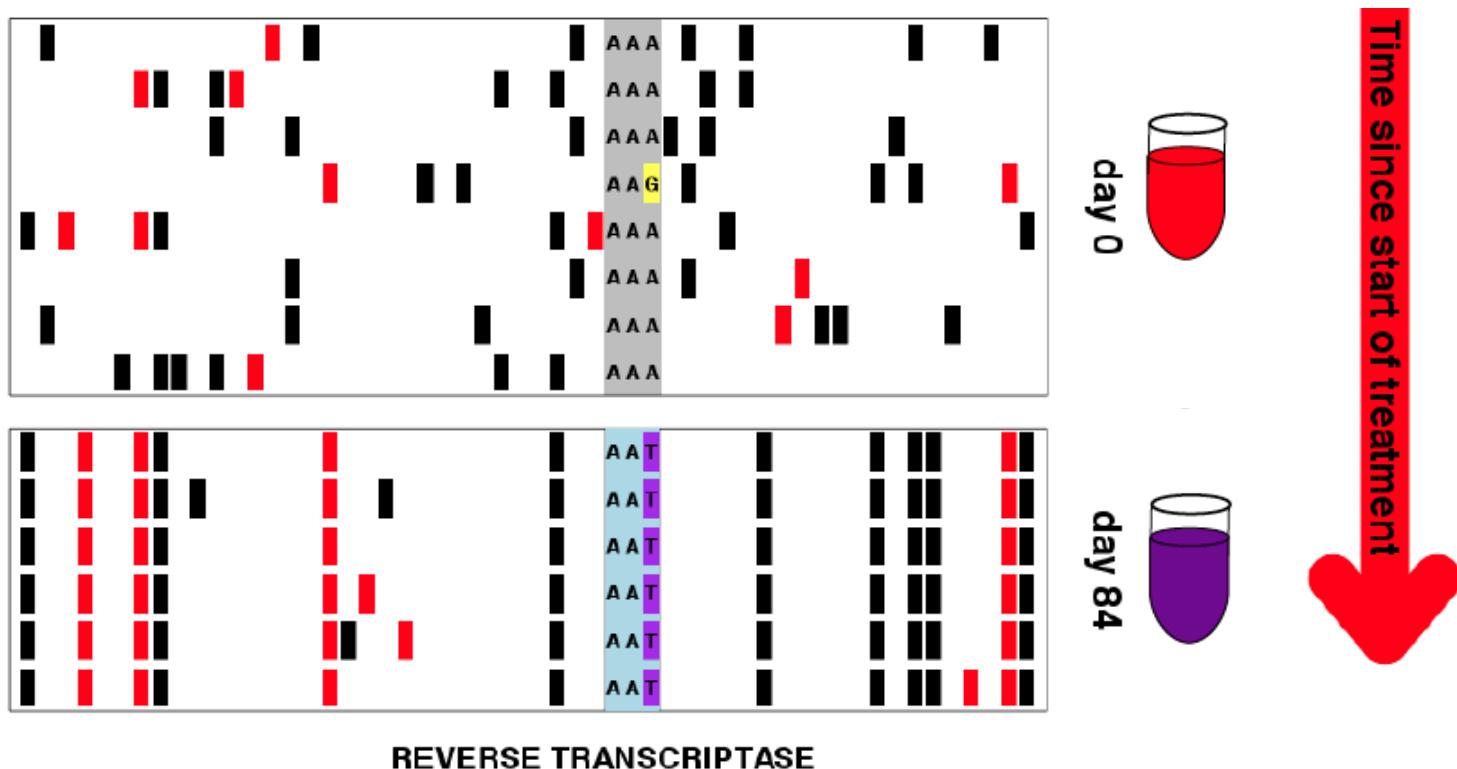
Interaction of selection & linked neutral variation

The hitchhiking effect:

Indirect impact of selection on patterns of linked diversity



The effect of hitchhiking at the reverse transcriptase gene in HIV in response to drug treatment.

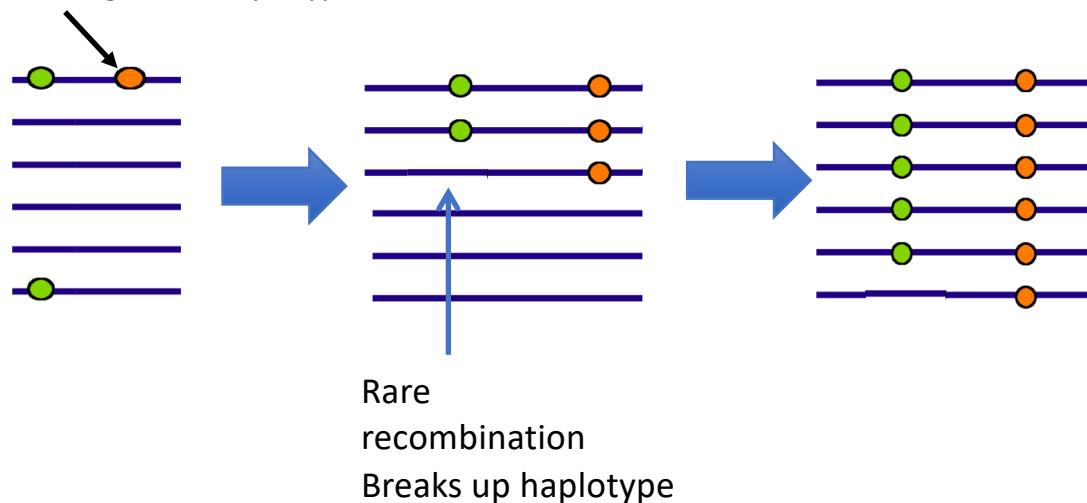


Indirect impact of selection on patterns of diversity

The hitchhiking effect

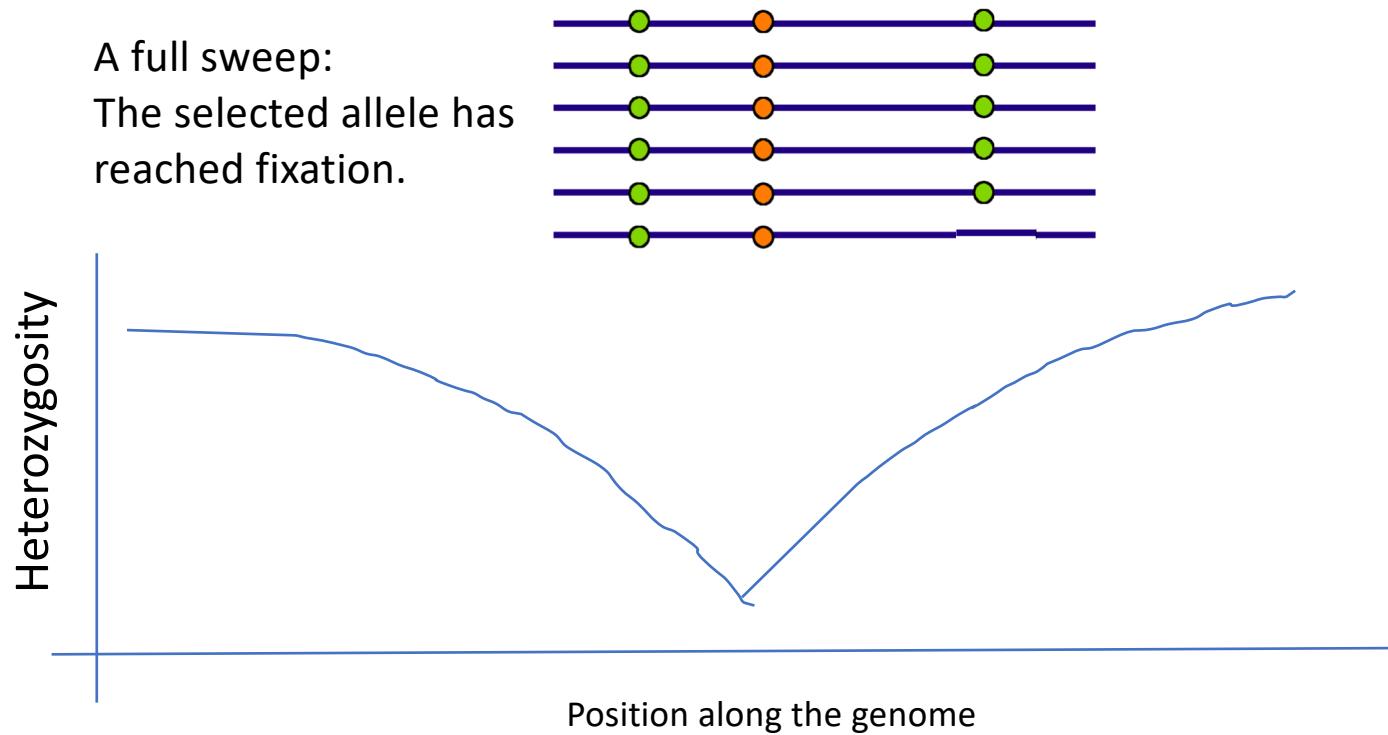
When recombination occurs

New beneficial mutation
Arises on a particular
genetic background (haplotype).



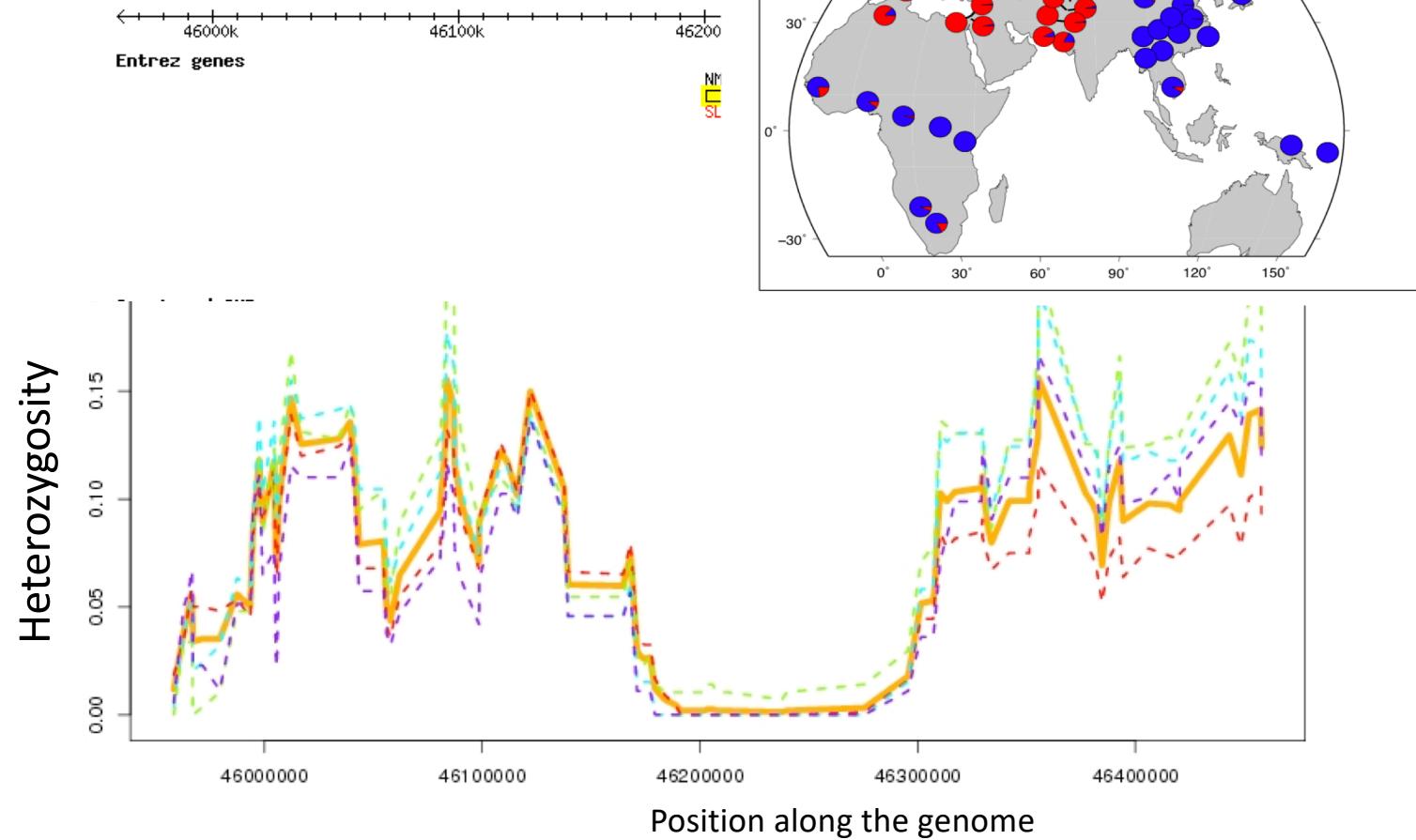
A haplotype a set of alleles physically linked on a chromosome

Indirect impact of selection on patterns of diversity



- Reduces levels of polymorphism (i.e. heterozygosity)
- Stronger selection/lower recombination leads to reduction over larger genomic region.

An example of the hitchhiking effect in humans



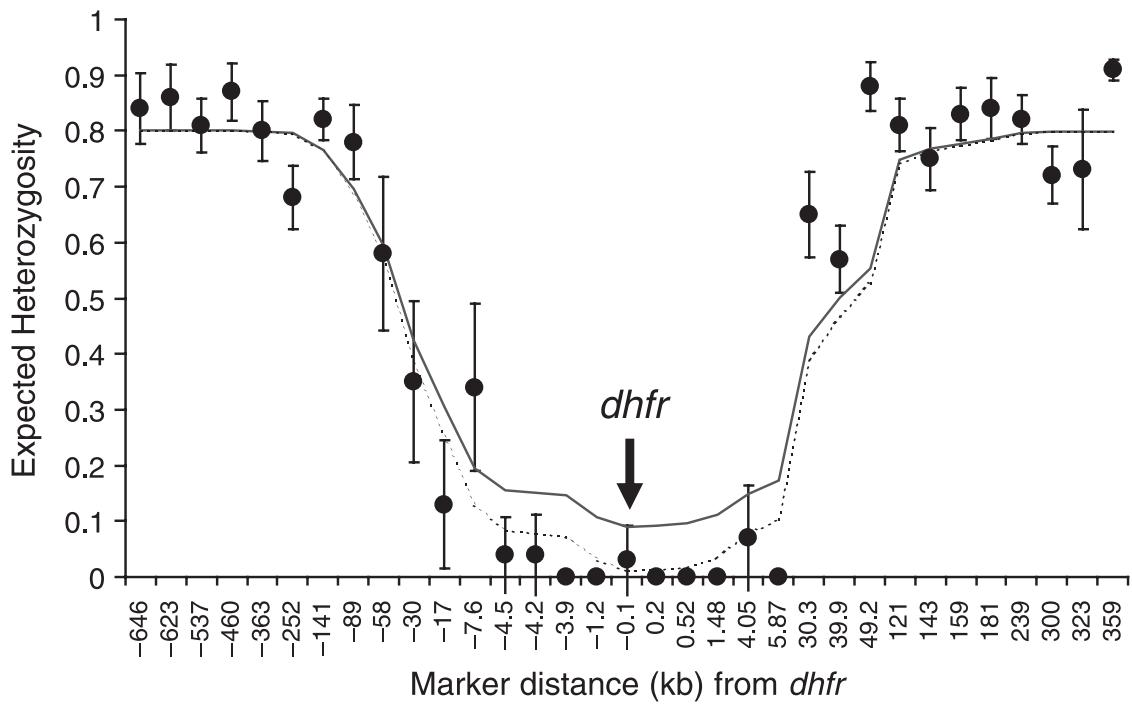
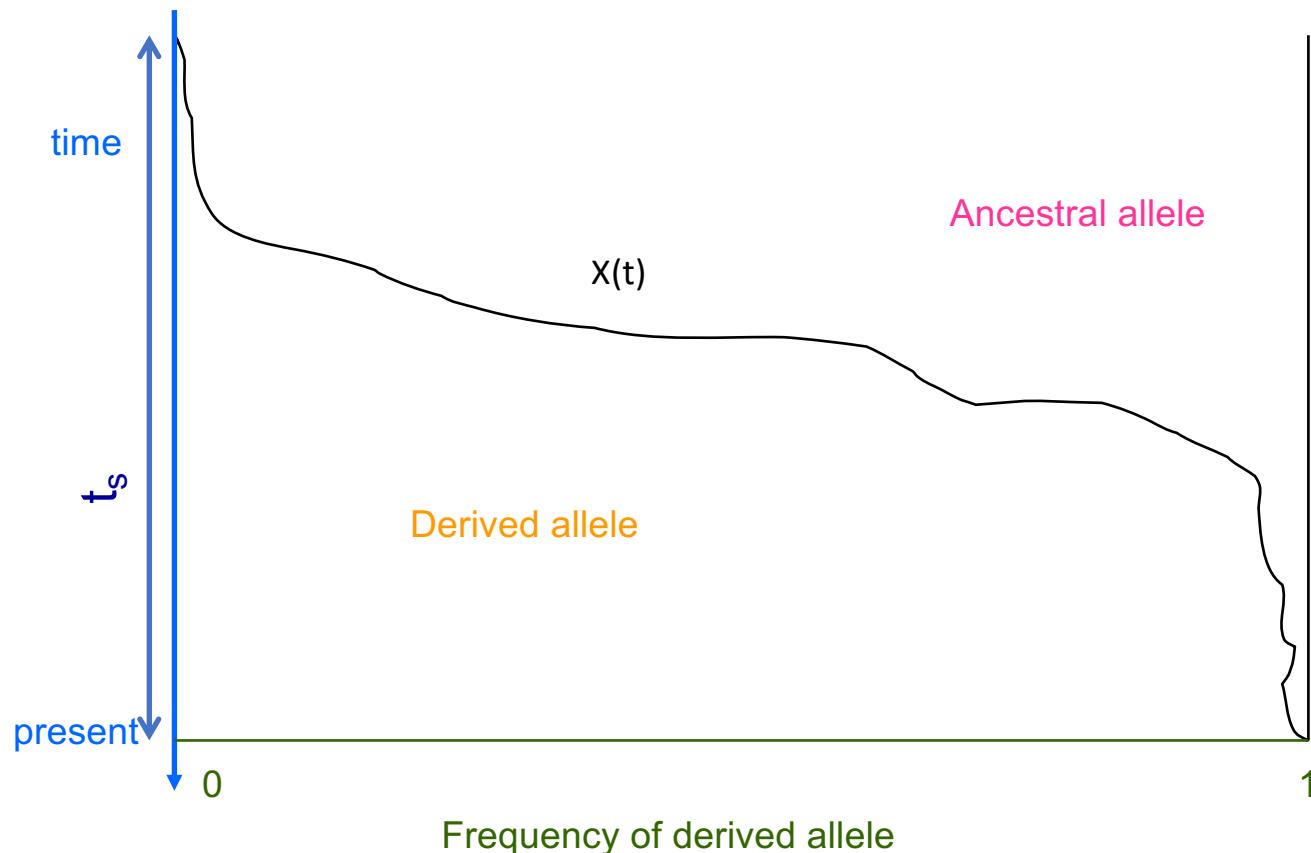
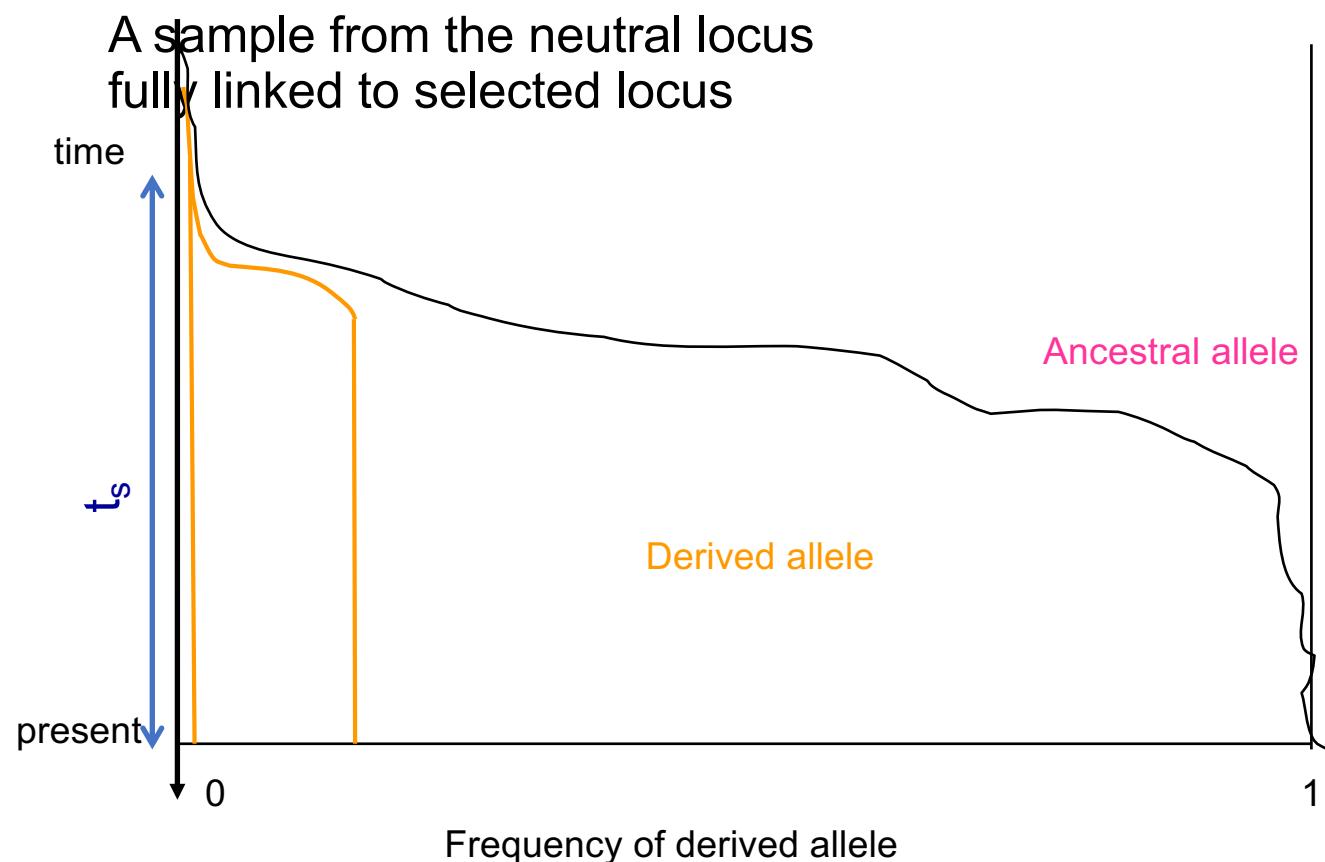


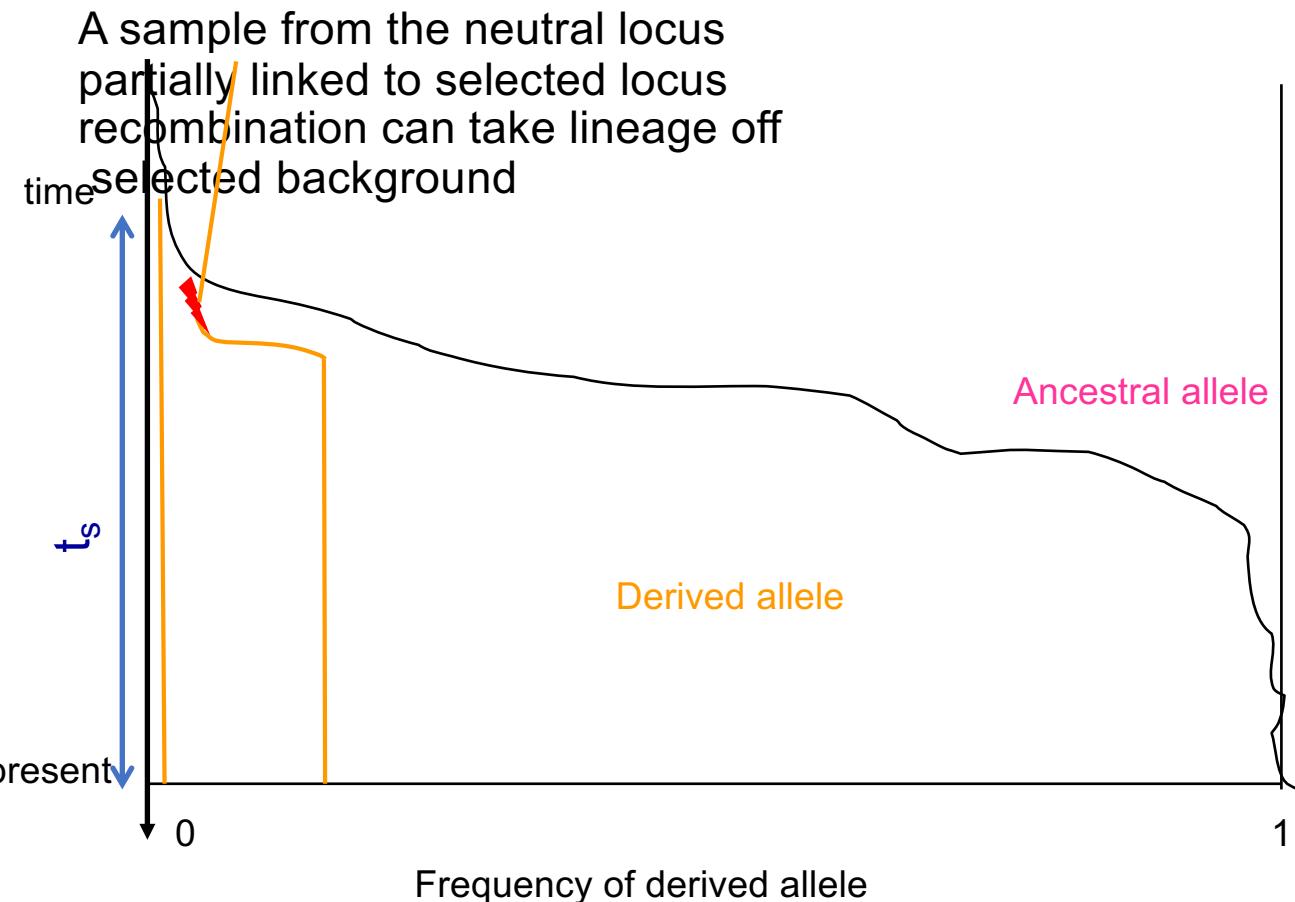
Fig. 6 A multilocus scan of microsatellite variation in a southeast Asian population of the malaria parasite *Plasmodium falciparum* reveals evidence for a selective sweep on chromosome 4. Microsatellite variation was markedly reduced within an interval of c. 100 kb centered on *dhfr*, a gene involved in drug resistance [reproduced from Nair *et al.* (2003)].

At the selected locus, two subpopulations:



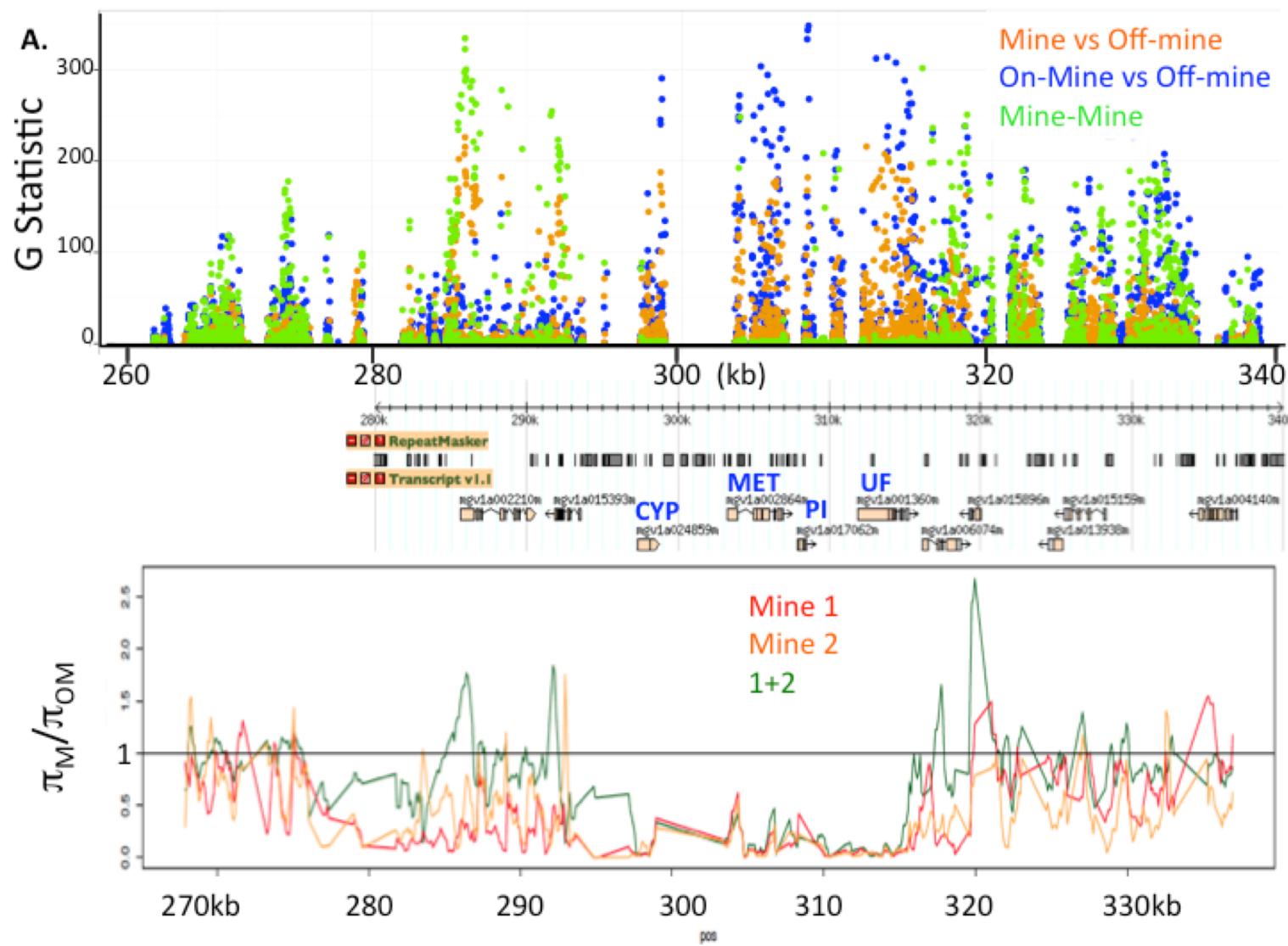


Hudson et al '88



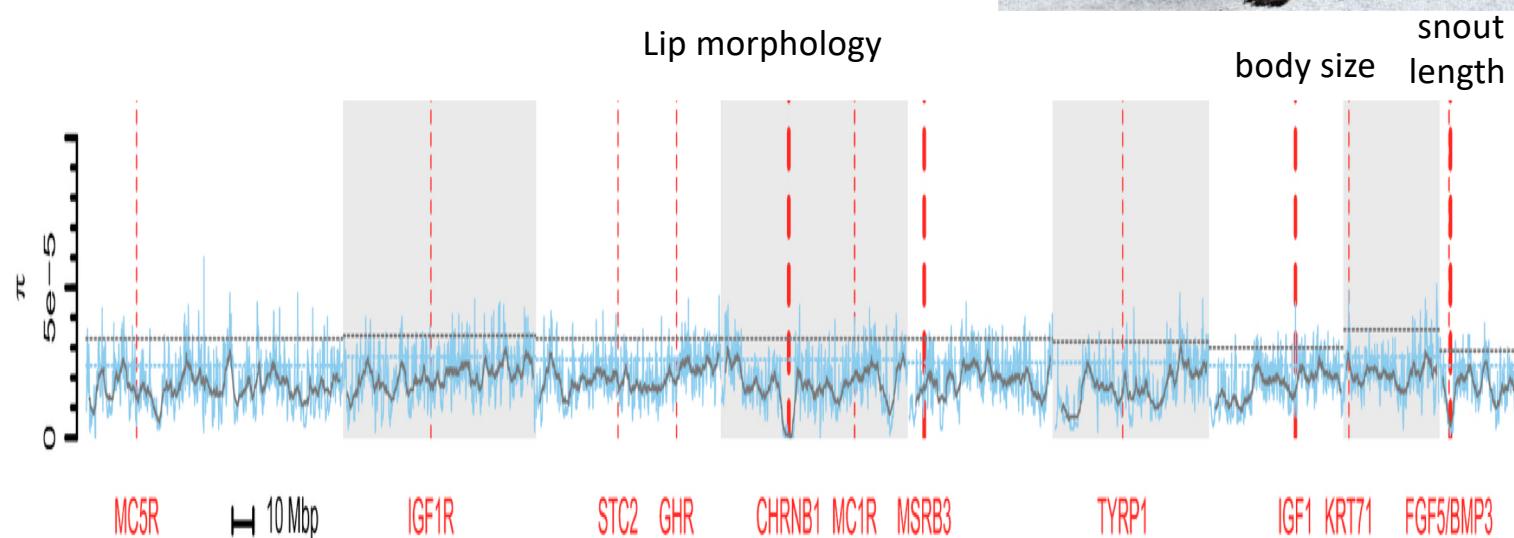
Hudson et al '88

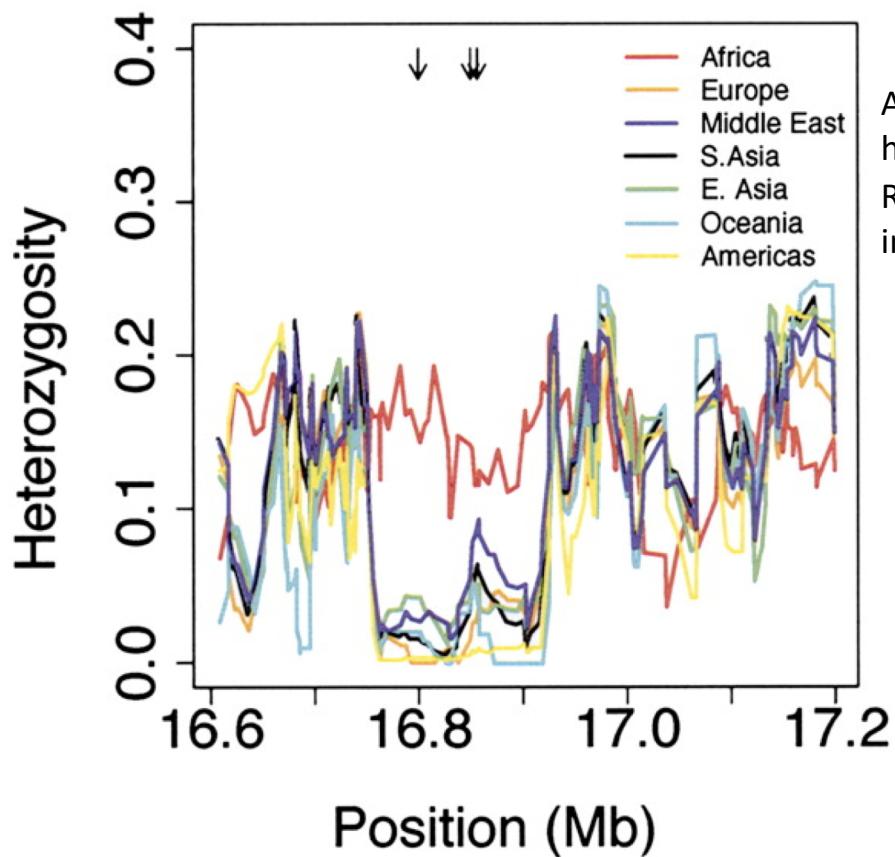




Evaluating the performance of selection scans to detect selective sweeps in domestic dogs

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LEWIS CHESEBROUGH,* ADAM R. BOYKO†¹ and PHILIPP W. MESSER*¹

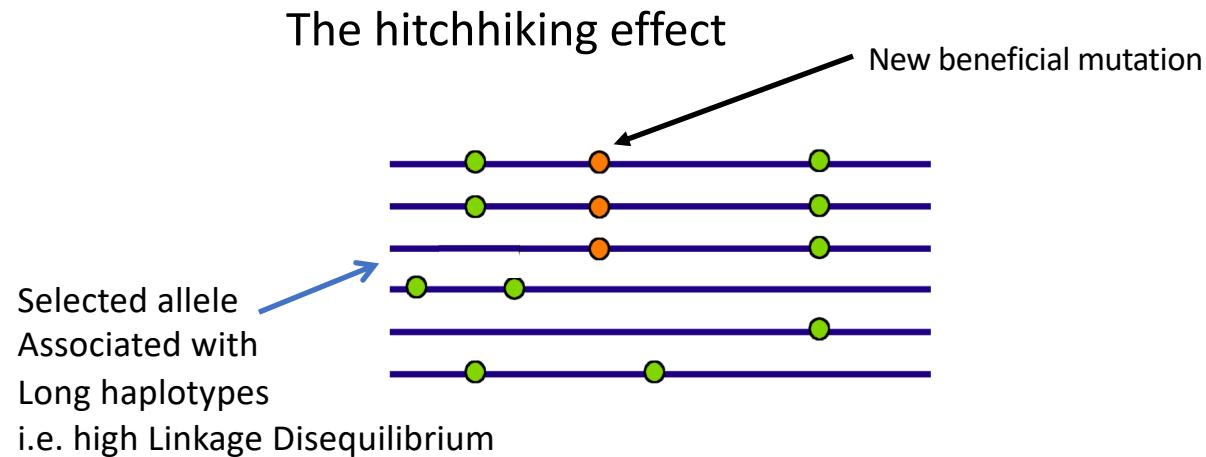




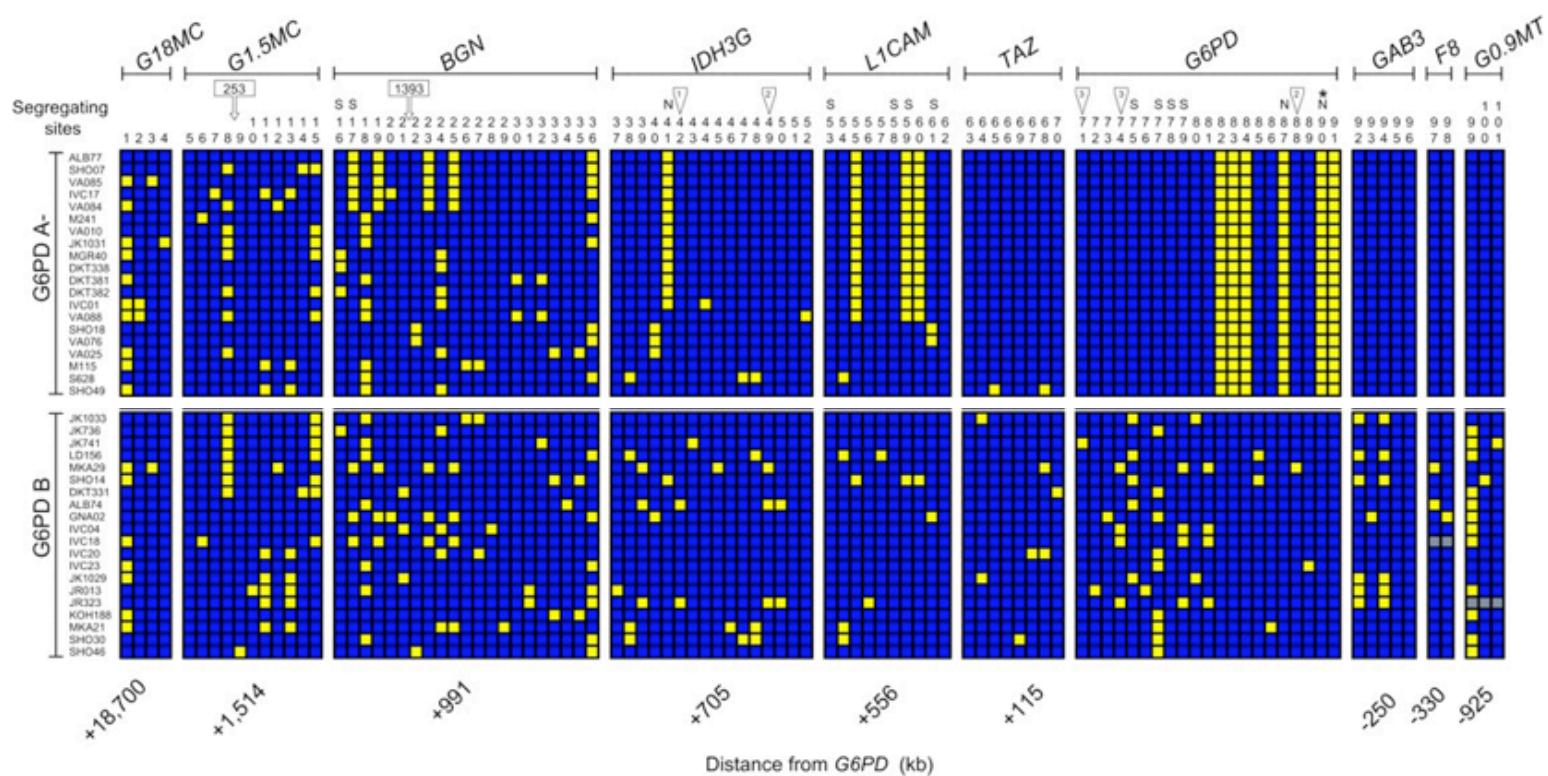
A selected allele has swept to
high frequency in Eurasia
Reducing levels of heterozygosity
in a broad genomic region

Pickrell and Coop et al 2009

Genomic effects of directional selection



G6PD region in Africans



Tishkoff et al.

Voight et al Plot of human
chromosome 2: Scanning for partial sweeps

