

How to model recombination?



focus on: homologous recombination

⇒ moving DNA between similar stretches

i.e. 1) meiosis (production of egg / sperms): "vertical" parents ⇒ offspring

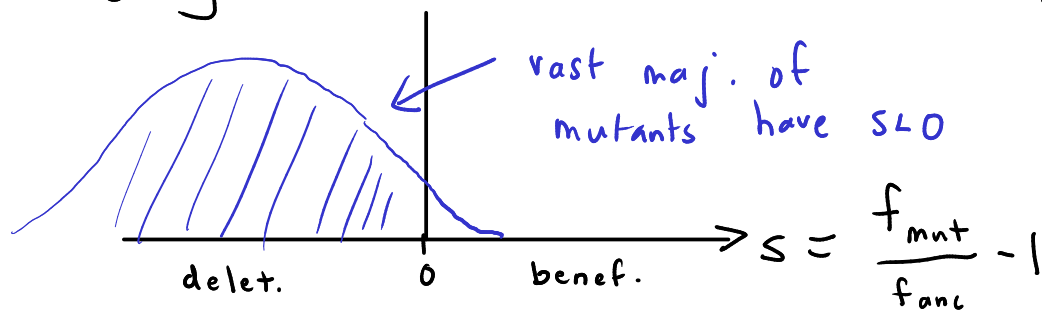
2) horizontal gene transfer:
transfer b/t non-related organisms (mostly happens in prokaryotes, less freq. in eukaryotes)

Why does this happen?

One answer: fights against accumulation of deleterious mutations

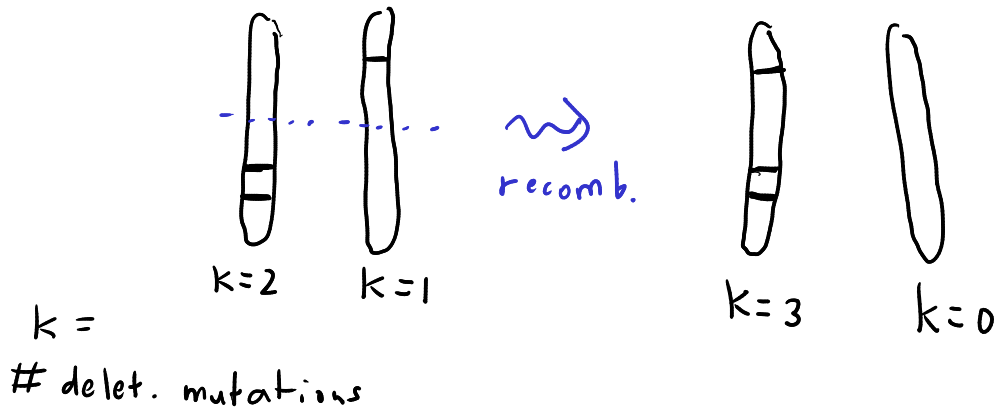
Two worrying facts: distrib. of fitness effects $\phi(s)$

1)



2) undoing delet. mutations is quite difficult (flipping same nucleotide back is highly unlikely)

How does recomb. help?



Takeaway: a population w/ no recombination (no sex or horiz. gene transfer)

Muller's ratchet (1960's) { should progressively build up deleterious mutations + have a "mutational meltdown"