



FIGURE 23.25. Deleterious mutations accumulate in asexual populations via Muller’s ratchet. (A) In a balance between mutation, at a total rate $U = 0.1$ and selection $s = 0.02$, an equilibrium is reached with, on average, $U/s = 5$ deleterious mutations per genome. However, in a population of 1000 genomes, there are only, on average, $1000 e^{-U/s} = 6.7$ individuals who are free of mutations (*blue bar*). (B) This fittest class will eventually be lost by chance. If there is no recombination and no back mutation, then mutation-free individuals cannot be recovered. (C) The whole distribution shifts to the right in one click of Muller’s ratchet and the process continues.