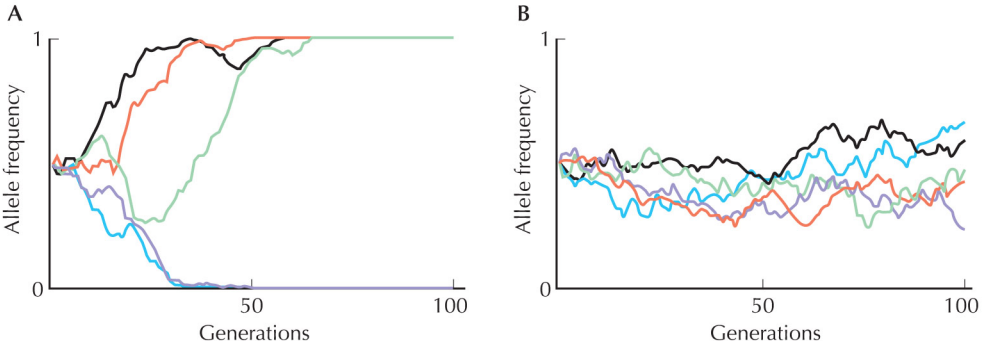


**FIGURE 23.19.** Inherited variation in fitness increases the rate of random genetic drift—a process known as the Hill–Robertson effect. (*A*) Neutral allele frequencies increase or decrease at random, as they become associated with fit or unfit genetic backgrounds. For example, one replicate (*green*) increases steadily between generations 30 and 50, because it happens to be in a particularly fit background. Across five replicates, neutral variation is lost by 70 generations. The simulation shows a population of 400 genomes, with a variance in relative fitness of 0.1 and a recombination rate of 0.05. (*B*) With no selection, allele frequency fluctuations are not correlated from one generation to the next, and so neutral variation persists for much longer.