



FIGURE 28.1. Theory is used in two ways in evolutionary biology. (A) The evolution of a population can be traced forward in time, giving predictions about the effects of the various evolutionary processes. (B) We can focus on a sample of individuals and trace its ancestry backward in time. This allows us to make inferences about the past processes that shaped the sampled genes. Genes are shown by *dots*, with color indicating allelic state (*red* or *black*). There is a single mutation (*black*→*red*) in the ancestry of the five sampled genes.