



Figure 8. Regulation of replication timing. (A) The diagram shows two different DNA regions, one that replicates early (E) in S phase and one that replicates late (L). In G₁, histones packaging the early-replicating origin (orange circle) become acetylated because *trans*-acting factors in the cell recognize specific “early” *cis*-acting sequences (purple rectangle). In contrast, nucleosomes packaging the late-replicating origin are prevented from becoming acetylated by virtue of different *cis*-acting motifs (green). During early S phase, protein factors specific for this stage in the cell cycle recognize acetylated origins and initiate the process of replication. Unacetylated origins remain unreplicated. Finally, factors specific for late S phase recognize and initiate firing of unacetylated origins, bringing about replication of late-replicating DNA regions. (B) Replication origins that are marked with acetylated histones H3 and H4 replicate early in S phase, whereas the deacetylation of origin regions primes them for late replication in S phase.