

The diagram illustrates the steps of a DNA replication cycle on a lagging strand, showing the progression from initial synthesis to the completion of a cycle and the start of the next.

- A** Initial state: A replication fork is shown. The leading strand (blue) is synthesized continuously. The lagging strand (green) is synthesized discontinuously. A parental strand (blue) and a daughter strand (green) are shown. A red segment represents the primer. The 3' and 5' ends are labeled. A box highlights the area where the cycle is complete.
- B** Filling single-strand loop: The lagging strand forms a loop. The primer (red) is extended by a new segment (green) to fill the loop. The 3' and 5' ends are labeled. The primer is labeled 'a' and the new segment is labeled 'b'.
- C** Loop full: The loop is now full. The primer (red) is extended by a new segment (green) to fill the loop. The 3' and 5' ends are labeled. The primer is labeled 'a' and the new segment is labeled 'b'.
- D** Primer synthesis: The primer (red) is extended by a new segment (green) to fill the loop. The 3' and 5' ends are labeled. The primer is labeled 'a' and the new segment is labeled 'b'.
- E** Okazaki fragment synthesis: The lagging strand is now composed of two Okazaki fragments (green) separated by a red segment (primer). The 3' and 5' ends are labeled. The primer is labeled 'a' and the new segment is labeled 'b'.
- F** Detach Okazaki fragment, remove previous primer, fill-in, ligate: The Okazaki fragment (green) is detached. The previous primer (red) is removed. The gap is filled in with a new segment (green). The 3' and 5' ends are labeled. The primer is labeled 'a' and the new segment is labeled 'b'.
- G** Cycle complete: The lagging strand is now a continuous strand (green). The 3' and 5' ends are labeled. The primer is labeled 'a' and the new segment is labeled 'b'. The cycle is complete. The enzymes involved are RNase H, polymerase, ligase, primase, polymerase, and helicase.

