

## 12.2- Replication of DNA

# **semiconservative replication-**

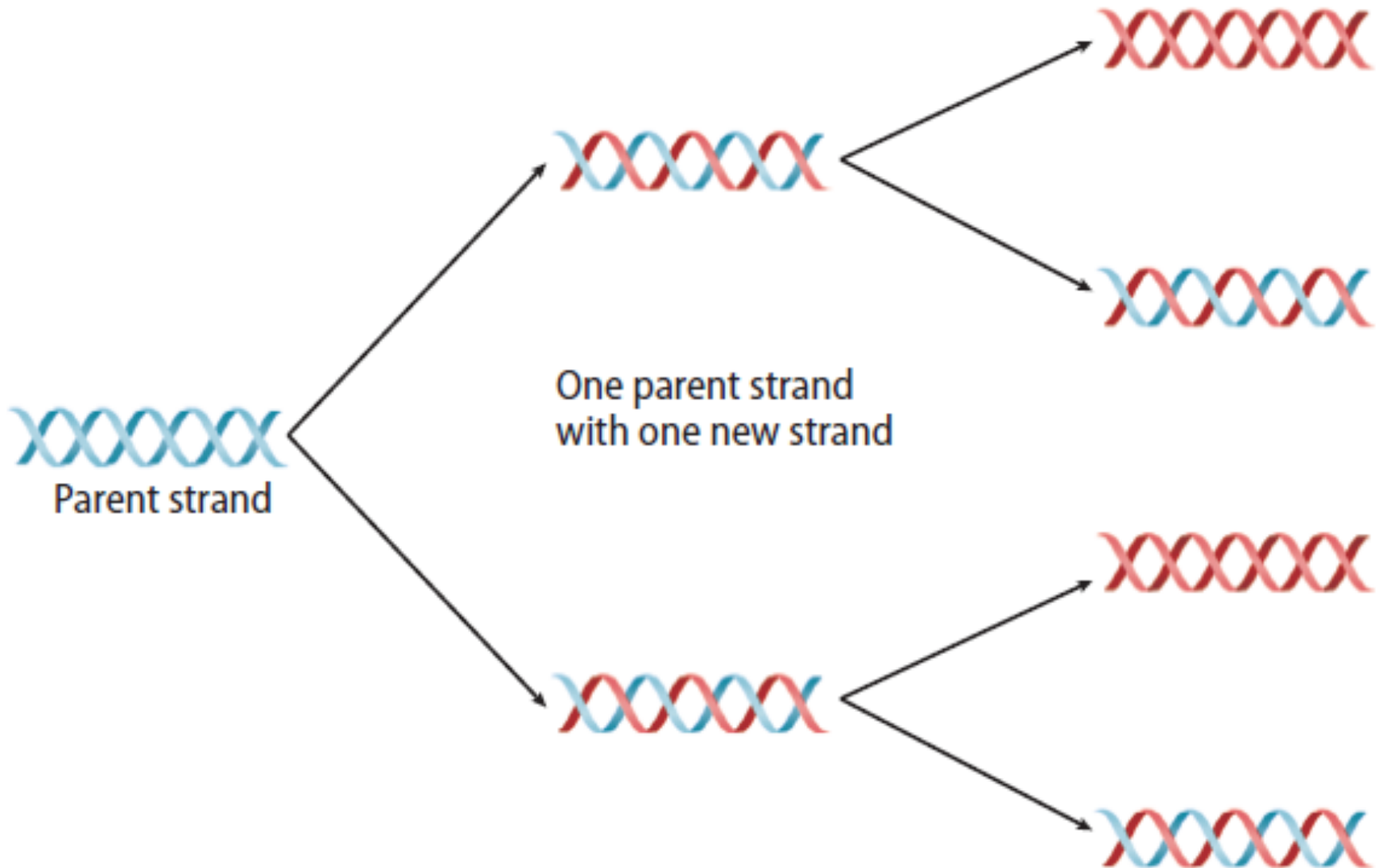
DNA molecules have one strand of parental DNA and one strand of new DNA

# Semiconservative Replication

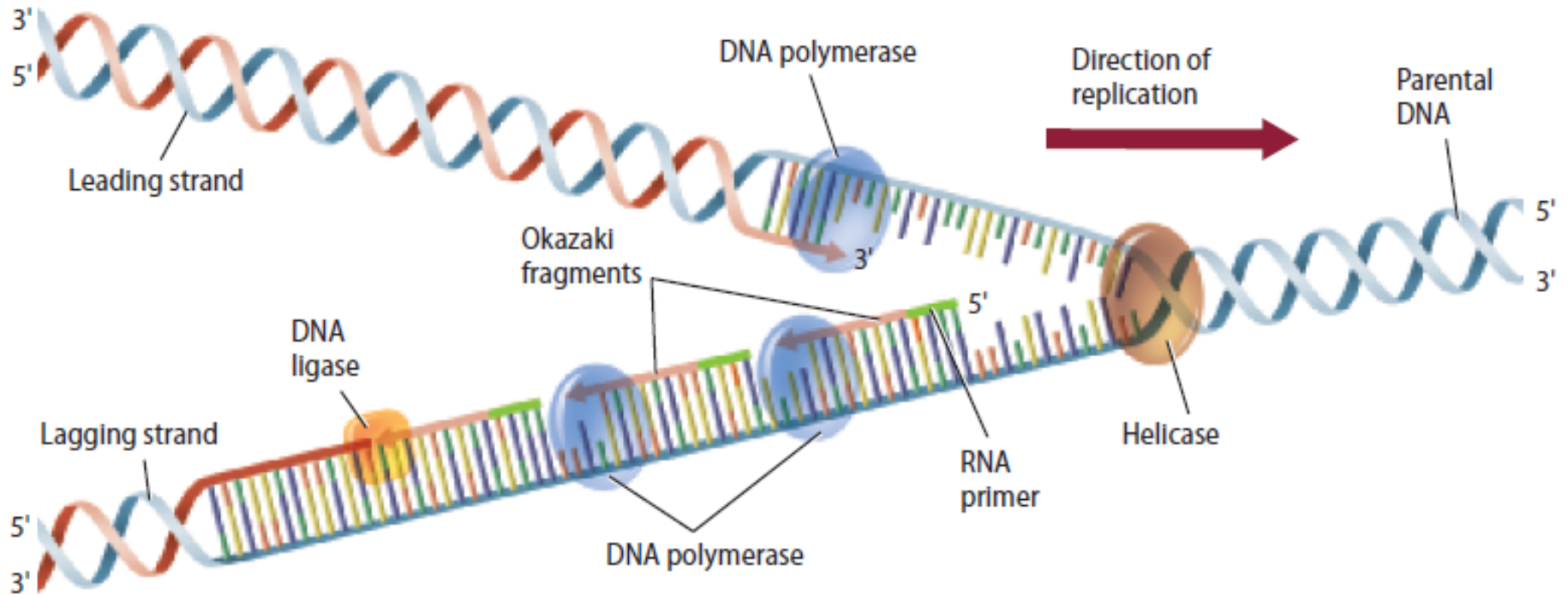
Original

First replication

Second replication



# 3 steps of DNA Replication



# 1. Unwinding the DNA:

**DNA helicase** (enzyme)

unwinds the DNA

**SSB proteins** (Single-stranded binding proteins)

keep the DNA strands separate

**RNA primase** (enzyme) –

adds **RNA primer** on each DNA strand

## 2. Base pairing

**DNA polymerase** (enzyme) adds nucleotides from the 3' end, in the 5' → 3' direction

**leading strand**- built continuously

**lagging strand**- built in small segments called **Okazaki fragments**

### 3. Joining

**DNA polymerase** removes the RNA primer and fills in the DNA nucleotides.

**DNA ligase** links the sections

# Comparing Eukaryotes and Prokaryotes

- In eukaryotes – DNA unwinds in multiple areas
- In prokaryotes – circular DNA strand- only one origin of replication.

