5:4 DNA Replication

DNA has to be copied before a cell can divide.

New cells will need identical DNA strands.

REPLICATION: when DNA makes an exact copy of itself to be used when cells divide or to pass the code for making proteins to offspring

## Steps of DNA Replication

1. DNA unwinds from double helix and “unzips” (splits) down the center when bonds between the bases break by the enzyme Helicase.
2.  A Single-Strand Binding protein attaches and keeps the 2 DNA strands separated and untwisted.
3. As the 2 DNA strands open at the origin, Replication bubbles form
	1. Prokaryotes have a SINGLE bubble
	2. Eukaryotes have MANY bubbles
4. Replication begins at the Origin of Replication, two strands open forming 2 Replication Forks
5. Spare nucleotides move in and attach to their proper “old” bases using the enzyme DNA polymerase.



1. Two identical DNA molecules are formed. In the new DNA strand, half is “old” and half is “new” in each.

Proofreading New DNA

* DNA polymerase initially makes about 1 in 10,000 base pairing errors
* The DNA Polymerase enzyme proofreads and corrects these mistakes
* The new error rate for DNA that has been proofread is 1 in 1 billion base pairing errors

