DNA Replication Foldable

Materials Preparation:
- Copy one foldable per student printed/copied 2-sided

Instructions:
- Fold paper in half long ways along the dotted line (hotdog style)
- Label the 3’ and 5’ ends of all of the DNA strands on the image (there are four 3’ ends and four 5’ ends to label)
- Fill in the blanks in the shaded box on the left side of the image.
- Cut along the 7 vertical dashed lines up to the fold in the paper.
- Fill in the blanks on the inside of each tab of the foldable.
- Use the foldable to quiz yourself or others about the components and processes of DNA Replication.

Image Source:
- [http://commons.wikimedia.org/wiki/File%3ADNA_replication_en.svg](http://commons.wikimedia.org/wiki/File%3ADNA_replication_en.svg), By LadyofHats Mariana Ruiz [Public domain], via Wikimedia Commons

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The original DNA helix is called the parent DNA, and the two resulting helices are called "daughter" helices. Each of these two daughter helices is nearly an exact copy of the parent DNA (it is not 100% the same due to mutations). DNA replication creates daughter DNA by using the parent strands of DNA as a template or guide.

**Parent DNA**
(Original DNA)

**DNA Helicase**
This enzyme *unwinds* the DNA double helix at the replication fork.

**DNA Polymerase**
Builds new DNA by reading the parent DNA *template* and adding new complementary *nucleotides* in the 5’ to 3’ direction to the leading and lagging daughter DNA strands.

**Okazaki Fragments**
Short, newly synthesized DNA fragments that are formed on the lagging template strand during DNA replication.

**DNA Ligase**
An enzyme that *joins* Okazaki Fragments of the lagging strand.

**DNA Polymerase**
Builds new DNA by adding new *nucleotides* in the 5’ to 3’ direction.

**Leading Strand**
(New DNA Strand)
The strand of new DNA which is being synthesized in the *same* direction as the growing replication fork.

**Lagging Template Strand**
(New DNA Stand)
The strand of new DNA whose direction of synthesis is *opposite* to the direction of the growing replication fork. Because of this, replication of the lagging strand is more complicated than that of the leading strand.
A. DNA (Original DNA)

The DNA helix is called the parent DNA, and the two resulting helices are called "daughter" helices. Each of these two daughter helices are nearly an exact copy of the DNA (it is not 100% the same due to ). DNA replication creates daughter DNA by using the parent strands of DNA as a or guide.

B. DNA

This enzyme the DNA double helix at the replication fork.

C. DNA

Builds new DNA by reading the parent DNA and adding new complementary in the 5’ to 3’ direction to the leading and lagging daughter DNA strands.

D. Okazaki Fragments

Short, newly synthesized DNA fragments that are formed on the template strand during DNA replication.

E. DNA Ligase

An enzyme that Okazaki Fragments of the lagging strand.

F. Leading Strand (New DNA Strand)

The strand of new DNA that is being synthesized in the direction as the growing replication fork.

G. Lagging Template Strand (New DNA Stand)

The direction of synthesis of the new strand of DNA is to the direction of the growing replication fork. Because of this, replication of the lagging strand is more complicated than that of the leading strand.
DNA is always synthesized in the ___ to ___ direction.