DNA REPLICATION

DNA replication stars in a certain part called-**1** .Usually this part is identify by certain DNA **2**- There can be a multiple origins within the DNA strand. At the origin the **-3** (unzipping enzyme)comes in and unwinds the DNA.-

4 proteins(which stands for single stranded binding proteins) bind the DNA strands to keep them separated.

5- comes in and makes RNA primers on both strands. This is really important because otherwise the DNA polymerase III won´t know where to star.

Now comes the **6**- . Remember this is important enzyme that adds DNA bases. Now you have two strands, right? But they are not identical; remember they complement each other. They are also **7**- so they don't go in the same direction. With DNA we don't say it goes North or South.The directions for DNA strands are little different.

We said that the DNA either goes to 5´ to 3´ or 3´ to 5´. What in the word does that mean? Well the sugar of the DNA is a part of the backbone of the DNA. It has carbons. The carbons on the sugar are numbered after the Oxygen in a clockwise direction: 1´, 2´,3´, 4´ ,5´. The 5 prime, is outside of the ring structure .Now you do the same thing for the other side, but keep in mind this strand is flipped just because the DNA strands are antiparallel to each other, so let's count again this clockwise from the oxygen, 1´,2´,3´,4´,5´ primers and the 5´ is outside the ring. This strand on the left runs to 5´ to 3´ and the strand on the right here runs 3´ to 5´. Well ,It turns out that the DNA polymerase III **8**- only works in the 5 prime to 3 prime direction. So, the strand that runs 5´ to 3´ is fine. It is called the **9**- But the other, will make it a little tricky. DNA polymerase can only go to 5´ to 3´ direction.

10- has to set extra a lot of extra primers down to do that as shown here. It takes longer too. This strand is called

11- the which is pretty fitting. On the lagging strand, you tend to get little fragments of synthesized DNA. There are called the **12**- fragments. Okazaki what an amazing name! .The primers have to get replaced with DNA bases since the primers were made of RNA. The ligase, the gluing enzyme as I like to nickname it, has to take care of the gaps in the Okazaki fragments. Now at the end you have two identical double helix DNA molecules from your one original double helix DNA molecule.

We call it **13**- because the two copies each contain one old original strand and one newly made one.One last thing, Surely, you have had to proofread before you catch errors?well, definitely, don't want the DNA polymerase to make errors .If it matches the wrong DNA bases, then you could have and incorrectly coded gene, which, could ultimately, end up in an incorrect protein or no protein. DNA polymerase is just awesome, it has to proofreading ability, which means it rarely makes a mistake, which is very good.