1.parental strand = template

2.Single strand Binding Proteins (SSB) keep the two strands from re-annealing (coming back together).

3.Primase引物酶 is an RNA polymerase（RNA聚合酶） that synthesize the RNA primer引物.

4. Exonuclease外切酶 removes mismatches 3'to 5', degrades退化 double stranded DNA 3'to 5'

5. Polymerase聚合酶 catalyzes催化 chain growth 5' to 3'

6. Prokaryotes have a single origin of replication while eukaryotes have multiple origin of replication

7. Replication happens in the S phase of Interphase分裂间期

**What DNA replication require**

1. H bonds between bases must be broken

2. chain separation/unwinding

3. available pools of 4 dNTPs: A = T, C ≡ G

4. Enzymes

**Describe how replication works and the significant**

Enzymes unzip DNA and complementary互补的 nucleotides join each original strand. Both new cells will have the correct DNA through replication.

**Nature of the Genetic Material**

①it must contain, in a stable form, information encoding the organism’s生物体 structure, function, development and reproduction繁殖

②it must replicate accuratelyso progeny cells子细胞 have the same genetic make up

③it must be capable of some variation (mutation) to permit evolution

**Enzymes required in DNA replication：**

1. a DNA helicase解旋酶 must unwind the parental template
2. a primase must synthesize short oligoribonucleotides寡核糖核苷酸 that serve as primer for synthesis of the Okazaki fragments冈崎片段 on the lagging strand后随链, a single-stranded DNA-binding protein that coats the single-stranded lagging-strand template and interacts with other replication proteins
3. a DNA polymerase must synthesize the nascent leading and lagging strands.

**Semiconservative replication：**

**Semiconservative replication** describes the method by which [DNA](http://cn.bing.com/reference/semhtml/DNA) is replicated in all known cells. This method of replication was one of three proposed models[[1]](http://cn.bing.com/reference/semhtml/Semiconservative_replication#cite_note-Griffiths-0) [[2]](http://cn.bing.com/reference/semhtml/Semiconservative_replication#cite_note-1) of[DNA replication](http://cn.bing.com/reference/semhtml/DNA_replication):

* Semiconservative replication would produce two copies that each contained one of the original strands and one new strand.
* Conservative replication would leave the two original template [DNA](http://cn.bing.com/reference/semhtml/DNA) strands together in a double helix and would produce a copy composed of two new strands containing all of the new DNA base pairs.
* Dispersive replication would produce two copies of the [DNA](http://cn.bing.com/reference/semhtml/DNA), both containing distinct regions of DNA composed of either both original strands or both new strands

**Mechanism of DNA replication？？？**