Polymerase Chain Reaction

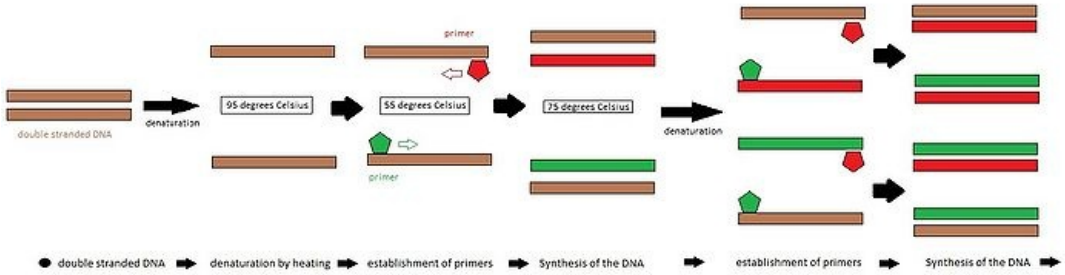
PCR – *polymerase chain reaction* is a method of the DNA replication. It allows us to get a huge number of copies. It is the way how to get the exact part of the DNA strand and use it for a research. PCR is used in gene manipulation.

The correct designation of the section is through the **primers**. Primer is a nucleotide sequence that binds to the opposite strands of the DNA. We can choose them according to the place of our interest. The primer indicates *the start point* of the DNA replication by the DNA polymerase. We can produce many types of the primers due to the sequences which we want to study. The samples have to have size from *50 bp to 2,5 kbp*. [1]

Process of the PCR

A sample of the DNA has to be **heated** the temperature rises from 55°C, through 70°C to 95°C. Then the double strand DNA is divided into the individual segments and DNA polymerase can start the replication process. These individual pieces of DNA become a pattern for each copy. The denaturation, the establishment of the primers and the replication are repeated over and over. After 20 cycles we can get about 10^6 copies, after 30 cycles it is 10^9.

At first, it was used the polymerase from E.coli. But it is not thermostable enough and it is destroyed after the first heating. So nowadays the polymerase from *Thermus aquaticus*, which is **thermostable**, is used.



Use of the PCR

1. *in the forensic medicine*
2. *in prenatal diagnosis*
3. *in polymorphism detection*
4. *in study of the evolution*
5. *in genetic manipulation*

Links

Related articles

- Gene Manipulation
- Replication
- DNA polymerase

References

1. MURRAY, Robert, et al. *Harper's Biochemistry.* 27. edition. McGraw-Hill Medical, 2006. 672 pp. ISBN 978-0071461979.

Bibliography

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