



كلية الصيدلة
Faculty of Pharmacy

Polymerase Chain Reaction and Application

Presented by

- Safa Anwar
- Eman Naje

ILO's

- **Define Polymerase Chain Reaction (PCR)**
- **Describe steps of PCR**
- **Identify types of PCR**
- **Explain application of PCR**





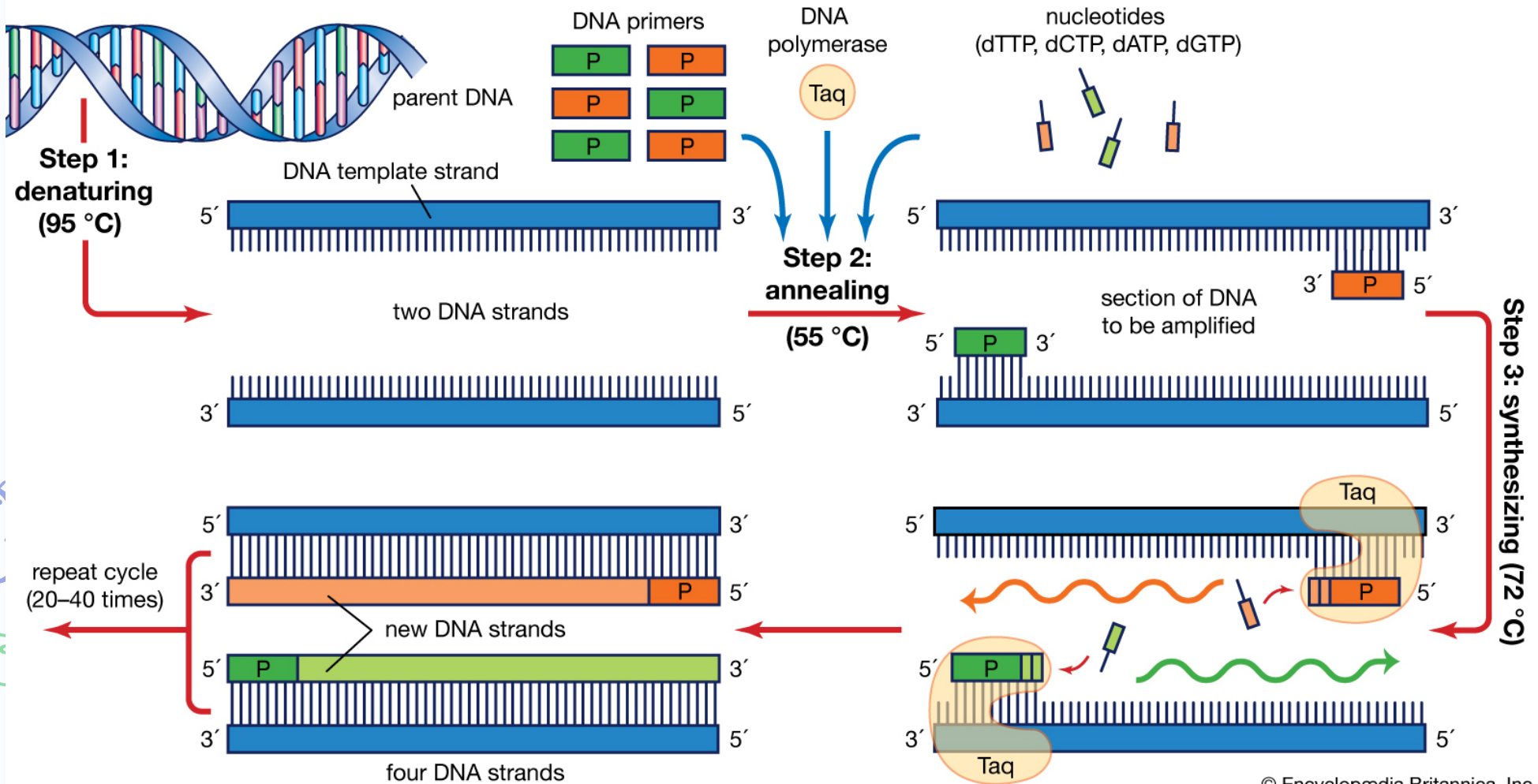
➤ Polymerase Chain Reaction

- **It was originally invented by Kary Mullis in 1985.**
- **PCR is a process that ‘amplifies’ or ‘copies’ a piece of DNA repeatedly until there is an amount which is great enough to observe visually.**

What are the steps of PCR?



Steps of PCR



➤ Types of PCR

Nested PCR

RT-PCR (or
Reverse
Transcription
PCR)

Ligation-
mediated PCR

Variable Number
of Tandem
Repeats (VNTR)
PCR

Methylation-
specific PCR
(MSP)

Asymmetric
PCR

Multiplex-PCR



➤ Types of PCR

Assembly PCR
(also known as
Polymerase
Cycling Assembly
or PCA)

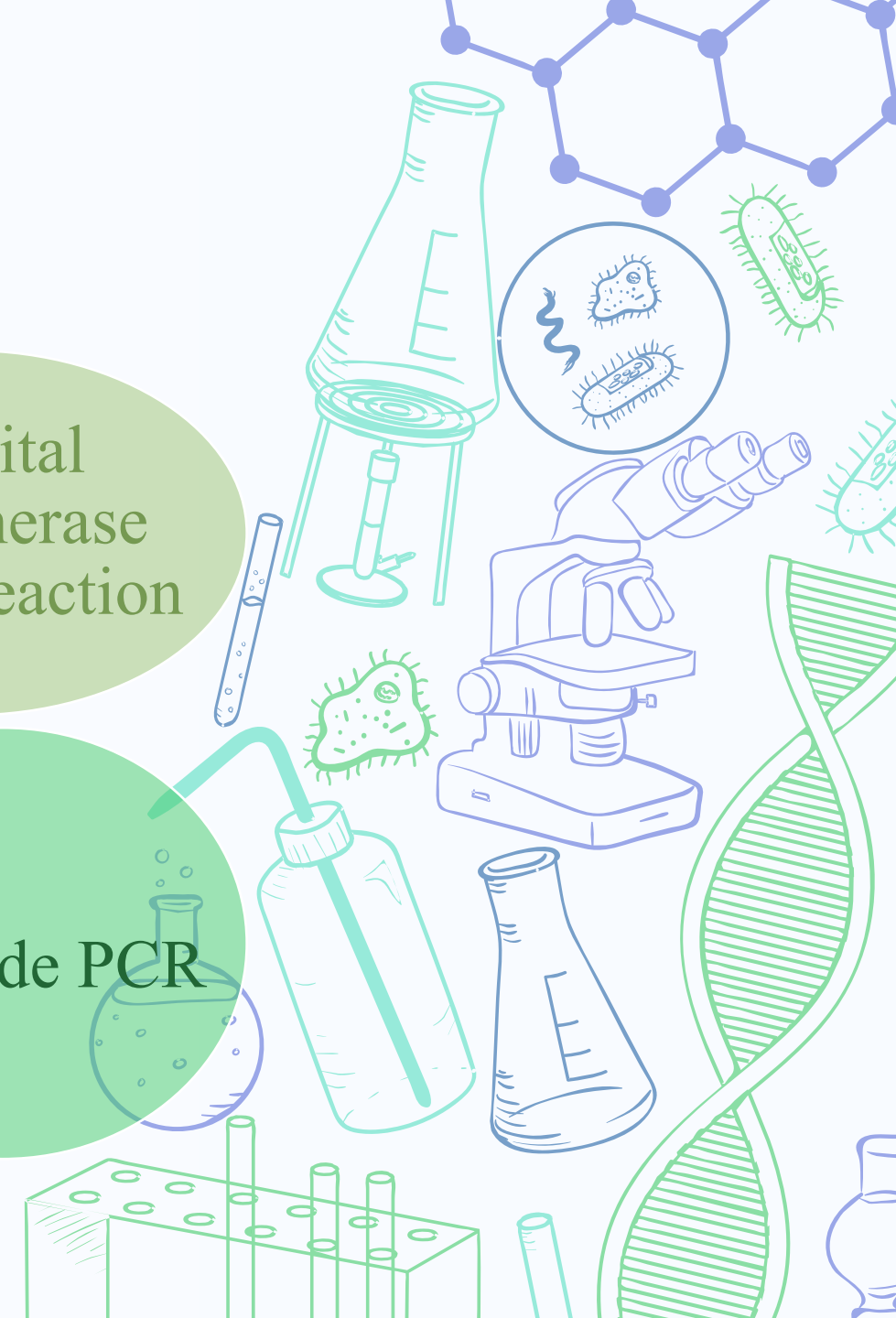
Colony PCR

Digital
polymerase
chain reaction

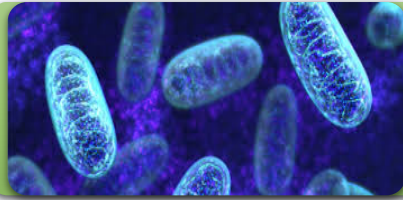
Touchdown
PCR

COLD-PCR (co-
amplification at
lower denaturation
temperature-PCR)

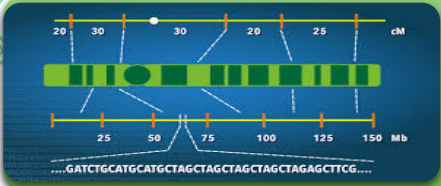
Suicide PCR



➤ Application of PCR



Molecular biological research



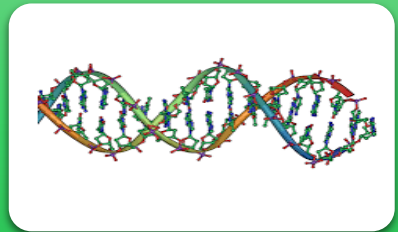
Genetic Mapping studies



Clinical and diagnostic uses



Genetic identification and DNA typing



Identification of trace amount of DNA



➤ Summary

PCR is a process that copies pieces of DNA .

There are three steps of PCR: Denaturation, Annealing and Extension.

PCR has many types.

Applications of PCR are in agriculture, genetic research, environmental microbiology, forensic science.



➤ References

Introduction To Biotechnology and Genetic Engineering License, Disclaimer of Liability, and Limited Warranty, (2007) .

<https://www.quora.com/What-are-the-different-types-of-PCR>

<https://scholar.google.com.ly/scholar?q=applications+of+PCR>

<https://cdn.britannica.com/77/22477-050-16EFB7B3/process->

[polymerase-chain-reaction.jpg](https://cdn.britannica.com/77/22477-050-16EFB7B3/process-polymerase-chain-reaction.jpg)

Thank YOU

Any question ?