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Recombinant DNA Technology

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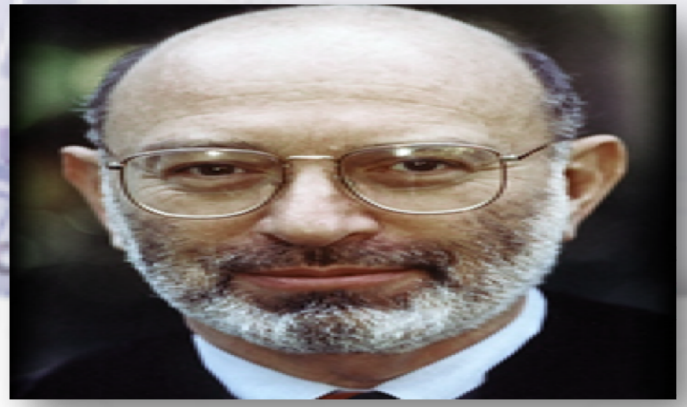
Objective

- Define recombinant DNA technology
- List applications of recombinant DNA technology
- Explain mechanism of recombinant DNA technology
- List advantages and disadvantages of recombinant DNA technology

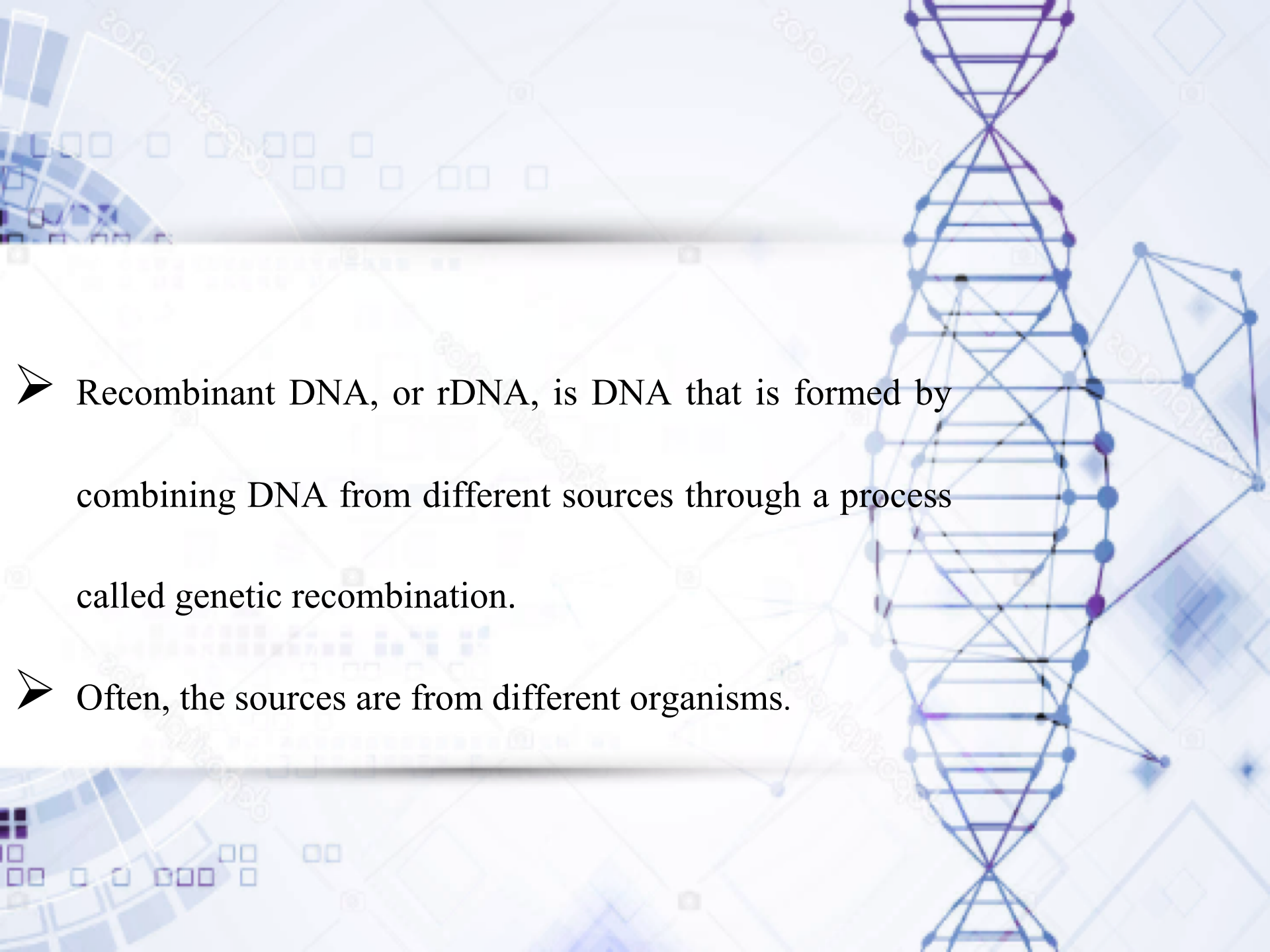
History



Recombinant – DNA (rDNA) technology was first discovered through the work of Herbert W. Boyer and Stanley N. Cohen, although many other scientists made important contributions to the new technology as well.

Define recombinant DNA technology

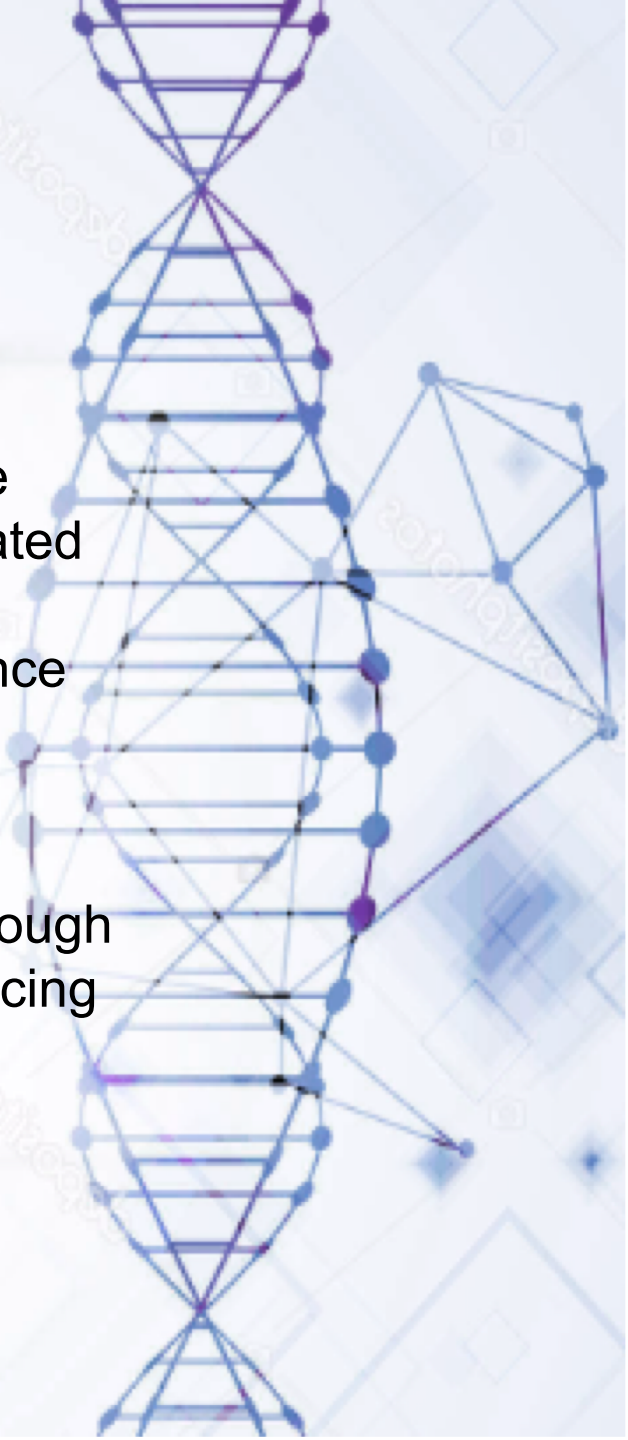
- Recombinant DNA, or rDNA, is DNA that is formed by combining DNA from different sources through a process called genetic recombination.
- Often, the sources are from different organisms.



Apllication of recombinant DNA technology

Applications

- Mutations: recombinant DNA technology uses the method of cloning & identifies which gene is mutated
- Cancer: scientist are trying to analyze the difference between cancerous & normal cells through Recombinant DNA Technology
- Vaccines: when Recombinant DNA is injected through muscles, cells take foreign genes and start producing proteins



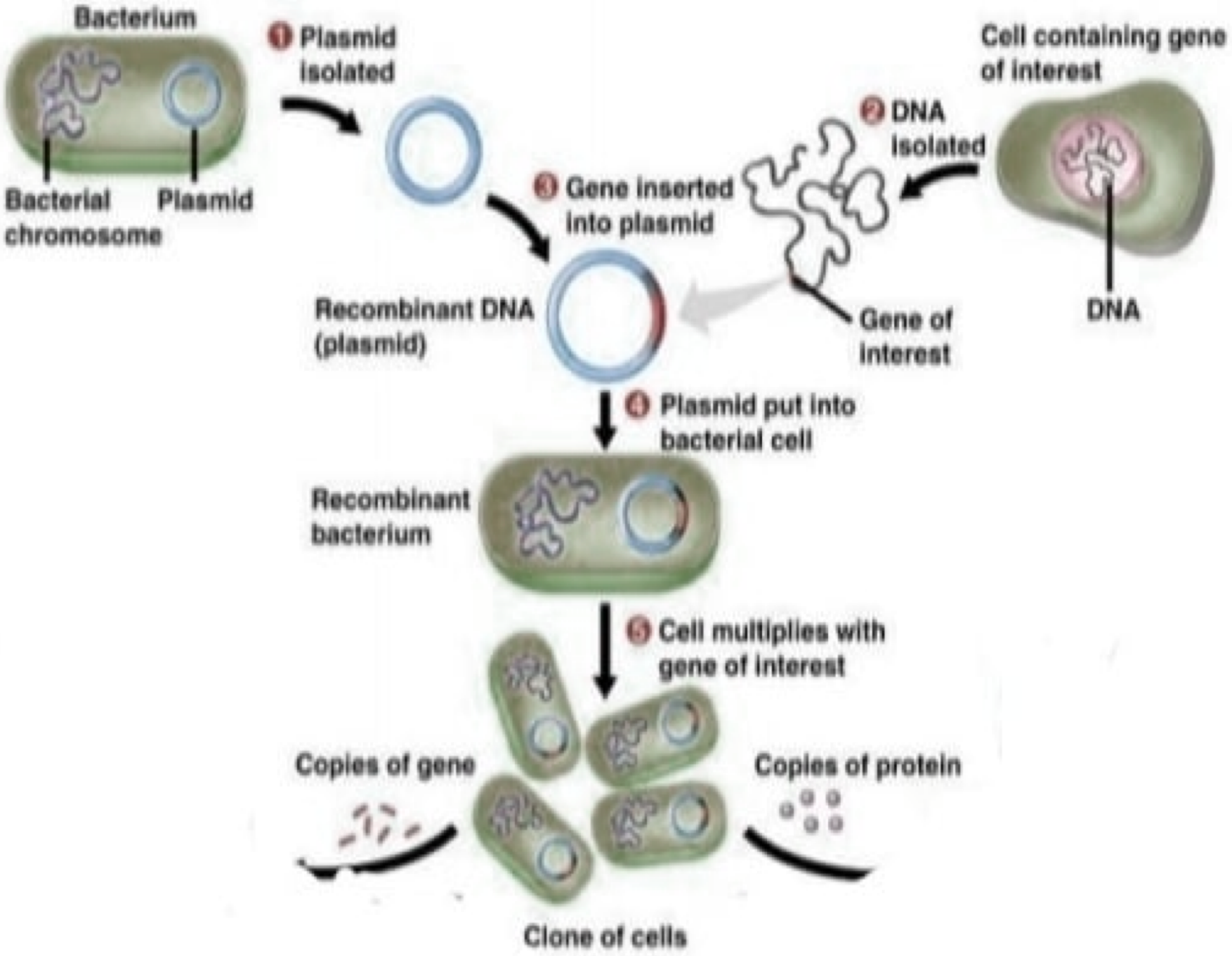
Application

- Fertility: Through RDNAT scientists are able to produce hormones which make the woman fertile
- Food: Recombinant DNA makes the develop resistance against insects and herbs
- Treatment of Diabetes: Insulin is produced using Recombinant DNA Technology

Question

- What are the steps for recombinant DNA technology?

Mechanism of recombinant DNA technology


Bacterium
Bacterial chromosome
Plasmid
1 Plasmid isolated
Cell containing gene of interest
2 DNA isolated
DNA
3 Gene inserted into plasmid
Recombinant DNA (plasmid)
Gene of interest
4 Plasmid put into bacterial cell
Recombinant bacterium
5 Cell multiplies with gene of interest
Copies of gene
Copies of protein
Clone of cells

Advantage and disadvantage of recombinant DNA technology

Advantages:

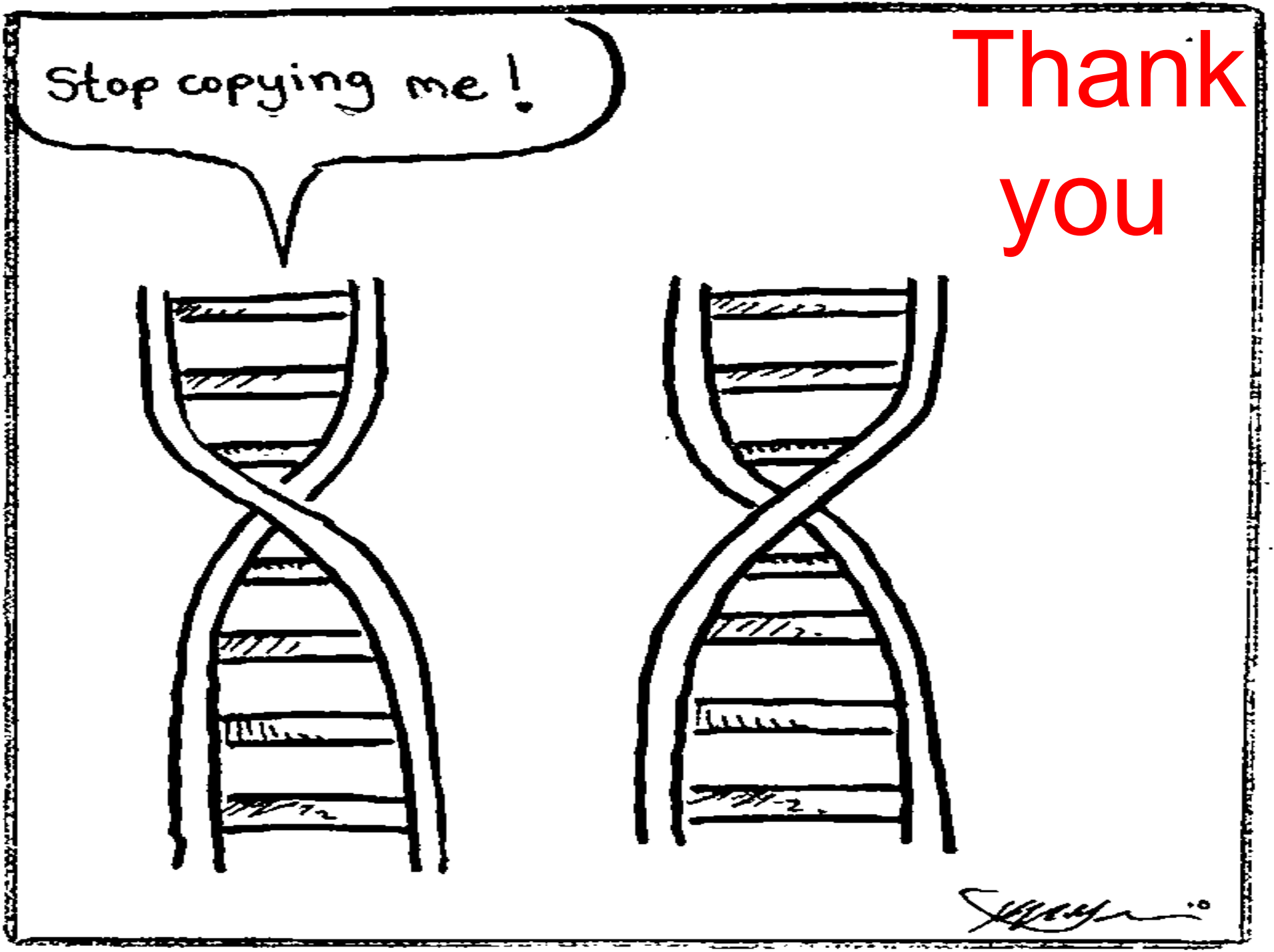
- Provide substantial quantity
- No need for natural or organic factor
- Cheap
- Tailor made product that can be controled

Disadvantages:

- Effects natural immune system of the body.
- Can destroy natural ecosystem that relies on organic cycle .
- Prone to cause mutation that could have harmful effects.

References:

- ✓ *https://www.sciencehistory.org/historical-profile/herbert-w-boyer-and-stanley-n-cohen*
- ✓ https://prezi.com/rkilmf39b8n7/the-advantages-of-recombinant-dna-technology/
- ✓ *https://www.thoughtco.com/recombinant-dna-technology-4178076*
- ✓ https://www.slideshare.net/TapeshwarYadav1/recombinant-dna-technology-49722102



Thank you