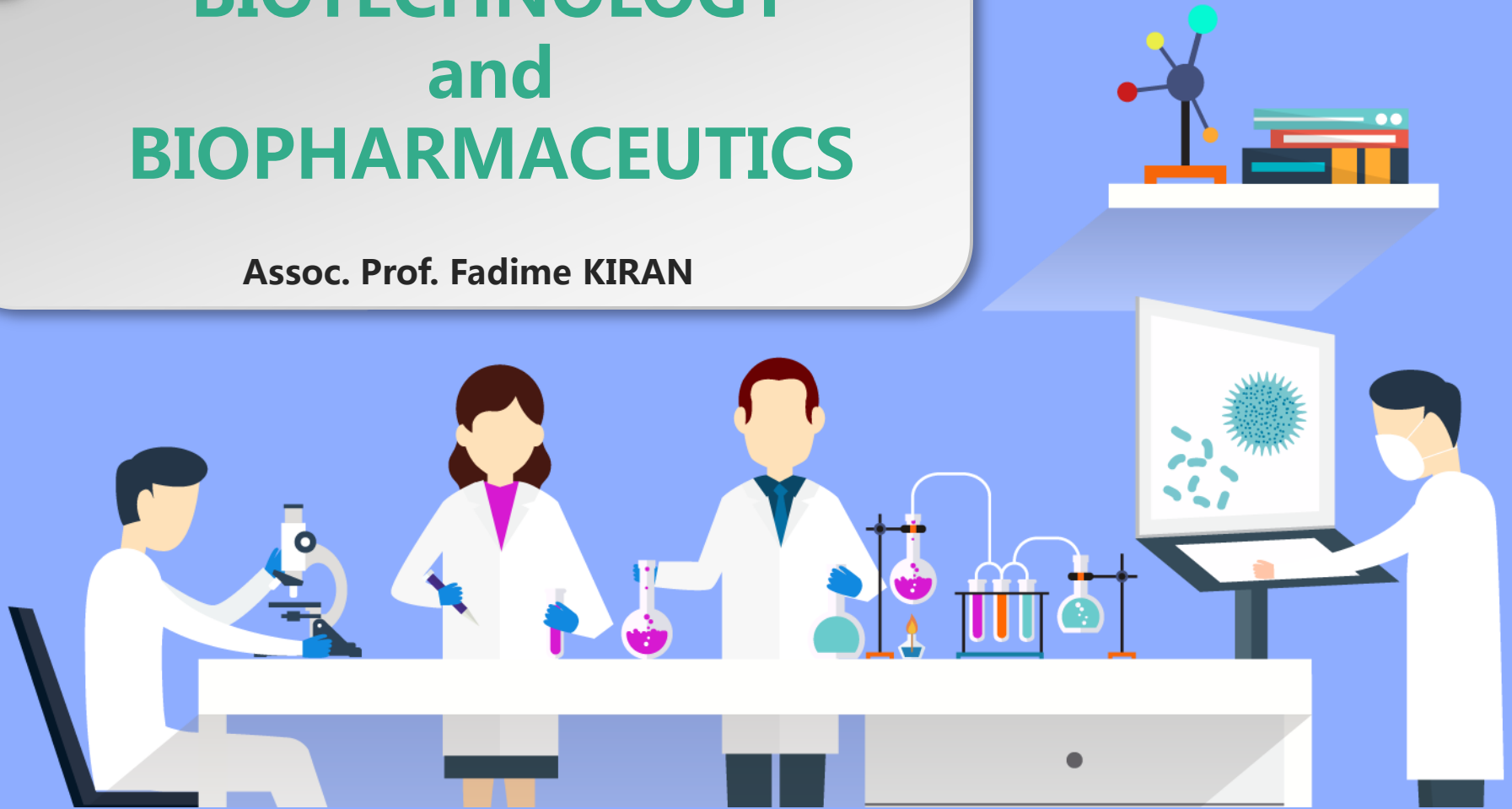


BIOTECHNOLOGY and BIOPHARMACEUTICS

Assoc. Prof. Fadime KIRAN



06

-Biopharmaceuticals from microorganisms:
production to purification-I

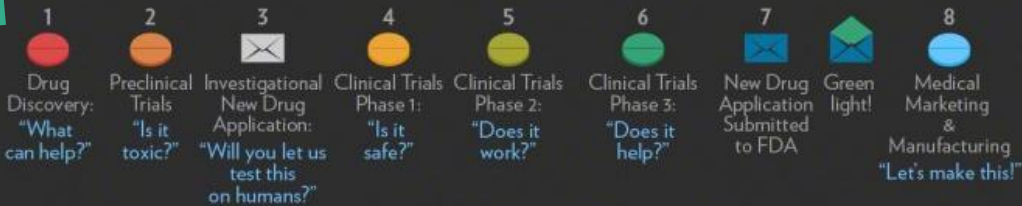
Recombinant DNA Technology



DRUG DISCOVERY



building UP to a let DOWN



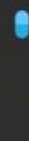
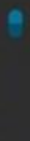
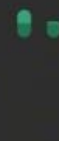
After all that effort, only **1 in 4** of us take it properly!



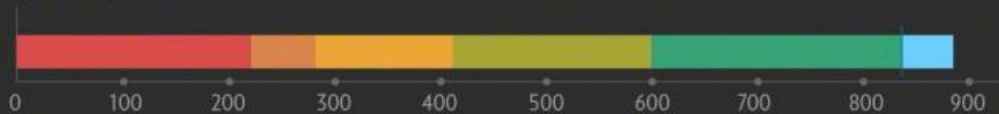
3 in 4 of us are non-adherent in one or more ways

Non-adhering patients contribute to an estimated **\$300 Billion** in additional healthcare costs!

Potential Drugs



Invested (\$Million)



Developing Time (years)



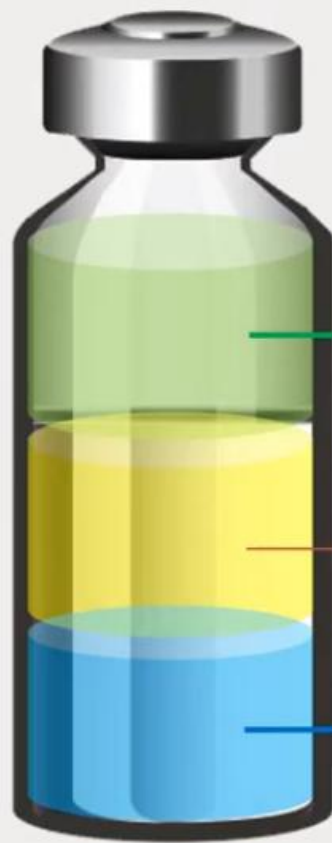
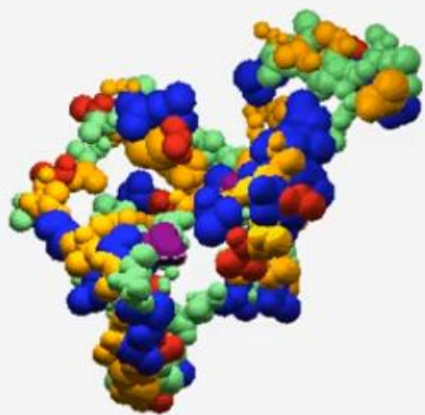
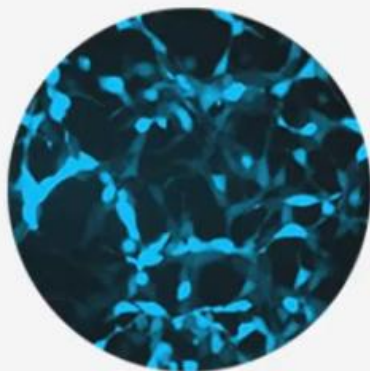
Testing



= 100 volunteers

Lower Bound
Upper Bound





Recombinant Protein

Recombinant Monoclonal Antibody

Recombinant Vaccine

What is rDNA technology?

What is rDNA technology?

Definition

It is technique used in genetic engineering that involves the identification, isolation and insertion of gene of interest into a vector such as a plasmid or bacteriophage to form a recombinant DNA molecule and production of large quantities of that gene fragment or product encoded by that gene.

HUMAN INSULIN MARKET

Global Human Insulin Market Size, 2018-2026
(USD Billion)

\$21.26
Billion in 2018

\$27.71
Billion by 2026



North America Human Insulin Market Size, 2018

• **\$10.42 Billion**



Global Human Insulin Market Share,
By Product Type, 2018

Analogue Insulin
Traditional Human Insulin

Steps in rDNA technology

Step 1: Identification & Isolation of Gene of interest or DNA fragment to be cloned.

Step 2: Insertion of this isolated gene in a suitable vector .

Step 3: Introduction of this vector into a suitable organism/ cell called host (transformation) .

Step 4: Selection of the transformed host cell.

Step 5: Multiplication or expression of the introduced gene in the host.

**CLONED CELLS WORK LIKE A FACTORY,
PRODUCING THE DESIRED PROTEIN
BESIDES THEIR OWN PROTEINS...**



ANY
QUESTION?





Thank you

