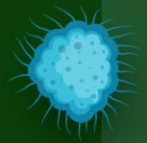
MICROBES IN HUMAN WELFARE - L 1

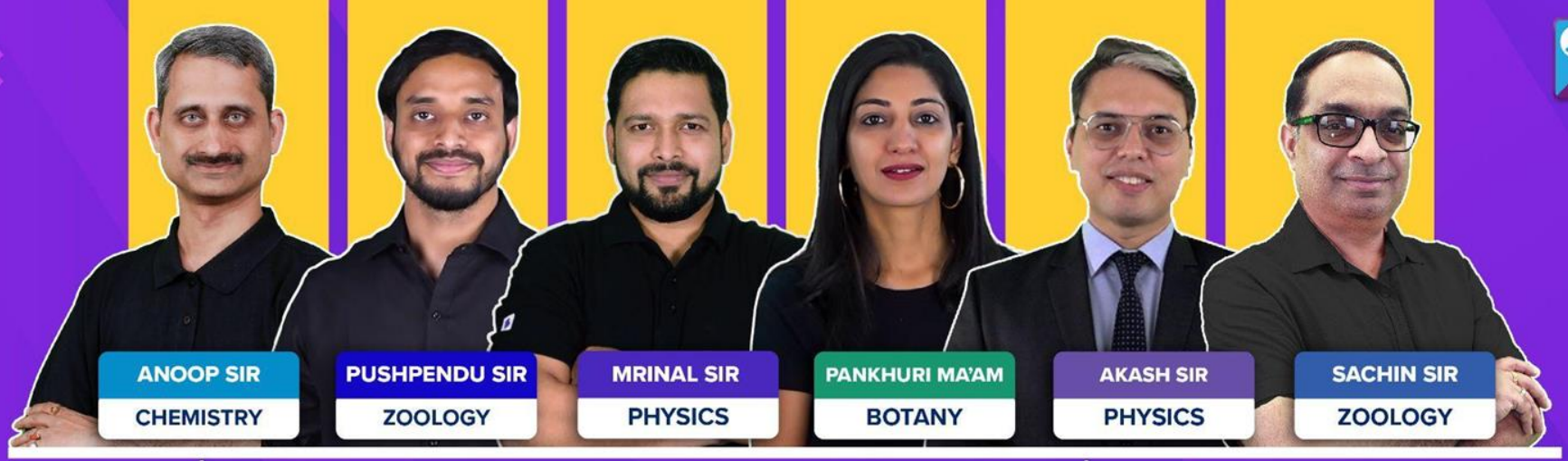


BOTANY

PANKHURI MA'AM

FREE FOR 14 DAYS!

Aakash + BYJU'S



MISSION MBBS

BIO की रण NEETi

CHEMISTRY SUPER 30

PHY की रण NEETi

MON - SAT | 12 PM - 8 PM

Aakash Live Webinars

Aakash + BYJU'S

6 Months NEET Strategy till May 2023

Dr. Sachin Kapur
Biology Expert - NEET

20th November, 2022

12:30 pm

ANTHE

AAKASH NATIONAL TALENT HUNT EXAM

Your Gateway To Success

For Class VII to XII

Current Students & Passouts

FREE

SMART PLAYLIST

FREE NEET RESOURCES

MISSION MBBS 2023 & 2024

- ALL YOUTUBE LECTURES
- ANNOTATED SESSION NOTES
- DAILY PRACTICE QUESTION & ANSWERS

LINK IN DESCRIPTION

Aakash + BYJU'S

Aakash BYJU'S

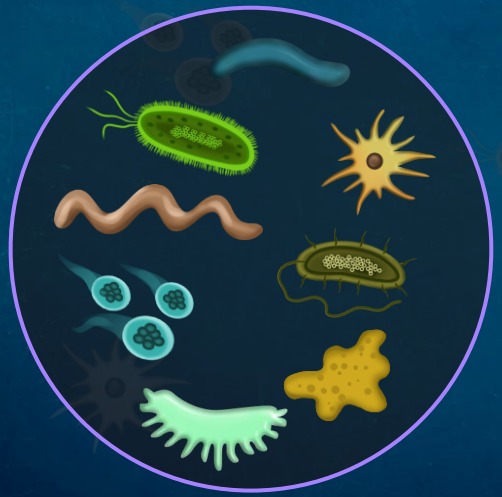
NEET STUDENTS' SURVEY

LINK IN DESCRIPTION

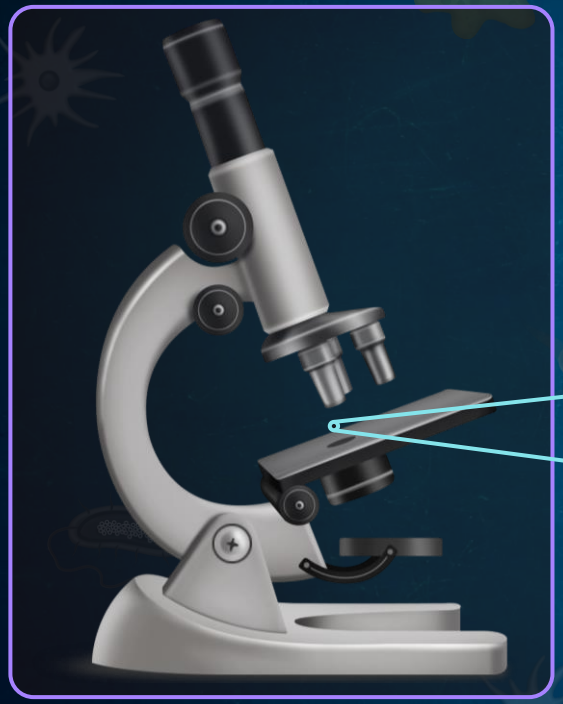
https://t.me/neetaakashdigital

Microbes

Microbes are tiny living organisms that cannot be seen with the naked eye



Microbes

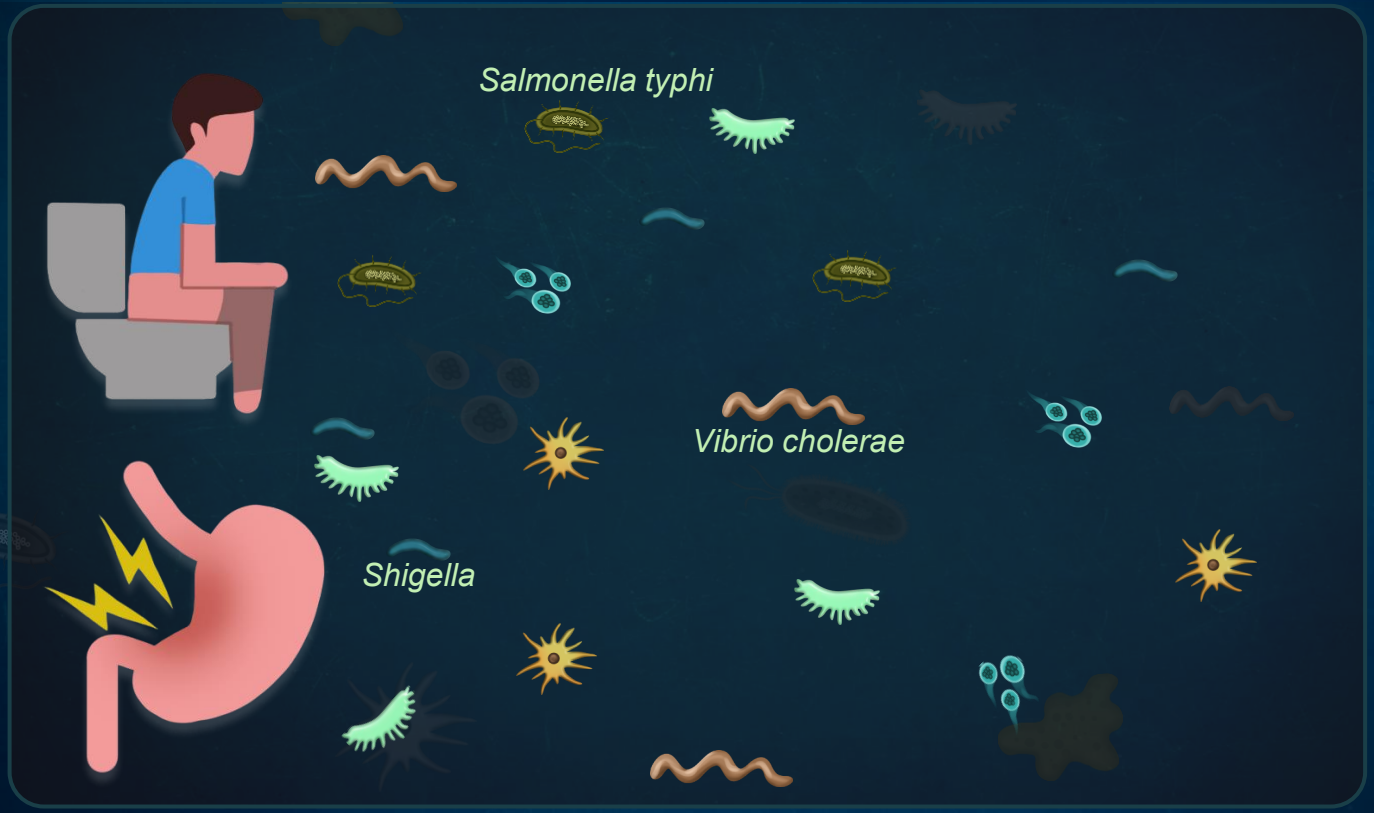


Microscope

10X

100X

Do all microbes make us sick?

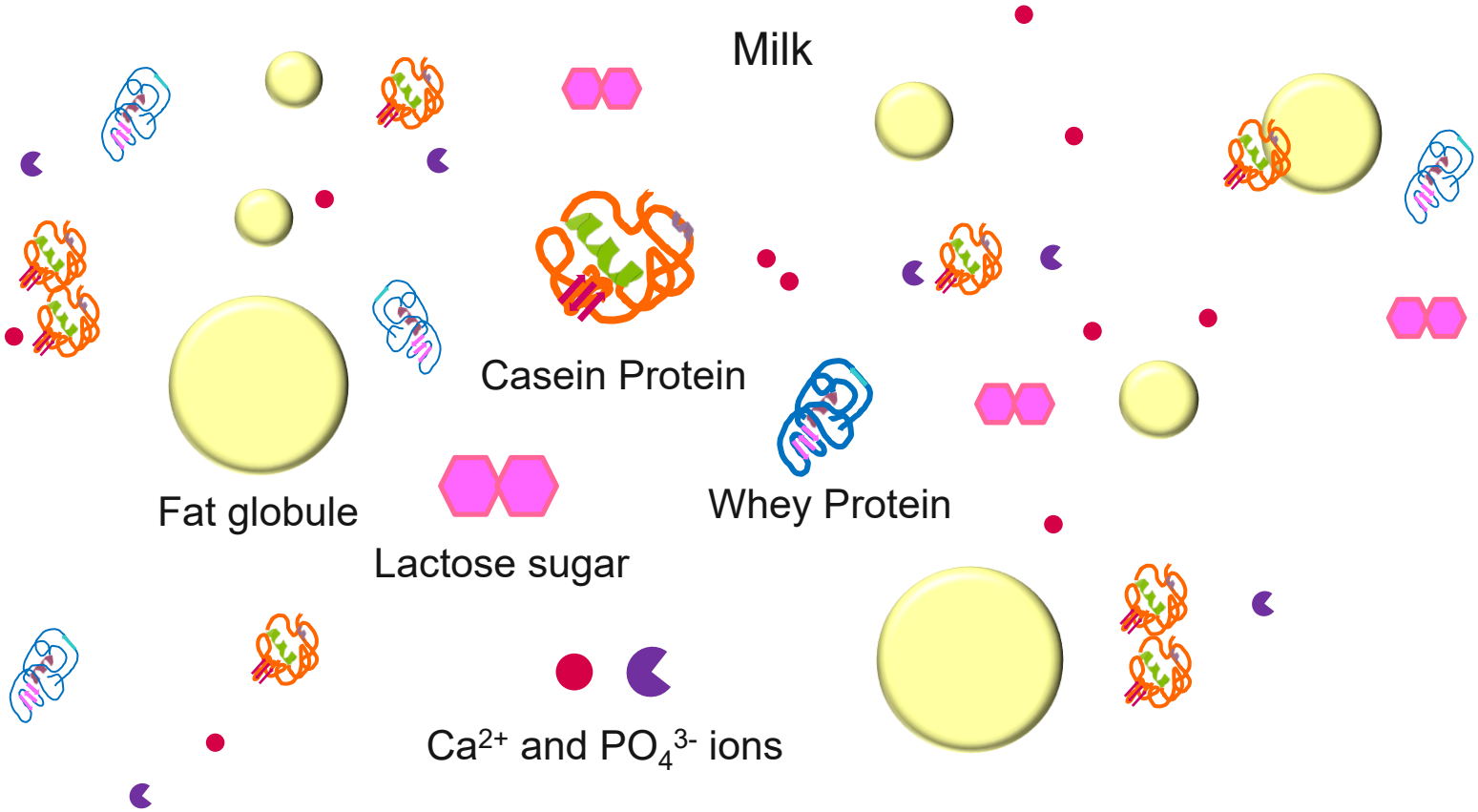


Microbes In Human Welfare

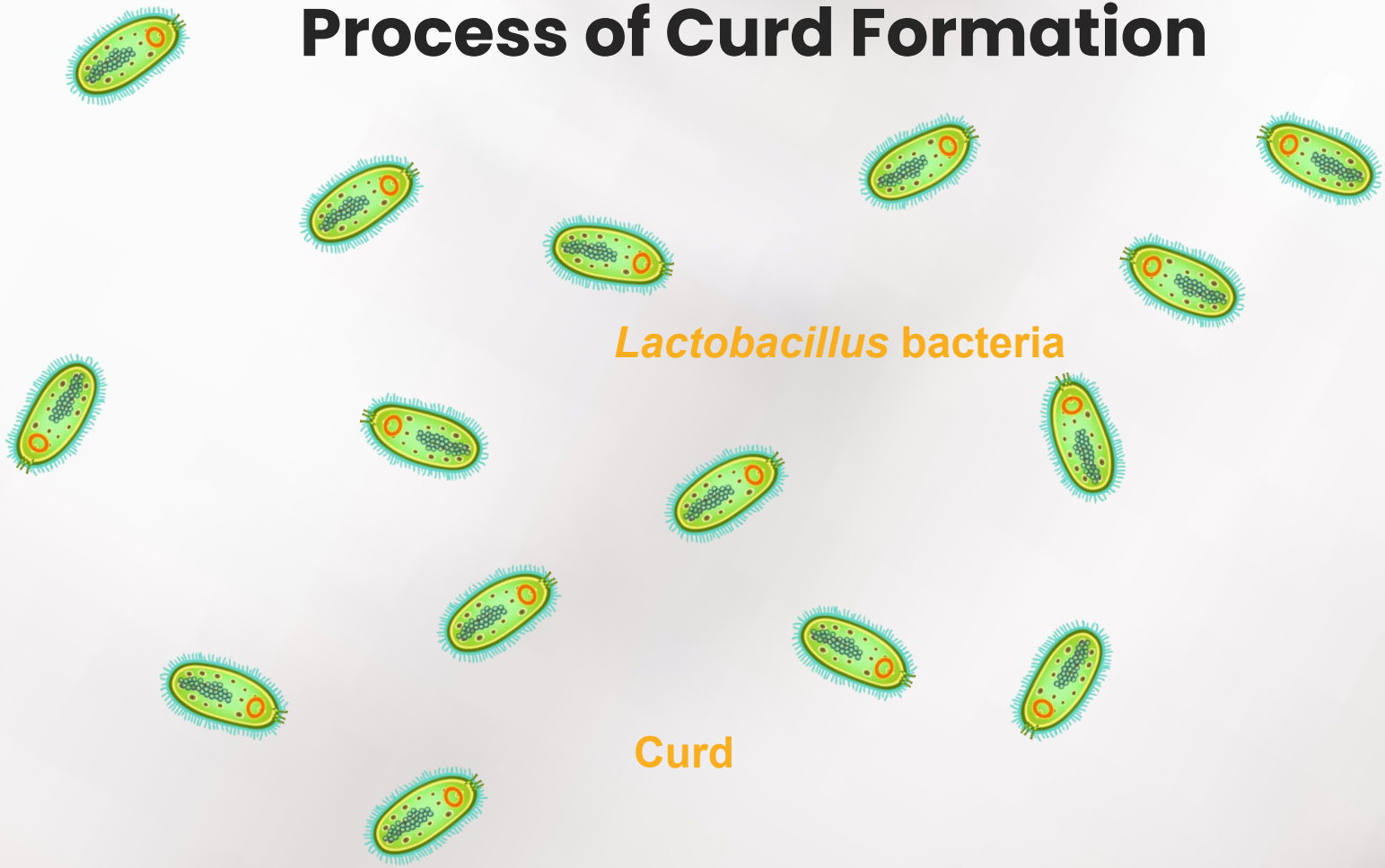
Curd

Lactobacillus bacteria

Process of Curd Formation

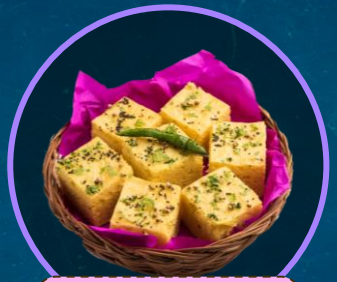


Process of Curd Formation



Lactic Acid Fermentation Products

Flavored yogurt



Dhokla

Pickles

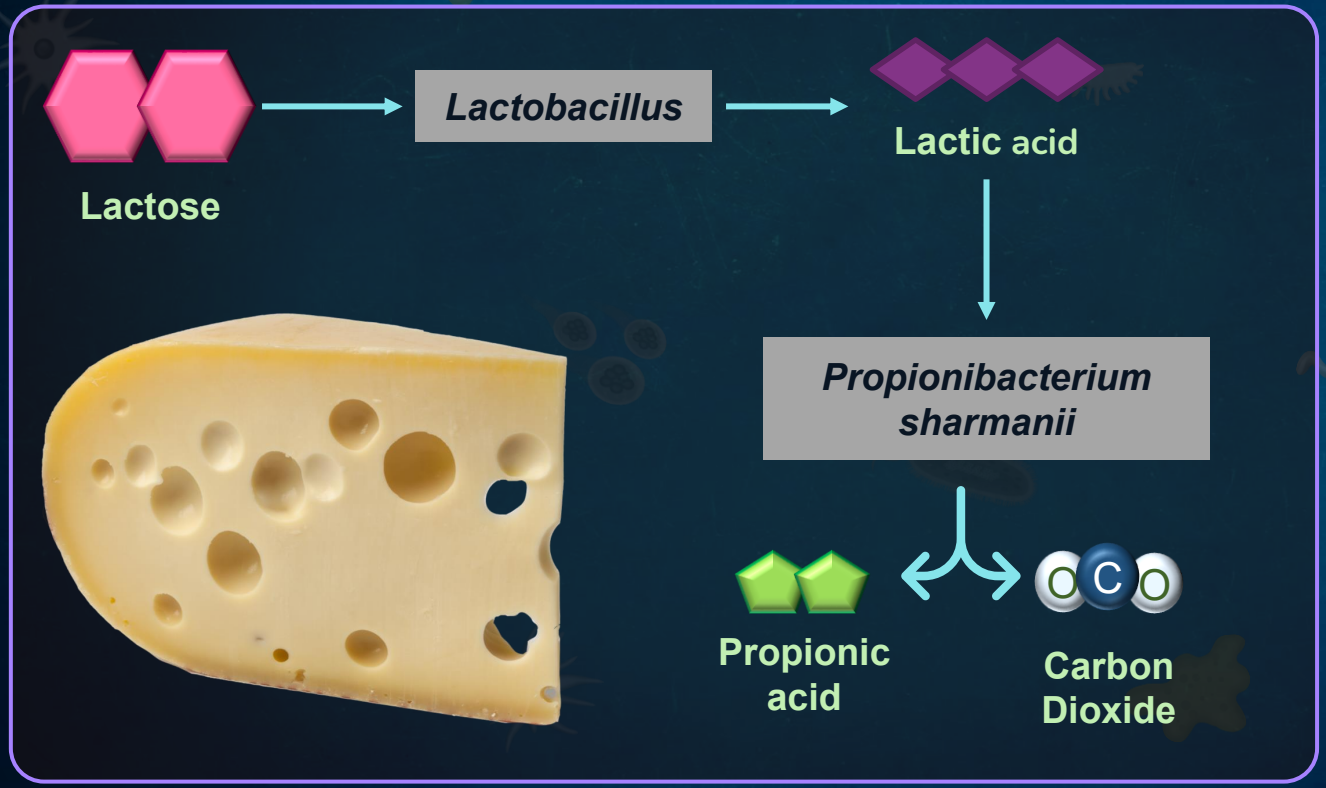
Dosa/Idli

Buttermilk/ Lassi

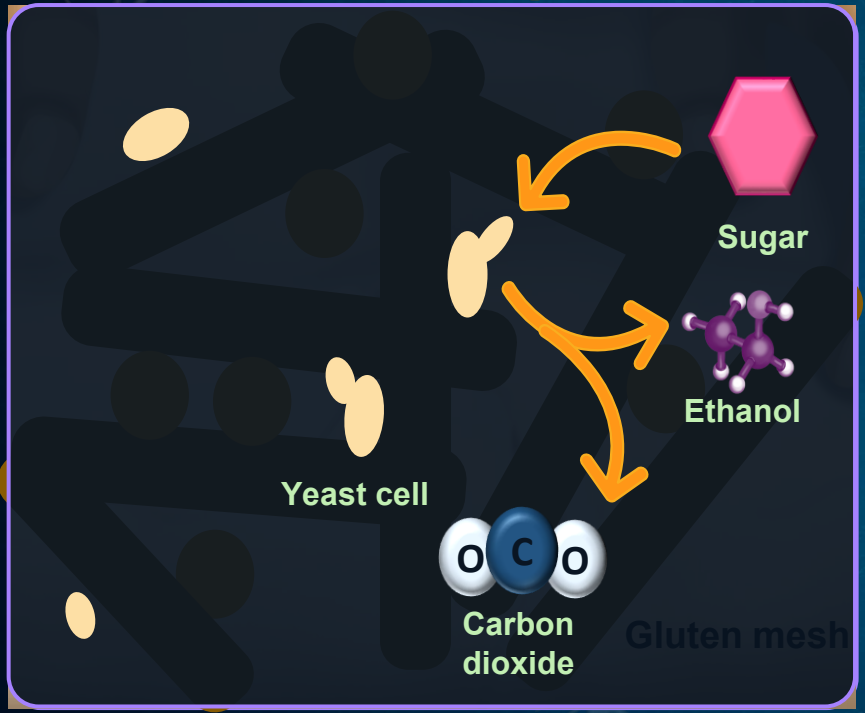
Cheese

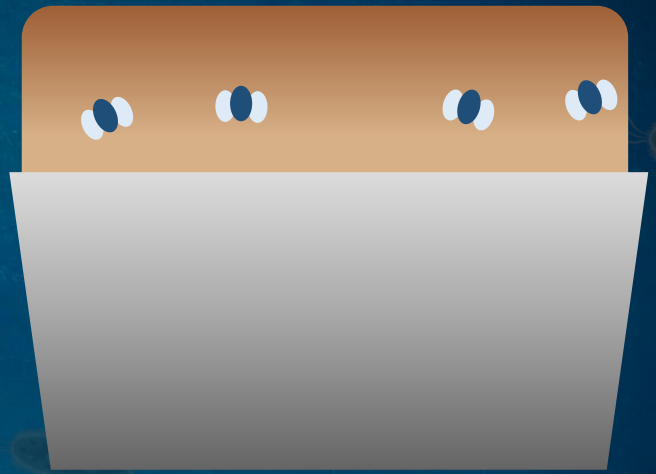
Swiss Cheese

Swiss Cheese



Bread Making





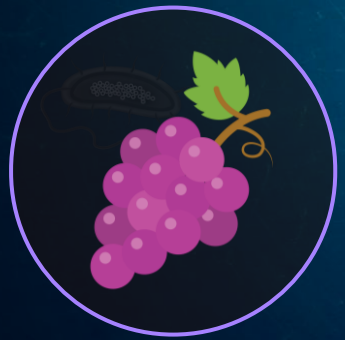
Yeast in Delicious Goodies

Donuts

Croissant

Bread

Food Preservation



Grapes

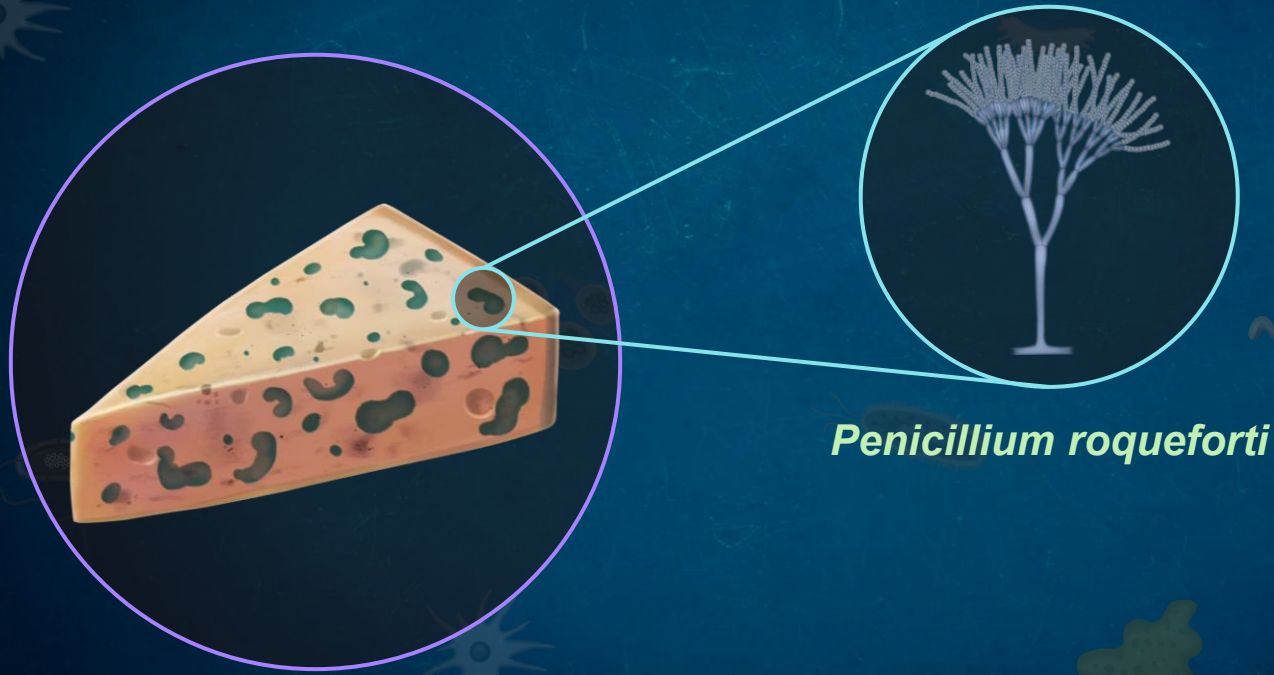
Crushing

Storing of wine

Food Preservation

Toddy

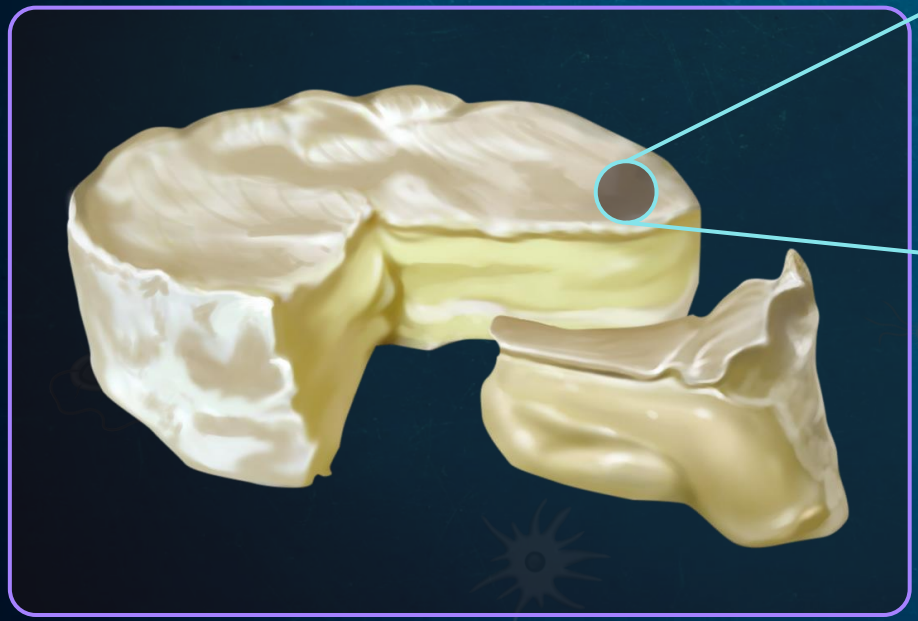
Blue Cheese



Penicillium roqueforti

Roquefort cheese

Camembert Cheese



Camembert Cheese

Penicillium camemberti


Microbes in Industry Products

Microbes in Industry Products

Fermentors – Large vessels to grow microbes for industrial use

Fermentation Plant – Many fermentors form fermentation plant

Fermentors

Fermentation Plant

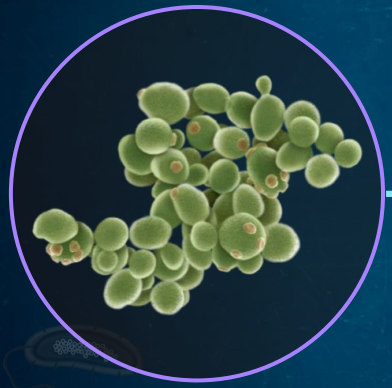
Microbes in Industry Products

Fermented Beverages

Antibiotics

Chemicals

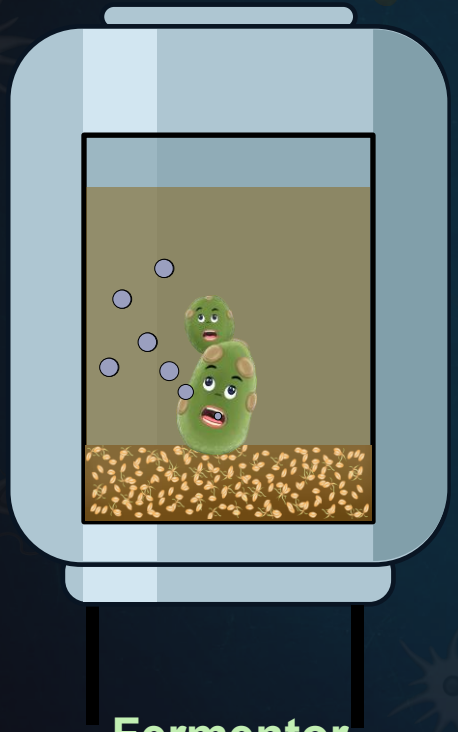
Fermented Beverages



Saccharomyces Cerevisiae
(Brewer's Yeast)

- Beer
- Wine
- Brandy
- Rum
- Whiskey

Fermented Beverages



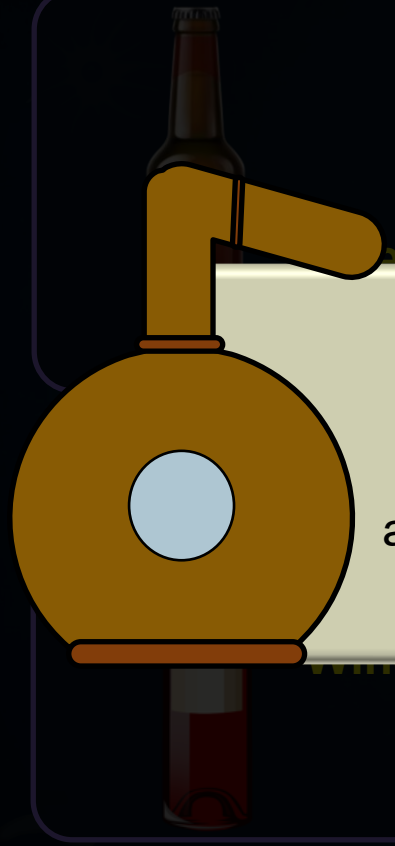
Fermentor

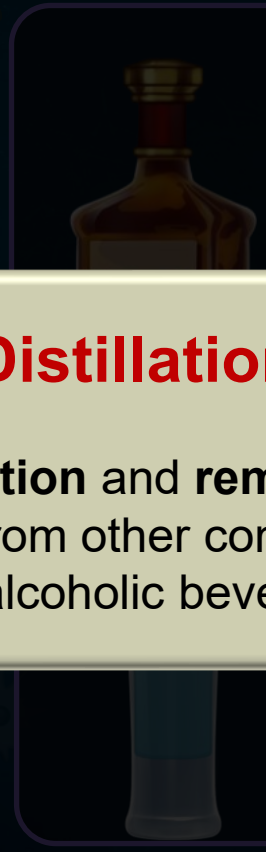
Fermentation

Alcohol

Fermented Beverages

Fermented Beverages





Whiskey

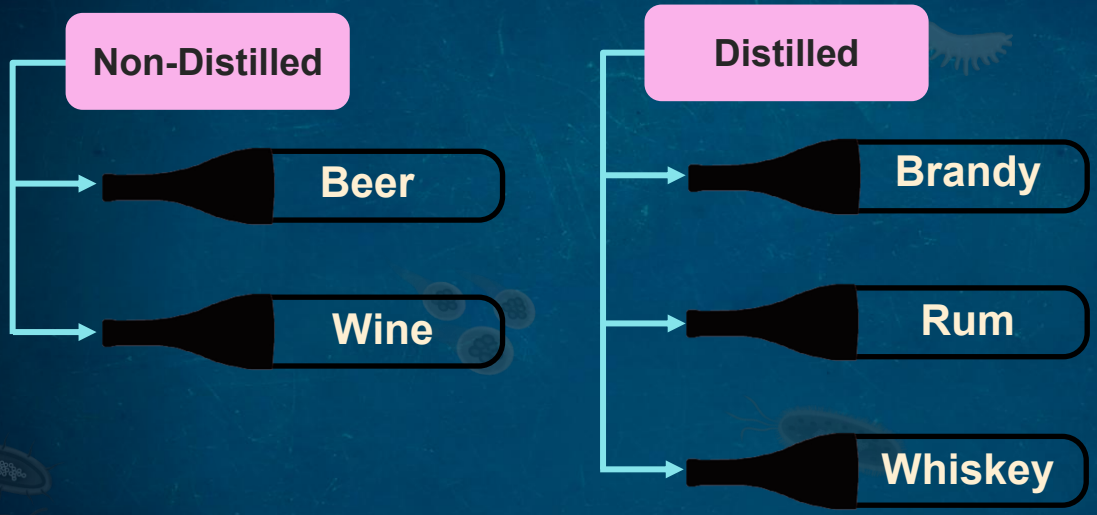
Rum

Vodka

Distillation

Separation and **removal** of alcohol from other components from alcoholic beverages

Fermented Beverages

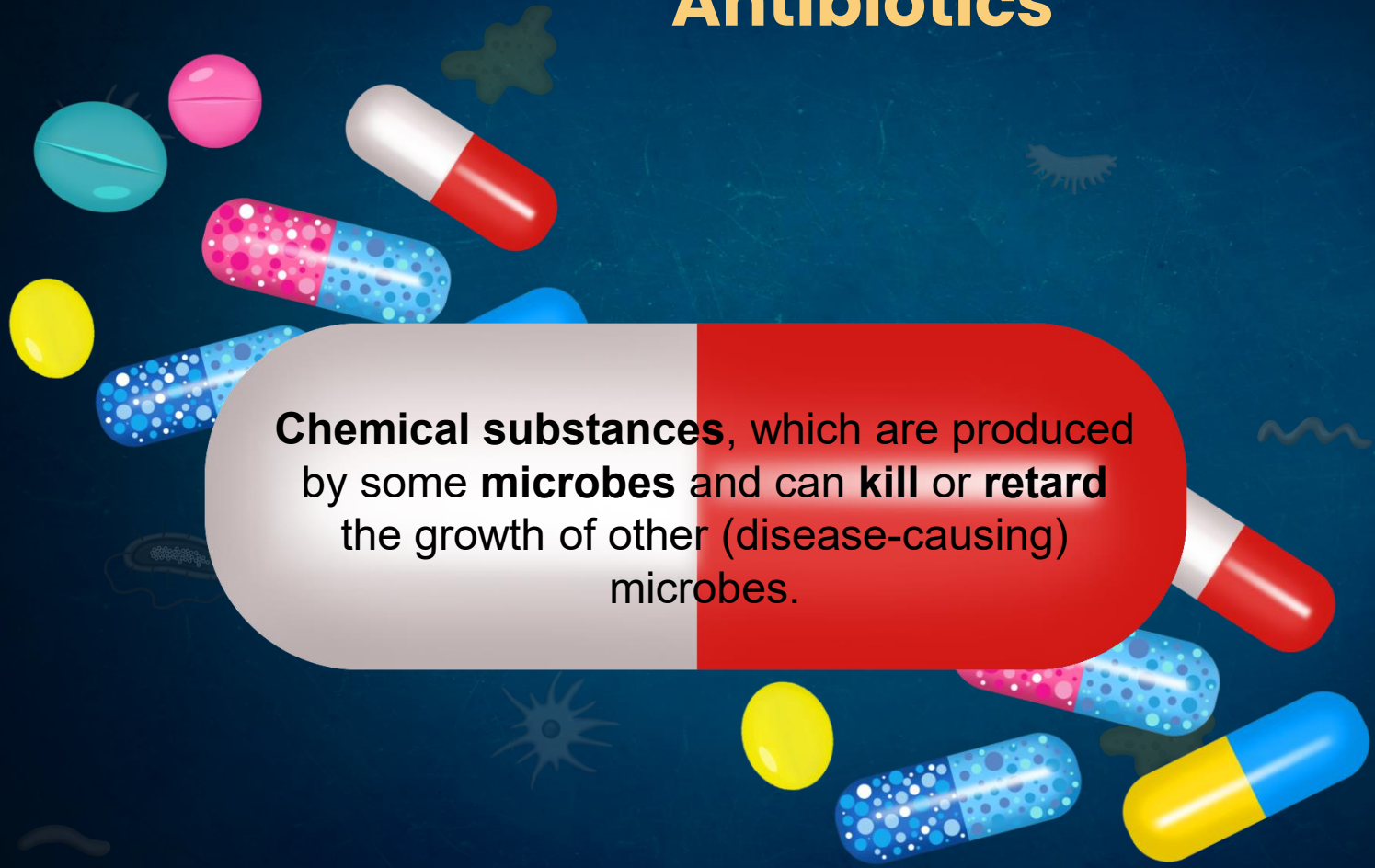


Antibiotics

Anti
against

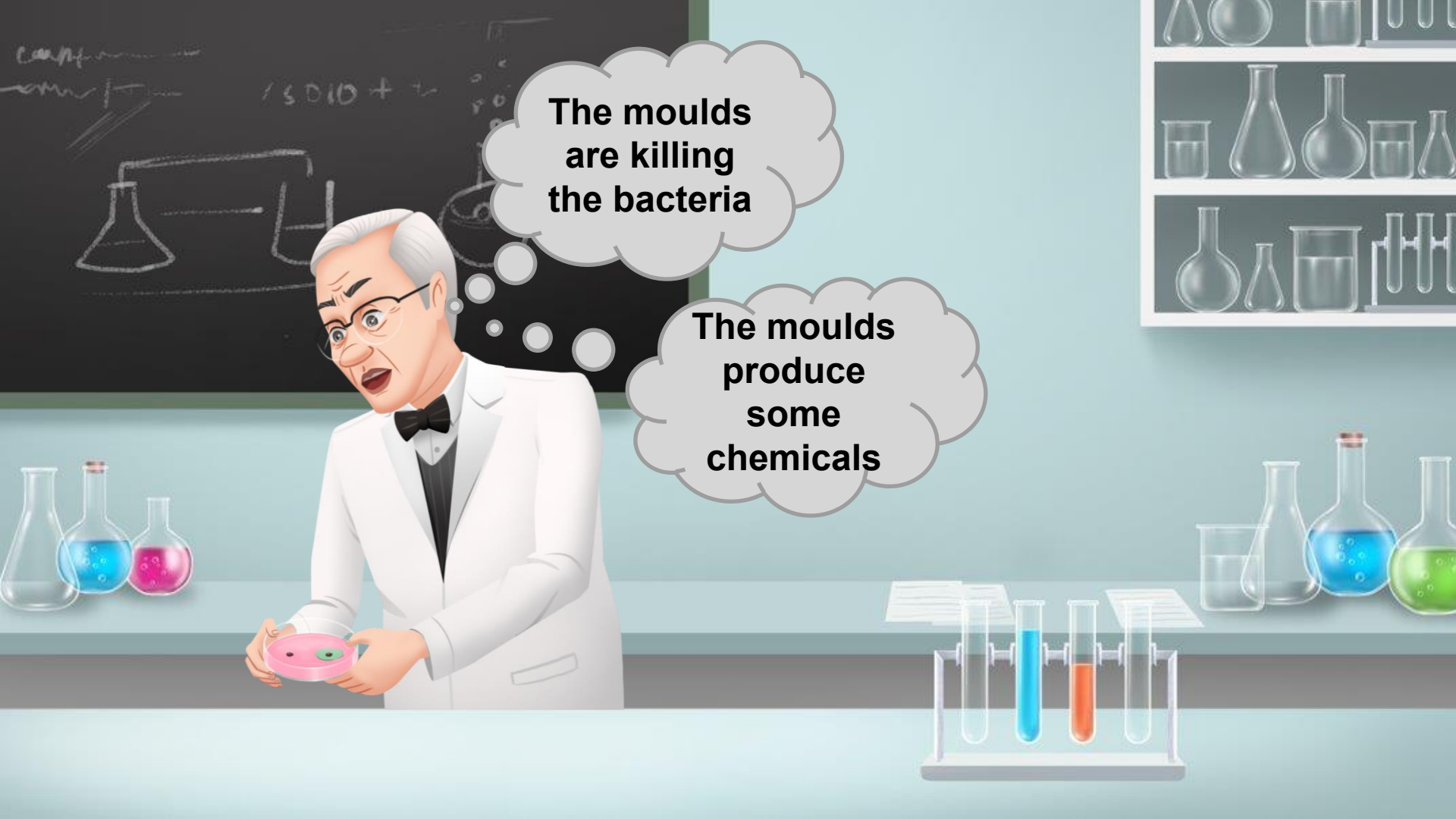
bio
life

Antibiotics

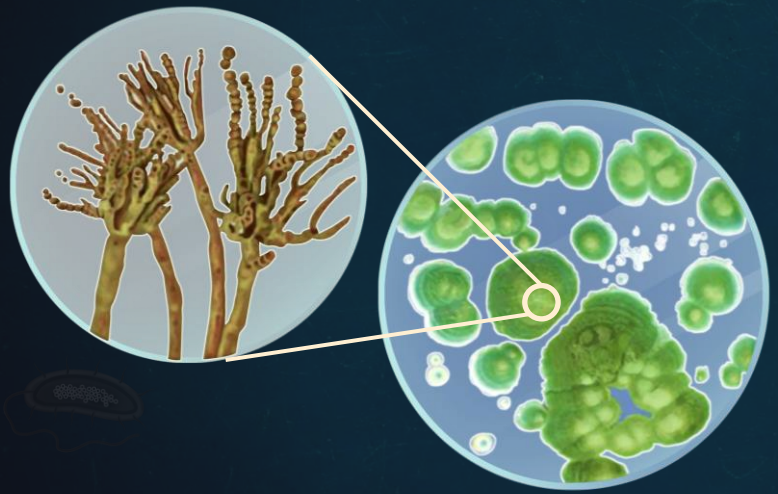


Chemical substances, which are produced by some **microbes** and can **kill** or **retard** the growth of other (disease-causing) microbes.

The Discovery of Penicillin


The moulds are killing the bacteria
The moulds produce some chemicals

Antibiotics



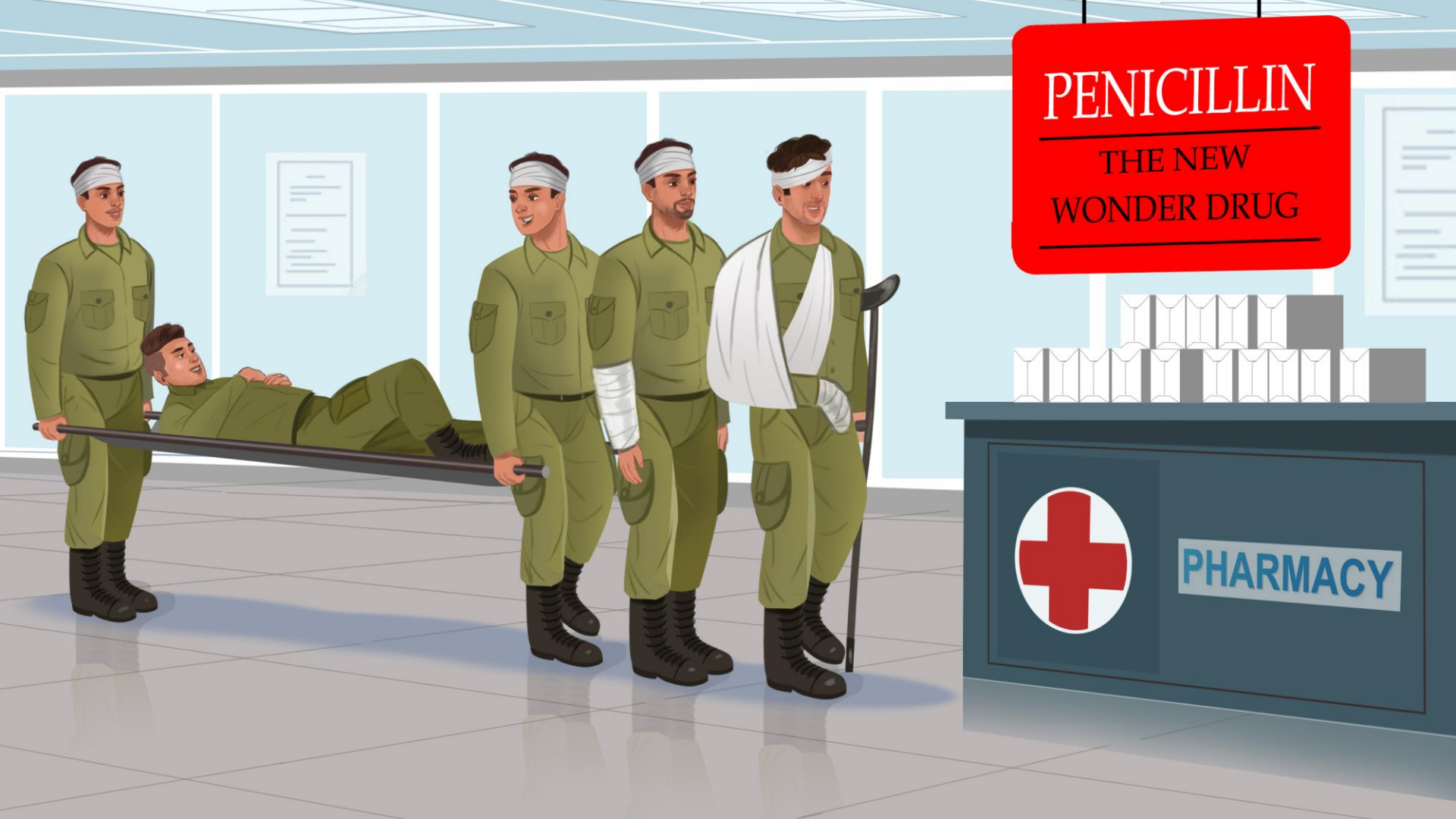
Penicillium notatum

Penicillium

Antibiotics

Ernst Boris Chain

Sir Howard Walter Florey


PENICILLIN
THE NEW
WONDER DRUG
PHARMACY

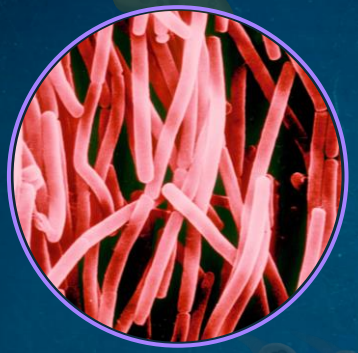
Antibiotics

Won Nobel Price in 1945

Antibiotics

Cephalosporium acremonium

Cephalosporin



Bacillus subtilis

Bacitracin

Streptomyces griseus

Streptomycin

Micromonospora purpurea

Gentamicin

Antibiotics

Plague

Whooping cough
(*kali khansi*)

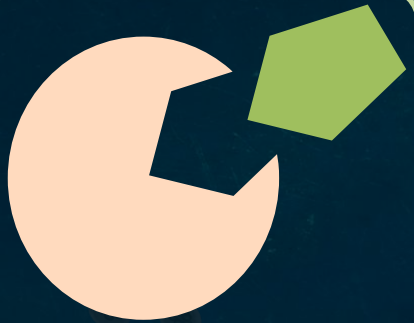
Diphtheria
(*gal ghotu*)

Leprosy
(*kusht rog*)

Chemicals, Enzymes and Bioactive Molecules

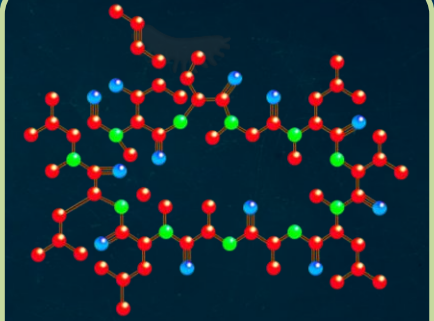
Chemicals

Any material with a definite chemical composition



Enzymes

Substances which act as biological catalysts



Bioactive molecules

Molecules are which are produced as a result of microbial activities

Chemicals, Enzymes and Bioactive Molecules

Organic Acids

Aspergillus niger
(fungus)

Citric Acid

- Detergent manufacturing
- Leather tanning
- Preservative
- Flavoring

Chemicals, Enzymes and Bioactive Molecules

Organic Acids

Acetobacter aceti
(a bacterium)

Acetic Acid

Industrial solvent

Cancer treatment

Foods

Chemicals, Enzymes and Bioactive Molecules

Organic Acids

Clostridium butylicum
(a bacterium)

Butyric Acid

- Food and flavoring
- Pharmaceuticals
- Perfume

Chemicals, Enzymes and Bioactive Molecules

Organic Acids

Lactobacillus
(a bacterium)

Lactic Acid

Cosmetic Industry

Pharmaceuticals

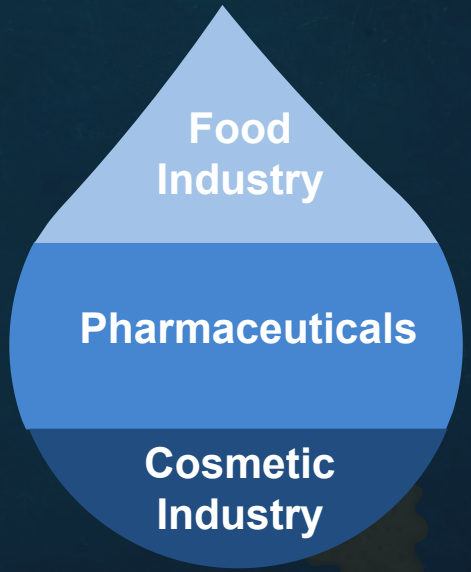
Food Industry

Chemicals, Enzymes and Bioactive Molecules

Alcohol

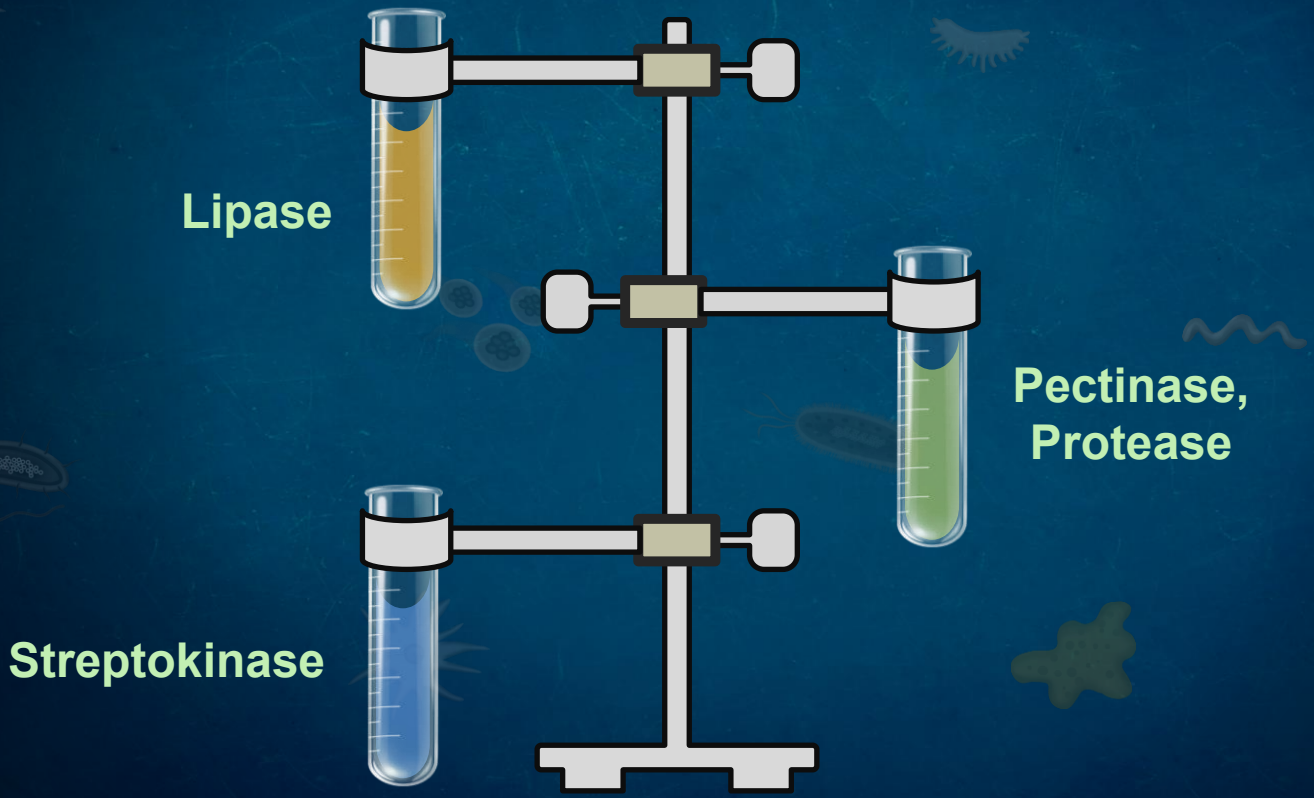
Saccharomyces cerevisiae (yeast)

Ethanol



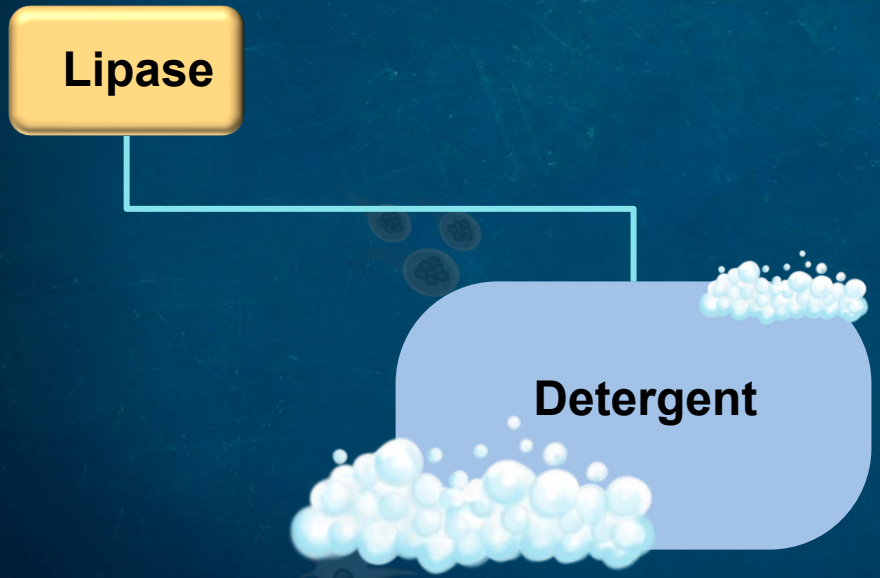
Chemicals, Enzymes and Bioactive Molecules

Enzymes



Chemicals, Enzymes and Bioactive Molecules

Enzymes



Chemicals, Enzymes and Bioactive Molecules

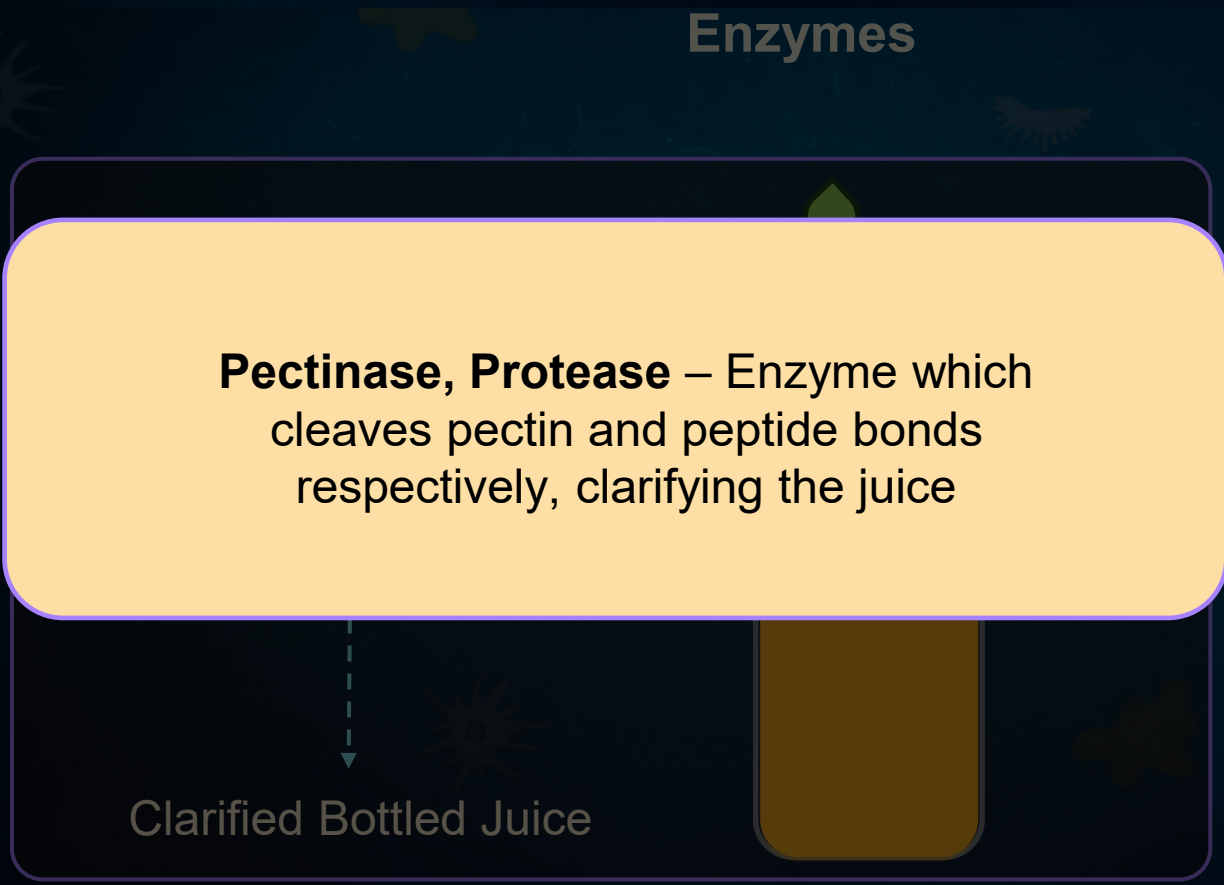
Enzymes

Homemade Juice

Pectinase, Protease

Clarified Bottled Juice

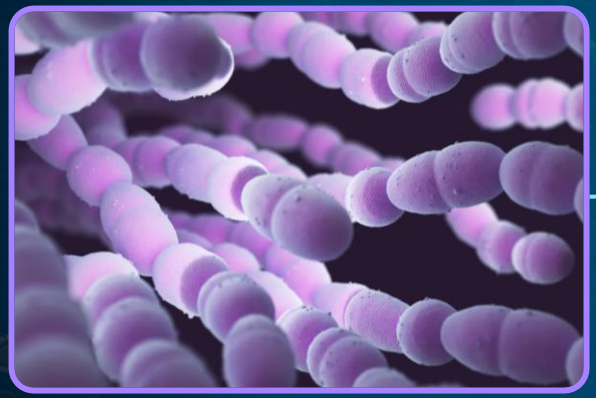
Chemicals, Enzymes and Bioactive Molecules



Pectinase, Protease – Enzyme which cleaves pectin and peptide bonds respectively, clarifying the juice

Chemicals, Enzymes and Bioactive Molecules

Enzymes



Streptococcus

Streptokinase

"Clot buster"

Chemicals, Enzymes and Bioactive Molecules

Enzymes

Removes blood clots from patients who have undergone myocardial infarction

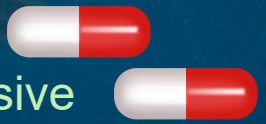
Chemicals, Enzymes and Bioactive Molecules

Bioactive molecules

Trichoderma polysporumn **(fungus)**

cyclosporin A

Immunosuppressive agent



Chemicals, Enzymes and Bioactive Molecules

Bioactive molecules

***Monascus purpureus* (fungus)**

→ **Statins**

↓

Blood cholesterol lowering agents


Keep Learning