

SNS COLLEGE OF PHARMACY AND HEALTH SCIENCES



Affiliated To The Tamil Nadu Dr. MGR Medical University, Chennai

Approved by Pharmacy Council of India, New Delhi.

Coimbatore -641035

COURSE NAME : PHARMACEUTICAL MICROBIOLOGY - BP303 T

B.PHARM II YEAR / III SEM

UNIT 1

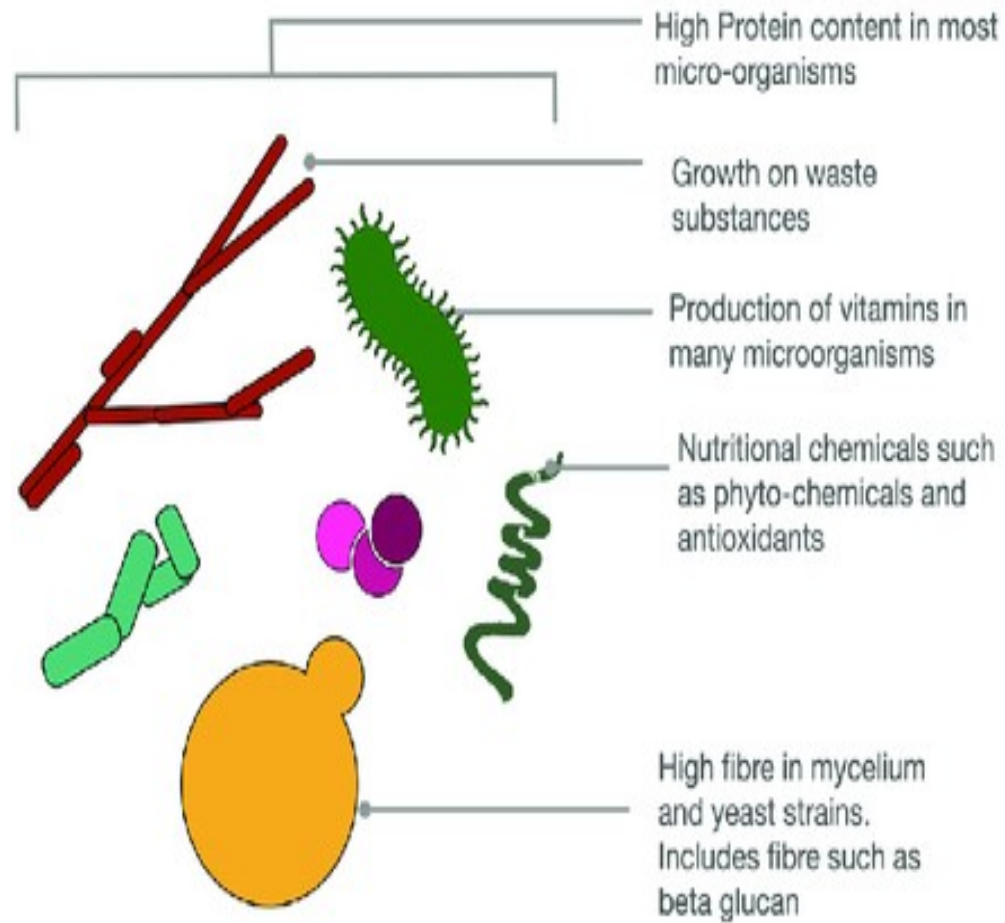
SUB TOPIC :NUTRITION GROWTH AND CULTIVATION OF
BACTERIA

BACTERIAL NUTRITION

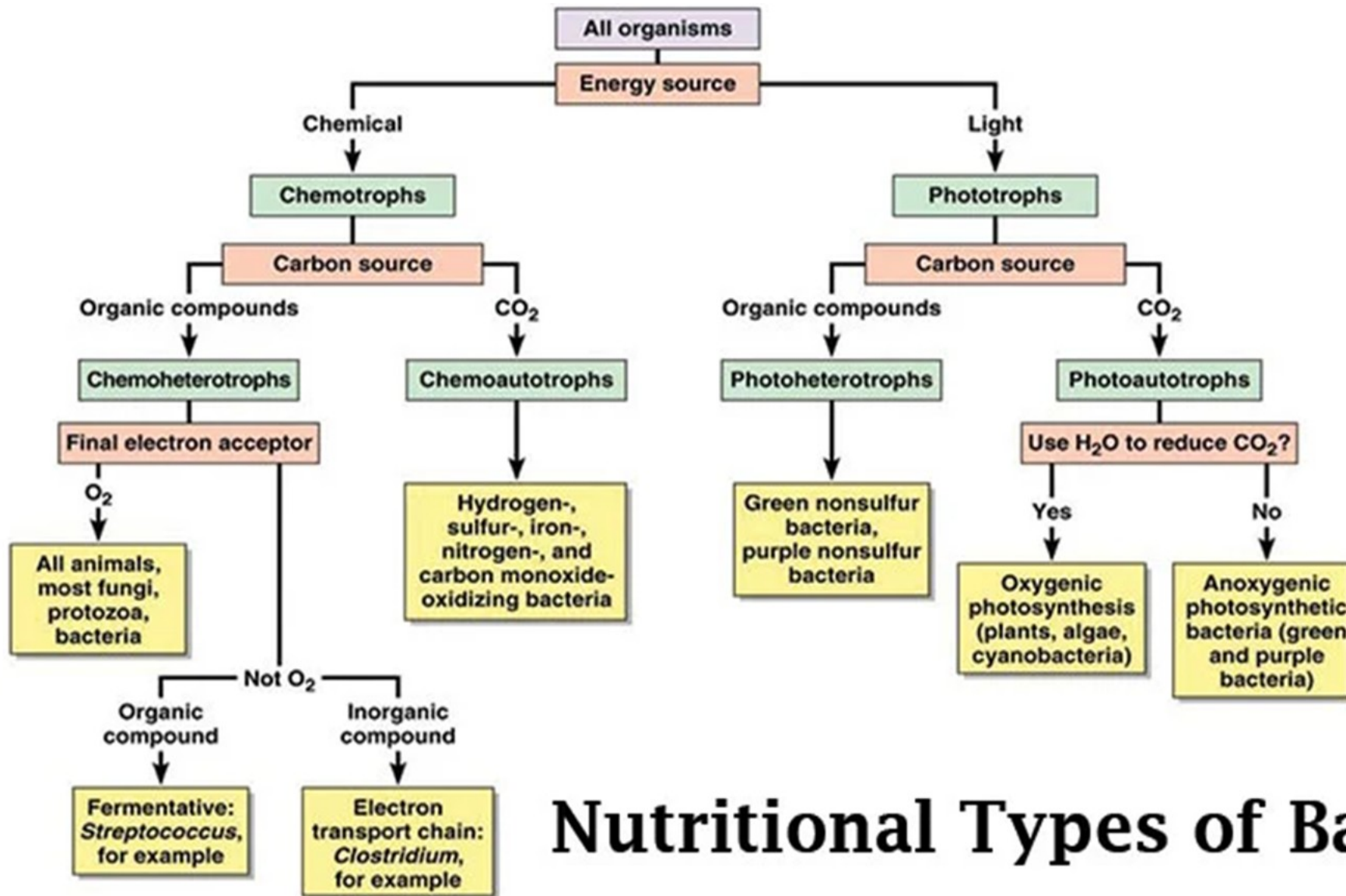
Bacterial Nutritional Modes

	Mode of Nutrition	Energy Source	Carbon Source	Types of Organisms
Autotroph	Photoautotroph	Light	CO ₂	Photosynthetic prokaryotes (for example, cyanobacteria); plants; certain protists (algae)
	Chemoautotroph	Inorganic Chemicals	CO ₂	Certain prokaryotes (for example, sulfurous)
Heterotroph	Photoheterotroph	Light	Organic Compounds	Certain prokaryotes (for example, rhodo-bacter, chloro-flexus)
	Chemoheterotroph	Organic Compounds	Organic Compounds	Many prokaryotes (for example, Clostridium) and protists' fungi; animals; some plants

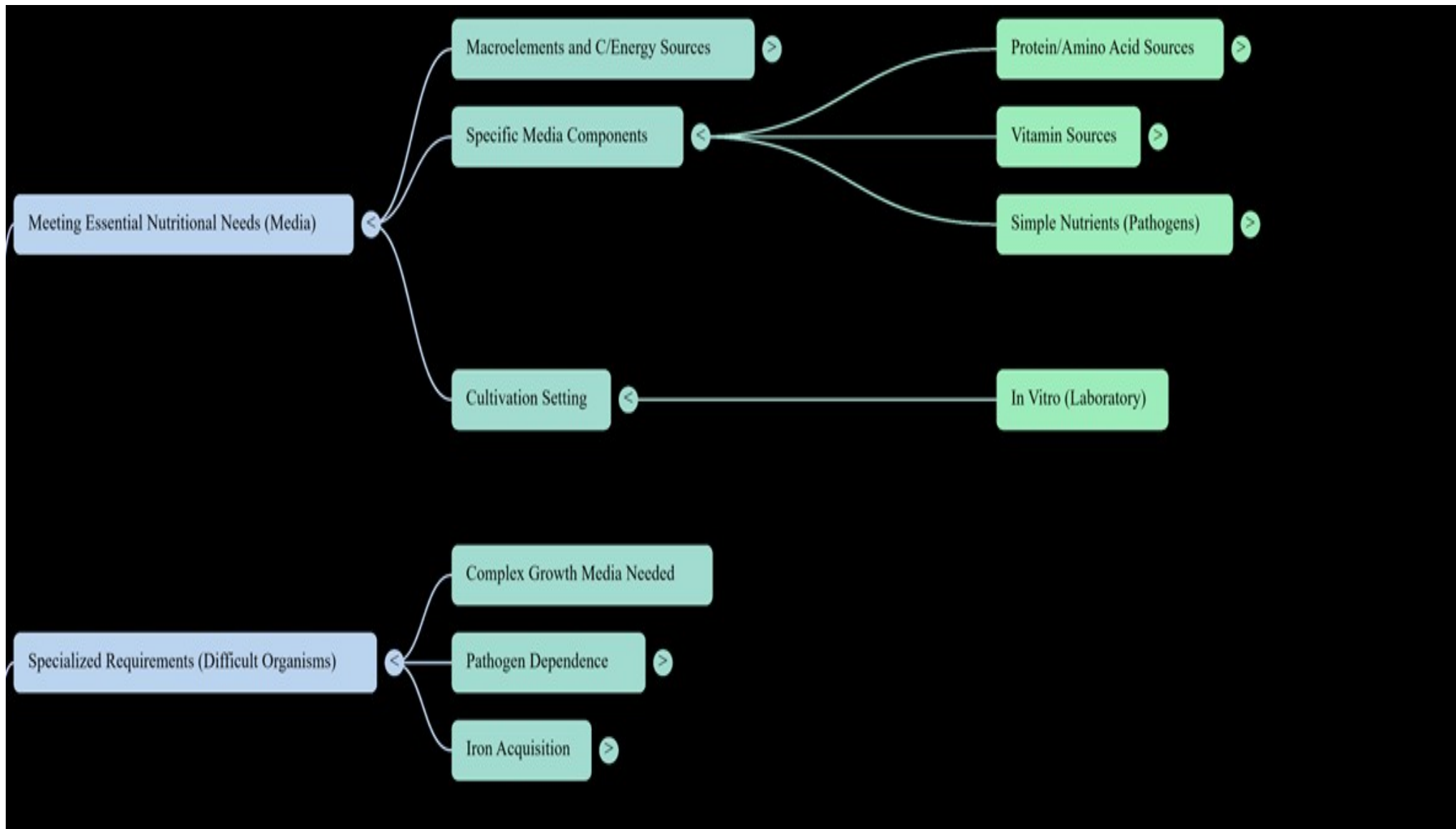
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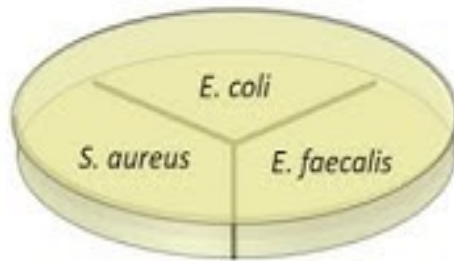


Organism	Fibre	Protein	Micro-nutrients
Bacteria			
Algae			
Mycelium			
Yeast			

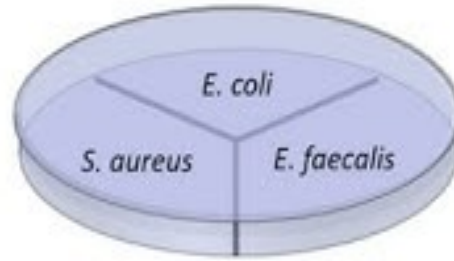


Nutritional Types of Bacteria

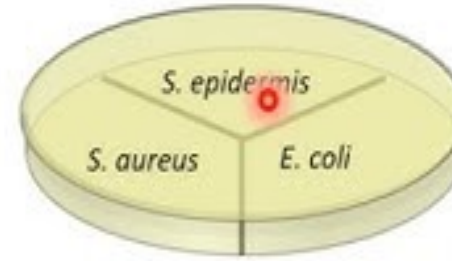




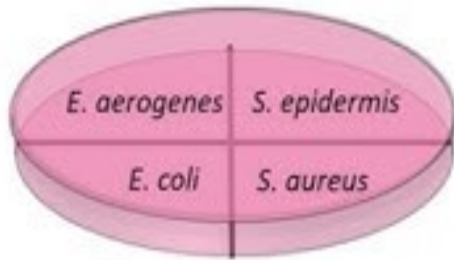
Phenylethyl alcohol agar



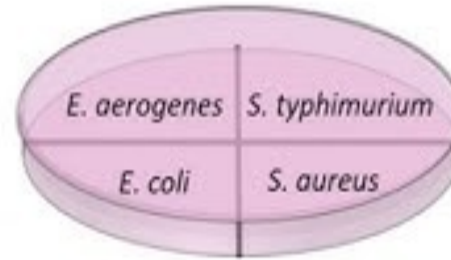
Crystal violet agar



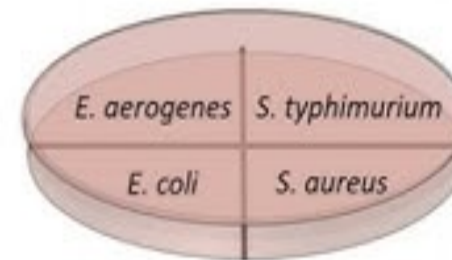
7.5% sodium chloride agar



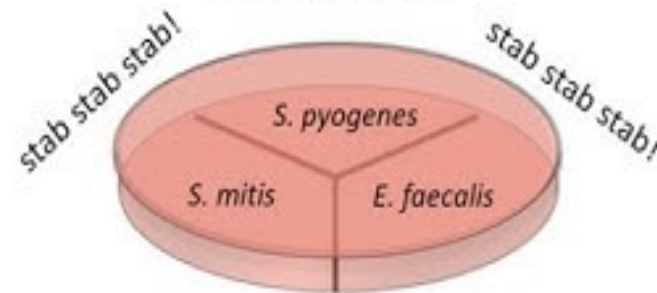
Mannitol salt agar



MacConkey Agar

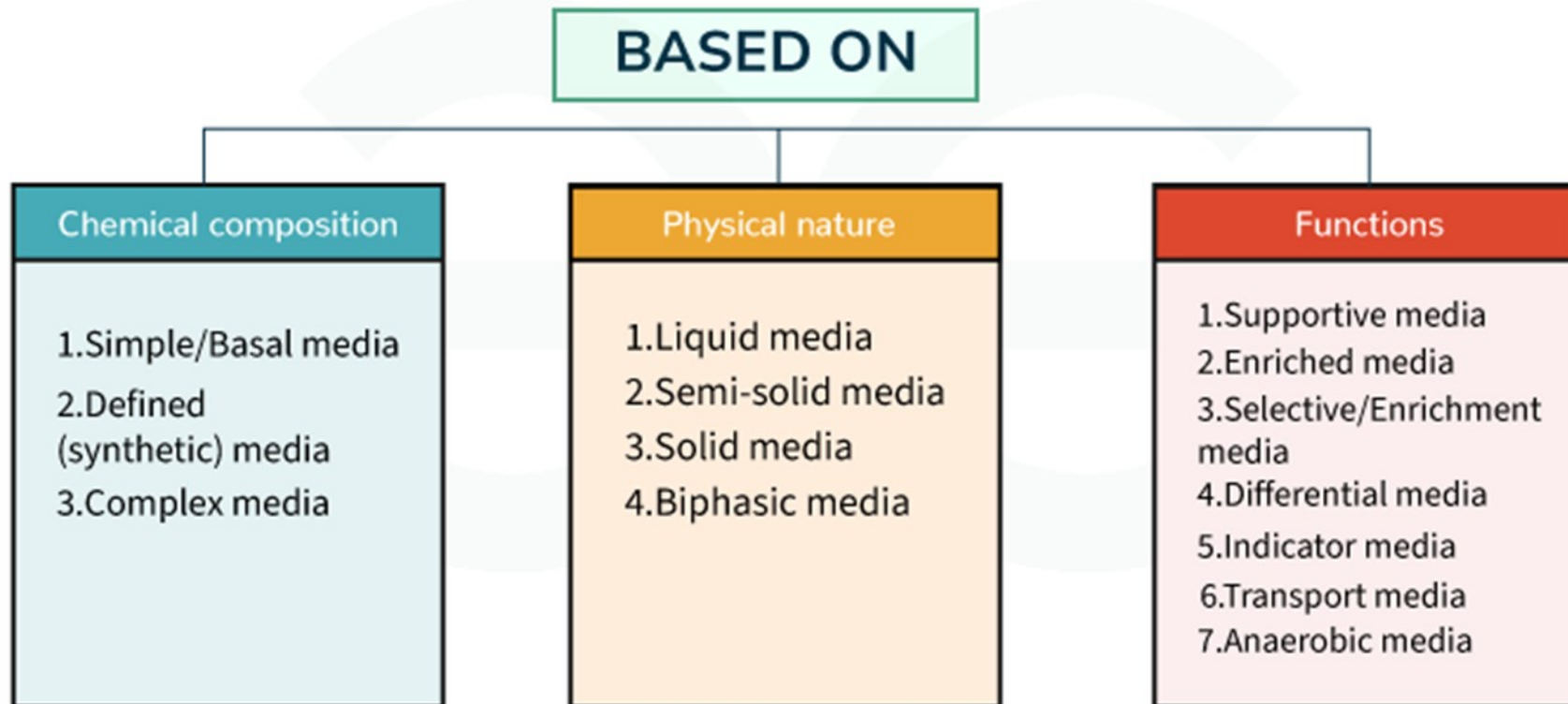


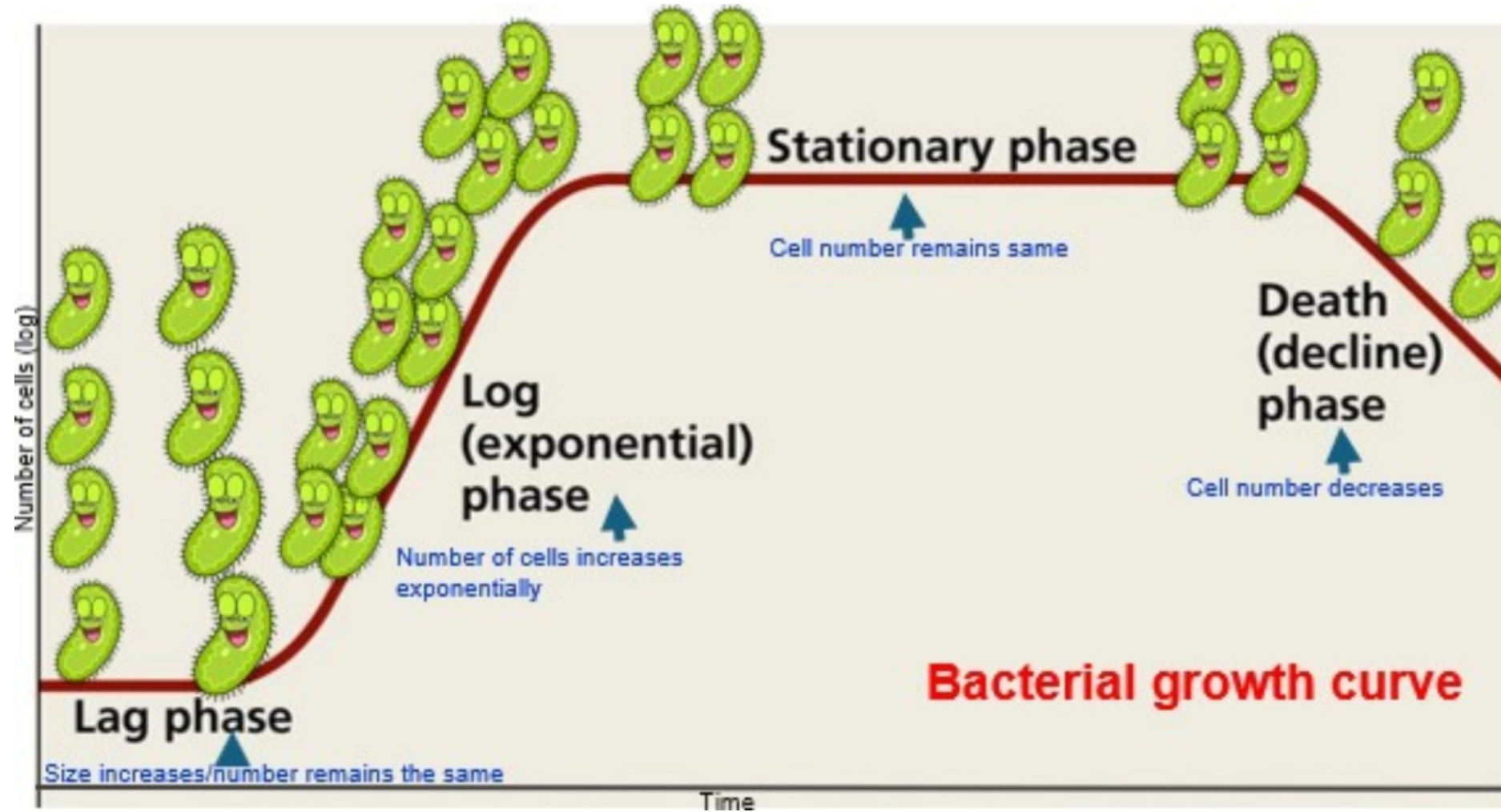
Eosin-methylene blue agar



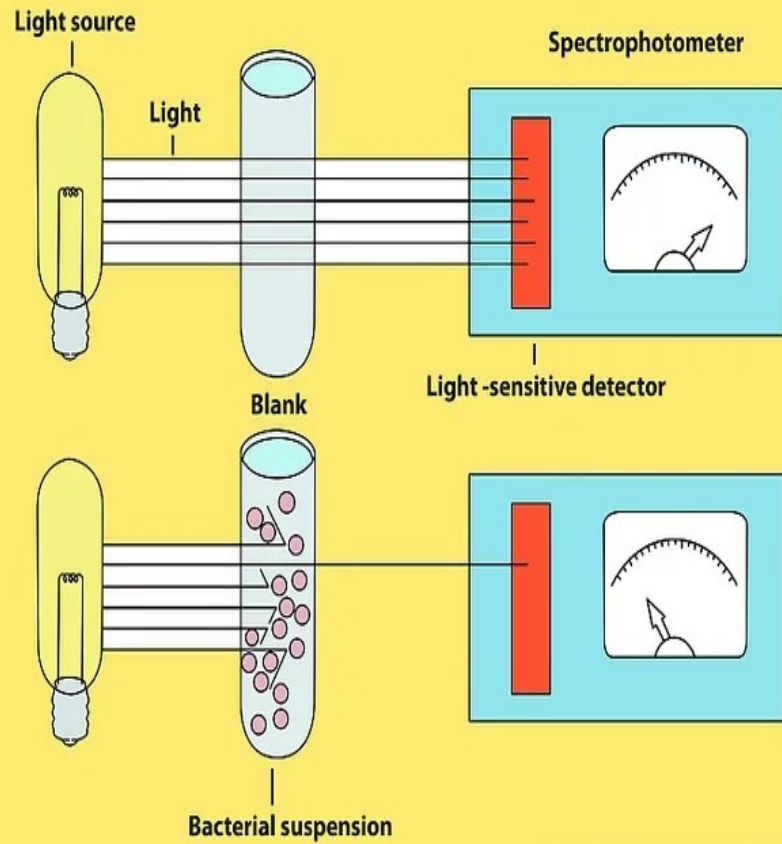
Blood agar

CLASSIFICATION OF CULTURE MEDIA

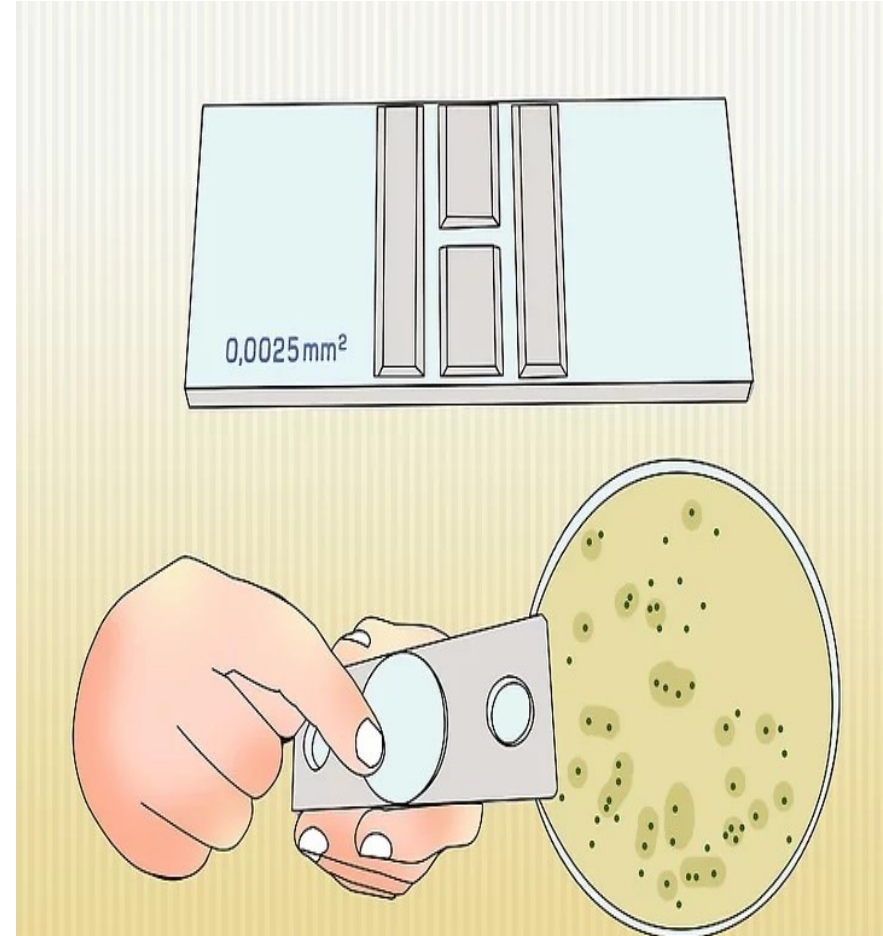




Measuring Turbidity



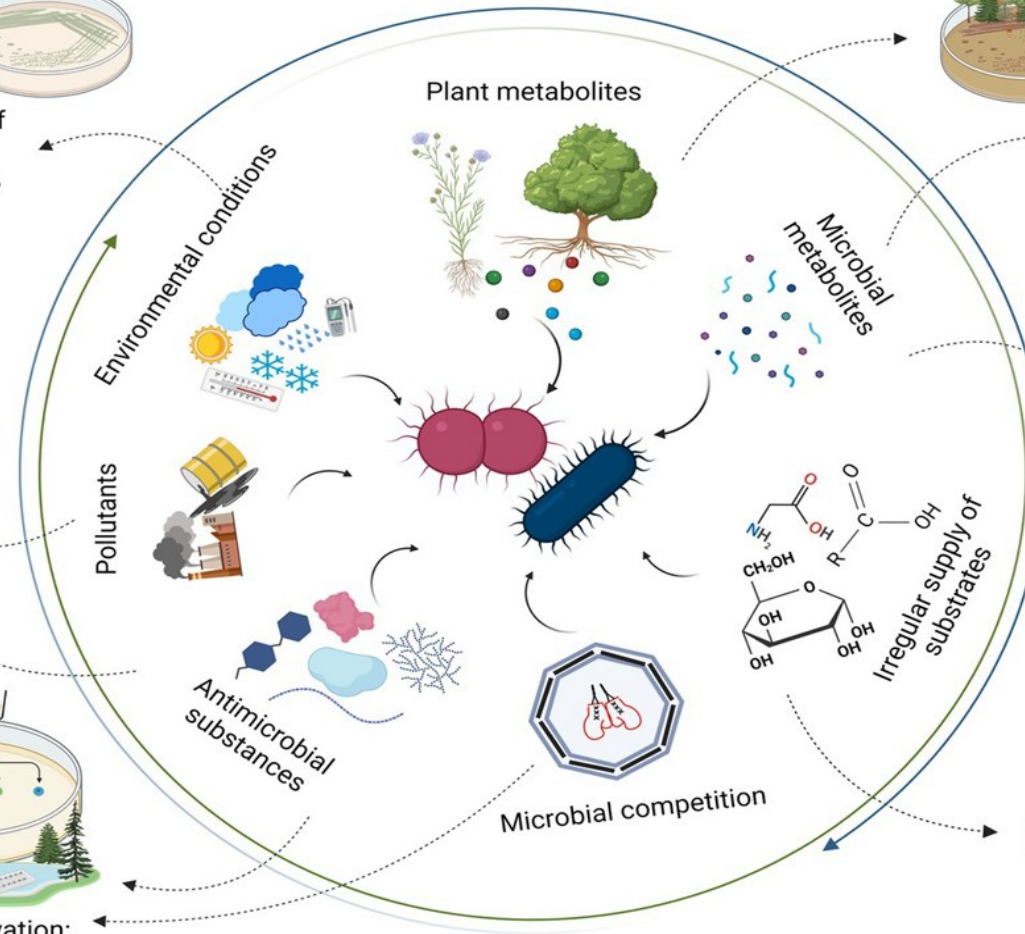
Direct count



Adjust physical conditions of cultivation:
temperature, pH, gas levels,
incubation time

Culture with specific compound to select resistant microorganisms

Sort/separate cells before cultivation:
cell sorter, Ichip, diffusion systems,
streaking pen, optical tweezers

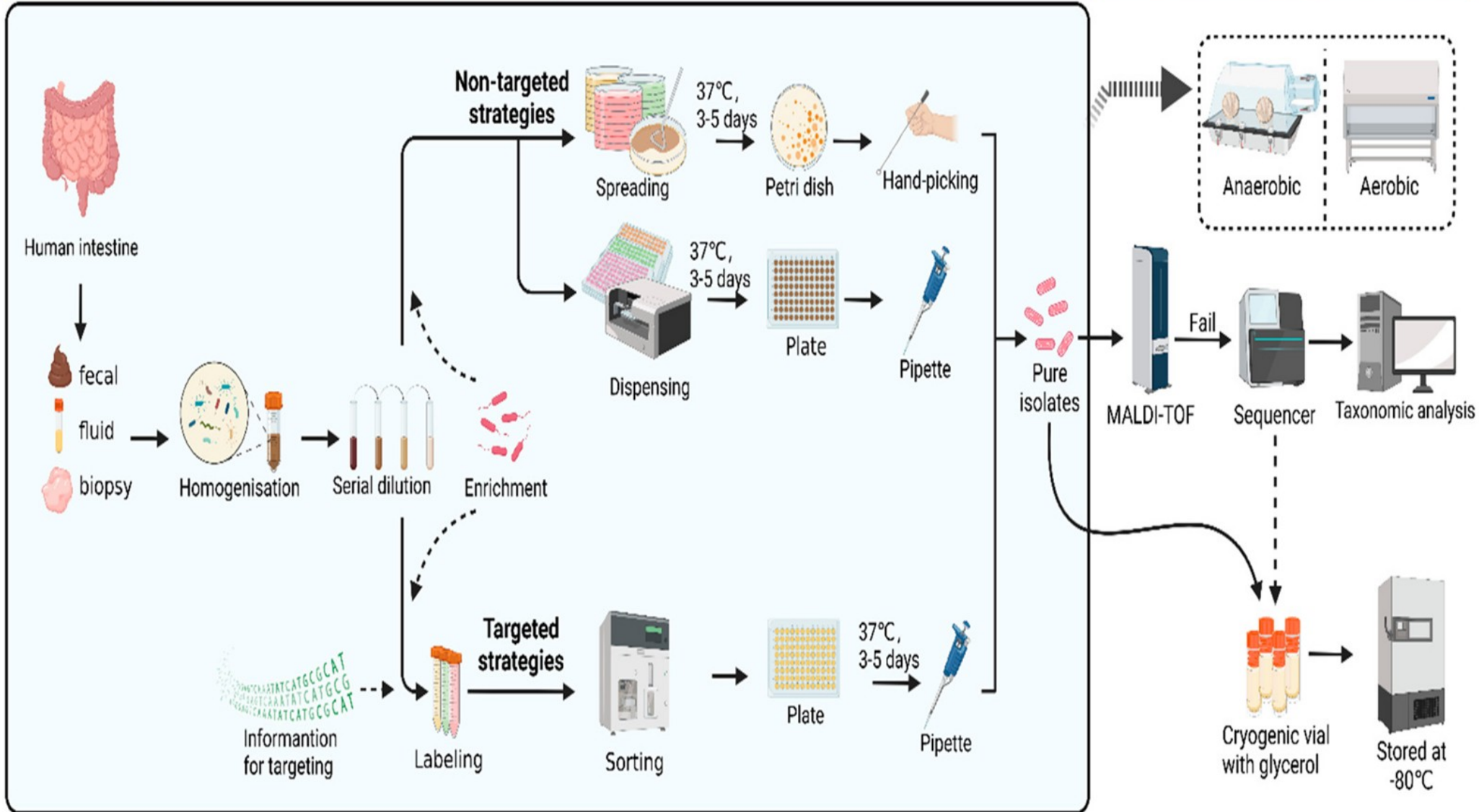


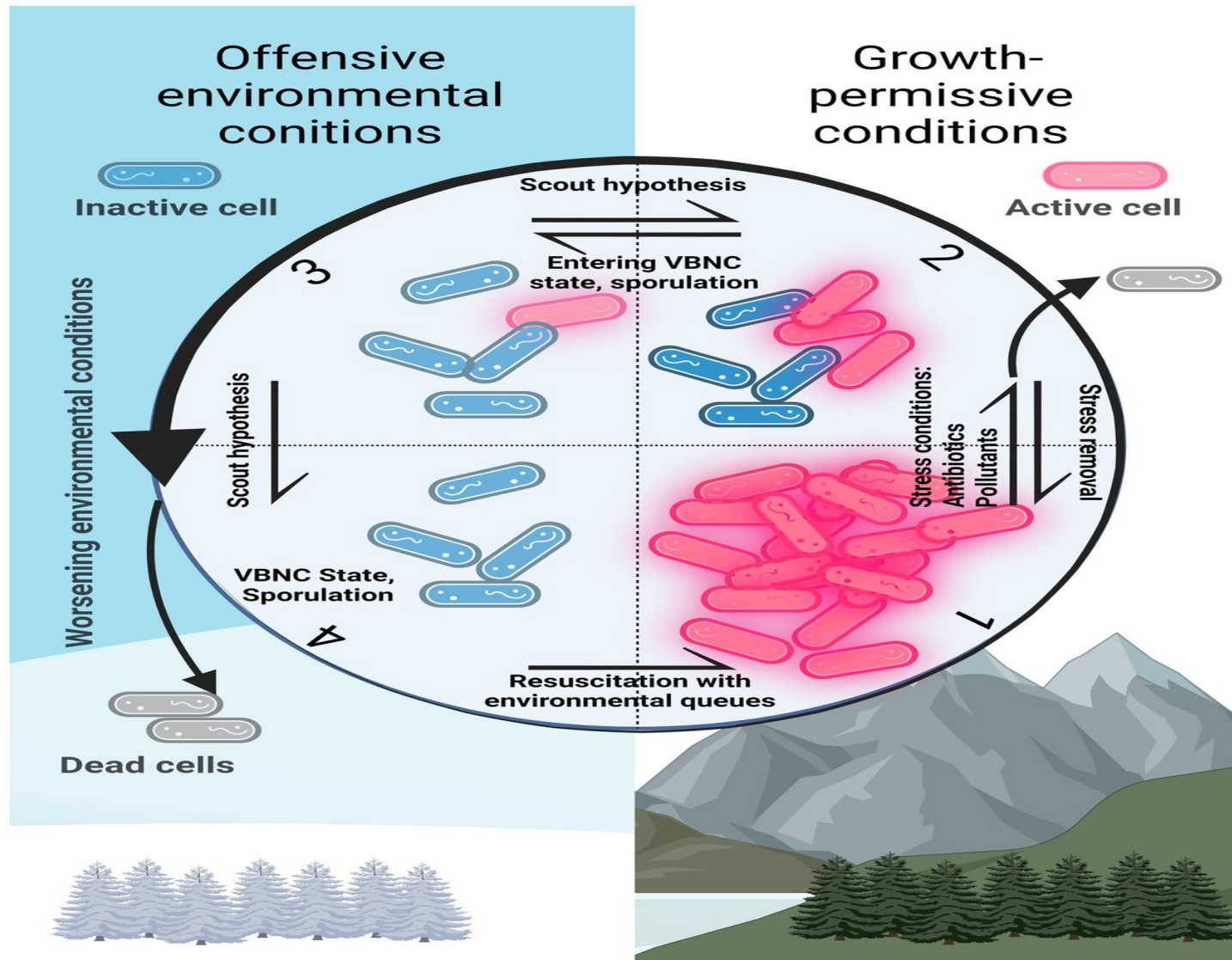
How can we make cultivation more efficient?

Provide specific substances to media: signaling molecules, resuscitation-promoting factors, extracellular metabolites

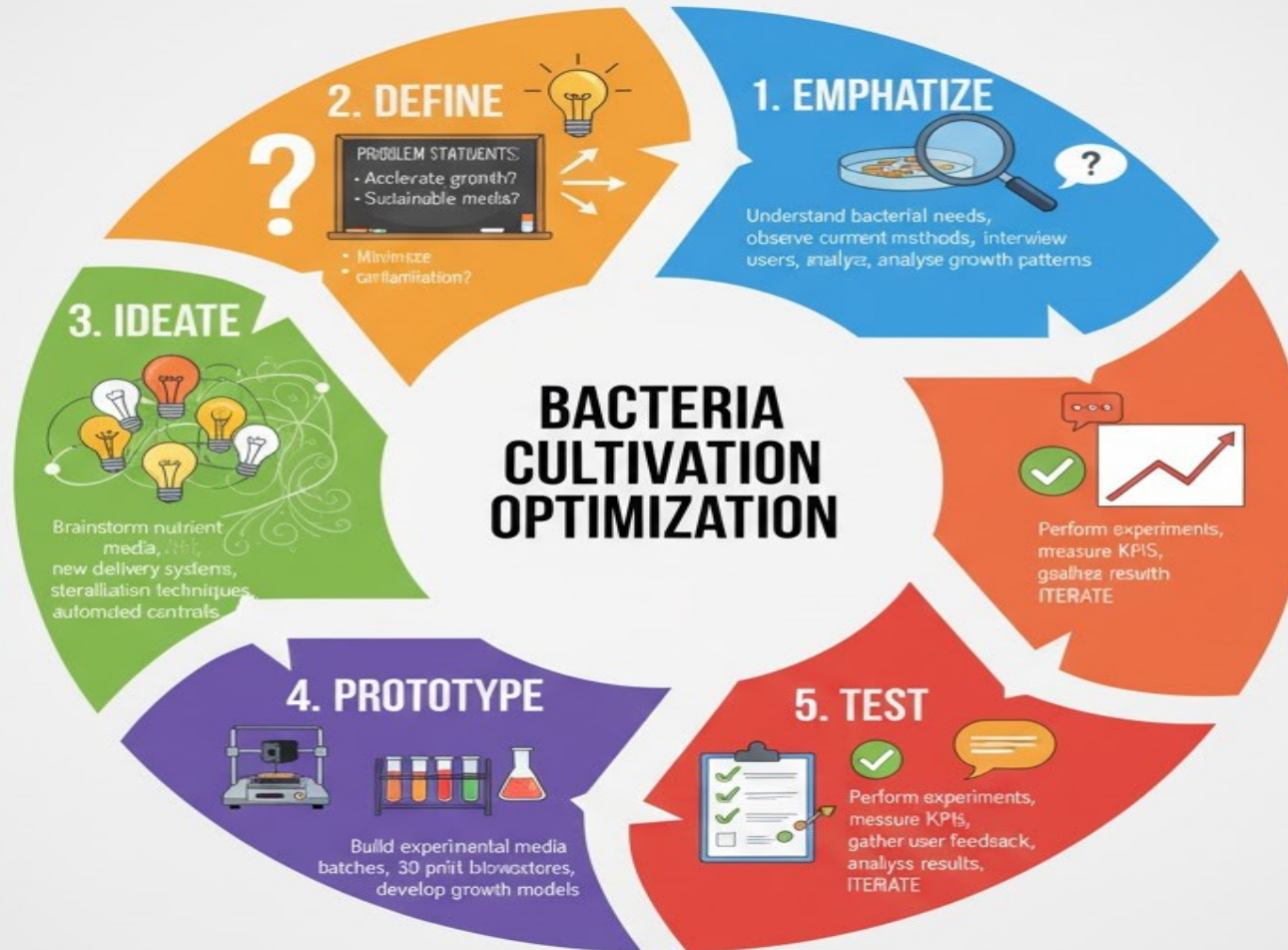
Co-cultivation with
helper strain

Adjust media composition
and substrate
concentration





DESIGN THINKING FOR BACTERIA

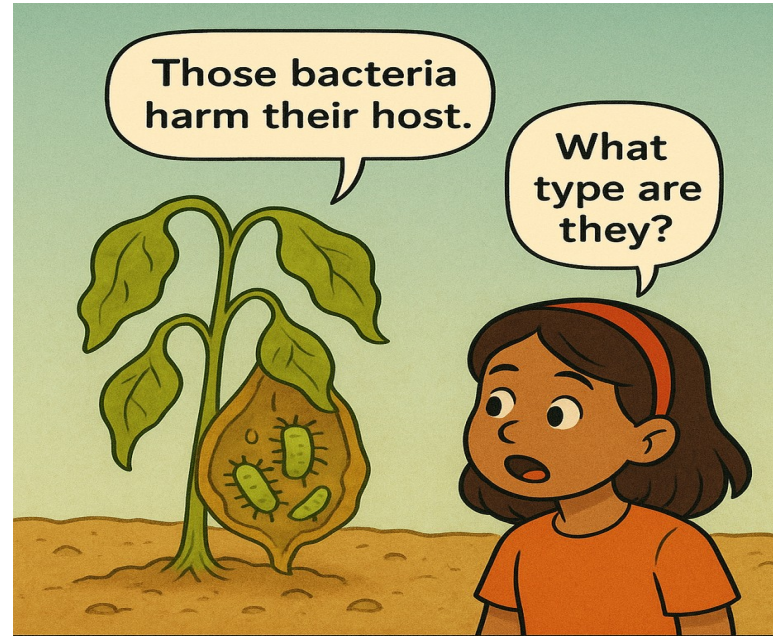






So they're _____ bacteria!

- Ⓐ Saprophytic
- Ⓑ Parasitic
- Ⓒ Autotrophic
- Ⓓ Magic



- A) Friendly bacteria
- B) Parasitic bacteria
- C) Saprophytic bacteria
- D) Phototrophic bacteria

Micro said, "Let's visit the *growth chamber!*" Inside, bacteria were multiplying like crazy!

"What process makes one bacterium split into two?"

- A) Budding
- B) Binary fission
- C) Spore formation



REFERENCES

- 1.W.B. Hugo and A.D. Russel: Pharmaceutical Microbiology, Blackwell Scientific publications, Oxford London.
2. Prescott and Dunn., Industrial Microbiology, 4th edition, CBS Publishers & Distributors, Delhi.
3. Ananthanarayan : Text Book of Microbiology, Orient-Longman, Chennai

