

# Microbiology Study Guide

## Microbial growth

### ***PHYSICAL REQUIREMENTS FOR GROWTH***

- Growth of population: increase in the number of cells
- Requirements are both *physical and chemical*

#### PHYSICAL REQUIREMENTS:

- \*psychrophiles: cold loving microbes
- \*mesophiles: moderate temperature
- \*thermophiles: heat loving
- Minimum growth temperature: the lowest temperature that a species will grow
  - Optimum: temperature it grows best
  - Maximum: highest temperature tolerated for growth
- Most bacteria grow at a pH value between 6.5-7.5
- Most microbes undergo plasmolysis (shrinking) in hypertonic solutions; halophiles (microorganisms that require salt to survive) can tolerate higher salt concentrations

#### CHEMICAL REQUIREMENTS:

- Carbon—all organisms require a carbon source
- \*chemoheterotrophs: use an organic molecule (pure carbon)
- \*autotrophs: use carbon dioxide
- Nitrogen—needed for protein and nucleic acid synthesis. Obtained from decomposition of proteins, from  $\text{NH}_4$  or  $\text{NO}_3$ .
- Oxygen—obligate aerobes (require oxygen); facultative anaerobes (will use oxygen if it is present but do not require it); anaerobes (do not use oxygen) – for growth
- Other: sulfur, phosphorus, trace elements, organic growth factors

#### BIOFILMS

- Microbes adhere to surfaces and accumulate as biofilms on solid surfaces in contact with water
- Most bacteria live in biofilms
- Microbes in biofilms are more resistant to antibiotics than free-swimming microbes

# Microbiology Chapter Study Questions

**JR Anderson**



## **Microbiology Chapter Study Questions:**

## **Microbiology Chapter Study Questions** Book Review: Unveiling the Magic of Language

In an electronic era where connections and knowledge reign supreme, the enchanting power of language has become much more apparent than ever. Its power to stir emotions, provoke thought, and instigate transformation is really remarkable. This extraordinary book, aptly titled "**Microbiology Chapter Study Questions**," compiled by a very acclaimed author, immerses readers in a captivating exploration of the significance of language and its profound effect on our existence. Throughout this critique, we will delve into the book's central themes, evaluate its unique writing style, and assess its overall influence on its readership.

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