

Microbial Structure and Function

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1. Introduction

- Understanding microbial structure explains how microbes survive, cause disease, and respond to treatment.

2. The Bacterial Cell

- **Cell wall:** gives shape and protection; its peptidoglycan determines Gram reaction.
- **Cell membrane:** controls what enters and leaves the cell.
- **Cytoplasm:** contains ribosomes and the genetic material.

3. External Structures

- **Capsule:** a protective layer that helps bacteria evade the immune system.
- **Flagella:** whip-like structures for movement.
- **Pili (fimbriae):** help attachment to surfaces and transfer of genetic material.

4. Genetic Material

- A single circular chromosome carries the essential genes.
- **Plasmids:** small extra DNA rings that can carry antibiotic-resistance genes.

5. Endospores

- Some bacteria form dormant, highly resistant endospores that survive harsh conditions.

6. Summary

- Each microbial structure has a function in survival, movement, attachment, or pathogenicity, and several are targets for antibiotics.