

Host-Pathogen Interactions

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1. Introduction

- A host-pathogen interaction is the relationship between an infecting microbe and the host it infects.
- The outcome depends on the microbe's virulence and the host's defences.

2. Stages of Infection

- **Exposure and adherence:** the pathogen contacts and attaches to host tissue.
- **Invasion:** it enters tissues, sometimes spreading widely.
- **Colonisation and multiplication:** the pathogen establishes and increases in number.

3. Virulence Factors

- **Adhesins:** help attachment to host cells.
- **Toxins:** damage host tissue; exotoxins are secreted, endotoxins are part of the bacterial wall.
- **Capsules and enzymes:** help evade immune defences.

4. Host Defences

- **Innate immunity:** skin, mucous membranes, phagocytes, and inflammation.
- **Adaptive immunity:** specific antibodies and immune cells that remember pathogens.

5. Outcomes of Infection

- The host may clear the pathogen, become a carrier, or develop disease.

6. Summary

- Disease results from the balance between a pathogen's virulence factors and the strength of the host's innate and adaptive defences.