16. Host-pathogen interactions: Immune evasion by pathogens

1 unit, Tobias Hohl, February 23, 2026

- Definition of Immune Evasion and Host – Microbe Relationships
  Commensalism
  Mutualism
  Parasitism
  Virulence

- Evolution of host defense mechanisms (from restriction enzymes to cytokines)

- Relationship between infectious inoculum and host tissue damage/disease
  Microbial intracellular growth as evasion strategy (low ID50) - TB
  Quorum sensing as evasion strategy (high ID50) – Cholera

- Examples of Immune Evasion
  Secreted or Injected Exotoxins or Modulators (diphtheria toxin, superantigens)
  Inhibition of Complement Function (staphylococci and meningococci)
  Outer surface of pathogen (capsules, outer membrane proteins)
  Antigenic hypervariability
  Escape from immune surveillance
  Infection or Attenuation of Effector Leukocytes
  Interference with host cell death pathways
  Interference with Ag processing, presentation, or display via MHC
  Interference with Cytokine/Interferon responses
  Interference with Pathogen receptor function and signaling
  Interference with Antimicrobial peptides

Discussion Paper:

Sterkel, A. et al. Fungal mimicry of a mammalian aminopeptidase disables innate immunity and promotes pathogenicity. Cell Host Microbe 19:361-374, 2016.

Background:

Finlay, B. B. and G. McFadden. Anti-Immunology: Evasion of the Host Immune System by Bacterial and Viral Pathogens. Cell 124:767-782, 2006.

Serruto, D. et al. Molecular mechanisms of complement evasion: learning from staphylococci and meningococci. Nature Reviews Microbiology 8:393-399, 2010.

Diacovich, L. and J.-P. Gorvel. Bacterial manipulation of innate immunity to promote infection. Nature Reviews Microbiology 8:117-128, 2010.