

Immunity and Foodborne Illness

A Review of Immunology

Food Safety and High-Risk Groups



The Immune System

- Innate or Natural Immunity (vertebrates/invertebrates)
 - Nonspecific response
 - Immediate response
 - Short-term response
- Adaptive or Acquired Immunity (vertebrates)
 - Specific response
 - Slow response
 - Long-term response

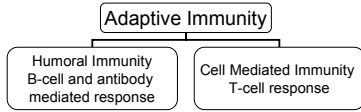


Innate Immunity

- Skin
- Mucosal secretions
- Intestinal pH and digestive enzymes
- Peyer's Patch in intestine (M cells)
- Reticuloendothelial System
- Involves Natural Killer cells, Complement and Phagocytic cells (neutrophils or macrophages)



Adaptive Immunity



Food Safety and High-Risk Groups

Correction!!!!

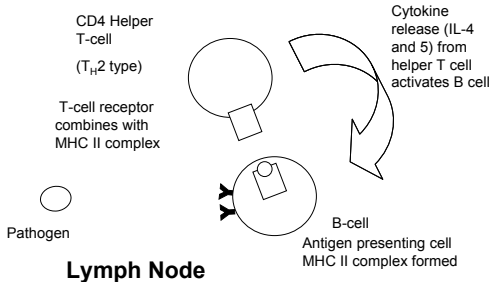
MHC class I molecules bind CD8 cytotoxic T-cells

MHC class II molecules bind CD4 T-helper cells

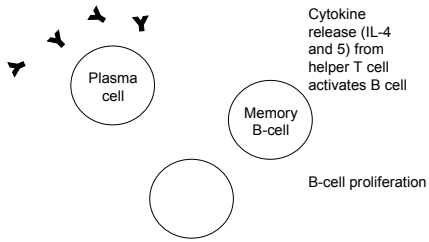
Food Safety and High-Risk Groups



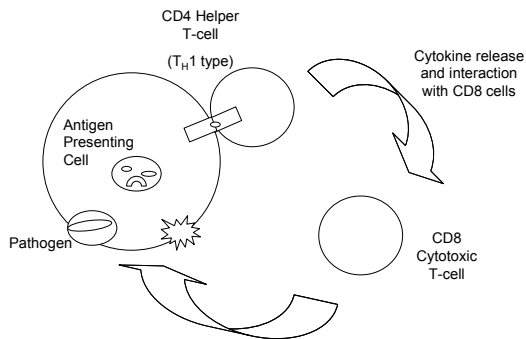
The Humoral Immune Response



The Humoral Immune Response



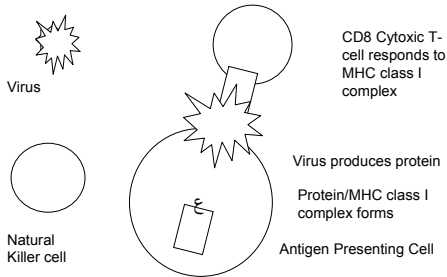
The Cell-Mediated Immune Response



How do foodborne pathogens invade the human body?

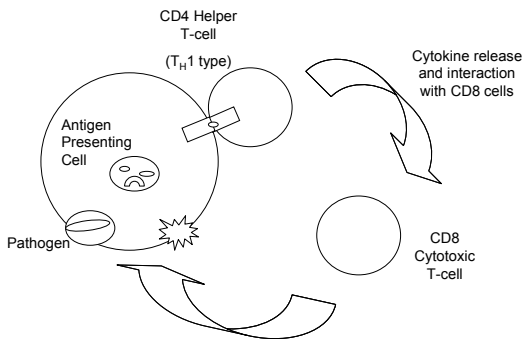
Viral Infections

Norovirus and Hepatitis A



Bacterial Infection

Listeria, Campylobacter, V. parahaemolyticus, Yersinia

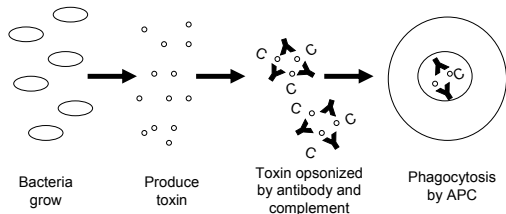


Toxin-Mediated Infections

Salmonella, Shigella, E. coli O157, C. perfringens, B. cereus

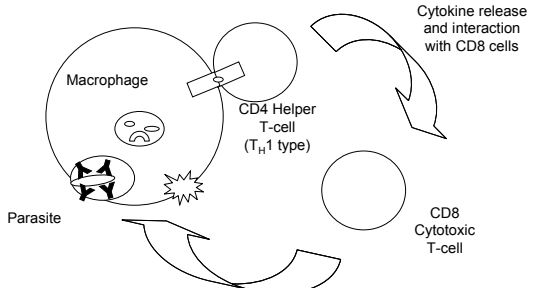
- Toxin
 - Produced systemically or intra luminally
 - Toxin neutralized by antibodies and complement
- Infective cells
 - Neutralized by immune response

Toxin-mediated Infection



Parasitic Infection

Toxoplasmosis gondii
Cryptosporidium parvum ???



Overview Summary

- First line of defense
 - Mechanical barriers
 - Chemical barriers
- Second line of defense
 - Inflammation response
 - Phagocytosis
- Third line of defense
 - Specific immune responses
 - Natural Killer Cells

Questions and Answers

Ohio
Colorado
Washington State



Food Safety and High-Risk Groups
