

## Innate Immunity

## Chapter 4

- I. Background
  - A. Innate
  - B. What do
  - C. Advantages & disadvantages
- II. External Barriers
  - A. Skin
  - B. Mucus
  - C. Other washing action
  - D. Antimicrobial peptides in secretions
    - 1. lactoperoxidase
    - 2. lysozyme
    - 3. defensins
    - 4. collectins
    - 5. cathelicidin
    - 6. SLPI
  - E. Gastric pH
  - F. Normal flora
  - G. Tissue resident sentinel cells
- III. Phagocytosis
  - A. Process
    - 1. phagosome
    - 2. phagolysosome
  - B. Recognition
    - 1. PAMPs
    - 2. DAMPs
      - a. alarmins
    - 3. PRRs
      - a. Toll-like receptors
        - 1) name
        - 2) protein structure
        - 3) cell surface
        - 4) lysosomal
      - b. NOD-like receptors
        - 1) structure
        - 2) subfamilies
        - 3) examples
          - gout
      - c. RIG-like receptor
      - d. CDS
      - e. Lectin receptors
  - C. Killing
    - 1. reactive oxygen species (ROS)
    - 2. nitric oxide
    - 3. proteolytic enzymes

#### IV. Humoral Mechanisms

##### A. Complement

1. alternative pathway
  - a. C3
  - b. C3b
  - c. MAC
2. additional Complement activities
  - 1) opsonization
3. released fragments

##### B. Pentraxins

- a. CRP

##### C. Collectins

1. structure
2. family members
  - a. MBL
  - b. surfactant protein A & D

##### D. Ficolins

1. structure, action

#### V. Inflammation

##### A. Signs

##### B. Purpose

##### C. Initiation

##### D. Process

1. vasodilation
  - a. permeability
2. leukocyte recruitment
  - a. adhesion molecules
    - 1) ICAM-1
    - 2) selectins
  - b. tumbling
  - c. integrins
  - d. diapedesis
3. pus

##### E. Hallmarks

1. localized
  - a. acute inflammation
2. healing
3. chronic inflammation

##### F. Outcomes

#### VI. Antiviral

##### A. Interferons

1. family, source, actions

##### B. NK cells

1. function / detection
2. killing
  - a. perforin
  - b. granzymes -> apoptosis

#### VII. Fever

#### VIII. Stimulating Adaptive Immune Responses

- 1) adjuvants

##### A. Costimulators

##### B. Cytokines

##### C. Complement