



SAND2012-8480P

# INFLAMMATION



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# Inflammation

- **Acute inflammation develops within minutes after tissues are damaged**
- **Damaged tissue exposes damage associated molecular patterns**
  - Recognized by dendritic cells and neutrophils
    - Release cytokines, other inflammatory mediators, and enzymes
- **Invading microbes express pathogen associated molecular patterns**
  - Recognized by dendritic cells and neutrophils
    - Release cytokines, other inflammatory mediators, and enzymes
- **Complex mixture of released molecules attracts leukocytes (neutrophils and lymphocytes) and also increases vascular permeability**
- **Production of leukotrienes and prostaglandins by enzymes results in redness, heat, and pain**



# Inflammation: Leukocyte migration

- **Vasodilation**
  - Increase blood flow to injured area
  - Occurs in response to cytokines (interleukin 1 and tumor necrosis factor and prostaglandins and leukotrienes)
  - Increased permeability of vessels
    - **Leakage of fluid into interstitial spaces – edema or swelling**
    - **Leukocyte migration into tissue to result in more inflammation**
      - Degranulation and phagocytosis
      - *Mannheimia haemolytica*
    - **Immune components leave vessel and enter tissue**
- **Pain due to activation of nerves in the tissue by inflammation**
  - Prostaglandins
  - Leukotrienes
  - Enzymes released by neutrophils and mast cells



# Inflammation

