

# Adaptive Immunity and Vaccines

# Three Lines of Defense

1. Physical and Chemical Barriers
  - skin, epithelial layers, mucosal surfaces
  - lysozyme in tears and saliva, etc
2. Innate Immune Response
  - general pathogen recognition
  - pathogen elimination
3. Adaptive Immune Response
  - specific pathogen recognition and elimination
  - adds to ongoing innate response

<b>Innate Immunity</b>	<b>Adaptive Immunity</b>
Rapid response (hours)	Slow response (days to weeks)
Receptors have broad specificity (ie, PAMPs)	Receptors have narrow specificity (ie, antigens)
Ligands are polysaccharides and polynucleotides	Ligands are primarily proteins (highly selective specificity)
No memory	Memory of prior exposure
Constant response	Improving response
Local response	Entire body
Mediated by neutrophils, macrophages and NK cells	Mediated by B- and T-lymphocytes
<b>Common effector mechanisms for pathogen elimination</b>	