



# Colleen Sedney

Hinkle Award  
Ph.D. Student, Infectious Diseases  
Third Year ARCS Scholar



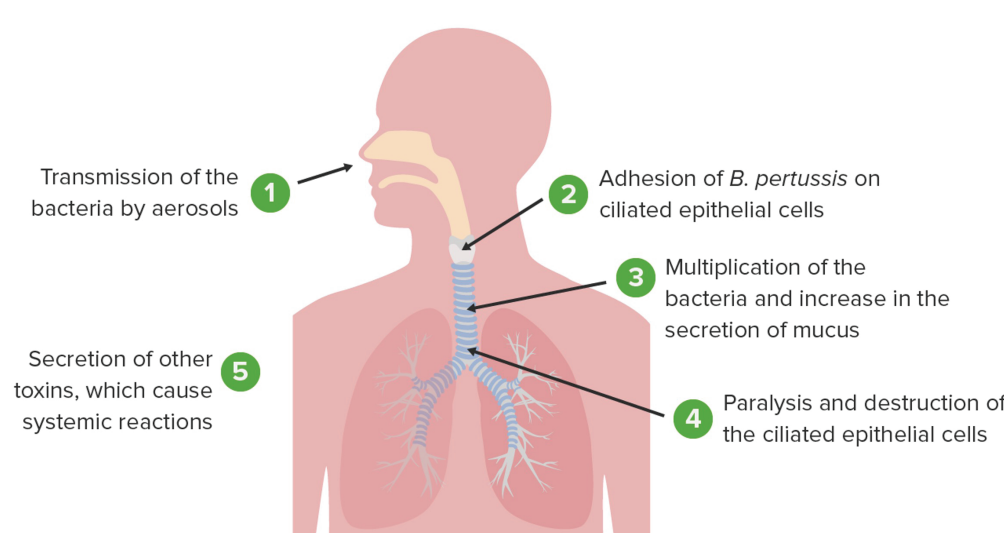
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## Novel murine model reveals an early role for Pertussis toxin in disrupting neonatal immunity to *B. pertussis*

- *Bordetella pertussis* causes whooping cough, which infants are much more susceptible to
- Pertussis toxin disrupts neonatal control of *B. pertussis* in the lungs
- Pertussis toxin disrupts early accumulation of neutrophils and T cells

### Introduction: *Bordetella pertussis* causes “whooping cough”

- Gram-negative
- Causes respiratory disease
- Attach to cilia of respiratory epithelial cells
- Bacterial factors delay immune cell action, leading to inflammation and disease

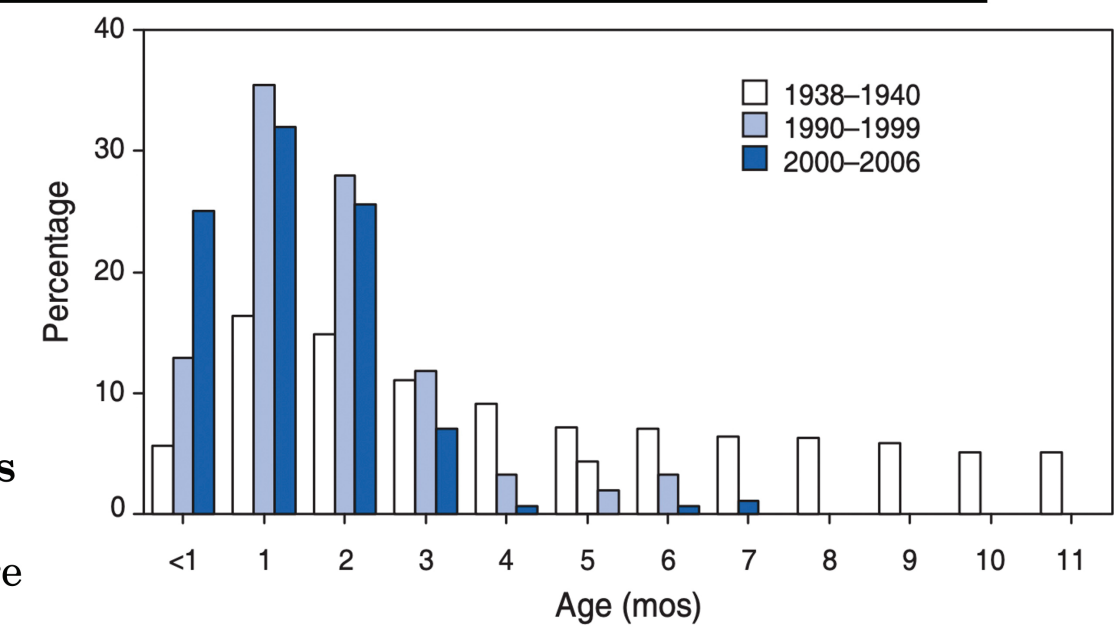


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### Introduction: High incidence and mortality in newborns

- Incidence for persons >20 years is 1.4 per 100,000
- Incidence for infants <6 months is 72.3 per 100,000
- Infants under 3 months suffer the most complications and severe disease related to *B. pertussis*

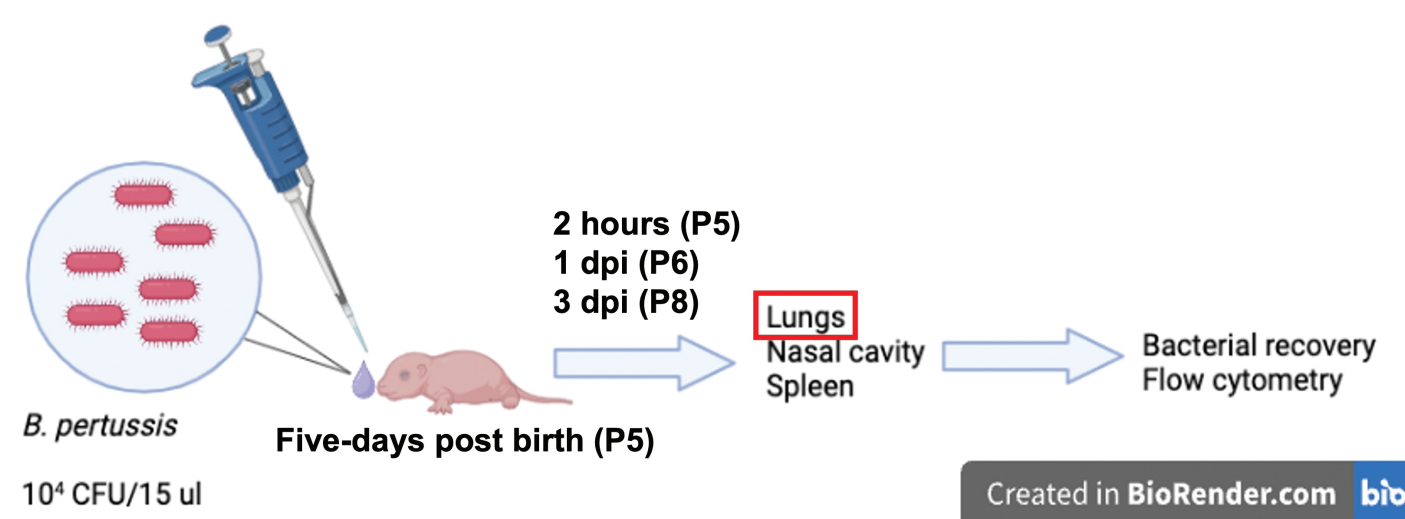


Source: Prevention of pertussis, tetanus, and diphtheria among pregnant and postpartum women and their infants. Recommendations of the Advisory Committee on Immunization Practices (ACIP)

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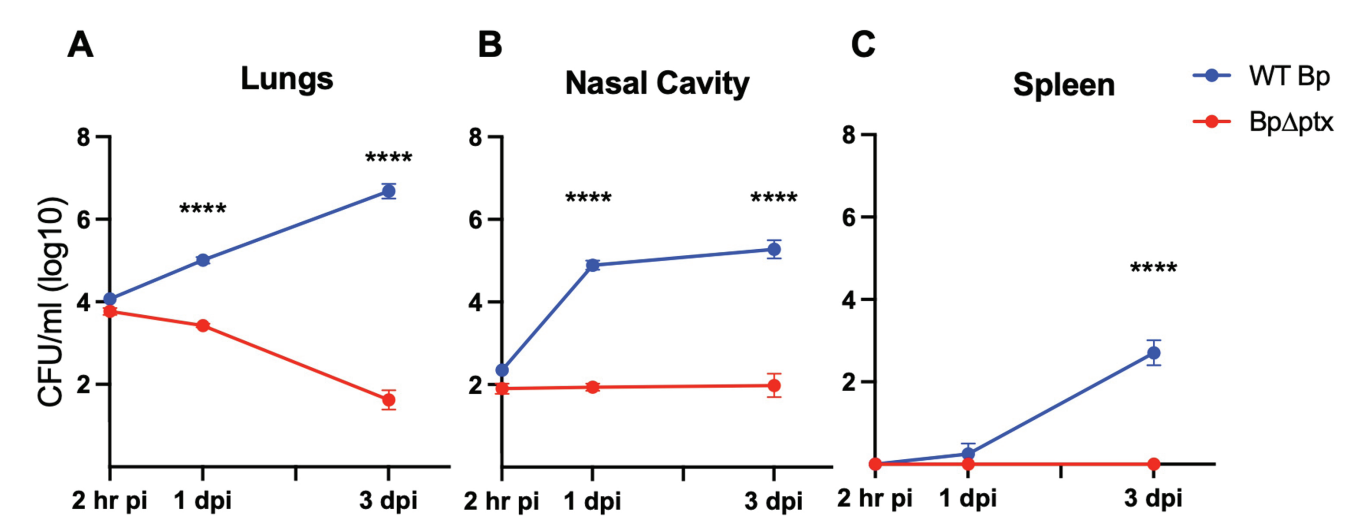
### Development of a novel neonatal *B. pertussis* infection model



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Sedney et al. *Front. Immunol.*, 2023

### Pertussis toxin disrupts neonatal control and immune responses in the lung



Pertussis toxin disrupts neonatal control of *B. pertussis* in the lungs

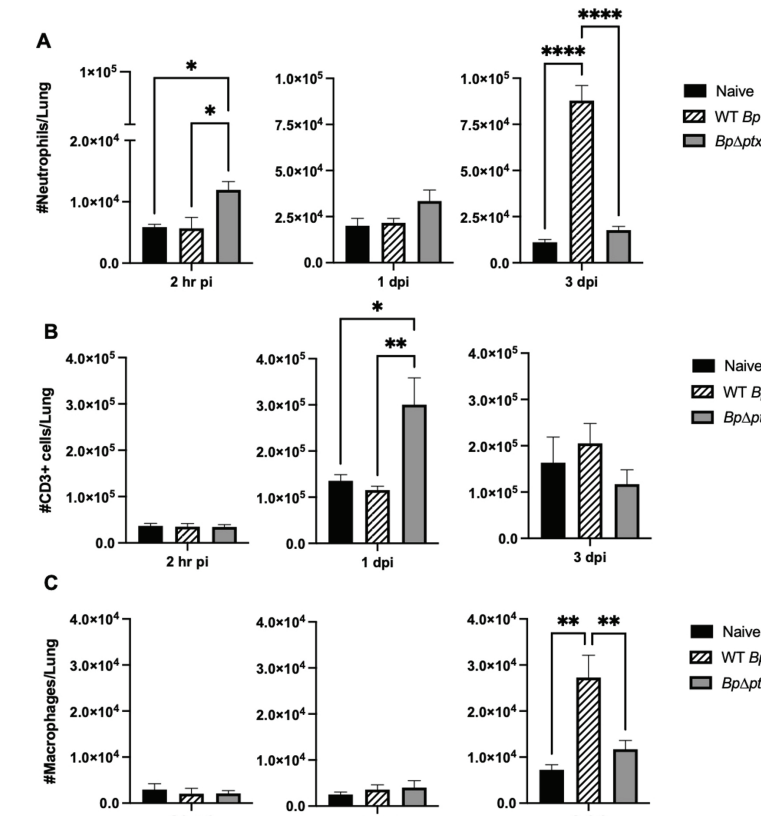
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Sedney et al. *Front. Immunol.*, 2023

### Pertussis toxin disrupts neonatal control and immune responses in the lung

- Pups inoculated with *BpΔptx* had significantly higher neutrophil counts at 2 hours and T cells at 1 dpi
- Pups inoculated with WT *Bp* had significantly higher neutrophils and macrophages at 3 dpi

Pertussis toxin disrupts early accumulation of neutrophils and T cells



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Scholar Awards Celebration  
November 13, 2024



Igniting  
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