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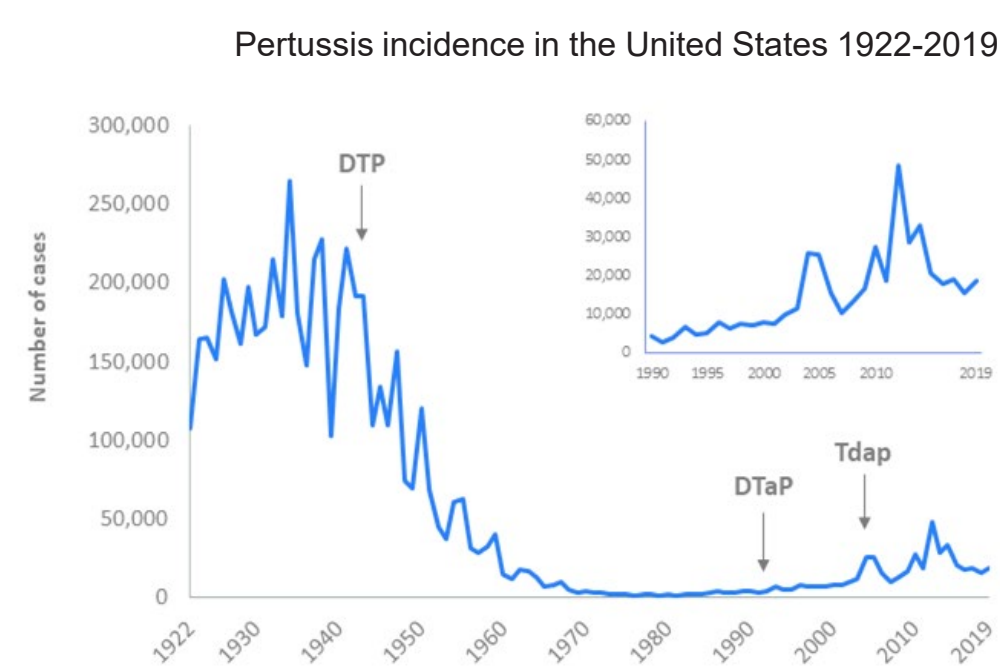
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New approaches to pertussis immunology: overcoming immunomodulation

The reemergence of whooping cough in countries with broad vaccine coverage has generated research initiatives to develop new and improved vaccines. To better understand how we can enhance immunity against *B. pertussis*, we are investigating the role of an immunomodulatory factor, btrS.

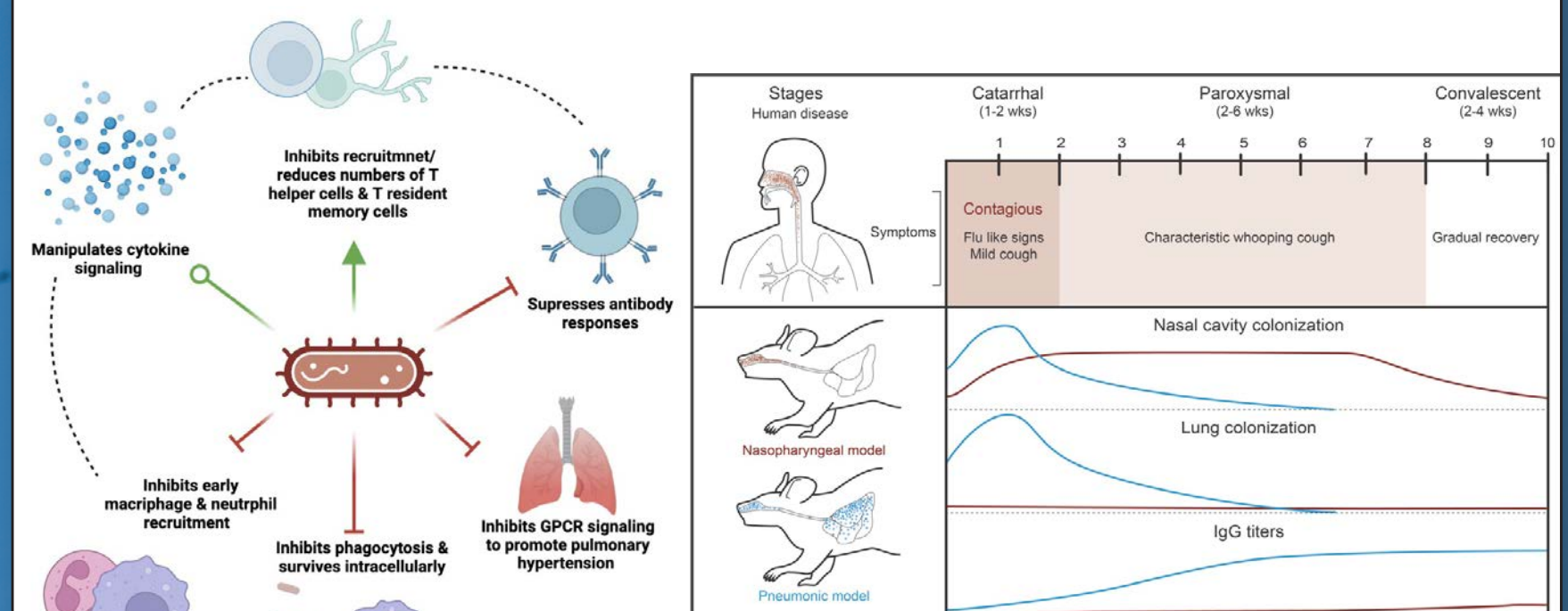
Pertussis: an old disease with new problems

- Waning immunity
- Transmission among vaccinated individuals
- Rapid expansion (spread) of vaccine escape mutants
 - ◆ Lacking a key-vaccine antigen
- Underreporting
- Resurgence



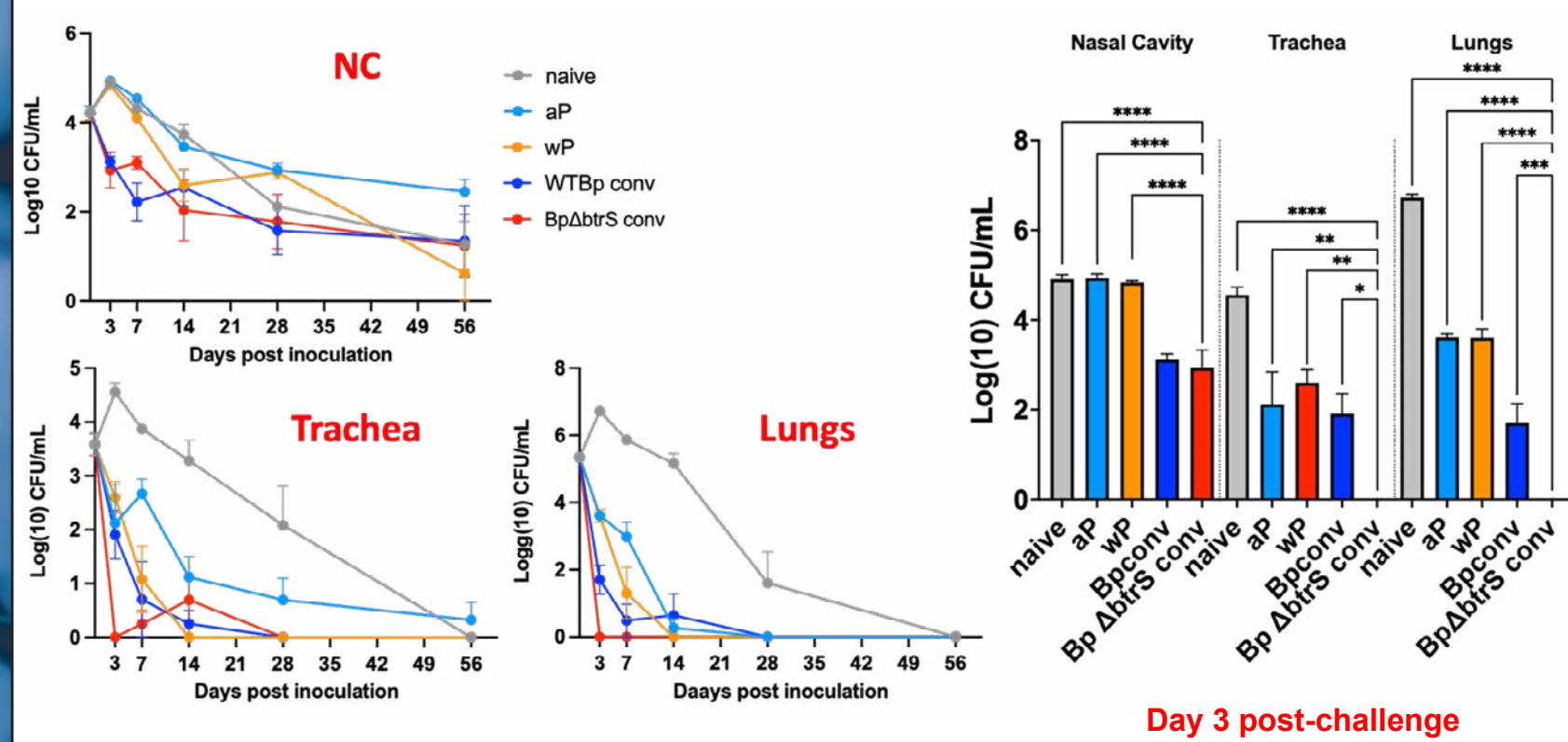
Global Impact: the CDC estimates 24-48 million cases of *B. pertussis* infection, and approx 170,000 deaths annually.

Bordetella pertussis is a potent immunomodulator



What happens when we disrupt this ability and investigate with different animal models?

BpΔbtrS generates sterilizing immunity in the lungs...



...and the nasal cavity against natural-dose challenge

