

## **NETROPHIL EXTRACELLULAR TRAP FORMATION AS A DEFENSE MECHANISM IN RESPIRATORY TRACT INFECTION**

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Neutrophil as professional phagocytes engulf bacteria and kill them during respiratory tract infections. Recently it was found that neutrophils have an additional way of killing microorganisms. They release proteins and chromatin that form extracellular net that binds pathogens. These structures are called Neutrophil Extracellular Traps (NETs). The formation of extracellular traps has been recognized as a novel and important mechanism of the host immune response against infections. Upon stimulation, the nuclei of neutrophils lose their shape and their chromatin homogenize. Later, the nuclear membrane and the granule membranes disintegrate allowing the mixing of NET components. Finally, the NETs are released from the broken cell. Neutrophil extracellular traps are abundant at sites of acute inflammation. There is increasing evidence that NETs are involved in microbial killing during respiratory tract infections. This mechanism prevent them from spreading, and ensure a high local concentration of antimicrobial agents to degrade virulence factors and locally kill pathogens. There is increasing evidence that NET plays a role in several infections by Gram-positive bacteria (*S. aureus*, *S. pyogenes*, *S. pneumoniae*, *L. monocytogenes*) and Gram-negative bacteria (*E. coli*, *Salmonella enterica*, *Shigella flexneri*, *Haemophilus influenzae*, *Pseudomonas luminescens*), mycobacteria (*M. tuberculosis*) and fungi (*C. albicans*).