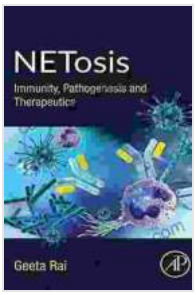
Netosis: Immunity, Pathogenesis, and Therapeutics



NETosis: Immunity, Pathogenesis and Therapeutics

by Kenneth Kee

4.1 out of 5

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Screen Reader	: Supported
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Netosis, a novel form of programmed cell death in neutrophils, has emerged as a pivotal player in immunity, pathogenesis, and disease progression. This process involves the release of neutrophil extracellular traps (NETs),composed of DNA, histones, and antimicrobial proteins, to ensnare and eliminate invading pathogens. While netosis serves as a critical defense mechanism, excessive or dysregulated NET release can contribute to the development of various inflammatory diseases, autoimmune disFree Downloads, and cancer.

Netosis: A Dual-Edged Sword

Immunity

Netosis represents a potent defense mechanism against microbial infections. NETs act as physical barriers, trapping pathogens and limiting their spread. The antimicrobial components of NETs, such as histones and

cathelicidins, directly kill or inhibit the growth of microorganisms. Furthermore, NETs promote the recruitment of other immune cells, such as macrophages and monocytes, to the site of infection.

Pathogenesis

Despite its beneficial role in immunity, excessive or dysregulated netosis can contribute to the pathogenesis of various diseases. In inflammatory diseases, such as sepsis and rheumatoid arthritis, NETs can damage host tissues and amplify inflammation. In autoimmune disFree Downloads, such as systemic lupus erythematosus and vasculitis, NETs can form immune complexes that activate the complement system and promote tissue damage. Additionally, NETs have been implicated in the development and progression of cancer, where they can promote tumor cell proliferation, invasion, and metastasis.

Therapeutic Implications

The dual nature of netosis highlights the need for a nuanced understanding of its role in disease. Therapeutic strategies aimed at modulating netosis could provide novel treatments for a range of conditions.

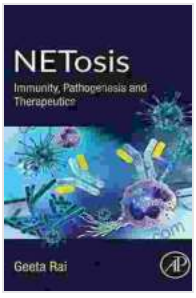
Inhibiting Excessive Netosis

In diseases where excessive netosis contributes to pathogenesis, therapies that inhibit NET release or neutralize their effects could be beneficial. For example, DNase enzymes can degrade NETs, reducing inflammation and tissue damage in sepsis and rheumatoid arthritis.

Promoting Netosis

In situations where netosis is beneficial, such as severe infections, therapies that promote NET formation could enhance host defense. Stimulating NET release in neutrophils could improve bacterial clearance and reduce the risk of infection.

Netosis is a complex and multifaceted process with profound implications for immunity, pathogenesis, and therapeutics. Understanding the delicate balance between its protective and detrimental effects is crucial for developing effective treatments for various diseases. Ongoing research in the field of netosis continues to unravel the mysteries of this intriguing phenomenon, paving the way for innovative therapeutic interventions.



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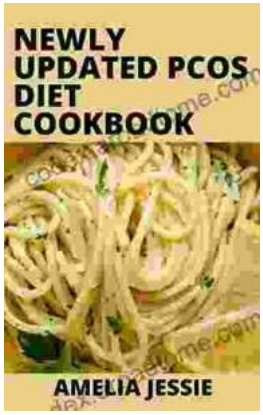

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