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Chapter

Role of Toll-Like Receptors in Molecular and Cellular Mechanisms of Respiratory Diseases

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Abstract

The family of toll-like receptors (TLRs) is receiving considerable attention as potential regulators and controllers of the immune response through their ability to recognize and defend against invading pathogens. TLRs are key components of the innate immune system. Inappropriate or unregulated activation of TLR signaling can lead to chronic inflammation and autoimmune disorders. TLRs have been implicated in a number of lung-associated immune responses and pathogenesis of some respiratory diseases including asthma, chronic obstructive pulmonary disease, lung cancer, and infections. This chapter details the different TLRs, signaling transduction of TLR, defines their possible role in the pathogenesis of the main respiratory diseases, and finally, speculates over the therapeutic possibilities by targeting TLR signaling.

