

From clinical view, recognition of the disease focuses mainly on the clinical presentation, diagnosis and management as well as understanding the unmet needs in clinical practice. For the understanding of the nature of the disease, it can't be done without the knowledge of the mechanisms of pathogenesis. Along with the rapid progress of new biotechnologies, the main methodologies for research are changing from the pathology and pathophysiology to modern biotechnologies. The progress of recognition of bronchial asthma provides a typical model of this changes. Before the early of 1990s, asthma was recognized as due to proliferation and abnormal contraction of smooth muscle cells in the airway. Later on, it was found that persistent chronic inflammation in the airway was the fundamental pathogenesis mechanism of bronchial asthma, which also contributed to abnormal contraction of smooth muscles, airway hypersensitivity as well as airway remodeling. As a consequence, extensive researches had been done with focus on the initiation, development and regulation of chronic airway inflammation. It has been shown that many cells and their components, mediators and cytokines involved in the pathogenesis of bronchial asthma in a complex network form. Although the pathogenesis mechanisms of bronchial asthma are not fully understood yet, the main concept is well accepted as "interaction of host with gene susceptibility with environmental factors results in the dysregulation of interactions between cells, mediators and cytokines, leading to the chronic inflammation in airway". After decades of extensive researches, some cytokines have been proven to be effective biomarkers and/or targets for therapies. Several monoclonal antibodies such as anti-IL-5 antibody, etc, have been proven to be effective in improving symptoms, exacerbation and lung function in clinical trials. All these research results are important impetus for better diagnosis and management of bronchial asthma in clinical practice.

In this book, the authors offered mainly the readers with the recent advance in bronchial asthma from the aspect of "Modern Biotechnology", including genomics, epigenomics, multi-omics, airway remodeling, mesenchymal stem cell therapy, nanotechnology and other related researches. With new technologies, new research results and new understanding of bronchial asthma, I hope this book can bring new recognition of bronchial asthma for the potential readers, such as post-graduate students, young scholars and doctors in the field of bronchial asthma. Understanding the mechanisms, heterogeneity, phenotypes and endotypes, new biomarkers for evaluation should be the important background for personal managements of bronchial asthma.



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