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PRINT: ISSN 0972-3757 ONLINE: 2456-6360

Int J Hum Genet, 2(1): 27-31 (2002)
DOI: 10.31901/24566330.2002/02.01.06

**The Role of Gene-Environment Interactions in the
Development of Respiratory Disorders**

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KEY WORDS Pulmonary diseases; single gene defects; environmental risk factors; adaptive responses.

ABSTRACT Gene-environment interactions are thought to be critical for several respiratory diseases such as COPD and lung cancer. For some pulmonary diseases, the etiology is well understood as a function of single gene defects; for others, the etiology is mainly determined by exposure to some strong environmental risk factor. But for the overwhelming majority of diseases of the respiratory systems, it is clear that the greatest magnitude of disease burden relates to complex interactions between multiple determinants in one’s environment and one’s genetic blueprint. Understanding the fundamental gene-environmental interactions in the development of respiratory disorders such as asthma should lead to earlier identification of susceptible individuals and more effective approaches for disease prevention. Moreover, identifying the genes and the pathways that serve as genetic modifiers of adaptive responses to the changing environmental stimuli could lead to new insights into respiratory biology and the identification of new therapeutic targets.