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Foreword on Environmental Factors in Asthma

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Whether you take the biblical quotation—"for dust you are and to dust you will return." Genesis 3:19, or the theory of evolution which implies that environmental changes triggered the biological evolution, it is all about environment. We biologists recognized the power of genes ever since Mendel demonstrated the principles of genetic inheritance, and Watson and Crick resolved the structure and beauty of the double helix. The driving power of genes in the expression of a phenotype is undeniable. Nonetheless, phenotype is not the same as genotype and we are yet to fully understand the complexity of the gene-environment interaction. Our simple paradigm of promoter-driven exon-based gene expression is losing its ground. We now understand that the expression of a gene is far more complex. Gene expression is controlled by proximal and distant enhancers and silencers, epigenetic modulation of the gene locus, secondary regulation by microRNA, gene splicing, single nucleotide polymorphism and etc. Many of the foregoing processes are influenced by the environment.

Asthma, being a polygenic disease, is far more susceptible to environmental changes. Thus, research in the environmental aspect of asthma is very important. A comprehensive understanding of the environmental contribution to asthma requires population-based case-control and prospective epidemiological studies, which are extremely difficult to conduct. Nonetheless, significant progress has been made in this field. We have observed continued evolution of the hygiene hypothesis. We have a better understanding of indoor pollution. We recognize the complex biological effect of indoor allergens. To elaborate on the complexity of environmental factors Dr. Mark Eisner, a leader in the field, has invited some of the top experts to contribute to this volume. The issue addresses such important areas as indoor allergens, indoor and outdoor pollution, hygiene hypothesis dealing with microbial environment, social environment that includes diet and obesity, and others. This will be an exciting reading.

Biography

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