

“Honorary Biomedical Sciences & Health Information Lecture Series”



STRATEGIES FOR ADDRESSING ENVIRONMENTAL HEALTH NEEDS AND DISEASE OUTCOMES

A Distinguished Lecture

By

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Abstract: The prevalence of common diseases is increasing. Led by cardiovascular disease and followed by cancer, chronic lung diseases, and diabetes mellitus, major diseases confronting us today are chronic and disabling conditions, complex and multifactorial in nature. Detailed knowledge of the etiology of these diseases has spurred many mechanistic studies to understand their pathogenesis, and this knowledge is beginning to be translated to preventive interventions in high-risk populations. It is becoming increasingly clear that environmental factors play a huge role in common disease susceptibility. Associations between environmental factors and health outcomes are, however, complex and poorly differentiated. Levels of exposure, for example, are often difficult to ascertain, owing to a lack of detailed biomonitoring as well as to inevitable variations within any population. The advent and maturation of innovative high-throughput techniques has steadily shifted the biomedical sciences to a more comprehensive global approach focused on understanding the diverse and complex responses underlying the development of disease. Enhanced computational power and robust informatics for data integration and modeling have enabled researchers to develop quantitative models to support predictive toxicity assessment, to determine the uncertainty of risk, and improve our understanding of biological processes. The long-range goal is cogent prevention of environmentally induced diseases. The goal is fundamental: to translate the basic discoveries that prevents disease and improves health. This will be accomplished by the conversion of research findings into information, resources, and/or tools used by public health and medical professionals, and by the public to improve overall health and well-being, especially in vulnerable populations.