Heat Shock Proteins 9
Series Editors: Alexzander A. A. Asea · Stuart K. Calderwood

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Heat Shock Protein-Based Therapies

Springer

Heat Shock Proteins

Volume 9

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Heat Shock Proteins: key mediators of Health and Disease. Heat shock proteins (HSP) are essential molecules conserved through cellular evolution required for cells to survive the stresses encountered in the environment and in the tissues of the developing and aging organism. These proteins play the essential roles in stress of preventing the initiation of programmed cell death and repairing damage to the proteome permitting resumption of normal metabolism. Loss of the HSP is lethal either in the short-term in cases of acute stress or in the long-term when exposure to stress is chronic. Cells appear to walk a fine line in terms of HSP expression. If expression falls below a certain level, cells become sensitive to oxidative damage that influences aging and protein aggregation disease. If HSP levels rise above the normal range, inflammatory and oncogenic changes occur. It is becoming clear that HSP are emerging as remarkably versatile mediators of health and disease. The aim of this series of volumes is to examine how HSP regulation and expression become altered in pathological states and how this may be remedied by pharmacological and other interventions.

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Preface

The book *Heat Shock Protein-Based Therapies* provides the most up-to-date review on new and exciting therapies that utilize mechanisms based on the heat shock response and targeting various stress proteins as a promising therapeutic strategy for a wide variety of human disorders and diseases including cancer, neurodegenerative disorders (Alzheimer's disease, multiple sclerosis), and infectious diseases (HIV, periodontal disease).

This book is divided into therapies based on various heat shock proteins (HSP). Part I begins with therapies based on mechanisms dependent on HSP27 and covers plant-based therapies and their use for cancer. Part II deals with how HSP60 is targeted on Alzheimer's disease and periodontal disease. Part III covers novel ways of targeting HSP70 in therapies including infectious diseases, antiviral drug therapy, cancer, neurodegenerative disorders, and nanotechnology. Part IV comprehensively covers HSP90-based therapies in cancer, neurodegenerative disorders, and drug development.

Heat Shock Protein-Based Therapies is written by leaders in the field of heat shock protein research in clinical research, basic research, translational research, and pharmaceuticals. The contributed chapters review present cutting-edge research activities and importantly project the field into the future. The chapters systematically and in a stepwise fashion take the reader through the fascinating sequence of events by which mechanisms dependent on heat shock proteins are targeted and provide answers as to the biological significance of HSP to human health and disease.

This book is a must-read for undergraduate, graduate, postgraduates, and experts in the field of neuroscience, medicine, oncology, immunology, dentistry, microbiology and infectious diseases, autoimmunity, pharmacology, pathology, phytomedicine, drug development, biotechnology, and pharmaceutical industry.

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