

touches virtually every major discipline of experimental biology and several areas of medical research as well. The proteins encoded by Ritossa's puffs were discovered in 1974 by one of the editors of this book, Alfred Tissières, working with H. Mitchell and U. Tracy. Known initially as heat shock proteins, these proteins are now frequently included with more recently discovered environmentally inducible proteins under the banner of stress proteins. The heat shock response remained a curiosity of *Drosophila* biology until heat shock genes became favorite subjects of molecular geneticists applying the then new techniques of recombinant DNA technology, and they quickly became some of the best-understood eukaryotic genes. Soon, closely related heat shock genes and proteins were discovered in bacteria, humans, and virtually everything in between, establishing the heat shock response as one of the most highly conserved genetic systems known.

Stress Proteins in Biology and Medicine provides the most convincing collection of evidence to date that a general theme for heat shock protein function and physiology has emerged, and that theme is protein homeostasis. As the chapters flow by, one's imagination is filled with images of heat shock proteins "chaperoning" newly synthesized or partially assembled proteins to their final destinations in the cell, working as "molecular crowbars" perhaps fueled by the energy of ATP hydrolysis to pry proteins out of nascent multiprotein structures such as DNA replication complexes or as "molecular nurses" to help refold denatured proteins.

The book begins with an excellent overview of the stress protein field by the editors that will be valuable to the newcomer. Notable aspects of the book include chapters by organismal biologists giving an ecological and evolutionary perspective on thermal adjustments, an overview of febrile responses from the physiological perspective, and contributions from medical scientists from the field of radiation oncology. The radiation biology literature contains many studies of cellular responses to hyperthermia, and there are numerous studies in the organismal biology literature of the responses of whole animals to thermal stress. The inclusion of these perspectives here will, it is hoped, stimulate more frequent cross-fertilization with the molecular and cell biology literature and more multidisciplinary collaborations. In addition, readers will find an intriguing chapter on possible links among stress proteins and infectious diseases, two chapters offering preliminary evidence that hyperthermia may aid in the treatment of some types of cancer if formidable obstacles in the delivery of heat to

tumors can be overcome, and a number of excellent contributions from investigators studying the complex regulatory pathways of heat shock genes in yeast, in cultured mammalian cells, and during developing in *Drosophila*. The value of cultured animal cells in unraveling the cellular physiology and biochemistry of the mammalian stress response is highlighted, and as befits a monograph series that helped introduce a generation of budding molecular biologists to the power of *E. coli* and bacteriophage genetics, two chapters are included showing that these systems have not lost their punch when it comes to rapidly dissecting cellular responses, gene regulation, and protein functions.

The editors and their contributing authors have captured much of the excitement and promise of stress protein research. This book is recommended to all biologists interested in stress responses from the organismal to the molecular levels as well as to medical scientists interested in the responses of animal tissues to trauma.

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A COLLOQUIUM ON NEUTRON RADIATION BIOLOGY: RECENT ADVANCES, FUTURE DIRECTIONS

November 5-7, 1990
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A colloquium will be held at the Holiday Inn Crowne Plaza, sponsored by the Armed Forces Radiobiology Research Institute, Bethesda, Maryland, and cosponsored by the National Institutes of Health, National Cancer Institute, Bethesda, Maryland, and the Department of Energy, Office of Energy Research, Washington, D.C.

The goal of the colloquium is to identify the most important scientific questions yet to be addressed in the investigation of neutrons of various energies and their biological effects. Valuable perspectives will be provided by scientists whose early contributions in radiobiology laid the groundwork for contemporary research programs. Current progress in a wide range of topics will be presented, including:

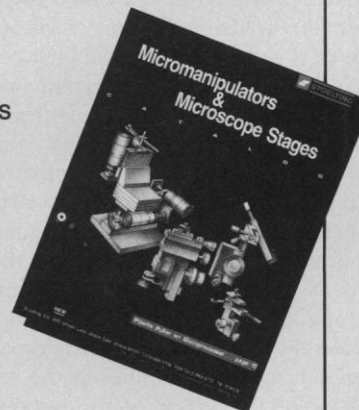
- Acute Radiation Responses
 - Cellular Radiobiology
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