

Introduction

CELLULAR BIOCHEMISTRY AT THE MILLENNIUM

We have crossed a new threshold of insight into mechanisms that govern fundamental biological processes and aberrations that are linked to a broad spectrum of diseases. For several decades there have been incremental advances in our capabilities to conceptually and experimentally address the complexities of biological control. And, there is compelling justification for confidence that in the coming millennium, further insight into cellular biochemistry will extend the limits to which physiological regulatory parameters that are operative in cells, tissues and organs are understood.

Such optimism is adequately justified. We have established a cellular, biochemical, molecular, and genetic foundation that provides both a knowledge base and approaches. The boundaries that have traditionally constrained disciplines are eroding. The emergence of integrated initiatives is facilitating the pursuit of formidable challenges that were previously unrealistic.

In this millennium issue of *Journal of Cellular Biochemistry* we have selected several questions that are being effectively pursued from a multidisciplinary perspective. Each illustrates the power of escaping longstanding niches. In every case, components of biological control have the potential to be translated to resolution of biomedical and biotechnological problems.

High throughput technologies are providing the basis for rapid accrual of insight into regulatory mechanisms and enhancing appreciation for the interrelationships of structure, function, and physiological responsiveness at the molecular and cellular levels. With the growing capabilities of informatics, genomics and proteomics, the results that are entering our rapidly expanding databases of nucleic acid and protein sequences, as well as crystal structures of proteins and nucleic acid-protein complexes, will be translated to new dimensions of understanding gene expression that is associated with development, differentiation, regulatory pathways, and disease.

Gary S. Stein
For the Editorial Board