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## Preface

# Biophysical chemistry of proteins and nucleic acids: a festschrift for John A. Schellman

This special issue of *Biophysical Chemistry* is a tribute to John Schellman from his friends, colleagues, and students. John is a founding member of the journal, served as its editor and had been a member of the editorial board with distinction until his retirement in 2000. His continuous support and editorial contributions have played a major part in shaping the development of the journal, and the field.

John's scientific career has paralleled the development of biophysical chemistry. Starting with his landmark paper on the stability of the  $\alpha$ -helix in 1955, and continuing throughout his research and teaching, John carried on the tradition of Linderstrøm-Lang which he and his wife Charlotte cherished, from the time of their postdoctoral stay in the Carlsberg Laboratory. John has been instrumental in bringing the rigor and methodology of physical chemistry (yes, including physics, mathematics and spectroscopy!) into the center stage of biochemistry and molecular biology. An essential characteristic of John's work is the integration of theoretical analysis with experimental measurement.

This volume is a collection of papers which provides a unique perspective of the current, post-genomic research in biophysical chemistry. It is organized into four parts. In part I, John's contemporaries write about his work and the development of biophysical chemistry; others write about the Institute of Molecular Biology in Eugene, especially John's laboratory and their personal experiences with John. Part II focuses on proteins, how their structures and functions are related to thermodynamic stability and folding kinetics. Proteins

are a central subject of John's life work. One can easily find his fingerprints in what we now call protein science. Studying peptides has become an important approach to understand protein physical chemistry. This work started with John's 1955 paper on analyzing the peptide  $\alpha$ -helix. Two of the most widely used methods in the field, circular dichroism (CD) measurement and helix–coil transitions analysis, have their roots in John's early work at the Carlsberg Laboratory almost half a century ago. Part III contains papers on DNA. John made significant contributions to the statistical theory of DNA conformational behavior, and to analyze DNA electrostatics and electrophoresis, by the theory of Poisson–Boltzmann equation and by measuring DNA conformational flexibility using linear dichroism spectroscopy. Part IV contains papers on various spectroscopies, new experimental single-molecule biophysical methods, and their theoretical analysis. John and his coworkers have made seminal contributions to a wide range of methodologies: light scattering, fluorescence spectroscopy and stopped-flow kinetics, in addition to CD and optical rotation.

John Schellman has been a leader in the development of biophysical chemistry, particularly in the study of biological macromolecules. He has also been a role-model and a wonderful colleague for scientists in widely different age groups. Many people in biophysical chemistry have had his friendship and felt his personal touch. This volume is a testimony to his influence on both the science and the scientists.

John continues his research on certain subjects, including the description of how protein denatur-

ants work, the quantum chemistry of peptides, and the history of thermodynamics.

This special issue would not have been possible without support from all the authors. Some who could not contribute to this volume send their greetings and best wishes to John on this occasion, including Howard Berg, Kenneth Hedberg, Terrell Hill, Rainer Jaenicke, K. Max Møller, Bengt Norden, and Frederic Richards. In addition to the contributors of the articles, current editors of

*Biophysical Chemistry*, especially Alan Cooper and Enrico DiCera, have given enthusiastic endorsement and provided tremendous editorial assistance in preparing the issue. To all, we express our sincere gratitude.

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