

## THERMOSTABLE PROTEINS Structural Stability and Design

**Thermostable Proteins: Structural Stability and Design** provides a comprehensive, updated account of the physical basis of enhanced stability of thermophilic proteins and the design of tailor-made thermostable proteins, paving the way for their possible industrial applications. This book is devoted to understanding the survival mechanisms of "thermophilic life forms" at the molecular level with an emphasis on design strategies.

The review chapters presented in **Thermostable Proteins** span a wide range of protein thermostability research. Basic structural, thermodynamic, and kinetic principles are explained and molecular strategies for the adaptation to high temperatures are delineated. In addition, this book covers:

- Computing and simulation methods in current and future thermostability research, especially in nonempirical situations
- How rigidity theory is used to improve the thermal adaptation of mesophiles
- Subtilisin-like serine proteases and their significant engineering applications
- The state of knowledge concerning structure-function relations and the origins of their structural stability
- Computational and experimental approaches for the design of proteins with increased thermal stability based on sequences or three-dimensional structures

Understanding the molecular basis of how thermostable and hyperthermostable proteins gain and maintain their stability and biological function at high temperatures remains an important scientific challenge. A more detailed knowledge of protein stability not only deepens our understanding of protein structure but also helps in obtaining insights into processes that drive protein activities—folding, unfolding, and misfolding—essential to biological function.



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