

Preface

This book is part of a series covering fields where structural biology has made substantial contribution. The book reviews the beautiful architectures and varying mechanical actions of the set of specialized cellular proteins called molecular chaperones, which provide essential kinetic assistance to processes of protein folding and unfolding in the cell. Ranging from multi-subunit ring-shaped chaperonin and Hsp100 machines that use their central cavities to bind and compartmentalize action on proteins, to machines that use other topologies of recognition — binding cellular proteins in an archway or at the surface of a “clamp” or at the surface of a globular assembly — the structures show us the ways and means the cell has devised to assist its major effectors, proteins, to reach and maintain their unique active forms, as well as, when required, to disrupt protein structure in order to remodel or degrade. Each type of chaperone is beautifully illustrated by X-ray and EM structure determinations at near- atomic level resolution and its structure and action described by a leader in the study of the respective family. The beauty of what Mother Nature has devised to accomplish essential assisting actions for proteins *in vivo* is fully appreciable.

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