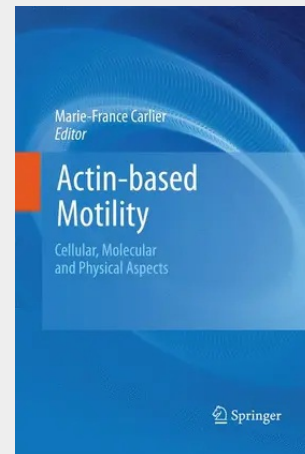


Actin-based Motility

Cellular, Molecular and Physical Aspects

Since the discovery of actin by Straub in the 1950's and the pioneering work of Oosawa on actin self-assembly in helical filaments in the 1960's, many books and conference proceedings have been published. As one of the most essential proteins in life, essential for movement in organisms ranging from bacteria to higher eukaryotes, it is no surprise that actin has fascinated generations of scientists from many different fields. Actin can be considered as a "living treasure" of biology; the kinetics and thermodynamics of self-assembly, the dissipative nature of actin polymerization, the molecular interactions of monomeric and polymerized actin with regulators, the mechanical properties of actin gels, and more recently the force producing motile and morphogenetic processes organized by the actin nanomachine in response to signaling, are all milestones in actin research. Discoveries that directly derive from and provide deeper insight into the fundamental properties of actin are constantly being made, making actin an ever appealing research molecule. At the same time, the explosion in new technologies and techniques in biological sciences has served to attract researchers from an expanding number of disciplines, to study actin. This book presents the latest developments of these new multiscale approaches of force and movement powered by self-assembly processes, with the hope of opening our perspectives on the many areas of actin-based motility research.

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