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Nota di contenuto	1. CK2 Suppression of Apoptosis -- 2. Structural Determinants of CK2 Regulation -- 3. Targeting Protein Kinase: CK2 Suppresses Pro-Survival Signaling Pathways and Growth of Glioblastoma -- 4. The Roles of CK2 in Drosophila Neurogenesis -- 5. Targeting the CK2 Subunit Interface: Challenge and Usefulness -- 6. CK2 in Wnt/-catenin signaling and embryo development -- 7. Defective expression of CK2 promotes EMT and stemness properties both required for breast cancer progression -- 8. Chemical Biology Approaches to Identify CK2 Substrates and Perform Unbiased Evaluation of CK2 Inhibitors -- 9. Development of Screening Systems and Identification of Novel Potent Inhibitors of Human Protein Kinase CK2 -- 10. Protein Kinase CK2: At the Crossroad of Regulatory Cellular Pathways -- 11. Functional Regulation of DYRK Family Protein Kinases by Cellular Binding Partners -- 12. Regulation of CK2 in pancreatic cells -- 13. Recent impressions from the configurational and conformational space captured by protein kinase CK2 -- 14. Role of CK2 in Plant Responses to Abiotic Stress -- 15. "Genuine" Casein Kinase: The False Sister of CK2: Phosphorylates-Secreted Proteins -- 16. CK2: – A Novel Player in L-DOPA induced dyskinesia in a mouse model of Parkinson's disease -- 17. CK2

function in the regulation of Akt Pathway: new findings and perspectives -- 18. CK2 structure from yeast to human -- 19. Cellular zinc signaling is triggered by CK2 -- 20. A Nanomedicine Approach to Targeting CK2 for Cancer therapy -- 21. Bisubstrate approach for construction of high-affinity inhibitors and optical probes for protein kinase CK2.

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## Sommario/riassunto

The field of protein kinases has greatly impacted our understanding of the basic mechanisms in cell function. The field has also been a major focus of drug development that considers the broad reach of the protein kinase function under diverse conditions. One member of the kinome, protein kinase CK2, continues to emerge as a major signaling molecule involved in diverse functions in health and disease. This kinase has unique features, most notably its ubiquitous and highly conserved nature. Its vast number of potential substrates exemplifies its involvement in various functions in cells under both the normal and diseased states. Of particular note is the observation that due to its ubiquitous nature, CK2 has been found to be dysregulated in all cancers that have been examined. As such, it is now being considered a potentially important target for cancer therapy. Protein Kinase CK2 plays equally important functions in development and intracellular activities, and has a global impact on cell growth and proliferation. An additional key function of CK2 is the impact of its activity on cell death processes. Given the vast nature of its functions, CK2 has been proposed to serve as a “master regulator” of cell function. The chapters included in this work cover a wide range of topics dealing with some of the functions mentioned above, providing an important starting point for research investigators and graduate students interested in this field.

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