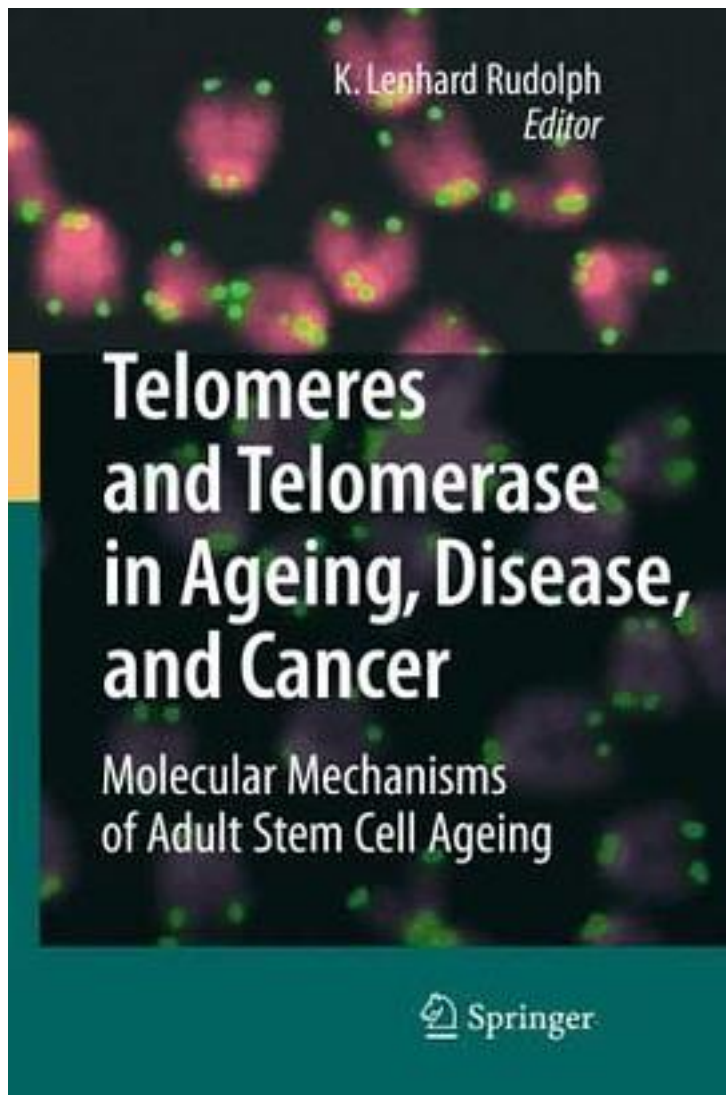


Telomeres and Telomerase in Aging, Disease, and Cancer



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This book provides an in depth review of our current knowledge on the role of telomeres and telomerase in ageing, disease and cancer. Telomere shortening results in telomere dysfunction, which represents one of the basic aspects of ageing contributing to the accumulation of DNA damage during ageing. The book describes cell intrinsic checkpoints (senescence and apoptosis) and environmental alterations that limit stem cell function during ageing and disease. The book focuses on experimental data in mouse models and cell lines and, in addition, provides an overview on telomere shortening in human diseases and ageing. The book also describes future directions in research on adult stem cell ageing, telomeres, and cancer. In addition, the book points to potential targets for molecular therapies aiming to improve regeneration and stem cell function during ageing or to impair cancer cell proliferation. A special focus of the book is on adult stem cells. There is emerging evidence that adult stem cell ageing impairs organismal fitness and survival and contributes to cancer formation (cancer stem cells). The book summarizes basic mechanisms of adult stem cell ageing. Moreover, the authors describe consequences of telomere dysfunction on stem cell function involving cell intrinsic checkpoints as well as environmental alteration of the stem cell niche. The above subjects appear to be of utmost importance to ageing researchers and physicians. Due to the advances in medicine, food supply and housing a growing percentage of humans reaches a long lifespan (70 years). At this age molecular mechanisms of ageing limit organ maintenance, fitness and survival. A detailed understanding of the molecular mechanisms underlying the ageing process is essential to further improve quality of life and a health span (TM) in the ageing human populations. In summary, this book provides an excellent basis for academic teachers, scientists, and students interested in the areas of stem cell ageing, telomeres and telomerase, regeneration, and cancer. In addition, the book is of interest for physicians since the development of molecular therapies targeting ageing stem cells represents a promising approach to improve regenerative reserve and organ function during ageing and could also serve to target cancer stem cells.

作者介绍:

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