



Systemic delivery technologies in anti-aging medicine : methods and applications /

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Monografía

This book presents a multidisciplinary assessment of the state of science in the use of systemic delivery technologies to deliver anti-aging therapeutics now under development. There is a gap between basic aging research and the development of intervention technologies. This major obstacle must be overcome before biogerontological interventions can be put into clinical practice. As biogerontology comes to understand aging as a systemic degenerative process, it is clear that there is a pressing need for technologies that enable cells and tissues in a fully developed adult body to be manipulated systemically to combat aging. The authors review advances in the chemistry and engineering of systemic delivery methods and analyze the strengths and limitations of each. The book is organized into six sections. The first offers an overview of the need for systemic delivery technologies alongside the development of anti-aging therapies and describes approaches that will be required for studying the properties and efficiency of carriers for systemic delivery. Sections II, III and IV describe recent advances in a range of strategies that may enable systemic delivery to help combat aging conditions ranging from cell senescence to decline in immune function and hormonal secretion. Section V discusses practical strategies to engineer and optimize the performance of delivery technologies for applications in systemic delivery, along with their working principles. The final section discusses technical and biological barriers that must be overcome as systemic delivery technologies move from research laboratory to clinical applications aimed at tackling aging and age-associated diseases. Benefiting scholars, students and a broader audience of interested readers, the book includes helpful glossary sections in each chapter, as well as sidebars that highlight important notes, and questions for future research

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Contenido: Preface -- Part I: Fundamentals of Systemic Delivery -- Anti-aging medicine: new concepts and intervention development,- Roles of systemic delivery in the development of anti-aging therapies -- Pharmacokinetics and pharmacodynamics in drug delivery -- Physiological, biochemical, and chemical barriers to systemic delivery -- Part II: Development of Delivery Technologies for Systemic Delivery -- Use of prodrugs for systemic delivery in anti-aging medicine -- Use of physical methods for systemic delivery in anti-aging medicine -- Use of viral systems for systemic delivery in anti-aging medicine -- Use of non-viral biological systems for systemic delivery in anti-aging medicine -- Use of lipid-based systems for systemic delivery in anti-aging medicine -- Use of polymeric systems for systemic delivery in anti-aging medicine -- Use of inorganic nanoparticles for systemic delivery in anti-aging medicine -- Part III: Practical Considerations in Intervention Execution -- Strategies in carrier design to enhance systemic delivery -- Characterization techniques for studying the properties of the carriers -- In vivo assessment of the efficiency of systemic delivery in anti-aging medicine -- Selection of administration routes for systemic delivery in anti-aging medicine -- Intellectual property and regulatory issues in drug delivery research -- Index

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