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Regenerative Strategies for the Treatment of Knee Joint Disabilities

 Springer

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Preface

This book is composed of four main sections totalizing 20 chapters, where the progress on biomaterials and current knowledge on the clinical management and preclinical regenerative strategies for the treatment of knee joint lesions are over-viewed. The role of different biomaterials from natural to synthetic, and processing methodologies to obtain scaffolds and patient-specific implants are deeply discussed. The current tissue engineering approaches and bioreactors technology are also revised. The advances on regenerative strategies and future trends based on expert opinion will be highlighted in dedicated chapters. Section one provides an updated and comprehensive discussion on articular cartilage tissue regeneration and role of synovial knee joint. Section two focuses on the important contributions for bone and osteochondral tissue engineering and highlights the importance of developing novel bilayered scaffolds and culturing conditions for enhancing osteogenesis and chondrogenesis, simultaneously. Section three overviews the recent advances on the treatment of meniscus lesions. A special focus is given both to preclinical strategies aiming to regenerate menisci and to the methodologies for the production of patient-specific meniscus implants. Finally, section four addresses the current strategies for treatment of ligament lesions. A next generation of bio-materials that hold great promise for improving the biofunctionality of engineered ligaments is also presented.

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