Chronic Renal Ischemia in Humans: Can Cell Therapy Repair the Kidney in Occlusive Renovascular Disease? 175
Ahmed Saad, Sandra M. Herrmann, and Stephen C. Textor
This review highlights recent clinical and experimental studies that suggest a role for cell-based therapy using autologous mesenchymal stromal/stem cells to repair kidney microvascular and interstitial structure and function.

Macrophages in Kidney Injury, Inflammation, and Fibrosis 183
Qi Cao, David C. H. Harris, and Yiping Wang
This review summarizes the role of macrophages with different phenotypes in kidney injury, inflammation, and fibrosis in various acute and chronic kidney diseases.

Molecular Pathways and Therapies in Autosomal-Dominant Polycystic Kidney Disease 195
Takamitsu Saigusa and P. Darwin Bell
This review presents clinical and basic aspects of ADPKD, reviews current concepts of PKD pathogenesis, evaluates potential therapeutic targets, and highlights challenges for future clinical studies.

Mitochondria, Muscle Health, and Exercise with Advancing Age 208
Heather N. Carter, Chris C. W. Chen, and David A. Hood
This review examines the literature with respect to mitochondrial content and function in muscle with advancing age, and provides a perspective on the effectiveness of endurance/aerobic exercise as an intervention for mitochondrial biogenesis and muscle homeostasis in older individuals.

Impact of Maternal Obesity on Fetal Programming of Cardiovascular Disease 224
Victoria H. J. Roberts, Antonio E. Frias, and Kevin L. Grove
This review summarizes maternal consequences of obesity during pregnancy, alterations in placental development, and impact on fetal cardiovascular development.

Ecophysiology of Omega Fatty Acids: A Lid for Every Jar 232
Walter Arnold, Sylvain Giroud, Teresa G. Valencak, and Thomas Ruf
This review explores evidence from animal models that points to pathways by which specific omega fatty acids exert differential effects.

NOD-Like Receptors: Guardians of Intestinal Mucosal Barriers 241
Anne-Kathrin Claes, Jun Yu Zhou, and Dana J. Philpott
This review highlights the function of NLRs in intestinal inflammation.