

Contents

Part 1 Structure and Function of the Kidney, 1

- 1 Overview of Kidney Structure and Function, 2**
Melanie P. Hoenig, Gerald A. Hladik
- 2 Kidney Development, 19**
Rosemary V. Sampogna
- 3 Assessment of Kidney Function in Acute and Chronic Settings, 26**
Lesley A. Inker, Andrew S. Levey
- 4 Urinalysis and Urine Microscopy, 33**
Arthur Greenberg
- 5 Hematuria and Proteinuria, 43**
Taimur Dad, Scott J. Gilbert
- 6 Imaging of the Kidneys, 52**
Dinushi S. Perera, Joanie M. Garratt, Austin R. Pantel, Matthew A. Morgan

Part 2 Acid-Base and Electrolytes, 69

- 7 Hyponatremia and Hypoosmolar Disorders, 70**
Joseph G. Verbalis
- 8 Hypernatremia and Hyperosmolar Disorders, 79**
Sophia L. Ambruso, Stuart L. Linas
- 9 Volume, Edema, and the Clinical Use of Diuretics, 88**
Vivek Soi, Jian Li, Jerry Yee
- 10 Disorders of Potassium Metabolism, 98**
Csaba P. Kovesdy
- 11 Disorders of Calcium, Phosphorus, and Magnesium Homeostasis, 109**
Ryan P. Flood, Jessica Kendrick
- 12 Approach to Acid-Base Disorders, 123**
Ankit N. Mehta, Michael Emmett
- 13 Metabolic Acidosis, 133**
Harold M. Szerlip
- 14 Metabolic Alkalosis, 147**
Thomas D. DuBose Jr., Mitchell H. Rosner
- 15 Respiratory Acidosis and Alkalosis, 154**
Nicolaos E. Madias, Horacio J. Adrogué

Part 3 Glomerular Diseases, 163

- 16 Glomerular Clinicopathologic Syndromes, 164**
Shane A. Bobart, Sanjeev Sethi
- 17 ANCA-Associated Kidney Disease and Vasculitis, 176**
Frank B. Cortazar
- 18 Minimal Change Disease, 187**
Howard Trachtman, Jonathan Hogan, Jai Radhakrishnan
- 19 Focal Segmental Glomerulosclerosis, 193**
Jeffrey B. Kopp, Avi Z. Rosenberg, H. William Schnaper
- 20 Membranous Nephropathy, 200**
Daniel C. Cattran, An S. De Vriese, Fernando C. Fervenza
- 21 Immunoglobulin A Nephropathy and Related Disorders, 211**
See Cheng Yeo, Jonathan Barratt

Part 4 Kidney in Systemic Diseases, 221

- 22 Complement-Mediated Glomerulonephritis and Thrombotic Microangiopathy, 222**
Marina Vivarelli, Joshua M. Thurman
- 23 Infection-Related Glomerulonephritis, 234**
Laura Ferreira Provenzano, Leal Herlitz
- 24 Viral Nephropathies: Human Immunodeficiency Virus, Hepatitis C Virus, Hepatitis B Virus, and SARS-CoV-2, 239**
Meghan E. Sise, Ian A. Strohbahn, Sarah Schrauben, Jeffrey S. Berns
- 25 Systemic Lupus Erythematosus and the Kidney, 248**
Andrew S. Bomback, Vivette D. D'Agati
- 26 Pathogenesis, Pathophysiology, and Treatment of Diabetic Kidney Disease, 255**
Lisa Dubrofsky, David Z. Cherney, Petter Bjornstad
- 27 Onconeurology, 271**
Jaya Kala, Kevin W. Finkel
- 28 Myeloma, Amyloid, and Other Dysproteinemias, 280**
Ala Abudayyeh, Paul W. Sanders

29 Cardioresenal Syndrome, 289*Jeffrey M. Turner, Jeffrey M. Testani***30 Liver Disease, Acute Kidney Dysfunction, and the Hepatorenal Syndrome, 295***Arnaldo Lopez-Ruiz, Juan Carlos Q. Velez, Luis A. Juncos***Part 5 Acute Kidney Injury, 305****31 Clinical Approach to the Diagnosis of Acute Kidney Injury, 306***Etienne Macedo, Ravindra L. Mehta***32 Acute Tubular Injury and Acute Tubular Necrosis, 317***Samantha Gunning, Jay L. Koyner***33 Acute Interstitial Nephritis, 325***Ursula C. Brewster, Randy L. Luciano***Part 6 Drugs and the Kidney, 331****34 Kidney Disease Caused by Therapeutic Agents, 332***Mark A. Perazella, Anushree C. Shirali***35 Principles of Drug Therapy in Patients With Decreased Kidney Function, 343***Thomas D. Nolin***Part 7 Hereditary Kidney Disease, 353****36 APOL1-Mediated Kidney Disease, 354***Etty Kruzel-Davila, Lijun Ma, Barry I. Freedman***37 Genetically Based Kidney Transport Disorders, 359***Steven J. Scheinman***38 Sickle Cell Nephropathy, 368***Kabir O. Olaniran, Vimal K. Derebail***39 Polycystic and Other Cystic Kidney Diseases, 375***Arlene B. Chapman, Frederic F. Rahbari-Oskoui, Jared Cook, Dana V. Rizk***40 Nephronophthisis and Medullary Cystic Kidney Disease, 387***Daniela A. Braun, Friedhelm Hildebrandt***41 Alport Syndrome and Related Disorders, 391***Martin C. Gregory***42 Fabry Disease, 396***Gere Sunder-Plassmann, Manuela Födinger, Renate Kain***Part 8 Tubulointerstitial Diseases, 405****43 Chronic Tubulointerstitial Disease, 406***Mark A. Perazella, Cynthia C. Nast***44 Obstructive Uropathy, 414***Richard W. Sutherland***45 Nephrolithiasis, 422***Anja Pfau, Felix Knauf***Part 9 Special Circumstances, 431****46 Kidney Diseases in Infants and Children, 432***Darcy K. Weidemann, Bradley A. Warady***47 The Kidney in Pregnancy, 440***Jessica Tangren, Michelle A. Hladunewich***48 Management of Kidney Disease in the Elderly, 451***Antoney J. Ferrey, John E. Sy, Connie Rhee, Ann O'Hare, Kamyar Kalantar-Zadeh***49 Global Kidney Disease, 461***Valerie A. Luyckx, Pablo Garcia, Shuchi Anand***Part 10 Chronic Kidney Disease, 471****50 Development and Progression of Chronic Kidney Disease, 472***Navdeep Tangri***51 Staging and Management of Chronic Kidney Disease, 483***Lesley A. Inker, Andrew S. Levey***52 Nutrition and Kidney Disease, 491***Melis Sahinoz, T. Alp Ikizler***53 Bone and Mineral Disorders in Chronic Kidney Disease, 500***L. Darryl Quarles, Pieter Evenepoel***54 Cardiac Function and Cardiovascular Disease in Chronic Kidney Disease, 512***Daniel E. Weiner, Mark J. Sarnak***55 Anemia and Other Hematologic Complications of Chronic Kidney Disease, 522***Jonathan W. Bazeley, Jay B. Wish***Part 11 Treatment of Kidney Failure, 533****56 Hemodialysis and Hemofiltration, 534***Madhukar Misra***57 Peritoneal Dialysis, 545***Nikhil Shah, Jeffrey Perl***58 Conservative Kidney Management, 560***Samantha L. Gelfand, Amar D. Bansal, Jane O. Schell***59 Selection of Prospective Kidney Transplant Recipients and Donors, 568***Greg Knoll, Todd Fairhead*

**60 Posttransplantation Monitoring
and Outcomes, 580**

*Brittany L. Schreiber, Tanun Ngamvichchukorn,
Anil Chandraker*

**61 Immunosuppression
in Transplantation, 593**

Sindhu Chandran, Flavio G. Vincenti

**62 Infectious Complications of Kidney
Transplantation, 605**

Michael G. Ison

Part 12 Hypertension, 611

63 Pathogenesis of Hypertension, 612

Christopher S. Wilcox, Wen Shen

64 Evaluation and Management of Hypertension, 618

Debbie L. Cohen, Raymond R. Townsend

65 Secondary Hypertension, 633

Aldo J. Peixoto