

<i>Contributing Authors</i>	<i>ix</i>
<i>Preface and Dedication</i>	<i>xv</i>

SECTION I: DEVELOPMENT 1

- 1 Embryology 3**
Adrian S. Woolf
- 2 Glomerular Circulation and Function 25**
Valentina Kon and Iekuni Ichikawa
- 3 Tubular Function 45**
Deborah P. Jones and Russell W. Chesney
- 4 Perinatal Urology 73**
David A. Diamond and Craig A. Peters
- 5 Renal Dysplasia/Hypoplasia 83**
Paul R. Goodyer
- 6 Syndromes and Malformations of the Urinary Tract 93**
Chanin Limwongse and Suzanne B. Cassidy

SECTION II: HOMEOSTASIS 123

- 7 Sodium and Water 125**
Howard Trachtman
- 8 Potassium 147**
George J. Schwartz
- 9 Acid-Base Homeostasis 189**
James C. M. Chan and Robert H. K. Mak
- 10 Calcium and Phosphorus 209**
Anthony A. Portale
- 11 Disorders of Phosphorus, Calcium, and Vitamin D 237**
Craig B. Langman
- 12 Nutrition and Metabolism 255**
Corina Nailescu, Phyllis J. Kaskel, and Frederick J. Kaskel
- 13 Fluid and Electrolyte Therapy in Children 275**
Michael J. G. Somers

CONTENTS

SECTION III: RESEARCH METHODS 299

- 14** Molecular Biology 301
Francesco Emma and Gian Marco Ghiggeri
- 15** *In Vitro* Methods in Renal Research 317
Patricia D. Wilson
- 16** Animal Models 335
Jordan A. Kreidberg
- 17** Clinical Investigation 347
Susan L. Furth and Jeffrey Fadrowski
- 18** Genetics 363
Lisa M. Guay-Woodford
- 19** Tissue Engineering 373
Anthony Atala

SECTION IV: CLINICAL METHODS 385

- 20** Clinical Evaluation 387
T. Martin Barratt and Patrick Niaudet
- 21** Laboratory Investigations 399
Jean-Pierre Guignard and Fernando Santos
- 22** Evaluation of Growth and Development 425
Sandra L. Watkins and Gail E. Richards
- 23** Diagnostic Imaging 449
Fred E. Avni and Michelle Hall
- 24** Renal Pathology 475
Agnes B. Fogo

SECTION V: GLOMERULAR DISEASE 501

- 25** Congenital Nephrotic Syndrome 503
*Christer Holmberg, Karl Tryggvason, Marjo K. Kestilä,
and Hannu J. Jalanko*
- 26** Inherited Glomerular Diseases 517
*Marie Claire Gubler, Laurence Heidet,
and Corinne Antignac*

- 27 Steroid-Sensitive Idiopathic Nephrotic Syndrome in Children 543**
Patrick Niaudet
- 28 Steroid-Resistant Idiopathic Nephrotic Syndrome in Children 557**
Patrick Niaudet
- 29 Immune Mechanisms of Glomerular Injury 575**
Allison A. Eddy
- 30 Acute Proliferative Glomerulonephritis 601**
Endre Sulyok
- 31 Immunoglobulin A Nephropathy 615**
Norishige Yoshikawa
- 32 Membranoproliferative Glomerulonephritis 629**
C. Frederic Strife, Michael C. Braun, and Clark D. West
- 33 Membranous Nephropathy 641**
Sudesh Paul Makker
- 34 Crescentic Glomerulonephritis 655**
Michael J. Dillon

SECTION VI: TUBULAR DISEASE 663

- 35 Nephronophthisis-Medullary Cystic Kidney Disease 665**
Friedhelm Hildebrandt
- 36 Polycystic Kidney Disease 675**
Katherine MacRae Dell, Ruth A. McDonald, Sandra L. Watkins, and Ellis D. Avner
- 37 Aminoaciduria and Glycosuria 701**
Israel Zelikovic
- 38 Tubular Disorders of Electrolyte Regulation 729**
Juan Rodríguez-Soriano
- 39 Renal Tubular Acidosis 757**
John T. Herrin
- 40 Nephrogenic Diabetes Insipidus 777**
Nine V. A. M. Knoers and Leo A. H. Monnens
- 41 Cystinosis and Fanconi Syndrome 789**
John W. Foreman
- 42 Primary Hyperoxaluria 807**
Pierre Cochat and Laure B. D. E. Collard
- 43 Tubulointerstitial Nephritis 817**
Uri S. Alon

SECTION VII: SYSTEMIC DISEASE 833

- 44 Renal Vasculitis 835**
Rudolph P. Valentini and William E. Smoyer

- 45** Henoch-Schönlein Purpura 851
Rosanna Coppo and Alessandro Amore
- 46** Systemic Lupus Erythematosus 865
Patrick Niaudet and Rémi Salomon
- 47** Hemolytic Uremic Syndromes 887
Chantal Loirat and C. Mark Taylor
- 48** Sickle Cell Nephropathy 917
Jon I. Scheinman
- 49** Diabetic Nephropathy 931
Leonard G. Feld
- 50** Renal Manifestations of Metabolic Disorders 941
William G. van't Hoff
- 51** Infectious Diseases and the Kidney 955
*Amitava Pahari, Sam Walters,
and Michael Levin*
- 52** Nephrotoxins 987
Russell W. Chesney and Deborah P. Jones

SECTION VIII: URINARY TRACT DISORDERS 1005

- 53** Urinary Tract Infection 1007
Sverker Hansson and Ulf Jodal
- 54** Vesicoureteral Reflux and Scarring 1027
H. Gil Rushton, Jr.
- 55** Obstructive Uropathy 1049
Robert L. Chevalier and Jonathan A. Roth
- 56** Bladder Dysfunction 1077
Dawn L. McLellan and Stuart B. Bauer
- 57** Urolithiasis 1091
Dawn S. Milliner
- 58** Pediatric Renal Tumors 1113
Christopher S. Cooper and Jack S. Elder

SECTION IX: HYPERTENSION 1123

- 59** Epidemiology of Hypertension 1125
*Jean U. Bender, Melvin A. Bonilla-Felix,
and Ronald J. Portman*
- 60** Pathophysiology of Hypertension 1153
Joseph T. Flynn and Robert P. Woroniecki
- 61** Evaluation of Hypertension in Childhood
Diseases 1179
Eileen D. Brewer
- 62** Treatment of Hypertension 1199
Beth A. Vogt and Ira D. Davis

SECTION X: ACUTE RENAL FAILURE 1221

- 63** Pathogenesis of Acute Renal Failure 1223
Norman J. Siegel, Scott K. Van Why, and Prasad Devarajan
- 64** Clinical Evaluation and Management 1233
Sharon P. Andreoli
- 65** Management of Acute Renal Failure 1253
Mark R. Benfield and Timothy E. Bunchman

SECTION XI: CHRONIC RENAL FAILURE 1267

- 66** Pathophysiology of Progressive Renal Disease 1269
Agnes B. Fogo and Valentina Kon
- 67** Conservative Management of Chronic Renal Insufficiency 1291
Richard N. Fine, Dilys A. Whyte, and Ivy I. Boydstun
- 68** Endocrine and Growth Disorders in Chronic Renal Failure 1313
Franz Schaefer
- 69** Renal Osteodystrophy 1347
Beatriz D. Kuizon and Isidro B. Salusky
- 70** Peritoneal Dialysis 1375
Bradley A. Warady, Bruce Z. Morgenstern, and Steven R. Alexander
- 71** Hemodialysis 1395
Stuart L. Goldstein and Kathy Jabs
- 72** Transplantation Immunobiology 1411
Alan M. Krensky and Carol Clayberger

- 73** Pediatric Renal Transplantation 1437
William E. Harmon
- 74** Ethical Considerations 1469
Michel J. C. Broyer

**SECTION XII: PEDIATRIC NEPHROLOGY
AROUND THE WORLD 1479**

- 75A** Overview 1481
Matthias Brandis and Ira Greifer
- 75B** Europe 1485
Jochen H. H. Ehrich and Anita Amina Elgendi
- 75C** Japan 1491
*Koichi Nakanishi, Masataka Honda,
and Norishige Yoshikawa*
- 75D** North America 1495
Sharon P. Andreoli
- 75E** Africa 1499
*Bahia Hassan Moustafa, Felicia Eke,
and Rajendra Bhimma*
- 75F** Latin America 1507
Ramon Alfonso Exeni
- 75G** Australia and New Zealand 1513
John R. Burke and William Wong
- 75H** Asia 1517
*Carmelo A. Alfiler, Hui-Kim Yap, and
Man-Chun Chiu*
- Index** 1525