

Contents

PART ONE

INTRODUCTION TO LABORATORY MEDICINE

- 1** Laboratory organization and management, 2
Richard C. Tilton
Melissa Martincich
- 2** Clinical laboratory safety, biohazard surveillance, and infection control, 13
Michael P. Kiley
- 3** Sample collection and processing, 25
JoanneM. Griffith
- 4** Weights, measures, and principles of instrumentation, 40
Marie Zureick
- 5** Laboratory statistics, reference ranges, and quality control, 66
Mary Kay Boehmer

PART TWO

MEDICAL CHEMISTRY AND CHEMICAL ANALYSIS

David C. Hohnadel

- 6** Renal physiology and water and electrolyte balance, 84
Lawrence A. Kaplan
- 7** pH and blood gases, 98
Sarah H. Jenkins
- 8** Carbohydrates, 109
JuanR. Sobenes
JohnE. Sherwin
- 9** Lipids, 125
Donald A. Wiebe
- 10** Bone and mineral metabolism and parathyroid hormones, 135
Willie Ruff
- 11** Hemoglobin and iron, 145
Gayle B. Jackson

- 12** Proteins, 157
Kory M. Ward
Kathy V. Waller
- 13** Liver function and nitrogen metabolism, 179
JohnE. Sherwin
JuanR. Sobenes
- 14** Clinical enzymology, 190
David C. Hohnadel
- 15** Pancreatic and intestinal function, 208
Michael D.D. McNeely
- 16** Pituitary, hypothalamic, and adrenal hormones, 222
Richard Kowalczyk
- 17** Thyroid function, 253
I-Wen Chen
Howard Smith
- 18** Gonadal hormones, 289
Paul T. Russell
R. Ian Hardy
- 19** Fertility, pregnancy, and fetal maturity, 290
Paul T. Russell
R. Ian Hardy
- 20** Vitamins, 307
Marge Brewster
- 21** Tumor markers, 322
Lawrence W. Bond
- 22** Laboratory investigation of sexual assault, 330
Charles G. Massion

PART THREE

TOXICOLOGY, HEAVY METALS, AND THERAPEUTIC DRUG MONITORING

David C. Hohnadel

- 23** Basic pharmacokinetics, 334
Ann Warner
- 24** Techniques of drug analysis, 346
Louis H. Steinert
Norman B. Coffman

- 25 Heavy metal analysis, 363
Donald J. Cannon
- 26 Therapeutic drug monitoring and antibiotics, 375
Victor Mondy
- 27 Emergency overdose toxicology, 384
Michael Hassan
- 28 Legal aspects of drug screening, 393
Amadeo J. Pesce

PART FOUR

URINALYSIS, CLINICAL MICROSCOPY, AND FLUIDS

David C. Hohnadel

- 29 Urinalysis, 402
Michael D.D. McNeely
Malcolm L. Brigden
- 30 Serous, cystic, and synovial fluid analysis, 422
Gordon N. Hoag
Michael D.D. McNeely
Malcolm L. Brigden
- 31 Seminal fluid analysis, 425
William Daniel Follas
JohnK. Critser
- 32 Gastrin and gastric fluid analysis, 446
Stanford Marenberg

PART FIVE

IMMUNOLOGY

Richard C. Tilton

- 33 Immunobiology, immunochernistry, and immunopathology, 448
Mario R. Escobar
- 34 Antibody detection for the diagnosis of infectious disease, 467
Thomas J. Tinghitella
- 35 The human leukocyte antigen system, 476
Petrina V. Genco
- 36 Immunodeficiencies and autoimmune disorders, 485
Gayle B. Jackson

PART SIX

CLINICAL MICROBIOLOGY

Albert Balows

- 37 Contemporary approaches to clinical microbiology, 506
Albert Balows

- 38 Quality assurance in clinical microbiology, 511
Ron B. Schiffman
- 39 Specimen collection, transport, and initial processing, 523
Richard C. Tilton
- 40 Principles and practices for the laboratory guidance of antimicrobial therapy, 532
JanetA. Hindler
Linda M. Mann
- 41 Microbial antigen detection, 565
Richard C. Tilton
- 42 Nucleic acid amplification techniques for the diagnosis of infectious diseases, 572
David H. Persing

PART SEVEN

MICROBIOLOGICAL ANALYSIS OF CLINICAL SPECIMENS

Albert Balows

- 43 Upper respiratory tract specimens, 584
Michael A. Gerber
- 44 Lower respiratory tract specimens, 591
Michael A. Saubolle
- 45 Central nervous system specimens, 604
Stephen G. Jenkins
- 46 Eye and ear specimens, 614
Stephen G. Jenkins
- 47 Gastrointestinal tract specimens, 627
J. Michael Miller
- 48 Urinary tract specimens, 633
Marie Pezzlo
- 49 Blood specimens, 641
Melvin P. Weinstein
- 50 Genital specimens, 649
Sandra Larsen
- 51 Wound, body fluid, and surgical specimens, 662
Robert C. Jerris
- 52 Hair, skin, and nail specimens, 673
Nancy L. Anderson

PART EIGHT

THE SYSTEMATIC IDENTIFICATION OF CLINICALLY SIGNIFICANT MICROORGANISMS

Albert Balows

- 53 Bacteriology, 686
David L. Sewell

- 54 Fungi, 727
Richard C. Tilton
- 55 Viruses, 765
Mark A. Neumann
- 56 Parasites, 792
Lynne S. Garcia

PART NINE**HEMATOLOGY**

Robert F. Reiss

- 57 Hemopoiesis and cell kinetics, 812
JayE. Valinsky
- 58 Morphology of the hematopoietic system, 830
Robert F. Reiss
- 59 Quantitative evaluation of the hematopoietic system, 859
Edward R. Burns
Barry Wenz
- 60 Flow cytometry and phenotyping of hematopoietic cells, 879
JayE. Valinsky
- 61 Laboratory diagnosis of erythroid disorders, 898
Robert F. Reiss
- 62 Laboratory diagnosis of granulocyte disorders, 938
Robert F. Reiss
- 63 Laboratory diagnosis of lymphoid disorders, 961
Robert F. Reiss

PART TEN**HEMOSTASIS**

Robert F. Reiss

- 64 Normal hemostasis, 996
Robert F. Reiss
- 65 Laboratory evaluation of hemostasis, 1007
Robert F. Reiss
- 66 Laboratory diagnosis of hemorrhagic disorders, 1025
Robert F. Reiss

- 67 Laboratory diagnosis and management of thrombotic disorders, 1045
David Ciavarella

PART ELEVEN**IMMUNOHEMATOLOGY AND TRANSFUSION PRACTICE**

Robert F. Reiss

- 68 Blood group antigens and antibodies, 1064
Carol L. Johnson
- 69 Laboratory techniques in immunohematology, 1084
Arlene S. Gingras
- 70 Immune hemolysis, 1101
Robert F. Reiss
- 71 Blood collection, processing, and storage, 1109
Joan Uehlinger
- 72 Transfusion of blood components and fractions, 1121
Robert F. Reiss
- 73 Complications of blood transfusion, 1132
Harold S. Kaplan

PART TWELVE**CYTOGENETICS**

- 74 Cytogenetics, 1144
Peter A. Benn

APPENDICES

Chemistry Reference Intervals, 1168
Periodic Table of the Elements, 1178

COLOR PLATES

1 to 65 following page 562