each assay, as well as the analyte concentration and source of the analyte. General principles of competitive and noncompetitive assay designs are covered in Chapter 5. Although both heterogeneous and homogeneous assay formats are discussed, considerable attention is given to the latter, and several examples of successful avoidance of separation of bound from free ligands are presented. Often referred to as “conditioning” assays, general principles of competitive and noncompetitive, liquid- or solid-phase, and homogeneous or heterogeneous assays are covered. Attention is given to isotopic and nonisotopic labels used in assays, along with a thorough discussion of the chemistry.

Classical methods and application of six types of labels to detect interaction of ligand and receptors are covered in Chapter 6. These include radionuclide particles, enzymes, conductive polymers, fluorescence, and luminescence. The spectrum of labels reviewed is impressive, from the least sensitive methods of nephelometry to the most sensitive methods of radionuclide decay. The range of labels discussed not only gives the reader a clear picture of various formats, but also educates one to possibilities beyond the standard radionuclide- and enzyme-linked colorimetric or luminescent detection systems. The synthesis of conductive polymers, an area with which I was unfamiliar, is covered at length; however, it appears to have great potential in labeling when used in several different assay formats, including amperometric and light-detector methods. This is followed by an explanation of how the labels are prepared. Iodination, enzyme conjugation, particle adsorption, and labeling of steroids are covered. Puriﬁcation of the tracer and its stabilization precede a description of the instrumentation required. Although these are fairly standard methods, the completeness and provision of speciﬁc examples with raw data afford an easy grasp of the content. In this regard, a section on biosensors orients the reader to assays without labels.

Perhaps the most challenging aspect of assay development is the sample. Chapter 7 thoroughly considers sample formats, as well as how to process them for assay. Problems with effects of the matrix of the samples or the reference preparations are thoroughly discussed. The preparation and desirable traits of reference preparations, as well as a list of those available, are presented. Principles of assay validation round out the chapter and will be a valuable reference for individuals encountering their ﬁrst assay development.

Assay validation is covered in Chapter 8, but some of its elements are confusing or misplaced. Presentation of the reference method comparison is awkward. Columns of x,y values and statistical tests for outliers with the use of an unfamiliar computer program (MathCAD) left me disenchanted with this section. I understood the author’s point, but it is doubtful that one developing an assay will embrace the methods as presented. It would have been more useful to place this section in the context of more widely used spreadsheets. In contrast, the discussion of speciﬁcity and sensitivity is thorough and an easy read. The section on interfering substances seems out of place; it would have been in a better context in Chapter 7 because the topic is related to matrix effects.

The last chapter (9) concerns itself with data analysis, processing, and presentation. Important concepts are covered regarding linearization methods. These extend the range of a dose–response curve but can obscure sample variance, leading to inaccurate results of dose interpolation. The mainstay four-parameter logistic function developed by Rodbard is contrasted to the Logit Y transform and others. The section on binding data primarily uses antibody-binding data for examples. A section devoted to receptor-binding data uses progesterone receptor as an example, but methods of analysis, as well as a discussion of appropriate transforms, are noticeably missing. There is considerable controversy about using Scatchard transforms for receptor-binding assays, and this is not discussed.

In summary, this text provides a nice background and reference for individuals who are developing immunoassays and receptor assays for the measurement of analytes.

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Having reached its 20th edition, this book needs no introduction. Few medical textbooks can equal the longevity attained by this publication. First published in 1908 by Dr. Todd, several editors have guided this text, a new edition of which has appeared approximately every 5 years since the early 1960s. The current editor, Dr. John Bernard Henry, joined Dr. Davidson in 1969 and has now overseen seven editions of the book. He is ably assisted in the latest edition by 6 associate editors and 88 other contributors, many of whom are recognized experts in their respective fields.

Although several textbooks are available for the individual components that comprise laboratory medicine, this book undertakes the daunting task of covering the whole discipline. The objectives are delineated in the foreword and indicate that the goal of the book is to serve as a resource of scientiﬁc information in virtually all aspects of laboratory medicine. In this, endeavor, it succeeds admirably.

There are seven sections. The ﬁrst provides an overview of the organization and management of laboratories, covering instrumentation, automation, informatics, and quality assurance. Concise diagrams, tables,
photographs, and relevant Internet addresses facilitate comprehension of Part 1. Each major discipline receives its own section: “Clinical Chemistry”, “Hematology and Transfusion Medicine”, “Medical Microbiology”, “Immunology”, and “Molecular Pathology.” “Urinary and Body Fluids” make up the seventh section. Sixteen chapters are new to this edition, with particular emphasis on germane topics that reflect recent biomedical progress. For example, “Assisted Reproductive Technology” and “Laboratory Aspects of Gestation Management” appear as separate chapters. “Hemapheresis” and “Tissue Banking and Progenitor Cells” are topics that are addressed in some detail as new chapters. “Molecular Diagnosis of Genetic Diseases”, although not a new chapter, provides a clear state-of-the-art overview of a complicated subject. The authors use pertinent examples to illustrate the complexity of large-scale genetic testing, emphasizing the “molecular and clinical heterogeneity of most genetic disorders”.

Updates are not confined to the new chapters. The section on myocardial infarction adequately covers the troponins in the available space, and the recently described use of high-sensitivity C-reactive protein in identifying individuals at risk for cardiovascular events is mentioned briefly. “Evaluation of Liver Function and Injury” is well organized and provides a logical approach to both tests of liver injury and markers of hepatitis virus infection. Flow cytometry is comprehensively addressed and illustrated with several clear examples. A diverse array of topics is included, ranging from physician office laboratories and point-of-care testing to state-of-the-art issues on HLA testing, molecular testing of infectious disease and neoplasia, Ras signal transduction pathways, and the role of allele frequencies in population screening for genetic testing. Even ethical issues related to genetic testing, an important but often neglected aspect of the Human Genome Project, receive comment.

Obviously with an undertaking of this magnitude, there will be some omissions and errors. For example, gestational diabetes is incorrectly defined in Chapter 22 as “any glucose intolerance in a pregnant woman... regardless of the state of glucose tolerance antepartum”. The correct definition of gestational mellitus is any degree of glucose intolerance with onset or first recognition during pregnancy. Similarly, it is erroneously stated in Chapter 11 that insulin stimulates glucose uptake in the liver; this is not correct. In the “Carbohydrate” chapter, the rare inborn errors of metabolism occupy two pages, whereas diabetes mellitus is covered in three, an emphasis not congruent with their relative importance. The section on glycemic control lacks lucidity; it fails to clarify the distinction between glycated (not “glycosylated” as used in the text) hemoglobin and hemoglobin A1c. In addition, the quantity and quality of the references are highly variable among chapters. Although cost constraints must be considered and the color plates are valuable, many of the figures would be considerably enhanced by the use of red or blue color.

These few issues aside, this book succeeds admirably in covering an extremely vast arena. It provides an excellent overview of the discipline of laboratory medicine and should be valuable to residents in laboratory medicine, medical technologists, medical students, medical technology students, and clinicians who want to understand the clinical laboratory. Practicing pathologists will also want a copy, which is likely to be consulted frequently. This book continues to set the standard as a premier text in laboratory medicine.

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This is the second edition of a text that seeks to blend information on the operating characteristics of laboratory (and other) tests with clinical estimates of pretest probability to provide a rational basis for the use of technology in clinical decision making. The first edition, published in 1991, grew out of an article entitled “Selection and Interpretation of Diagnostic Tests and Procedures: Principles and Applications”, published as a supplement to the Annals of Internal Medicine (1981;94:553–600) by members of the General Medicine Unit at the University of Rochester. This followed the publication of Beyond Normality: The Predictive Value and Efficiency of Medical Diagnosis by Galen and Gambino (New York: Wiley, 1975), the monograph largely responsible for introducing the notion of “predictive value” to the laboratory community. The initial response to the quantitative and probabilistic approaches suggested in these publications was one of interest tempered by the realization that readily available data on the operating characteristics (sensitivity and specificity) of methods in use were largely unavailable. Things have improved considerably since then.

The current edition of Diagnostic Strategies begins with four chapters on the basic aspects of quantitative decision making and their application to the clinical decision-making process. As in the previous edition, the terms pre- and posttest probability replace prevalence and predictive value. These terms are preferable to