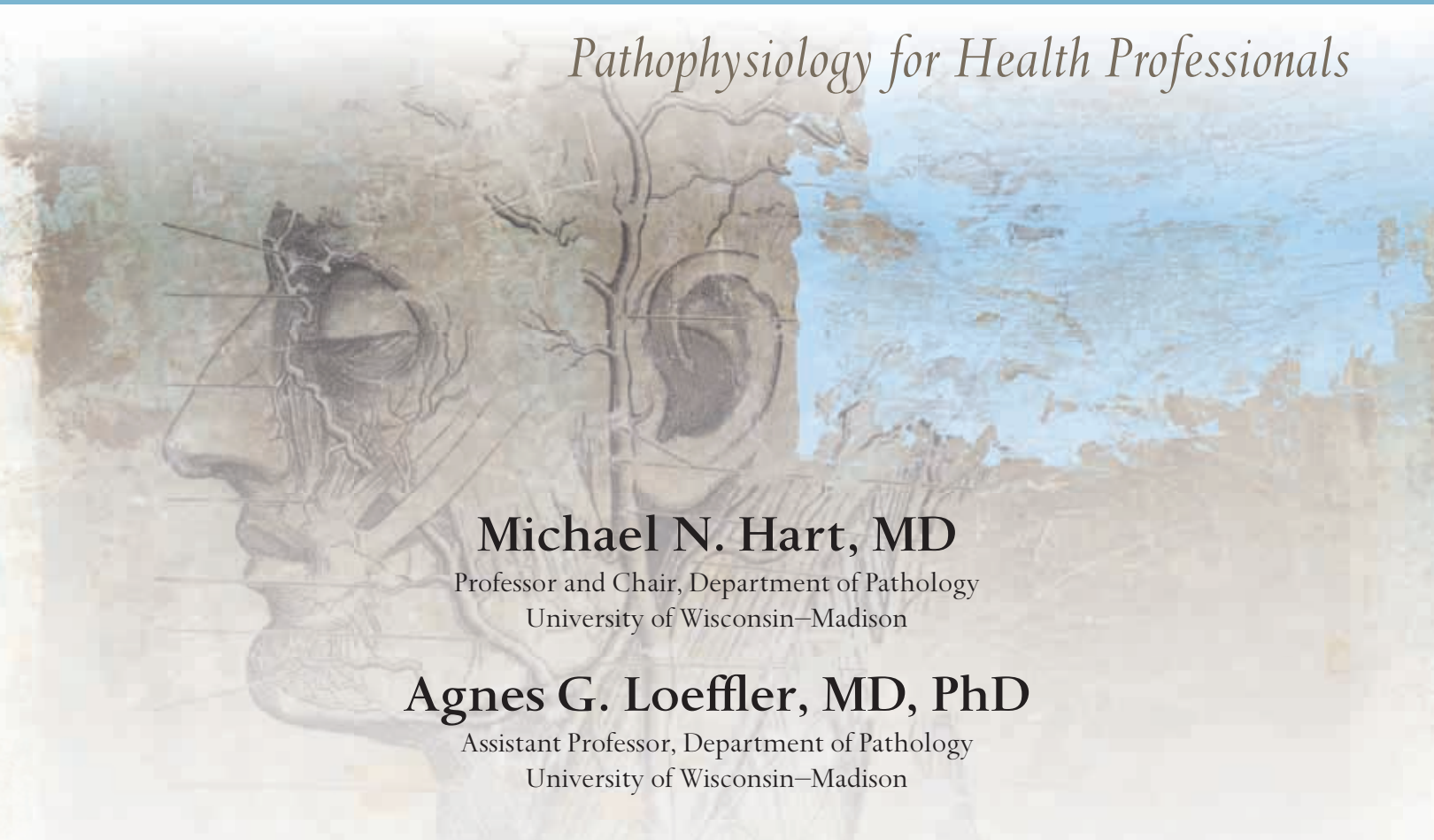
FIFTH EDITION

Introduction to Human Disease

Pathophysiology for Health Professionals



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Dedication

This book is dedicated to students beginning their career in the allied health sciences.

Brief Contents

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Preface

The scope and purpose of *Introduction to Human Disease* has not changed since it was first published 31 years ago, and the intentions expressed in the preface to the *First Edition* are just as applicable to the *Fifth*. *Introduction to Human Disease* introduces the basic principles of disease to allied health professions students. The intent of the book is to provide a text that covers all aspects of human disease with minimal requirements for prerequisite knowledge. Over the course of the past four editions, we have noticed that lay people and medical students, overwhelmed by the volumes of detailed, technical information delivered to them in print and, increasingly, on the Internet, turn to the book for a basic outline of how the health profession approaches particular diseases, or where a specific disease fits into the medical nosological scheme. While we are happy that they derive benefit from the discussions of diseases laid forth in this text, the intended readership is students wishing to pursue a career in nursing, pharmacy, dentistry, physical or occupational therapy, nutrition or other allied health professions fields, who require a broad understanding of disease epidemiology, cause, diagnosis and treatment, and a basic grounding in the specialized medical lexicon.

We have been pleased by the continual use of the *First*, *Second*, *Third*, and *Fourth Editions* by instructors who teach pathology courses to a wide variety of allied health professions students. We think that all health professions students have a need for a common vocabulary and a broad-based understanding of human disease. Thus, we define terms as clearly and specifically as possible and attempt to describe all of the most common and important diseases of humans, including mental illnesses. In fact, a special effort is made via the text's format to make the reader aware of the most frequent and significant diseases in each organ category.

In the *Fifth Edition,* all of the illustrations have been converted to color, new illustrations have been added, and the content has been considerably updated to reflect the current state of medical knowledge and practice. The basic format of the book, which has made it so popular through the first four editions, has been retained, with the exception that we now provide a comprehensive list of learning objectives at the beginning of each chapter and a set of practice questions at the end of each chapter. Each chapter has been critiqued by pathophysiology instructors for content, accuracy, and presentation. Based on reviewers' and readers' suggestions for each successive edition, we have added more clinical information, including general and specific treatments for diseases. Consequently, although *Introduction to Human Disease* remains primarily a pathology text, the clinical information provides a more circumspect foundation for the reader.

The text is divided into four sections. Section I provides fundamental vocabulary and concepts, a broad analysis of the most common and significant diseases, and a discussion of the tools and processes of diagnosis. Section II provides a framework for the basic types of human disease: reactions to injury, neoplasia, genetically determined disease, and intrauterine injury. In Section III, each chapter discusses diseases of a particular organ system. We review the anatomy and physiology of that organ, provide an overview of the most frequent and important diseases encountered, discuss diagnostic techniques (symptoms, signs, laboratory tests, and radiological and clinical procedures), profile the diseases, and discuss the consequences of failure of the organ to function. Section IV presents diseases that tend to affect multiple organs and that share causative mechanisms within each group. Topics included are infections, immune reactions, external injury by physical and chemical agents, and disorders caused by nutritional deprivations and excesses. We have found that these chapters are easier to learn after diseases of the organs have been studied. They can, however, be inserted earlier in a course without any prerequisites other than Sections I and II.

We hope that the text continues to be of use to students embarking on a career in the allied health professions.

The sheer volume of medical knowledge can appear overwhelming, and the technical vocabulary used can seem like a foreign language to students at the beginning of their studies. By reading and studying the content of this book, students should be well on their way to gaining the basic foundation they need for a rewarding and exciting career in medicine.

Preface to the *First Edition*

This text includes the knowledge that we believe the various health science students should have in common to facilitate further learning in their area of specialization and effective interaction as members of the healthcare team. Each student should go beyond this text in areas of special interest or need, and some may choose to omit some of the chapters.

The need for this text at the University of Iowa grew out of our experience in developing and teaching a pathology course for pharmacy, physicians' assistants, physical therapy, and dental students. We anticipate that this text will be suitable to the needs of other health science students, including nurses. Based on experience as well as analysis of the needs of these students, we concluded that the text content should be significantly different from that offered in texts oriented toward medical students. For example, we designed this text to be more clinically oriented than a typical medical student's text because most health science students will not have further courses in the general aspects of medicine. We chose to emphasize common laboratory tests, frequency of disease, and mental illness and deemphasize histologic detail.

In making a blueprint for the text we carefully considered material to be included under four categories: (1) the vocabulary for each chapter was determined by consensus among the authors from a list of vocabulary expected of medical students; (2) the diseases to be covered were selected on the basis of their frequency and significance or as representative examples; (3) a list of diagnostic resources and laboratory tests was selected for each content area; and (4) for each organ, we included a discussion of the general effects of failure of that organ. In addition, we have included a brief review of the most important aspects of anatomy and physiology in most of the chapters.

In line with our goal of providing a survey or introduction to human disease rather than emphasizing the discipline of pathology, we also decided to depart from the classic sequence of general and systemic pathology offered to the medical student. The text has four general content areas:

1. Chapters 1 through 3 provide an overview of human disease in terms of general vocabulary, overall frequency and significance of disease, and diagnostic approach including laboratory resources.
2. Chapters 4 through 6 cover the basic pathologic processes common to most diseases: inflammation, degeneration-necrosis, repair, growth disturbances, and developmental disorders.
3. Chapters 7 through 23 cover diseases by organ or organ system. In our experience, teaching disease by organs before discussion of multisystem diseases has the advantage of encountering the common diseases of the heart and other major organs early in the course. Within each organ-system chapter, material is presented in a standardized sequence: review of structure and function, most frequent and serious problems, major manifestations, specific diseases (under the categories of developmental abnormalities, inflammatory and degenerative diseases, and growth disturbances), and organ failure.
4. Chapters 24 through 31 discuss multisystem diseases and disease processes, including infections, immunologic disorders, physical and chemical injury, bleeding and clotting, hypertension, atherosclerosis, diabetes mellitus, nutritional disorders, alcoholism, and cancer.

The order of teaching these topics can easily be altered and many could be inserted at an earlier stage in a course. In our experience, multisystem diseases have been easier for the students to learn after the diseases of each system have been learned, and they provide a nice overview to end the course.

Although the text was written on the basis of detailed educational objectives, we have chosen not to include the objectives as such in the text, but rather to provide the student a content outline at the beginning of each

chapter and review questions based on the objectives at the end of the chapter. We highly recommend that instructors provide problem-solving exercises as supplemental learning exercises so that the student's knowledge level can be expanded beyond that of recall to problem solving and analysis. For the student who desires or needs information beyond the scope of this text, we recommend more comprehensive pathology texts or major textbooks of internal medicine.

Suggestions for improvement and criticisms of this text will be welcomed by the authors.

Acknowledgments

Foremost, we want to acknowledge the contributions of Thomas Kent, MD, who was the senior author of *Introduction to Human Disease* through the first four editions. Thomas Kent was a leading medical educator for many years. He was cofounder of the Group for Research in Pathology Education (GRIPE), a consortium that shares pathology education materials amongst over 75 medical schools. In 1975, Thomas Kent was having students at the University of Iowa College of Medicine take tests on the computer, a further example of his prescience in education. Dr. Kent is now retired from pathology teaching, but the success of the first four editions of this text is in no small measure the result of his vision in creating the style and format of the text, plus his insistence that the content must be directed to an understanding of the most common and important diseases. We strive to carry forward his vision into the *Fifth Edition*.

In June of 2008, we received a letter from Kristine Johnson of Jones and Bartlett Publishers (now Jones & Bartlett Learning). She had received a note from a person who "was extremely sad" to see *Introduction to Human Disease* "leave the shelves" after the *Fourth Edition*. Ms. Johnson asked if we would consider revising the book as its content area was consistent with the intended audience for Jones & Bartlett Learning. Thus began our relationship with Jones & Bartlett Learning, and we have been extremely pleased with the help we have received along the way from Kristine Johnson, Maro Gartside, Renée Sekerak, Jessica Elias, and the other members of the editorial, marketing, and production team.

Bringing this text up to date required the concerted effort of numerous colleagues. Not only did the text have to be revised, sometimes substantially, to reflect progress in medical knowledge, but we also wanted to enhance the text with high quality, color photographs. We would like to thank the following individuals who contributed significantly to the *Fifth Edition* of this textbook by reviewing chapters, contributing illustrations, or both: Rashmi Agni, Daniel Albert, Richard Antaya, Luis Brandi, Alan Bridges, Darya Buehler, Robert Corliss, Kirkland Davis, Charles Ford, John Frey, Andreas Friedl, Michael Fritsch, Molly Gurney, Josephine Harter, Michael Hartman, Eleanor Knopp, Catherine Leith, Bradley Maxfield, Patrick McBride, Fern Murdoch, Kenneth Noonan, Terry Oberley, Scott Perlman, Myron Pozniak, Gordana Raca, Shahriar Salamat, Lonie Salkowski, Suzanne Selvaggi, Donald Schalk, Lynette Scott, Carol Spiegel, Jose Torrealba, Patrick Turski, Art Walaszek, Stacy Walz, Eliot Williams, Donald Yandow, David Yang, and Weixiong Zhong.

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