Preface

Marks' Essential Medical Biochemistry is based on the second edition of *Marks' Medical Biochemistry: A Clinical Approach*. It has been streamlined to focus primarily on only the most essential biochemical concepts important to medical students. If further detail is needed, the larger "parent" book can be consulted.

Medical biochemistry has often been the least appreciated course taken by medical students during their four years of training. Many students fail to understand how the biochemistry they are learning will be applicable to their clinical years. Too often, in order to make it through the course, students fall into the trap of rote memorization instead of understanding the key biochemical concepts. This is unfortunate, as medical biochemistry provides a molecular basis and scaffold upon which all future courses in medical school are built. Biochemistry provides the foundation upon which disease can be understood at the molecular level. Biochemistry provides the tools upon which new drug treatments and therapies are based. It is very difficult to understand today's practice of medicine without comprehending the basic principles of biochemistry.

As the student proceeds through the text two important objectives will be emphasized: an understanding of protein structure and function, and an understanding of the metabolic basis of disease. In order to accomplish this, the student will learn how large molecules are synthesized and used (DNA, RNA, and proteins), and how energy is generated, stored, and retrieved (metabolism). Once these basic concepts are understood, it will be straightforward to understand how alterations in the basic processes can lead to a disease state.

Inherited disease is caused by alterations in a person's DNA, which leads to a variant protein being synthesized. The metabolic pathway which depends upon the activity of that protein is then altered, which leads to the disease state. Understanding the consequences of a block in a metabolic pathway (or in signaling or regulating a pathway) will enable the student to better understand the signs and symptoms of a specific disease. Type I diabetes, for example, is caused by a lack of synthesized insulin, but how do the myriad of symptoms which accompany this type of diabetes come about? Understanding how insulin affects, and regulates, normal metabolic pathways will enable the student to figure out its effects, and not just memorize them from a list.

This text presents patient cases to the students as the biochemistry is being discussed. This strengthens the link between biochemistry and medicine, and allows the student to learn about this interaction as the biochemistry is presented. As more biochemistry is learned, patients reappear, and more complicated symptoms and treatments are discussed. In this manner, the medical side of biochemistry is reinforced as the book progresses. The intended purpose for using descriptive names given to patients in this textbook was to allow the reader to more easily identify the specific disease process discussed for each patient as their case histories initially unfolded. It was also hoped that these names would serve as a mnemonic, to assist the student in connecting what they had learned earlier about specific patients with new information about those patients who reappeared in later chapters with additional biochemically-related problems. It was not the intent of the authors or the publishers that the use of these names would in any way make light of the health problems faced by the patients presented here.

HOW TO USE THIS BOOK

Icons identify the various components of the book: the patients who are presented at the start of each chapter; the clinical notes, biochemical notes, questions, and answers that appear in the margins; and the clinical and biochemical comments that are found at the end of each chapter.

Each chapter starts with an outline that summarizes the information so that students can recognize the key words and concepts they are expected to learn. The next component of each chapter is the "Waiting Room" containing patients with complaints and a description of the events that lead them to seek medical help.


Indicates a female patient


Indicates a male patient


Indicates a patient who is a baby or young child

As each chapter unfolds, icons appear in the margin, identifying information related to the material presented in the text:


Indicates a clinical note, usually related to the patients in the waiting room for that chapter. These notes explain signs or symptoms of a patient or give some other clinical information relevant to the text.


Indicates a book note, which elaborates on some aspect of the basic biochemistry presented in the text. These notes provide tidbits, pearls, or just reemphasize a major point of the text.


Refers the reader to extra material that can be found at http:\www.connection.lww.com/marksessentials.

Questions and answers also appear in the margin and should help to keep students thinking as they read the text:


Indicates a question


Indicates the answer to the question. The answer to a question is always located on the next page. If two questions appear on one page, the answers are given in order on the next page.

Each chapter ends with "Clinical Comments":


Indicates clinical comments that give additional clinical information, often describing the treatment plan and the outcome

"Suggested References" are listed at the end of the chapter for students who would like to pursue a particular topic in more depth. We have added comments about the references to help steer readers to those that would be most helpful for their particular purpose or interest.

A related online site called Connection can be accessed at http:\www.connection.lww.com. It contains many valuable resources for the student. Review questions for each chapter, along with detailed explanations, are included in an interactive testing format. Many of the questions are written in a USMLE format, in which a short case is presented, followed by answer choices. These questions can be used

to review after reading a chapter and to prepare for examinations. Additional material for some chapters, such as detailed tables, can also be found on Connection, as well as animations of key biochemical processes, including DNA synthesis, protein synthesis, oxidative phosphorylation, and PCR.