Preface

Most of my students are training to become allied health professionals, so I wanted a textbook that was specifically built from the ground up for their chosen careers. But it didn't exist! The books available have either been retrofitted with features that target these students or they were built by pulling art and wording from existing non–allied health texts. This is the *very first* microbiology text *completely* designed from scratch to train allied health students—art, media ancillaries, wording, assessments, *everything* you see is just for them.

The First Microbiology Textbook Aligned with ASM's *New* Microbiology Nursing Learning Outcomes

In 2012 the American Society for Microbiology (ASM) drafted a document called "Recommended Curriculum Guidelines for Undergraduate Microbiology Education." Today, most microbiology textbooks are aligned to these guidelines. Unfortunately, the guidelines are not at all clinical—you won't find the words "pathogen" or "infection" *anywhere* in them. Based on this, it's no wonder that anyone looking from the outside in would conclude that microbiology courses are for science majors, not allied health students. That's exactly why some nursing programs are removing microbiology courses from their curriculum and prerequisites. Most microbiology faculty would agree that this is a tremendous disservice to students and patients. Preventable medical errors are the third leading cause of death in the United States, and healthcare-acquired infections affect over 1.7 million U.S. patients annually and cost $35 billion dollars per year in the United States alone. Clearly, allied health students need microbiology. However, their training in microbiology is not the same as general microbiology. Allied health students need microbiology from an allied health perspective every bit as much as science majors need training from a research perspective.

To address the issue, ASM convened a task force, of which I was one of many faculty participants. The task force drafted nursing-centric microbiology learning outcomes and showed how they align with NCLEX learning outcomes. This textbook is the first on the market that directly aligns with ASM's nursing–centric learning outcomes and NCLEX learning outcomes. And this textbook is the first to have assignable, auto-graded content specifically tagged with these outcomes. Faculty can review this content in Mastering Microbiology and track student progress on theses outcomes—along with ASM's original outcomes.

The First Microbiology Textbook that Overtly Teaches Critical Thinking

Allied healthcare workers have the potential to either save lives or end them based on how they perform in their careers. Our students are studying for more than a grade; there are lives at stake. This means that they need to learn the course content, but they also must be able to think clinically and critically. Knowing this, faculty may infuse case studies and other critical thinking exercises into their courses. But, there are challenges to this. Many students lack prerequisite knowledge and struggle with critical thinking; class time is limited and there is so much to cover. Also, most microbiology case studies require students to be diagnosticians—an arguably unreasonable expectation to have for an introductory microbiology student. Most books include critical thinking exercises and case studies, but none overtly provide a framework for students to approach higher order questions. This book does, and here's why . . .

I used to believe that students would pick up on how to think critically if I assigned them readings, gave them critical thinking questions, and modeled critical thinking for them. But time after time I had students come to me in a daze of frustration. They'd routinely say things like, "The answer's not in the book," or "I don't even know where to begin." I eventually realized I had to *overtly* teach critical thinking—not just model it and assign it as a task. It has to be expressly taught, just like the course content. But I don't have unlimited time with my students and I can't hold their hands through all of their course work or into their next program. This is how the S.M.A.R.T. framework was born.

I thought about how trained clinicians and scientists approach problems. I also followed the literature on the neurological aspects of how we learn and how we develop critical thinking skills. Years of teaching and experimenting with thousands of my own students led me to distill the process into the five formulaic steps in S.M.A.R.T. (**S**ummarize, **M**ake connections, **A**void distractors, **R**eread, and **T**horoughly answer). These steps are easy to teach, model, and evaluate students on—and students can readily remember them. These steps help students begin to think like the healthcare providers they are seeking to become.

A Book Focused on Students

Learning science is tough enough without introducing a communication barrier into the mix. This is an accessible textbook that breaks away from stuffy "textbook-speak." That does not mean it's "dumbed down"; it means it's conversational, easy to read, focuses on details allied health students need, and uses memorable analogies and learning devices to bring the content to life. When learning a new subject, that last thing anyone needs is to get bogged down in passive voice prose, odd jargon-filled language, and overly busy figures. Having an accessible text is also increasingly important as we shift from traditional face-to-face courses to hybrid and online platforms where students are expected to engage in more independent learning.

Student and Instructor Tested—and Approved

The development process for this book involved substantial numbers of reviews to ensure that my approach works well for allied health instructors and students. Over one hundred professors and 5,000 students participated in product testing. Of these, 1,700 students took part in both class tests and focus groups. Some key student statistics from this research:

- 97% of students felt that the illustrations and photos in this book were more effective in helping them learn the concepts than the illustrations and photos in their current book.
- 86% of students felt this book's writing style was clearer and more engaging than their current book.
- 87% of students said that, if they were a microbiology instructor, they would choose Norman-McKay for their text.
- 91% of the students said that the S.M.A.R.T. case studies helped improve their understanding of the topics and, of those who said they improved their understanding, 54% said that they significantly improved their understanding.

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