Introduction to the Human Body

11th Edition

GERARD J. TORTORA
Bergen Community College

BRYAN DERRICKSON
Valencia College

WILEY

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About the Authors

courtesy of Reverend Doctor James F. Tortora

courtesy of Bryan Derrickson

JERRY TORTORA is Professor of Biology and former Biology Coordinator at Bergen Community College in Paramus, New Jersey, where he teaches human anatomy and physiology as well as microbiology. He received his bachelor's degree in biology from Fairleigh Dickinson University and his master's degree in science education from Montclair State College. He has been a member of many professional organizations, including the Human Anatomy and Physiology Society (HAPS), the American Society of Microbiology (ASM), American Association for the Advancement of Science (AAAS), National Education Association (NEA), and the Metropolitan Association of College and University Biologists (MACUB).

Above all, Jerry is devoted to his students and their aspirations. In recognition of this commitment, Jerry was the recipient of MACUB's 1992 President's Memorial Award. In 1996, he received a National Institute for Staff and Organizational Development (NISOD) excellence award from the University of Texas and was selected to represent Bergen Community College in a campaign to increase awareness of the contributions of community colleges to higher education.

Jerry is the author of several best-selling science textbooks and laboratory manuals, a calling that often requires an additional 40 hours per week beyond his teaching responsibilities. Nevertheless, he still makes time for four or five weekly aerobic workouts that include biking and running. He also enjoys attending college basketball and professional hockey games and performances at the Metropolitan Opera House.

To all my children: Lynne Marie, Gerard Joseph, Kenneth Stephen, Anthony Gerard, and Andrew Joseph. Their love and support continue to make my world worthwhile. I could never repay them for all they have done for me. **GJT**

BRYAN DERRICKSON is Professor of Biology at Valencia College in Orlando, Florida, where he teaches human anatomy and physiology as well as general biology and human sexuality. He received his bachelor's degree in biology from Morehouse College and his Ph.D. in cell biology from Duke University. Bryan's study at Duke was in the Physiology Division within the Department of Cell Biology, so while his degree is in cell biology, his training focused on physiology. At Valencia, he frequently serves on faculty hiring committees. He has served as a member of the Faculty Senate, which is the governing body of the college, and as a member of the Faculty Academy Committee (now called the Teaching and Learning Academy), which sets the standards for the acquisition of tenure by faculty members. Nationally, he is a member of the Human Anatomy and Physiology Society (HAPS) and the National Association of Biology Teachers (NABT). Bryan has always wanted to teach. Inspired by several biology professors while in college, he decided to pursue physiology with an eye to teaching at the college level. He is completely dedicated to the success of his students. He particularly enjoys the challenges of his diverse student population, in terms of their age, ethnicity, and academic ability, and finds being able to reach all of them, despite their differences, a rewarding experience. His students continually recognize Bryan's efforts and care by nominating him for a campus award known as the "Valencia Professor Who Makes Valencia a Better Place to Start." Bryan has received this award three times.

To my family: Rosalind, Hurley, Cherie, and Manuel. Your support and motivation have been invaluable to me. **B.H.D.**

Preface

Welcome to your course in anatomy and physiology! Many of you are taking this course because you hope to pursue a career in health care. Or perhaps you are simply interested in learning more about your own body. Whatever your motivation, this 11th edition of ***Introduction to the Human Body*** and ***WileyPLUS*** have all the content and tools that you need to understand the relationship between structure and function of the human body and how this all relates to your future career.

This 11th edition has been updated with added illustrations and photographs to better help you visualize concepts. In addition, details have been added to the mechanisms of actions of various physiological processes described in the text to help you better understand these processes.

Start with WileyPLUS

To succeed in this course, take advantage of everything available to you in WileyPLUS. Here you can find the complete e-Textbook, animations, and plenty of opportunities to quiz yourself. You can create a personalized study plan, assess your progress along the way, and then quickly access to the content and resources you need to master the material.

Many dynamic programs integrated into the course help build your knowledge and understanding, and keep you motivated. Fifteen **3-D Physiology** animations were developed around the most difficult physiological concepts to help students like you understand them more effectively. **Muscles in Motion** are animations of the seven major joints of the body, helping you learn origin, insertion, and movements of muscles surrounding those joints. **Real Anatomy** is 3-D imaging software that allows you to dissect through multiple layers of a real human body to study and learn the anatomical structures of all body systems. And **Anatomy Drill and Practice** lets you test your knowledge of structures with easy drag-and-drop or fill-in-the-blank labeling exercises. You can practice labeling illustrations, cadaver photographs, histology micrographs, or anatomical models.

WileyPLUS also includes ORION integrated adaptive practice that helps you build proficiency and use your study time most effectively.

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