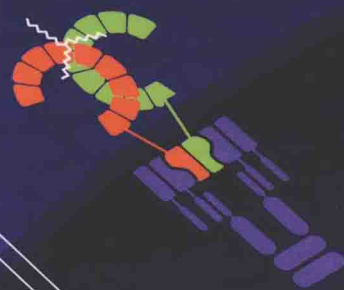
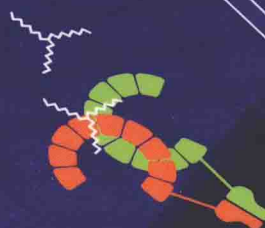
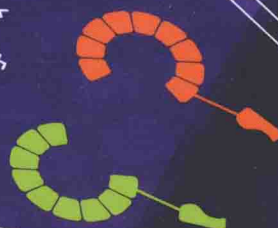
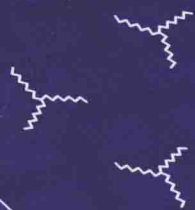
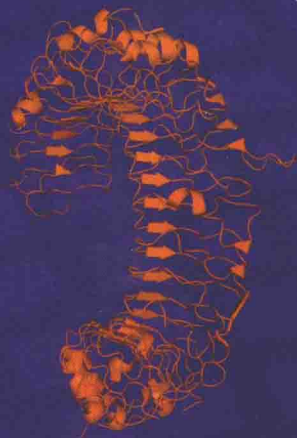
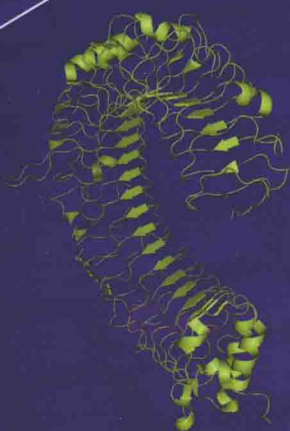


JANEWAY'S

8TH EDITION

IMMUNOLOGY



KENNETH MURPHY

JANEWAY'S

8TH EDITION
IMMUNO
BIOLOGY

Kenneth Murphy

Washington University School of Medicine, St. Louis

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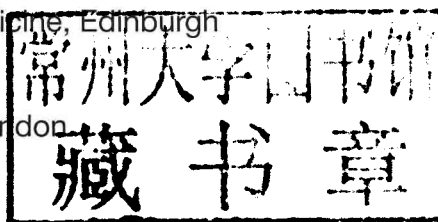
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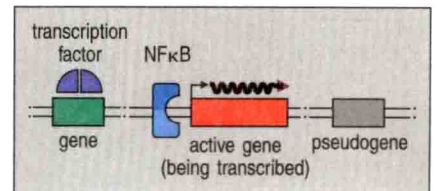
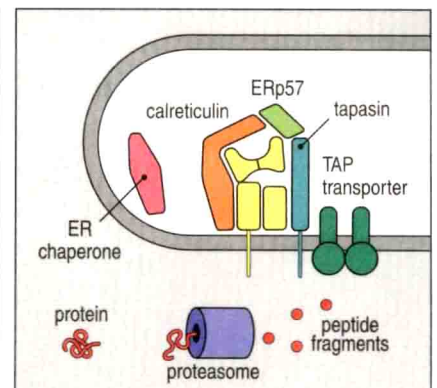
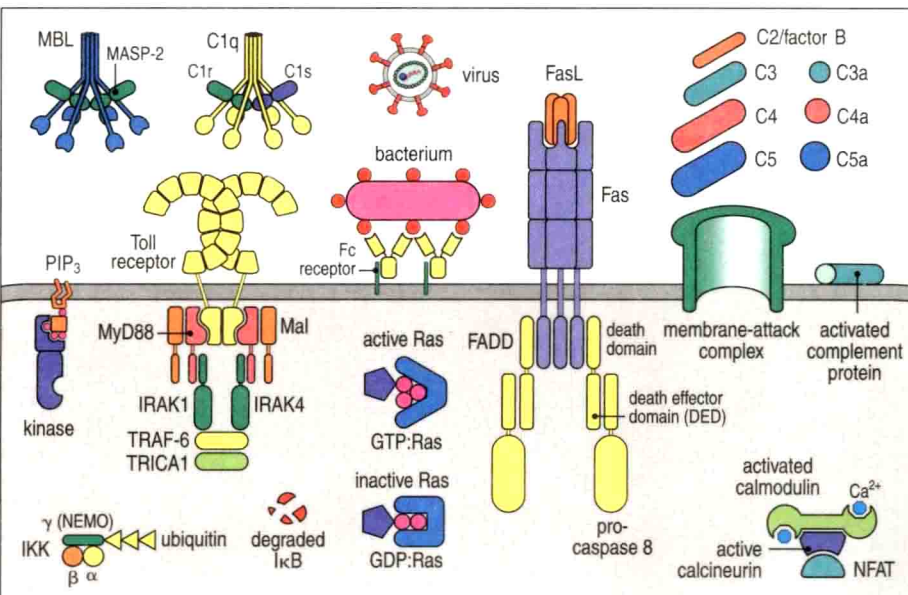
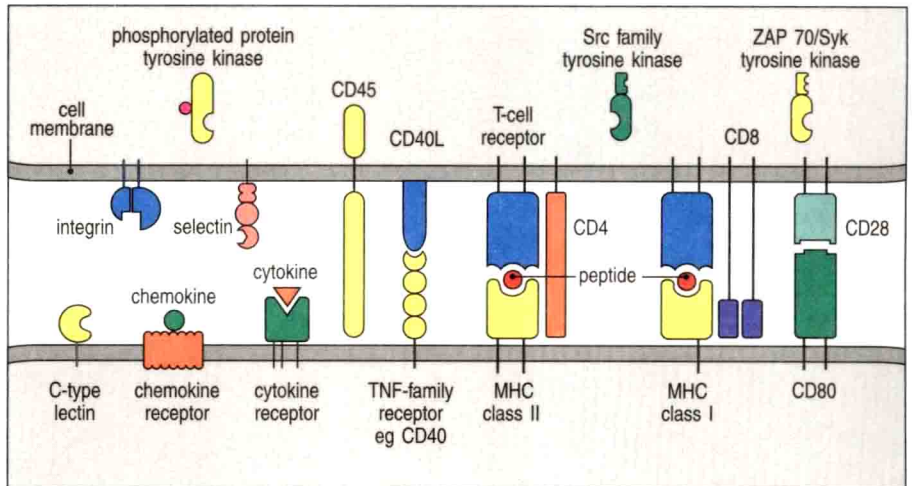
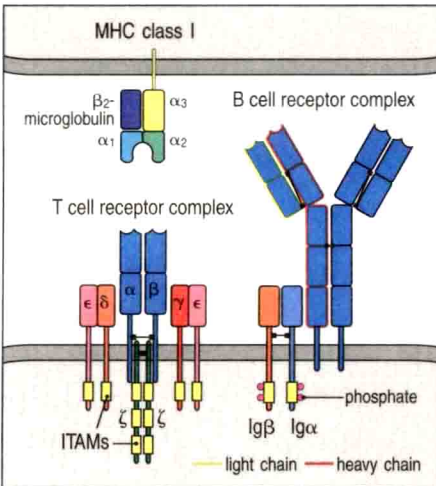
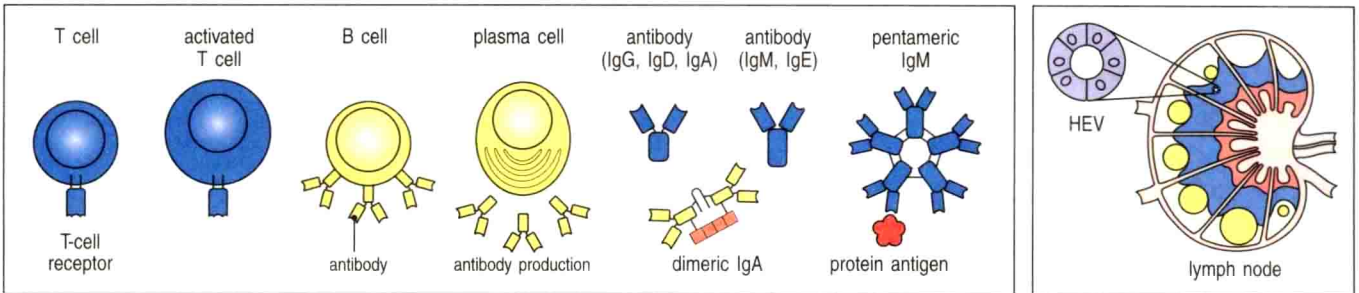
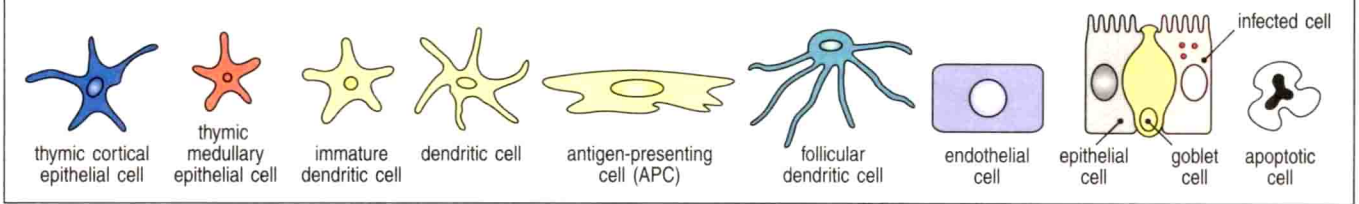
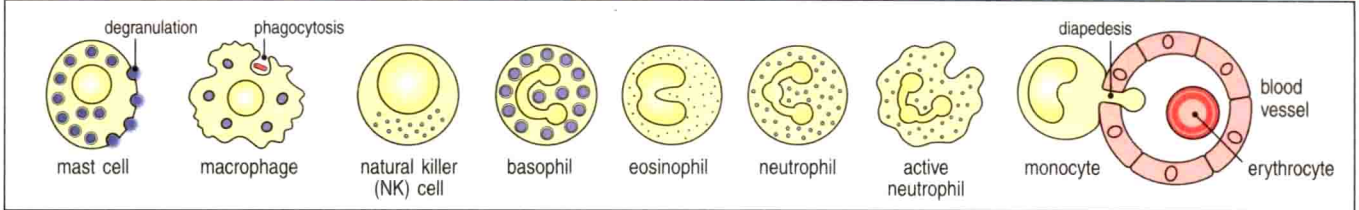
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JANEWAY'S

8TH EDITION

IMMUNO BIOLOGY

Preface

Janeway's *Immunobiology* is intended for undergraduate and graduate courses in immunology, as well as for medical students. The book can be used as an introduction to immunology but its scope is sufficiently comprehensive and deep to be useful for more advanced students and working immunologists. *Immunobiology* presents immunology from the consistent viewpoint of the host's interaction with an environment full of microbes and pathogens, and illustrates that the loss of any component of this system increases host susceptibility to some particular infection. The companion book, *Case Studies in Immunology*, provides an additional, integrated discussion of clinical topics (diseases covered in *Case Studies* are indicated by a symbol in the margin of *Immunobiology*).

This eighth edition retains the overall organization of the previous edition, and chapters in which the field has made important and rapid developments have been extensively revised. The discussion of innate immunity has been substantially expanded and its mechanisms are now treated in two separate chapters, presented in the order in which a pathogen would encounter innate defenses as it attempts to establish an infection. The immediate and soluble defenses are treated in Chapter 2. The complement system is introduced in the context of innate immunity, with the lectin pathway presented before the classical pathway of activation. The induced defenses of innate immunity—including a completely updated treatment of innate sensing—follows in Chapter 3, where various innate cell subsets and their receptors are also described. Signaling pathways are now presented as they are encountered, and not confined to a single chapter. Signaling pathways of the Toll-like receptors and other innate sensors are described in Chapter 3, while antigen receptor signaling pathways and cytokine and apoptotic pathways are retained in Chapter 7. Chapter 10 has been revised to place more emphasis on the trafficking of B cells in peripheral lymphoid organs and the locations at which they encounter antigen. Mucosal immunology (Chapter 12) has been expanded to include more discussion of responses to the commensal microbiota and the role of specialized dendritic cells and regulatory T cells in maintaining tolerance to food antigens and commensal bacteria. The last four chapters—the clinical chapters (Chapters 13–16)—reinforce the basic concepts discussed earlier with our latest understanding of the causes of disease, whether by inherited or acquired

immunodeficiencies or by failures of immunological mechanisms. Chapter 16 describes how the immune response can be manipulated in attempts to combat infectious diseases, transplant rejection, and cancer. This chapter includes a complete update of the immunotherapeutics and vaccine sections. Aspects of evolution, which were confined to the last chapter of previous editions, are now discussed throughout the book as the relevant topics are encountered.

The eighth edition has benefited again from the contributions of Allan Mowat, who extensively revised and updated Chapter 12. I welcome Casey Weaver's new contributions to Chapters 13 and 15, and Robert Schreiber's and Joost Oppenheim's revisions to the appendices on cytokines and chemokines. I thank Barry Kay for his suggestions in revising Chapter 14. Most importantly, I acknowledge Charles A. Janeway Jr., Paul Travers, and Mark Walport for their pioneering work on the previous editions.

The editors, illustrators, and publishers have contributed in many ways. Eleanor Lawrence's editorial skills give the book its consistent style and ensure the orderly and didactically sound presentation of concepts. Matt McClements has transformed the author's clumsy sketches into the informative yet artistic diagrams that define Janeway's text. Janete Scobie, Bruce Goatly, Sally Huish, Georgina Lucas, and Ioana Moldovan have brought skill and dedication to the editing, proofreading, and typesetting of this edition. Monica Toledo and Michael Morales were key in updating and generating new animations. I thank Adam Sendroff and Lucy Brodie, who are instrumental in communicating information about this book to immunologists around the world, and most of all I thank the publisher Denise Schanck for her incredible patience and support.

I would like to thank all those people who read parts or all of the chapters of the seventh edition and advised on the revision plan for this edition. I would also like to thank the many instructors and students who have taken the time to write to me with their suggestions on how to improve the book. I hope I have done those suggestions justice in this edition. Every effort has been made to write a book that is error-free. Nonetheless, you may find them, and I would greatly appreciate it if you let me know.

Kenneth Murphy

Instructor and Student Resources Websites

Accessible from www.garlandscience.com, these websites provide learning and teaching tools created for Janeway's *Immunobiology, Eighth Edition*. Below is an overview of the resources available for this book. On the websites, the resources may be browsed by individual chapters and there is a search engine. You can also access the resources available for other Garland Science titles.

Instructor Resources: The following resources are available on the Instructor Site:

The Art of Janeway's Immunobiology, Eighth Edition

The images from the book are available in two convenient formats: PowerPoint® and JPEG. They have been optimized for display on a computer. Figures are searchable by figure number, figure name, or by keywords used in the figure legend from the book.

Animations and Videos

The 40 animations and videos that are available to students are also available on the Instructor's Site in two formats. The WMV-formatted movies are created for instructors who wish to use the movies in PowerPoint presentations on Windows® computers; the QuickTime-formatted movies are for use in PowerPoint for Apple computers or Keynote® presentations. The movies can easily be downloaded to your PC using the 'download' button on the movie preview page.

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The section headings, concept headings, and figures from the text have been integrated into PowerPoint presentations. These will be useful for instructors who would like a head start in creating lectures for their course. Like all of Garland Science's PowerPoint presentations, the lecture outlines can be customized. For example, the content of these presentations can be combined with videos on the website to create unique lectures that facilitate interactive learning in the classroom.

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Animations and Videos

The 40 animations and videos dynamically illustrate important concepts from the book, and make many of the more difficult topics accessible. Icons located throughout the text indicate the relevant media.

Flashcards

Each chapter contains a set of flashcards, built into the website, that allow students to review key terms from the text.

Glossary

The complete glossary from the book is available on the website and can be searched and browsed as a whole or sorted by chapter.

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