

# The Liver

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## Biology and Pathobiology

Fifth Edition

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# Dedication

We dedicate this edition to the National Institutes of Health (NIH) of the Department of Health and Human Services of the United States Government. It was the vision of James Shannon, Director from 1955 to 1968, that the creation of extramural and intramural research programs would generate a strong basis for accelerating post-war biologic science and improving human health. Since the creation of these programs, the NIH has been the major worldwide source of public funds supporting biomedical research, and the peer review system proved to be the most effective mechanism for allocation of public funds. The Intramural and Extramural programs have been catalytic for virtually every major advance in biology and medicine in the United States, including better understanding of liver structure, function, and disease.

Major advances in hepatology would not have been possible without the support of public funds administered through the NIH. The Intramural program played a particularly major role in the study, detection, and analysis of hepatitis viruses, and also prevention of post-transfusion hepatitis and other infections.

NIH support has been global, as have the resulting advances and benefits. At least three generations of American and other basic and clinical investigators *owe* their careers to support from the NIH.

We hope that this investment by the American public in science and world health will be sustained, thereby permitting effective bridging of the amazing advances in the biological sciences with human health.



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# Preface

Predictions stated in previous editions of *The Liver: Biology and Pathobiology* (1982, 1988, 1994, and 1999) have consistently come to pass at a faster rate than had been anticipated. Major advances in genetics, immunology, virology, chemistry, biophysics, and structural, molecular, and cellular biology increasingly affect our understanding of liver function and disease. The near future promises additional developments resulting from the sequencing of the human genome, proteomics, small RNAs, and advances in combinatorial chemistry, micro-imaging, stem cell biology, and other areas of research.

The challenge addressed by this book has not changed since the Preface to the First Edition was written in 1982:

The amazing advances in fundamental biology that have occurred within the past two decades have brought hepatology and other disciplines into new, uncharted and exciting waters. The dramatic changes in biology will profoundly influence our ability to diagnose, treat, and prevent liver disease. How can a student of the liver and its disease maintain a link to these exciting advances? Most physicians lack the time to take post-graduate courses in basic biology; most basic researchers lack an understanding of liver physiology and disease. This book strives to bridge the ever-increasing gap between the amazing advances in basic biology and their application to liver structure, function, and disease.

A problem arises. How can a new edition remain reasonable in cost and size and still present essential background information, which has not changed since the last edition, as well as the panoply of major new contributions to our understanding of liver disease? In the Fourth Edition, we introduced a novel solution which has been expanded in the current Fifth Edition. The Fourth Edition emphasized exciting important new concepts and discoveries of the previous five years, and background information and references from the previous edition were provided on an open web site.

Now, in collaboration with our new publisher, Wiley-Blackwell, we have provided 17 chapters from the

Fourth Edition on the web site GastroHep.com. These are freely available and we have cross-referenced the new text to these chapters. They are designated by [insert computer screen symbol] and web site chapter numbers W-1 through W-17 when cited in the text. Therefore, readers can obtain new information in the printed Fifth Edition and background information through GastroHep.com.

The Fifth Edition includes 60 NEW chapters and 14 chapters are on the web site that present major progress as achieved in the laboratory and clinic. All other chapters either have been completely revised or appear on the web site. Harvey Alter, David Cohen and Allan Wolkoff have become Associate Editors. Previous editions included a section entitled “Horizons”, which presented advances of extraordinary nature in areas of potentially major importance to the liver. Virtually all of these fields have rapidly expanded and become topics for future chapters. Fifteen new “Horizons” are presented in this edition. One may safely predict that their impact on hepatology will also be considerable.

As stated in the Preface to the Third and Fourth Editions:

The amazing advance in science proceeds at an ever-increasing pace. The implications for students of liver disease are considerable. The authors and editors will have achieved our goals if the reader finds within this volume glimpses into the current state and future direction of our discipline and perspectives that lead to better understanding of liver function and disease.

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