

A molecular medicine resource

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Immunohistochemistry and In Situ Hybridization of Human Cancers, 3 Molecular Genetics: Liver and Pancreatic Carcinomas

Edited by M.A. Hayat, MD

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The growing interest in developing novel treatments for gastrointestinal cancers has highlighted the importance of understanding the molecular biology of these cancers. The reality is molecular medicine is replacing traditional clinicopathologic evaluations; with our rapidly expanding armamentarium of targeted therapies, molecular profiling of tumors will soon become a necessity.

The handbook of *Immunohistochemistry and In Situ Hybridization of Human Cancers* is a compilation of a vast knowledge of the molecular biology of hepatic and pancreatic cancers. Authored by a group of international experts in their respective fields, the book is organized into three major sections: molecular genetics, liver carcinoma, and pancreatic carcinoma. Introductory sections on selected definitions and a classification scheme of human cancers help orient less sophisticated readers.

The first section, dealing with molecular genetics, provides detailed descriptions of principles involved in immunohistochemistry, microarray data analysis, tissue microarrays and qualitative fluorescence image analysis, subtraction hybridization, laser microdissection, genomics, proteomics, transcriptomics, and DNA methylation analysis. It also provides information on more specific analyses, including the epidermal growth receptor, PTEN, p53, p73, and assays for centrosome amplification.

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The assays are described with practical details on tissue preparations, reagents, and optimal experimental conditions. Applications of the assays and interpretation of results are also provided.

The second major section deals with liver cancer, providing useful information on epidemiology, carcinogenesis, and known molecular and genetic abnormalities. It addresses hepatitis B as a risk factor in more detail than hepatitis C. Interestingly, it also deals with the treatment of this disease, which would seem to be beyond the scope of the book. Other chapters within this section address topics related to specific genes, such as p53, PTEN, bcl-2, and bcl-x.

Drawbacks of this section include the discussions of purely experimental topics, with little use to translational researchers let alone clinicians, and omission of information on angiogenesis. The inclusion of antiangiogenesis treatment strategies currently being tested would have been helpful. A number of chapters were simply research articles and perhaps would have been more appropriate in journals or more specialized handbooks. Nevertheless, they provide valuable data for those interested in molecular research. I personally found the chapters on distinguishing well-differentiated hepatocellular cancers from benign nodular lesions clinically beneficial. This chapter makes for excellent reading for pathologists, hepatologists, and oncologists.

The third and final section of this book deals with pancreatic carcinoma. The first chapter offers an excellent account of the different genetic changes in this disease. Subsequent chapters discuss various molecular events. Again, striking omissions were discussions on angiogenesis and EGFR pathways; both topics are currently subjects of extensive clinical trials.

Highly specialized science

The sections and constituent chapters are adequately referenced for further reading. Some, but not all, chapters contain high-quality images and diagrams, which help explain all scientific aspects of the assays. Unfortunately, biliary tract and gallbladder cancers as well as neuroendocrine tumors that affect the pancreas were not addressed.

Obviously, this book is highly specialized for the average clinician, and pathologists, basic scientists, and researchers in this field of practice and research would benefit the most from having it in their libraries. The book represents a great resource for basic information and methodologic issues related to performance of assays and interpretation of data. General pathologists, medical oncologists (especially those who subspecialize in treating gastrointestinal cancers or who are involved in new drug development and translational research), and gastroenterologists may also find this book worthwhile.