

Mechanisms of Chemical Carcinogenesis

Edited by C.C. Harris and P.A. Cerutti

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582 pages. £75.00

This book reports the proceedings of the UCLA symposium held in Colorado, February 22 to March 1, 1981. A substantial part of the book consists of material reprinted from readily available journals and important, not to say dramatic, advances in the field of carcinogenesis have occurred subsequent to the appearance of this book. These facts, coupled with the relatively enormous cost of the work, should ensure that it will be purchased by only a tiny number of the least discriminating librarians around the world. The articles appear in a rather random order but are rationalised in the table of contents into logical and distinctive areas. Thus the order of listing of the articles in the contents is different from their order of appearance in the text.

I.B. Weinstein presents a perceptive overview of the field in his keynote address. This is matched by an elegant short summary of the conference by J. Cairns who forcefully states his belief, heartily endorsed by the reviewer, that the direction of cancer research should be steered towards basic molecular biology.

To turn to the main contents headings, there are a number of articles on carcinogen metabolism and carcinogen activating systems. This is a field of great complexity with large individual and species variations in metabolism. Problems in this field are likely to be more clearly defined with the advent of recombinant-DNA technology which should ultimately provide the capability to identify the genetic complement of cytochromes P450 possessed by each individual. The article by D.W. Mebert and his colleagues indicates the logical directions this area is now taking and demonstrates what excellent problems are available for molecular biologists to tackle.

The very important area of cellular processing of DNA damage is discussed in a number of papers. The articles by P.C. Hanawalt and colleagues and E.C. Friedberg and coworkers are good reviews of this complex field. Other articles deal with specific aspects with emphasis on human cell systems.

The section on in vivo and in vitro carcinogenesis deals with the complex biology of the carcinogenic process. T.J. Slaga et al. discuss their important work on multistage carcinogenesis in mouse skin. It has been known for many years that chemical carcinogenesis in mouse skin involves an initial irreversible event called initiation followed by stages, reversible up to a certain point, called promotion. The importance of promotion in the etiology of human cancer is discussed by H.C. Pitot et al. in the summary section. The fundamental question is the nature of the normal biological mechanisms that prevent initiated cells from developing into tumour clones. The article by Bertram et al. suggests – as indeed others have previously – that the expression of transformation is prevented by the passage through gap junctions of growth inhibitory substances from neighbouring cells.

The section entitled 'Genetics of Malignancy' contains some interesting articles on the embryonic control of malignancy and the transfection of teratocarcinoma cells. An intriguing article by J.W. Shay et al. demonstrates that tumorigenicity in cells derived from a mouse teratoma can be suppressed by fusion with the cytoplasm from normal cells. Wisely the authors suggest that caution should be exercised in the interpretation of their data. Well concealed under the title 'Evidence for both mutational and non-mutational processes in chemically induced cell transformation' is the important finding of a specific mutation in an actin gene on transformation of a diploid human fibroblast by a chemical carcinogen. This mutation produces a single amino acid change (glycine to aspartic acid) in position 244 of the protein.

To summarise, this is a stimulating work containing some very good papers. However, it cannot be recommended for purchase because most of the articles are already published and easily available, it is now out of date and it is far too costly.

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