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Book Review

Technologies for Detection of DNA Damage and Mutations
Ed. Gerd P. Pfeifer
Plenum Press, New York and London, 1996, $95 (US)

According to the preface, this book aims to provide a collection of techniques that are useful in mutagenesis research. It is divided into three sections. Part I is devoted to technologies for detection of DNA damage. It contains reviews of the principles of, and detailed methodology for:-

- the techniques of microgel electrophoresis of DNA from individual cells,
- the cytokinesis-block micronucleus technique,
- agarose gel electrophoresis,
- ^{32}P-postlabelling and its application to the measurement of both oxidative DNA damage and carcinogen adducts,
- radio-immunoassay of UV-induced DNA damage,
- measurement of alkylation products using monoclonal antibodies,
- measurement of oxidative DNA damage by immunochemical and electrochemical methods,
- strategies for measuring damage (e.g. pyrimidine dimers) and repair in gene-sized specific DNA sequences, including the use of specific nucleases, PCR-based assays (including ligand mediated PCR) for DNA damage and repair and the use of automated DNA sequencers.

Each chapter gives a commendable degree of experimental detail which appears (without trying it myself!) sufficient to allow others to set up the techniques from scratch. The only thing missing seems to be the use of mass spectrometric techniques, linked with GC or HPLC: this seems a surprising omission in any comprehensive account of DNA damage methodology. It would also have been useful to see a comparison of the data obtained by different methods.

Part II of the book reviews technologies for the detection of mutation. It covers:-

- heteroduplex analysis,
- denaturing and constant gradient gel electrophoresis,
- single-strand conformation polymorphism analysis,
- 2D-gene scanning,
- ligase chain reaction,
- the protein truncation test,
- single nucleotide primer extension
- and sequencing of PCR products.

Again, a good level of experimental detail is provided.

The final part of the book is a brief survey of mammalian systems for mutation analysis, including the use of shuttle vectors, analysis of the HPRT gene, phage λ and plasmid *lacZ* transgenic mice and the genotypic mutation assay.

Overall, this book is useful and well presented, although the contrast on some of the photographs of gels could have been better. The price is reasonable. I am pleased to have the book on my shelf and I recommend it to others.

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