
Book reviews

Lawrence, C. W. (ed): Induced Mutagenesis. Molecular Mechanisms and Their Implications for Environmental Protection. New York: Plenum Press 1983. viii + 433 pp., several figs., several tabs. Hard bound \$ 55.00.

The field of environmental mutagenesis has been distinguished in the past by the rapid development of screening tests, legislation of genetic toxicology testing and the identification of the major classes of chemical mutagens and carcinogens. The present phase has two major objectives: characterization of the predictive value of short-term tests and the exploration of cellular factors involved in the mutational process. The 14th Rochester conference and the contributions published in this volume reflect this modern trend. The title promises a comprehensive monography but the 15 contributions cover only special aspects of molecular mechanisms of mutagenesis in bacteria and mammalian cells in culture. An introductory review is presented by Singer dealing with mutagen-DNA interactions and their repair as assessed by *in vitro* transcription. The isolation and use of an eukaryotic RNA-dependent RNA polymerase which also copies deoxy-polynucleotides promises new avenues with which to study the role of polymerase in mutation induction. It could be demonstrated that even small substituents blocking Watson-Crick sites will lead to ambiguity when hydrogen bonds cannot be formed in the appropriate number. Further chapters characterize bisulfite mutagenesis, infidelity of DNA replication and the role of pyrimidine dimers. The inducing ability of the latter for SOS response represents a new and not generally accepted hypothesis (Doubleday). Two contributions deal with plasmid pKM101 in mutagenesis and support earlier findings

that the plasmid enhances mutagenicity by a constitutive production of a *umuC*-like product. The significance of this muc-dependent repair pathway for mammals is still unknown and not subject for discussion in these papers.

Inducible repair does not necessarily mean error prone repair and error prone repair does not imply inducible error prone repair. The following chapters are dedicated to mutagenesis in mammalian cells in culture. The main interest today is in the selection of mutagen hyper- and hyposensitive lines for both mutagenicity testing and investigation of cellular factors involved in mutagenesis. The studies clearly show that an extrapolation of hypotheses generated in bacterial models to mammalian cells is still impossible although knowledge has increased during the last 5 years. Final chapters concern mathematical modeling of the mutation process, including main modulating factors, and the opportunities for bacterial test systems in detecting mutagens in complex environmental systems. While this contribution is a summary of data published elsewhere by several authors, the paper of Thilly provides a good basis for understanding mutation induction and the role of repair and cell cycle. Clearly, the modeling of mutagenesis is still in its infancy but interpretation of genetic toxicology data and quantitation of risk estimates need these excitements and they are worth to be discussed and improved.

Although the publication of the proceedings of the 14th Rochester conference in this volume has been delayed for 2 years, they are still actual and a survey of the current knowledge in the special branches of environmental mutagenesis. The book is well prepared and in line with earlier fundamental volumes published in this series.

R. Braun, Gatersleben

Announcement

Genetics Symposium

The 16th Stadler Genetics Symposium being held in Columbia, Missouri on 19–21 March 1984 will focus on gene manipulation in plant improvement. For registration information you

should contact: Dr. J. P. Gustafson, 208 Curtis Hall, Department of Agronomy, University of Missouri, Columbia, MO 65211, USA. Telephone: (3 14) 8 82-73 18.

Correction

In the paper of T. B. Ramey and A. A. Rosielle entitled "Hass cluster analysis: a new method of grouping genotypes or environments in plant breeding", published in TAG, Vol. 66, pages

131–133 (1983), the authors want to correct the equation (1) on page 132 as follows:

$$d(i, i') = 1/[2(n-1)] \sum_{j=1}^n [(Y_{ij} - \bar{Y}_i) - (Y'_{ij} - Y'_i)]^2 \quad (1)$$