GENETIC MOSAICS AND CHIMERAS IN MAMMALS. Liane B. Russell (Ed.). Plenum Press, New York and London, 1978. P. xiv+485. Price: not quoted.

The study of organisms containing two or more populations of cells, recognisable by the expression of different genetic markers, constitutes one of the most exciting interdisciplinary areas in experimental biology. In mammals, such individuals occur naturally (mosaics) as a result of X-chromosome inactivation in the female or of somatic mutation, and can be generated experimentally by manipulations which result in the incorporation of some or all of the cells from different embryos into a single composite individual, known as a chimera. This book, which constitiutes the Proceedings of the Symposium on Genetic Mosaics and Chimeras held at Gatlinburg, Tennessee, from April 3-6, 1978, brings together papers from a number of contributors to this field.

The wide variety of investigation possible with mosaics and chimeras is apparent from an examination of the contents of this volume. They make it possible to follow cell lineages, as illustrated by contributions on the clonal origin of tumours and the origin of the germ line. Distinction can be made between effects which are cell-autonomous and those which are not. Examples of this approach are seen in chapters on the effects of developmental-lethal mutant genes, on the effects of chromosome constitution and of single-gene mutations on sex determination, on lethality in parthenogenetic embryos and on the malignancy of teratocarcinoma cells. Since the degree of chimerism varies between different organs of one individual, attempts can be made to localise the site of action of genes affecting phenotypes expressed at the level of the whole organism, as illustrated by papers on body weight and behavioural traits.

In the case of spontaneous mosaics the mechanism by which the mosaicism is generated is in itself of interest. X-chromosome inactivation has long been of interest as a model system for the study of gene regulation, and data are here presented which demonstrate that both X-chromosomes are active in early embryos; that inactivation, once it has occurred, is very stable; and that in extraembryonic tissues the paternally-derived X-chromosome is preferentially inactivated. A promising model system for the study of X-chromosome inactivation *in vitro, viz* the use of teratocarcinoma cells, is also discussed.

Finally, technical considerations have not been neglected. A means of extending the range of usable cell markers is provided by antibodies to alloenzymes, and three papers present techniques for the mathematical and statistical analysis of mosaic patterns.

Unfortunately, in such a rapidly developing field, a book of this kind is inevitably out of date almost before it is published, and a long time has now elapsed since this symposium was held, although the delay of two years between the symposium and the receipt of the book by this reviewer may not be entirely the fault of the publishers! This is regrettable as the book is well-produced and documents a good cross-section of mosaic and chimera research.

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