

Book Reviews

***In Vitro* Techniques in Research. Recent Advances.** Edited by J.W. Payne, Open University Press in Association with the Human Research Trust, Milton Keynes, Philadelphia, 1989, 164 pp. £45.

This book constitutes the proceedings of a conference sponsored by The Humane Research Trust and held at the Royal College of Surgeons in September 1987. Included in the authorship of its ten chapters are many scientists and clinicians of high standing. No attempt is made to cover the field in any systematic way. Instead each chapter constitutes a learned treatise on one particular topic within the overall field.

G. P. Lewis discusses the ways in which human cell cultures can be of use in the development of anti-rheumatic drugs. M. T. Bayliss and his colleagues then review how studies on the biochemistry of human intervertebral disc cells may help in the understanding of spinal osteoarthritis and low back pain. In his chapter the overall Editor of the book, J. W. Payne, considers the advantages and disadvantages of cell culture systems in the study of the uptake and transport of exogenous material by nerve cells.

The case for using cell culture techniques for studying basic biological, physiological and disease mechanisms is particularly well stated in the chapter by E. M. Carey & colleagues, describing the observations on oligodendrocytes, and in the chapter by J. M. Polak & S. R. Bloom reviewing the use of tumour cell cultures in research on neuroendocrine biology.

For the foreseeable future the main role of cell culture techniques in relation to the toxicological assessment is in the study of mechanism of toxicity. It is at present very difficult to see how *in vitro* tests could replace the use of tests in intact animals for the primary testing of chemicals for possible toxicity. An excellent chapter by C. Rhodes and his colleagues summarizes the state of the art in this regard and discusses the fundamental need to validate all *in vitro* test systems. Certainly, in the long run it should be possible to reduce the numbers of intact animals used in toxicity testing if one followed the stepwise approach outlined in this chapter.

R. C. Garner's discussion of laboratory methods that are available for assessing carcinogen exposure in man is excellent as far as it goes. However, he confines what he says to exogenous genotoxic carcinogens and more or less ignores

the fact that non-genotoxic mechanisms exist and that endogenously generated electrophiles as distinct from environmental mutagens may be playing a predominant role in the aetiology of human cancer.

Those who are attracted to this book because they think it may provide evidence that cell culture systems can one day replace whole animals in drug research or in the assessment of chemicals for toxicity would have to don strongly rose-tinted spectacles to derive much anticipatory excitement from it.

There is more than enough good thought-provoking science in this book to make it worth buying and reading.

F. J. C. Roe