

microanatomy and biology of haemopoiesis, moves to accounts of the receptor technology and molecular biology of the principal colony stimulating factors and concludes with a series of chapters on the clinical applications of CSFs (with associated problems of large scale production of protein pharmaceuticals), CSF signal transduction and control of gene expression. "Colony Stimulating Factors" can therefore be highly recommended as a generally accessible and wide-ranging compendium of information on CSFs which conveys an excellent feel for the successes, problems and future directions of this exciting area of modern biology.

The book, however, is not without its faults. There is an inevitable duplication of information and unevenness of level; the 'splice sites' in certain chapters with multiple authors are painfully obvious and whereas some chapters are readable and informative, others are highly detailed and

somewhat indigestible. It is not clear, for example, how many readers will wish to wile away a long flight perusing the complete genomic sequence of GM-CSF. The other problem is that the book is already in certain areas out of date. It seems the book was completed in 1988 and developments in certain areas, particularly the cloning of CSF receptors, whilst anticipated in the editor's excellent summary chapter, are now a reality. For this reason, the most durable aspect of the volume may prove to be those chapters (e.g. Allen et al. on bone marrow biology and Steward et al. on clinical trials) with an analytical and broadly based approach. Finally, both the indexing and proofreading are firmly from the minimalist school of academic publishing, which is rather irritating for a volume costing \$162 (in Europe).

John K. Heath

Molecular Control of Haemopoiesis: CIBA Foundation Symposium 148; Edited by G. Bock and J. Marsh;
John Wiley and Sons; Chichester, 1990; xi + 232 pages; £35.95

Haemopoiesis is one of the principal areas where molecular biology is beginning to make a direct impact on clinical medicine. A discipline that was firmly rooted in cell biology has warmly embraced the new molecular approach and this has increased the pace of progress towards an understanding of the mechanisms controlling both the normal and pathological aspects of this extremely complex process. In May 1989 the CIBA Foundation brought together many of the world's leading research workers in this field, not just from Europe and North America but also from the Southern hemisphere, since Australians have provided a major contribution to dissecting the regulation of haemopoiesis over the last 25 years. This book is the published proceedings of that symposium, and if it has an overall message, it is that however far the field has progressed, it has an awful lot further to go.

Haemopoiesis can be considered as a triangle, the base being all the mature cells of the peripheral blood (plus some cells in other tissues) and the apex the haemopoietic stem cell, a cell with the capability to differentiate down several different pathways and with an extremely high proliferative capacity. Our understanding about how the pluripotent stem cell ends up as a fully differentiated end cell remains limited and the best understood steps are those late in the pathway, towards the base of the triangle. Many of the growth factors needed for these steps have now been cloned (and therefore can be produced in relatively large amounts), as have a few of their receptors. Many of the haemopoietic growth factors are produced by the haemopoietic cells themselves and the

factors have pleiotropic effects, including influencing factor release from other haemopoietic cells. Clearly, therefore, haemopoiesis is no simple hierarchical process but rather a cascade of interactions and thus it is not surprising that our current understanding remains limited.

The molecular control of haemopoiesis may be complex and the basic biology of the system may only be known in outline but that has not prevented the use of some of the haemopoietic growth factors in treating disease. The use of recombinant erythropoietin in the treatment of the anaemia of renal disease is now almost routine in many countries and numerous groups are studying the beneficial effects of granulocyte colony stimulating factors on shortening the period of granulocytopenia following chemotherapy or bone marrow transplantation. These are early, somewhat empirical, trials which provide valuable data on the *in vivo* effects in man.

Many of these issues are addressed in this book, which is not a series of reviews (and suffers from the lack of an overview of the whole area), but rather, a series of random snapshots of various parts of haemopoiesis, authoritatively written and of a generally high standard, but lacking in cohesiveness. As such it is difficult to identify its intended readership, since the topics covered are somewhat selective. For those in the haemopoiesis field there will be lots to savour and for those in related areas it will provide a good flavour of where this rapidly moving field was in 1989.

W.G. Wood

Cell Growth and Division: A Practical Approach; Edited by R. Baserga; Oxford University Press;
Oxford, 1989; xiv + 158 pages; £27.50

This volume in the successful "Practical Approach" series comprises 10 chapters presenting practical methodology used in studies on the growth and division of animal cells in

culture. Most of the information provided relates to specific cell lines: chapters are devoted to culture of mouse embryo cells, mouse fibroblast lines (C3H 10T1/2 and NIH 3T3),