'Somatic Cell Genetics and Immunogenetics', and 'Genes and Behaviour' that are absent in *Essential Genetics*. Separate chapters on 'Genes and Chromosomes' and 'The Molecular Organization of Chromosomes' in *Genetics* are reduced and combined in a single chapter on 'The Chromosomal Basis of Heredity' in *Essential Genetics*. The order of chapters and some sections are switched around and *Genetics* has some other extra chunks and words here and there. Otherwise the text, pictures and diagrams are identical. Thus the somewhat reduced but otherwise identical *Essential Genetics* seems at first a step backwards, a retrograde 'fourth edition' of *Genetics*. What is going on?

The preface of *Genetics* says that its aim is to provide a clear, comprehensive, and rigorous introduction to the principles of genetics at the college level. This aim is achieved. The preface of *Essential Genetics* states that it is designed to meet the needs of the shorter, less comprehensive introductory course in genetics. But shorter than what? Shorter perhaps than a course whose needs are met by *Genetics*? We do not find out, as *Essential Genetics* makes no reference to its predecessor. An answer to the puzzle lies in the format which differs completely between the two books. In *Genetics*, Hartl provides the normal kind of textbook most of us are used to. For example it has section headings such as, 'Random Genetic Drift', 'Restriction Fragment Length Polymorphisms', 'Redundancy and Wobble', but in *Essential Genetics* these become, 'Some Changes in Allele Frequency are Random', 'Polymorphisms in the Size of DNA Restriction Fragments are Widespread', 'Much of the Code's Redundancy Comes from Wobble in Codon-Anticodon Pairing'. Moreover, *Essential Genetics* is bristling with learning objectives — themes and main points, with lists and bullets, topical reviews, summaries, keywords, glossary, problems and answers, pitfalls, guide terms and so on. Do any of these things ring a bell with UK readers experiencing Teaching Quality Assessment fever? I think Hartl has been on a course and I really don't know if I want to go on it too. I surely cannot recommend both these books to students. I would advise Christopher to concentrate on *Genetics* even if he gets a copy of *Essential Genetics* free like me.

At Swansea we recommend *An Introduction to Genetic Analysis* by Griffiths *et al.* (W. H. Freeman and Company) (see review above of the 6th edn) to intending genetics honours students as a general textbook for the first and second years. In many respects this is too advanced for first year students yet often not detailed enough for second year students. *An Introduction to Genetic Analysis* has 300 pages more than Hartl's *Genetics* and of course covers more, particularly on classical genetics and chromosomes and molecular genetics. But *Genetics* has high diversity in relation to its length, and has for example a chapter on behavioural genetics lacking from *An Introduction to Genetic Analysis*. I found the narrative of *Genetics* rather more gripping and clear than in *An Introduction to Genetic Analysis* where the style is variable and can be dull in parts. Thus I would be most happy to recommend *Genetics* to first year biology students as a more easily digestible and perhaps more stimulating alternative to *An Introduction to Genetic Analysis*.

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Cell Cycle–Materials and Methods. Michele Pagano (ed.) Springer-Verlag, Berlin. 1995. Pp. 285. Price DM 128.00, paperback. ISBN 3 540 58066 2.

The druid Panoramix [Getafix (GB) or Miraculix (D)] presents the cartoon hero, Asterix, with a magic potion that gives him limitless confidence and the might to tackle a thousand tasks. The brews in this creole cookbook from Mitotix and expert friends are certainly encouraging as well as exotic (chapter 18's excellent recipe for MPF with CAK starts: 'cut the five arms of the starfish with large scissors and open it... macerate the ovaries and filter through fine cheese-cloth'). The historical synopsis and glossary of cell cycle regulators that opens the book records the material culture of the biochemists, molecular geneticists, and cell biologists who have chased the molecules regulating cell proliferation from species to species since 1987, when the human cdc2 gene was shown to function in fission yeast. The book is a set of guidelines for the exploration of the interdisciplinary approach, skirting whole research communities with their own teeming cultures of operating procedures. The clams and sea urchins that started the cyclin revolution are not on the menu. Nor is there any treatment of genetic techniques for *Saccharomyces* and *Drosophila*, species that (as is admitted on p.104) have been key in dissecting cell cycle control. Other areas are included, such as structure-function bioinformatics and apoptosis, only to be left behind in a flood of recent publications.

If not for historians, then for whom is the book written? The two excellent opening chapters set the tone: Bartkova and her co-authors aim to provide reagents and techniques with which the research pathologist can make an objective evaluation of cell proliferation in a variety of disease states. This advice on adapting standard histochemical procedures to detect oscillating and labile peptides comes from the top practitioners with careful consideration of practical difficulties and essential controls. In Chapter 2, Cardoso and Leonhardt take equal pains to ensure that immunofluorescence techniques are thoughtfully examined and reproducibly applied, down to the details of the mounting medium. Sadly, this level of attention to detail and critical evaluation of the pitfalls of each method are only sporadically attained throughout the book. The chapters by Dutta and Winchester and by Clarke on SV40 replication and *Xenopus* extracts are extremely good and Chapter 6 is a good place to start

students thinking about the basis and wisdom of cell synchronization techniques.

Most importantly, like the druid, a laboratory manual must caution against the magic fix. In several places, this one does not include enough discussion to stand out from similar published methods. Tissue culture transfections, protein expression and yeast two-hybrid methods are also dealt with in the comprehensive, outstanding and more frequently updated *Current Protocols in Molecular Biology* (Wiley). Chapter 4 on cell sorting is inadequate, and the excellent idea of eukaryotic protein expression in the yeast, *Picchia*, is covered with little more than an advertisement for the Invitrogen kit (how does one open these cells to recover the 12 g L^{-1} of protein?). Chapters 22 and 24 on immunoprecipitation, immunoblotting and antibody production could be amalgamated and re-edited by a critical user.

This book stimulates and empowers but fails to warn. The cell cycle, like the grant cycle, is an optimistic symbol of creative rebirth and fertile reinvestment. Clutching this book of hopeful spells, but with many methods besides, we shall turn our attention to more millenial cellular pursuits of malignancy, destruction, stress and suicide.

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Genetic Recombination. David R. F. Leach. Blackwell Science, Oxford. 1996. Pp. 192. Price £18.50, paperback. ISBN 0 632 03861 6.

Recombination between DNA molecules is central to all aspects of genetics: also, its mechanisms are notoriously difficult to teach. David Leach, in this very useful book, has made a creditable attempt at overcoming the latter problem while ensuring the reader remains conscious of the former, despite a wealth of molecular detail. After an introductory chaper which describes both independent assortment and meiosis (the author takes no chances about possible gaps in a reader's background), he provides a detailed chapter on homologous recombination, not surprisingly the longest in the book. He follows this with 'Roles of Homologous Recombination', detailing systems such as DNA repair, mating type interconversion, and antigenic variation in trypanosomes and *Neisseria*. This is succeeded by 'Site-specific Recombination', 'Transposition', and 'Illegitimate Recombination'. As before, although the account of molecular mechanisms is weighted towards bacterial and phage systems, eukaryotic examples are given their due. For instance, the various kinds of eukaryotic transposition mechanisms are described in some detail, and immunoglobulin gene rearrangements (both VDJ joining and class switching) are dealt with as examples of illegitimate recombination. The final chapter, 'Applications of Genetic Recombination', covers a broad range of topics including linkage analysis in humans, gene targeting, and gene therapy.

David Leach has himself worked in several of these fields, and no doubt for this reason his book, while displaying a mastery of its material, wears its depth lightly, or as much as the subject matter allows. There is a strong emphasis, especially where molecular detail is involved, on phage and *E. coli* systems, centred–appropriately enough–on the work of the Stahls and their collaborators, and on ideas from the exciting Nethybridge meetings. Perhaps this has sometimes led to other work being skimpily covered, though of course the publishers, sensibly looking to reduce costs, presumably emphasized the need to keep the length down. I give two examples. There is only brief mention of recent work (and it is noticeable, though this can perhaps be justified, that few of the references are to publications in the 1990s), for instance from the groups of Lloyd and West, that gives biochemical reality to events postulated in the Holliday model. (True, the work is mentioned, but no references are given). This is not trivial in a teaching context because students can become restive at the abstractness of pure Cartesian deduction of what logically *must* exist, as in the early days of the operon model. Also, there is only brief mention (and again, no references) of McClintock's seminal work on 'controlling elements' in maize. Agreed that McClintock's own publications make few concessions, a useful reference might have been the milestone review by Fincham and Sastry (*Ann. Rev. Genet.*, **8**, 15–50 1974) which provided an accessible summary of McClintock's findings (and incidentally makes the connection with prokaryotic insertion sequences). Perhaps a little less detail on *chi* and *cos* sites would have permitted inclusion of such topics.

However, these reservations are minor in view of the virtues of this book, the most outstanding being that it largely succeeds in explaining processes of profound complexity. (The next most outstanding is as value for money, by present-day standards). For instance, it heroically succeeds in explaining DNA topology and changes in linking number during site-specific recombination. Much of the credit is due to the excellent diagrams, which do as much as can be done without the movement available from CD-ROM. Perhaps future editions could be accompanied by a CD? There can hardly be a topic which would benefit more. Meanwhile, those who have to teach or learn this subject, at the advanced undergraduate or postgraduate levels, will have good reason to be grateful for David Leach's efforts.

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