embryo which are the subject of this book. Paul Lasko has made a careful and thorough review of the area that is up-to-date – and rapid publication has preserved this – so the information is current. The facts are generally accurate, though I am a little concerned that the emphasis on the regulation of yolk protein gene expression by hormones is on juvenile hormone, when ecdysone is equally important. The book concentrates very much on the genetics and molecular biology of oogenesis, and the role of hormones, which are inevitably involved, is rather neglected. This is probably justified given that we do not yet understand what the hormones are doing.

That 40 pages of this 120 page book are dedicated to references is testament to the fact that much is happening in this area. It is also valuable to have a review of the whole area together. Such a book is really a long review. It has an advantage over publications from meetings covering a topic, which would often tackle an area such as this, in that it is all by one author, so there is one style, no overlaps and no gaps. However, the very fact that the area is so full of activity will mean that it dates very rapidly. If it were a cheap paperback accessible to graduate students, undergraduate teachers and even some very keen undergraduates to annotate as things develop, it would be very useful. The fact that it is the hardback with a very high price tag will put in firmly in the library – which is a shame!

The quality of the print is poor, so the photographs are not very clear, and I think the book would have benefited from a few more diagrams and illustrations. It is fine for those who already know, but to the newcomer the actual pictures of localized mRNAs and protein gradients convey the real excitement of the advances in understanding oogenesis much better than words.

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Gene Targeting: A Practical Approach. Edited by ALEXANDRA L. JOYNER. Oxford University Press/ IRL. 1993. 234 pages. Price Paperback £19.50. Also available in Hardback. ISBN 0 19 963406 8.

It is only 13 yr since embryonic stem (ES) cells were first isolated (Evans & Kaufman, 1991), 10 since the first report of germ line transmission (Bradley *et al.* 1984), and 7 yr since the first animal models following *in vitro* mutagenesis of ES cells (Kuehn *et al.* 1987; Hooper *et al.* 1987). The first targeted modification was introduced to the mouse germline as recently as 1989 (Thompson *et al.* 1989). In the intervening 5 yr the number of targeted loci have risen well above 100. Gene targeting has almost become a standard laboratory technique which most molecular biologists will need to address at some point in their careers. The need, therefore, for a practical manual such as *Gene Targeting* as a companion to the earlier and excellent *Teratocarcinomas and Embryonic Stem Cells* (IRL Press 1987, ed. E. J. Robertson) is indisputable.

Three other recent volumes deal with the general subject of gene targeting: *Gene Targeting* by John Sedivy and Alexandra Joyner, *Embryonic Stem Cells: Introducing Planned Changes into the Animal Germ Line* by Martin Hooper and *Methods in Enzymology, vol. 225* edited by Paul Wasserman and Melvin De Pamphilis. Those planning to attain expertise in every aspect of ES technology would be well advised to consult them all. *Gene Targeting*, however, contains most of the information required to design and build targeting vectors and is particularly well-suited to the reader who is new to targeting but may have made collaborative arrangements with others who have expertise in ES culture and proven success with germline transmission. The reader should bear in mind that while the molecular biology of gene targeting is actually quite straightforward, the appropriate technique for routine handling of ES cells is less easily acquired and remains most problematic.

In common with others of the same series, *Gene Targeting* contains chapters contributed by leading groups with proven experience in different aspects of gene targeting: vector construction, production of targeted clones, production of chimaeras, production of completely ES-derived fetuses, and gene and enhancer trap strategies. Placed somewhat incongruously within these, is a chapter dealing with analysis of gene transfer in bone marrow stem cells – an excellent treatment in itself, but of little direct relevance to gene targeting until haematopoetic stem cells can be purified in culture.

The fast pace of advancement in gene targeting means that any book on this subject is doomed to rapid obsolescence and clearly the authors cannot be faulted on that score. *Gene Targeting* already predates the successful use of the double replacement strategy to replace one sequence with another (Stacey *et al.* 1994), indeed, this strategy is not discussed in the otherwise comprehensive discussion of targeting vectors in chapter 1. It also predates germline transmission and expression of a yeast artificial chromosome containing human sequences (Jacobovits *et al.* 1993). In the chapter on production of targeted clones and again in that dealing with production of germline chimaeras, the authors imply that growing ES cells on inactivated feeder layers is absolutely necessary for efficient germline transmission. Readers should be aware that for certain cell lines this is clearly not the case. All of the knockouts generated in Martin Hooper's and David Melton's laboratories, for example, have used targeted ES clones isolated and cultured entirely without feeders. Notably, the ES line HM1, which was weaned from feeders at third passage, has given high levels of germline transmission following a two step targeting procedure (Stacey *et al.* 1994).

Gene Targeting is well written, easy to follow, has helpful diagrams, and provided it is used in conjunction with the recent literature, offers an excellent introduction to the topic, particularly with regards to vector design and screening. Newcomers to the ES system will still, as always, need 'hands on' advice regarding ES culture and blastocyst injection.

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Experiments with Fission Yeast: A Laboratory Course Manual. By CAROLINE ALFA, PETER FANTES, JEREMY HYAMS, MAUREEN MCLEOD and EMMA WARWICK. Cold Spring Harbor Laboratory Press. 1993. Plastic Comb Binding. 188 pages. Price $55.00. ISBN 0 87969 424 6.

This book has its origins as the laboratory manual for use by students on the Molecular Genetics of Fission Yeast course that has run annually at Cold Spring Harbor since 1989. That the authors and publishers have sought a wider audience for their work suggests that they believe the book will find a use as a general laboratory manual for day-to-day use in existing fission yeast labs or as a start-up guide for those venturing into fission yeast for the first time. While there is little doubt that a book of this sort is required by the fission community, prospective buyers of *Experiments With Fission Yeast: A Laboratory Course Manual* should be aware of its limitations.

What does the book contain? The Introduction deals succinctly with taxonomy, cell growth and division properties of fission yeast and is clearly written, although the quality of reproduction of the photographs leaves a little to be desired, particularly in the case of the sole colour figure where it is impossible even for the experienced eye to discriminate key details clearly. This chapter is followed by some 22 'experiments', divided into three sections (cell biology, classical genetics and molecular genetics) though several of these actually include more than one experimental procedure. The strength of the book lies in the clarity of presentation of these sections. Each experiment is laid out in a uniform style: each has a defined Aim, followed by a brief Introduction, outlining the background to the method used, then by details of Strains, Media and Reagents (the latter interspersed with occasional hazard warnings), the experimental Procedure itself, and a section headed Analysis of results. The experimental sections are followed by a series of appendices detailing growth media, reagents, the growth and maintenance of fission yeast strains, as well physical and genetic maps. A list of suppliers (U.S. addresses only) follows.

Section I – Cell Biology – includes protocols for staining cells to identify nuclear material, septa, mitochondria and vacuoles, together with detailed methods for immunofluorescence studies. Also contained in this section is a method for preparation of fission yeast cells for flow cytometry. The results expected from these experiments are described in the text but, surprisingly given the nature of the material, the discussions are not illustrated (except where stained cells are included in figures illustrating the introductory chapter), nor is any advice given to aid trouble-shooting of failed experiments. These are significant omissions that greatly limit the usefulness of the book.

Section II – Classical Genetics – covers tetrad analysis, fine structure mapping, diploid construction and genetic mapping using diploid strains, and the use of ethylmethanesulphonate as a mutagenic agent, while section III – Molecular Genetics – focuses on the introduction of recombinant DNA into fission yeast cells. Two protocols are included for transformation in this section, with a third in the Appendix, along with a method for testing plasmid stability. Also included are methods for the preparation of chromosomal DNA suitable for Southern blot analysis, and for pulsed field gel electrophoresis. The PFGE method is included in a protocol for mapping of a previously cloned gene (by homologous integration of the gene carried on a plasmid containing a single NotI site) which the availability of ordered cosmid libraries has to all extents and purposes rendered obsolete. Procedures for protoplast fusion and nuclear isolation found in this section might better have been located amongst the cell biology protocols of section I.

Section III is in fact the weakest of the three, and the one in which the limitations of the book as a general laboratory guide are seen most clearly. As with section I, there is little if any advice on trouble-shooting unsuccessful experiments. There is no discussion of available selectable marker systems and plasmid vectors, nor of their advantages and disadvantages. The protocol included for one-step gene replacement makes no attempt to discuss what factors should be taken into account in designing constructs for this purpose. In addition, there is no discussion of methods for mapping mutations by gene conversion