

Mammalian Development: A Practical Approach.

Edited by M. MONK. IRL Press Ltd. 1987. 335 pages. Paperback £18.00, US\$34.00. ISBN 1 85221 029 X. Hard cover, £27.00, US\$49.00. ISBN 1 85221 030 3.

The first thing that struck me about the book was an appropriately scaled mouse on one of the cover photographs. This reflects what follows in the contents: many of the protocols are designed and scaled to deal with small amounts of material. The book consists of a collection of protocols from different laboratories. The protocols cover methods used for the recovery of eggs and embryos and various ways to study and manipulate them. As expected, most of the chapters deal with material derived from the mouse. The final chapter however, concerns itself with the retrieval, culture and fertilization of human eggs.

The first chapter, on husbandry, teaches you how to handle and look after your first mice. It is easy to become overrun by animals, so methods for keeping experiments on ice are described later in the book, in a chapter on long-term preservation of mouse oocytes and embryos. The manipulation methods described are on the handling of pre- and post-implantation mouse embryos, microinjection of DNA into fertilized mouse eggs, nuclear transplantation and the construction of chimeric mice. The analytical methods include *in situ* hybridization to RNA, cell marking, protein analysis on a miniaturized scale, construction of cDNA libraries from eggs and embryos, quantitative microenzyme assays on HPRT and PGK and the analysis of meiotic and mitotic chromosomes. It is surprising that there is scant mention of embryo-derived stem cells (ES or EK cells). Another book in the series covers this topic well; surely the reader should be referred to it.

The general format of the book is as follows: each chapter consists of a description of the methods and is accompanied by detailed protocols listed in tables, and complemented by informative diagrams and photographs. The methods described are those used in the authors' laboratories, although alternatives for some of the steps are cited. Especially welcome are the inclusion of trouble-shooting sections and the listing of equipment and chemical suppliers. Experiments with animals can be very expensive. In view of this, the price is very reasonable, especially when considering that the same amount of money would only buy six mice or 1000 units of a cheap restriction enzyme. I am confident that the book will be very useful for both those entering and established in the field.

Many of the areas covered by 'Mammalian development: a practical approach' have also been described by Hogan, Constantini and Lacy in *Manipulating the Mouse Embryo*. Ann McLaren in her introduction states 'Any self-respecting laboratory of mammalian development needs to have both books

on its shelves'. I wholeheartedly agree, although maybe their place is open on the bench.

RAYA AL-SHAWI
Department of Genetics
University of Edinburgh

Vaccines '87: Modern Approaches to New Vaccines.

Prevention of AIDS and Other Viral, Bacterial and Parasitic Diseases. Edited by R. M. CHANOCK, R. A. LERNER, F. BROWN and H. GINSBERG. Cold Spring Harbor: Cold Spring Harbor Laboratory, New York. 1987. 461 pages. Paper, \$95.00. ISBN 0 87969 302 9.

This most recent product of the annual meetings on Modern Approaches to Vaccines at Cold Spring Harbor is an extremely well-edited volume which accurately reflects the breadth of work being carried out in the field of vaccine development. The broad spectrum of the authors from this 1986 conference, ranging from the peptide chemist through the molecular biologist and geneticist to the cell biologist and immunologist, together with the wide range of diseases being studied, retroviral, viral, bacterial and protozoan, allows a unique perspective of vaccine research to be presented. The binding and quality of print does slightly detract from the reader's enjoyment of the book, however. Over several readings, a few pages became detached and there was a tendency for the print to 'smudge'.

As with most books of this type, the delay between conference and publication will lead readers to find that some articles in their field are a little bit dated, but the breadth of topics covered ensures that there is something there for everyone. The articles are divided into five sections: Immunology; AIDS; Pathogenic Bacteria and Glycoproteins; Pathogenesis and Attenuation; and Recombinant Vectors and Parvoviruses. As a disease, AIDS dominates the volume, occupying over 25% of the contributions. However, this rightly reflects its new dominance as the world's most important health hazard, and care is given to present a number of articles for non-AIDS specialists, which review very well aspects of the molecular biology, immunology, pathogenesis and epidemiology of the disease, before moving on to discuss particular vaccine-related projects. Malariologists also have few grounds for complaint, with their subject receiving six of the eight articles related specifically to parasite vaccines.

The main value of this volume, however, lies, not in its analysis of particular diseases, but in its emphasis on Basic Immunology and New Technologies for Immunization. The Immunology section contains a very useful article by Berzofsky *et al.* outlining the importance of defining epitopes recognized by helper T cells if we wish to induce a 'memory' response or cytolytic T-cell response from a candidate vaccine. The requirement for a T-cell response was one of the

take-home lessons learnt in the rather disappointing human malaria vaccine trials recently carried out [Herrington *et al.* (1987), *Nature* **328**, 257–259] and a lot of effort is now being exerted to define these epitopes within candidate vaccine antigens. The importance of T-cell-mediated immunity in many diseases is well documented in this book and elsewhere, and the advances in peptide synthesis over recent years have allowed peptide chemists to make a substantial contribution to defining both T-cell and B-cell epitopes. Richard Houghton, for example, has developed an automated peptide synthesizer which allows the production of 100 peptides within 2–3 weeks, allowing the systematic study of amino-acid composition upon certain antibody–antigen interactions.

A novel approach to vaccination using anti-idiotypic antibodies is presented by Finberg and Ertl in this volume. Immunization with antibodies generated against specific T-cell clones from virus-infected animals was shown to result in both cytolytic and helper T-cell responses, and also to generate a virus-specific antibody response. This method precludes the need for the often expensive production and purification of a recombinant antigen and is a very exciting development.

Much work to date has gone into defining the protective antigens of various infectious diseases and we are now entering an era where we need to define the optimal delivery system of these antigens for the generation of immunity. The virologists have shown the way in this field and the emphasis, as illustrated in this volume, is moving away from the use of synthetic peptides and purified recombinant proteins to the use of viral vectors, which directly express the gene of the candidate antigen. Of these vectors, recombinant vaccinia viruses have received the most experimental attention, though for obvious reasons these could not be employed on human populations. The successful results obtained using vaccinia vectors in animal model systems have, however, pointed the way for modifications of this approach, and work is presented which utilised other viruses such as adenoviruses, herpes simplex virus and baculovirus as novel antigen delivery systems. The well publicised work of Jeffrey Almond and his colleagues at Reading, who have recently shown that the safest of the attenuated poliovirus strains may be a suitable vector for vaccinations [Burke *et al.* (1988), *Nature* **332**, 81–82] is one good illustration of the power of this approach. In addition to viral vectors, bacterial strains of *E. coli* and attenuated *Salmonella* have been constructed which can express foreign antigens on their cell surfaces.

One advantage of using vectors such as those mentioned above is, of course, a lessening of the requirement for adjuvant of which very few are applicable for human use. However, novel adjuvants are still required for human immunisations with

peptide and purified recombinant subunit vaccines. Muramyl dipeptide analogues have proved promising, but it is likely that in future more attention will be paid to ‘biological’ activators of the immune system such as γ -Interferon and Interleukin-2. Work reporting the successful expression of both these compounds in recombinant vaccinia viruses is presented in *Vaccines* 87.

Ginsberg quite rightly states at the end of this volume that developing vaccines and understanding the use of vaccines require a thorough knowledge of the pathogenesis of infection and the basic immunologic events that accompany infection and development of disease. The move to ‘biological’ antigen delivery systems such as viruses and the possibility of the concurrent expression of ‘biological’ activators of the immune system such as γ -Interferon and Interleukin-2 reflect the growth of knowledge in this area. It will be interesting to follow these developments in later editions of this most useful series of Cold Spring Harbor Conferences.

ROBERT G. RIDLEY

*Department of Molecular Biology
University of Edinburgh*

Population Genetics and Fishery Management. Edited by N. RYMAN and F. UTTER. Seattle, WA: University of Washington Press. 1987. 418pp. Cloth \$35.00, ISBN 0 295 96435 9. Paper \$17.00, ISBN 0 295 96436 7.

Nils Ryman and Fred Utter are to be commended for assembling a timely collection of papers in *Population Genetics and Fishery Management*. The purpose of the book is to demonstrate the application of principles in population genetics to the management of natural fish populations. The 15 chapters, each of which can be read independently of the others, are directed towards assisting the fishery manager with implementation of genetic methods, a strategy that has been largely ignored throughout the history of fisheries management. The book is expressly written for the fishery manager and not the aquaculturist. Several of the chapters, however, are equally applicable to the latter.

In the opening chapter, Allendorf, Ryman and Utter underscore the importance of fish in the human diet and point out that most of the fish consumed are captured from wild populations. This chapter sets the stage for the remaining chapters and provides an interesting view of the unfortunate historical lack of a genetic perspective in fisheries management. The authors suggest that fisheries managers have been slow to incorporate genetics in their management decisions because of (1) the domination of the field by taxonomists who are interested in group rather than individual differences, (2) the great phenotypic variation within species which is often largely environmental rather than genetic, (3) the difficulty of