



## Book Reviews

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## BOOK REVIEW . . .

**Techniques in Fish Immunology, Fish Immunology Technical Communications 1**, J. S. Stolen, T. C. Fletcher, D. P. Anderson, B. S. Roberson, W. B. van Muiswinkel (eds.). SOS Publications, Fair Haven, New Jersey 07704, USA. 1990. 197 pp., Appendix 15 pp. \$42.00 U.S.

This soft-cover, ring bound book is a compilation of chapters that present detailed methodologies used to investigate the immune responses of fish. Developments in the field of fish immunology over the past two decades confirmed that immune functions have been conserved throughout vertebrate evolution. However, methods used to investigate the immune responses in fish had to be modified and adapted from methods that were developed to study comparable responses in mammals. These modified techniques are presented in this concise and user-friendly publication.

Ten of the 21 chapters describe immunological techniques for assaying humoral responses to antigen stimulation. These techniques include: the fluorescent antibody test, passive hemolytic plaque assay, enzyme-linked immunosorbent assay (ELISA), complement-fixation test, bacterial agglutination, and various gel diffusion procedures including electrophoresis and western blot analysis. Two other chapters present methods to assay for serum anti-proteases and lysozymes. Four of the chapters describe techniques used to monitor cellular responses such as: separation and identification of fish leucocytes, various assays of macrophage activity, and mixed lymphocyte reactions (MLR). The remaining five chapters outline various manipulations of fish in order to explore various aspects of the immune system. These manipulations include: surgical techniques, hypersensitivity skin reactions, gynogenesis for the production of inbred lines, adoptive transfer of immunity, and immune suppression by X-irradiation.

Each chapter reviews the uses and limitations of the technique under consideration, lists all the equipment and reagents required to conduct the procedure, gives the step by step methodology, describes how to interpret the results, and provides pertinent literature references. The recipe book style of presentation and the numerous illustrations should aid inexperienced investigators in carrying out many of the tech-

niques. Unfortunately, some of the black and white photographs are very poor, making it impossible to discern indicated features. However, the two coloured plates of leucocytes adequately illustrate the morphological differences between the various types of fish blood cells.

In the preface, the senior editor requests input concerning errors, omissions, and ambiguities in the published text. Presumably, a subsequent edition can be expected. In addition to a few minor typographical errors, there are some ambiguities that require elucidation in the subsequent edition. In Chapter 5 (Diffusion-in-Gel Techniques) and Chapter 7 (Immunoelectrophoresis), the preparation of 1% Alcian Blue to label the gel surface prior to diffusion should be explained. In Chapter 9 (Bacterial Agglutination), scoring of the agglutination titre could be made more explicit by indicating whether or not the addition of antigen was taken into account when determining the dilutions and by presenting an example of what a score means with respect to the actual dilution of the antiserum. In Chapter 15 (Macrophages, Isolation/Killing Activity), the supplier of the "bacterial counting chamber" or a description of this apparatus should be mentioned. In Chapter 17 (The One Way Mixed Lymphocyte Reaction), the importance of using reagents from the specified suppliers should be indicated and the procedure used to dissociate the cells from the kidney and spleen could be more precise. In Chapter 20 (Adoptive Transfer of Immunity), the figure suggests that the lymphocytes from the donor fish were separated on a density gradient, but this step was not mentioned in the text. Apart from these minor criticisms, the first edition of "Fish Immunology Technical Communications FITC 1" was well presented and easy to comprehend.

This text will serve as an excellent reference and laboratory manual for scientists and students in the field of aquaculture, fish health, and pollution monitoring. Immunologists desiring to use fish as experimental models will also find this text a valuable source of information.

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**Susan M. Bower**, Department of Fisheries and Oceans, Biological Sciences Branch, Pacific Biological Station, Nanaimo, British Columbia, Canada, V9R 5K6.

## BOOK REVIEW . . .

**Epidemiological Information Systems**, edited by R. S. Morris. Scientific and Technical Review, Office International Des Epizootics. March 1991, Vol. 10: 1. 231 pp. \$32.00 U.S.

The International Office of Epizootics periodically publishes reviews of various topics in selected areas of animal health. This March 1991 issue contains 10 papers that focus on animal health information systems around the world. The papers represent an eclectic collection of examples and experiences from various workers in veterinary epidemiology. The papers are centered around the collection and utilization of data that could be important to animal health policy makers. They range from ideas such as using pictures of camels and syringes for the recording of disease treatment to satellite imaging for the prediction of Leishmaniasis in tropical rain forests.

The first three papers outline various principles for the establishment of animal health information systems. The first paper proposes a framework for the establishment of animal health monitoring systems. The second paper describes the establishment of a micro computer based data collection and processing system in a mythical third world country. The third paper is printed in both French and English and provides an optimistic view of activities of the OIE in relation to the establishment of animal health surveillance systems in member countries. It provides a good overview of the current status of activities.

The next two papers present some interesting solutions to the difficult problem of disease data collection in the nomadic and transhumant livestock populations of Africa. The authors suggest that a data collection system should begin by focusing on the geographic area of the pastoral ecosystem to be addressed. Pastoralists from the targeted region were trained for 10 days as veterinary auxiliaries. These individuals were expected to charge for their treatment services and record necessary data for reporting to the government. The data collected were for general

disease categories such as respiratory disease, wounds, diarrhea, and "others." The data collection forms consisted of pictograms where the number of treatments for that condition were recorded as a drawing of the animal being treated, such as a lactating cow, or a camel. The forms were collected by a government employee who entered them into a computerized database.

The second of the two African papers is printed in both French and English. It introduces a multi-disciplinary method for animal health monitoring that centers around demographic surveillance. Peripheral modules such as studies of the serology of respiratory or breeding diseases, housing and feeding, and disease outbreaks can provide an extensive source of data. Various levels of analysis can be performed on multiple combinations of these modules. Even though the main module is described as demographic, it is actually an individual animal record system where animal identification is recorded and life history is tracked.

One paper that may of interest to those involved with wildlife diseases described various methods used to investigate tuberculosis in badgers (*Meles meles*). It provides examples of methods used to estimate the prevalence of tuberculosis under the constraints of British animal welfare regulations.

The remaining three papers give overviews on ecopathology, a holistic view of disease investigation, geographic information systems, and satellite imaging. The book is relatively short for the price, especially with the loss of 46 pages for the three papers repeated in French. It provides interesting reading for those with a need to collect animal health data in a variety of settings. Some of the ideas and examples may be helpful to investigators monitoring the health of wildlife populations.

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**H. Scott Hurd**, Animal Health Information Systems, USDA, Animal Plant Health Inspection Service, Fort Collins, Colorado 80521, USA.

## BOOK REVIEW . . .

**Advances in Disease Vector Research**, Vol. 8, Kerry F. Harris (ed.). Springer-Verlag, New York, New York, USA. 1991. 209 pp. \$89.00 U.S.

This is a continuation of the series initiated by Kerry Harris, and an able editorial board, with the objectives of transcending interdisciplinary boundaries and improving communication and cooperation among investigators conducting research on pathogen-vector-host relationships. There are seven chapters, of which six fall within the general scope of medical entomology. The exception is a chapter in which Rose Gergerich and Howard Scott review recent research on the mechanism of virus transmission by leaf-feeding beetles. They discuss a unique type of specificity that appears to be controlled by interaction of virus particles with the host plant following feeding by the vector and deposition of virus in regurgitant.

Patricia Nuttall, Linda Jones and Clive Davies contribute a thought-provoking chapter on the role of arthropod vectors in arbovirus evolution. They consider the arthropod to be a medium in which genetic changes occur and a selective pressure on the course of virus evolution. Evidence is presented supporting the concept that vectors having a high threshold of infection will select for virus strains inducing high levels of viremia and, by inference, strains that are more pathogenic. A recent example that may have appeared in print as the authors' chapter was going to press is the description of a yellow fever epidemic caused by a relatively incompetent mosquito vector (Miller et al., 1989, *Tropical Medicine and Parasitology* 40:396).

Motoyoshi Mogi and Teiji Sota discuss integrated control of mosquitoes and mosquito-borne diseases in ricelands. The magnitude of the problem is apparent from the opening sentence in which the authors point out that rice is the most important staple food for about 60% of the world's population. Malaria and Japanese encephalitis (JE) are the principal vector-borne diseases considered. Unfortunately, but through no fault of the authors, few reliable methods for controlling the mosquito vectors of these diseases are presented. Suggested methods such as the use of light traps and sound traps for mosquito control, and isolation of pig farming from ricelands in the case of JE control, either lack convincing field demonstrations of their effectiveness or are impractical. Certain deficiencies in this chapter that might have been corrected by a more thorough editorial review are annoy-

ing and detract from an otherwise clear presentation. Examples such as "number of female mosquitoes per cattle" and "repellents or insecticides treated on animals" are numerous. The treatment of data also is inconsistent. Although the text refers to the use of forage ratios in presenting data on blood-feeding patterns of vector mosquitoes, table 3.3 includes raw census data for vertebrate hosts in a summary of the blood-feeding patterns of *Culex tritaeniorhynchus* and *Anopheles culicifacies*. The table, which purports to summarize data for these species from rice-growing areas of "South and Southeast Asia," inexplicably includes information from Okinawa but not Taiwan (Mitchell et al., 1973, *Bulletin of the World Health Organization* 49:293).

Robert Wirtz and Thomas Burkot present a comprehensive overview of traditional techniques and new methodologies for detecting malarial parasites, especially sporozoites, in mosquitoes. The development of new biotechnology-based methods, including immunological methods and nucleic acid probes, has reduced time and cost factors while simplifying and improving detection and identification of sporozoites. The authors point out that the distribution of ELISA kits to scientists with limited resources has allowed many researchers to focus again on field studies and represents one of the most successful examples of biotechnology transfer to developing countries.

Mary Miller and Dennis Brown review the study of alphavirus infection in vertebrate and mosquito cell cultures. They emphasize the importance of such studies as models for understanding infection mechanisms. Toby Barrett reviews advances in triatomine bug ecology in relation to Chagas' disease with an emphasis on vector ecology. Rainer Gothe and Albert Neitz review past achievements and recent advances concerning the pathogenesis and etiology of tick paralysis and discuss in detail the disease syndromes caused by *Argas walkerae*, *Dermacentor andersoni*, *D. variabilis*, *Rhipicephalus evertsi* and *Ixodes holocyclus*.

This slender volume offers something for everyone having an interest in arthropod vectors and vector-borne diseases. Its high price may discourage individual ownership, but it should be on the purchase list of university libraries and agencies and organizations concerned with vector-borne diseases. Perhaps the editor should be chided for not proofreading the galley more carefully. Even the editorial board did not escape unscathed; the distinguished Dr. Robert K.

Washino is erroneously listed as Dr. Robert K. Washmo!

Disease Control, Public Health Service, U.S. Department of Health and Human Services, P.O. Box 2087, Fort Collins, Colorado 80522, USA.

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**Carl J. Mitchell**, Medical Entomology-Ecology Branch,  
Division of Vector-Borne Infectious Diseases, Centers for