

Fly methods for the new millennium

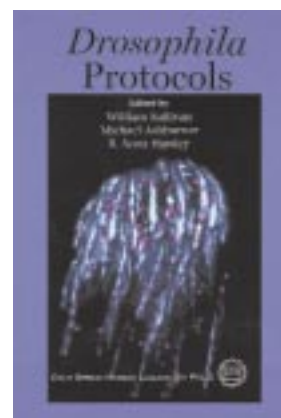
Drosophila Protocols

edited by William Sullivan, Michael Ashburner and R. Scott Hawley

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In 1922, H. J. Müller wrote, “Must we geneticists become bacteriologists, physiological chemists and physicists, simultaneously with being zoologists and botanists? Let us hope so.” His hopes have been abundantly realized with the progress in *Drosophila* genetics over the last decades. Maybe at one time a prospective postdoc in a fly lab would have been expected just to have a solid grounding in fly pushing, but no longer. This book of protocols for fly labs reflects the fact that working with *Drosophila* today is much less concerned with morphological or even cytogenetic traits and much more concerned with the molecular mechanisms that underlie a phenotype. As the mechanisms are diverse, so are the techniques required to analyse them. So ‘*Drosophila* Protocols’ aims to be a resource for the modern multidisciplinary drosophilist who feels the need to move beyond the relative safety of fly crosses, as well as for non-drosophilists wishing to experiment with the fly model. It contains no genetics and only a brief outline of fly culturing; instead there are sections that deal with the molecular analysis of chromosomes, cell and molecular biology, genomics and biochemistry.

The rationale behind such a collection of protocols is that there is already adequate coverage of techniques for fly genetics in other books, but there has not recently been an attempt to collect together the many techniques that fly labs have adapted from other systems for use with *Drosophila*. It was surely a difficult task to decide what to include, and doubtless some readers will feel that the emphasis should have been different, but I would be surprised if there is anyone working with *Drosophila* who would not find something useful and interesting among this diverse collection.

In the introduction the editors write that the protocols are chosen to represent those “most likely to be used by the *Drosophila* community in the next decade”. This forward-thinking bias is clear from the inclusion of RNA interference (RNAi)

and microarray protocols as well as some basic advice on database searching. Such techniques do seem likely to become more widely used as we take advantage of the sequenced genome. On the other hand, some of the included chromosome techniques like polytene *in situ* hybridizations look less widely useful, as we can now localize inserts by inverse polymerase chain reaction (PCR) or plasmid rescue (for which the nicely streamlined Berkeley protocols are provided). I found the choice of topics both sensible and provocative — as well as comprehensive chapters on staining many tissues from embryos to adults, making antibodies and various protein extracts, the editors have also included photoactivation of gene expression, single-embryo western blotting and feeding flies with crack cocaine! There are 37 chapters; with an average of 4–5 methods in each, so this is a substantial work that covers a lot of ground. More importantly, most of the authors used are well-known researchers writing in their field of special expertise, and their credibility should give even complete novices confidence that the protocols are well-tested and will work.

The only area that I felt could have been more thoroughly covered was the molecular analysis of genetic loci — there is nothing on northern blotting, RACE, single-embryo PCR, SSCP or even genomic Southern blotting, except for a chapter on pulsed-field gel electrophoresis. As the mapping of mutant lesions is likely to remain a popular occupation for fly graduate students for some time, it would have been nice to see some of these ‘straight’ molecular-biology techniques included. Of course some of these protocols are readily available elsewhere, but be aware that this book is not biased towards molecular biology, so you will still want your well-thumbed copies of Maniatis or Glover *et al*’s methods.

The presentation of methods is excellent throughout, with many notes and diagrams to clarify the text. It is particularly nice to see the line drawings and photographs

where specialized equipment is used and for dissection techniques. The appendices also include many useful anatomical diagrams of flies throughout their life cycle. I expect that this book will particularly appeal to groups that do not specialize in *Drosophila* work, but who would like to look at their gene of interest in flies, because many of the protocols are straightforward and most are free of specialist jargon or assumed knowledge. So whether you are a fly novice keen to test the waters or a die-hard geneticist looking to expand your horizons, if you are planning to do experiments using *Drosophila* over the next few years, you will find this book greatly useful. □

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Other *Drosophila* books

Hardback

The Genome of *Drosophila melanogaster*

by Dan L. Lindsley and Georgianna G. Zimm

Academic Press, £74/\$121

The Embryonic Development of *Drosophila melanogaster*

by J. A. Campos-Ortega and V. Hartenstein

Springer-Verlag, £103/\$213

An Atlas of *Drosophila* genes

by Gustavo Maroni
Oxford University Press, £75/\$75

Paperback

***Drosophila*: A Practical Approach**

edited by David Roberts and D. B. Roberts
Practical Approach Series, £40/\$75

Fly Pushing: the Theory and Practice of *Drosophila* Genetics

by Ralph J. Greenspan
CSHL Press, £39/\$39