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## Book Reviews

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*A Short Course in Bacterial Genetics: A Laboratory Manual and Handbook for Escherichia coli and Related Bacteria.* By JEFFREY H. MILLER. Cold Spring Harbor Laboratory Press. 1992. 876 pages. Price \$95.00. ISBN 0 87969 349 5.

Jeffrey Miller's *Experiments in Molecular Genetics*, published by Cold Spring Harbor Press in 1972, has been a most valuable asset to all laboratories using *Escherichia coli* as an experimental tool. It is still used in my laboratory but has inevitably become outdated as the field has expanded at breakneck pace. I was therefore delighted to hear that Jeffrey Miller was willing to take on the daunting task of bringing out a new book illustrating the power of modern molecular genetics in *E. coli*. He has chosen the same format, combining brief theoretical introductions with clearly illustrated experimental procedures. As with his earlier book, a set of strains (that must be purchased separately) accompanies the experiments. This time, however, he has included a resource handbook describing the tools available. He has divided the material between two books. The first is the Laboratory Manual, which gives the theoretical background and experimental procedures, and the second is the Handbook, which acts as a resource for workers in the field.

The Laboratory Manual is beautifully organized, with brief introductions to the experimental procedures and clearly illustrated methods. Flow diagrams are often used to good effect to give visual outlines of the methods. The text is clear, and safety precautions are illustrated at the points where potentially dangerous chemicals are used. Furthermore, details of the expected outcomes of experiments are provided. This all contributes to a very useful text that in conjunction with the set of strains provides an insight into the beautiful sophistication of modern bacterial genetics. The experiments can be used as exercises for inexperienced researchers to acquire knowledge and skills or can be adapted for many different purposes by more experienced workers to address their own questions. Mutagenesis is covered in great detail, and this will be extremely valuable to many since this is not a topic easily found in other texts. The modern applications of the classical methods of homologous recombination by bacterial

mating and generalized transduction are illustrated and linked with the section on mutagenesis. Transposable elements have recently become powerful tools of the bacterial geneticist, and this area is covered in considerable detail.

The Handbook includes resources such as the genetic maps of *Escherichia coli*, *Salmonella typhimurium* and *Bacillus subtilis*; the physical map of *E. coli*; information on bacterial strains, plasmids, bacteriophages and commonly used cloning vectors; plus restriction enzyme specificities, the genetic code, nonsense suppressors, mutagen specificities, amino acids and atomic weights; finally there are sections on recipes for media, recommendations for photographing bacterial colonies and a list of commercial suppliers. This is an impressive collection of information that many of us probably have in one form or another in reviews and catalogues but not under one cover. Again we must be grateful to Jeffrey Miller for collecting all this information together. My only reservation is that (presumably due to lack of space or cost constraints) the main bulk of the references in this volume are not included, and the reader is referred back to the reviews from which the information was obtained. This means that you still need to have copies of the original reviews to follow up many details.

The strain set comes with extensive instructions as to how to store and test the materials, and all the strains that we tested behaved as they were expected to in these tests.

In summary, I can recommend Jeffrey Miller's new *Short Course in Bacterial Genetics* as strongly as I do his previous book. I believe that it does justice to the beauty and sophistication of this area of biology, which has contributed so significantly to the current revolution in biological science. It is no wonder that so many of the fundamental discoveries of modern biology have been made using *E. coli* and its episomes, and it will be no surprise to bacterial geneticists if many more significant discoveries are made using these elegant systems.

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