

# Genetic Exchange

a celebration and a new generation

editors

Uldis N. Streips  
Sol H. Goodgal  
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## Foreword

The Genetic and Cellular Technology series has been initiated to provide a link between the basic and applied spheres of molecular biology: first, to bring together and update fundamental research in areas that might lend themselves to application; second, to explore new aspects of biotechnology; and third, to cover areas of application.

Fundamental research in molecular biology over the past fifteen years has provided a basic understanding of the structure and function of genetic material. Due to the development of new methodologies comprising recombinant DNA technology, progress in this research has recently accelerated tremendously. These techniques allow the isolation, characterization, and expression of genes from virtually any organism. Moreover, cloning methods permit the alteration of the structural or regulatory regions of cloned genes so that the function of genes and their products can be better understood. The simultaneous development of hybridomal technology has provided another powerful tool for the study and exploitation of eukaryotic systems.

A dramatic effect of this emerging technology is that it allows the application of this new depth of understanding to problems of direct commercial importance. Three remarkable and perhaps unique aspects of this new technology are (1) the speed with which progress is being made both in the understanding of gene structure and function and in the techniques for its application; (2) the immediate interdependence of basic and applied research, so that, for example, the same laboratory can be involved in both; and (3) the tremendously broad range over which molecular biology is finding application. Exemplary of all three points is the fact that industries as diverse as the energy, pharmaceutical, chemical, and agricultural are implementing basic research programs in molecular biology.

This volume of papers presented at the 25th Wind River Conference on Genetic Exchange is focused on the mechanisms of DNA transfer



among bacteria. Rollin D. Hotchkiss begins with a personal overview of the past history of genetic exchange research. The remainder is an interesting collection of papers describing recent studies on transformation, cloning, and genetic recombination.

It is fitting that the initial volume of this series on genetic and cellular technology be devoted to natural forms of genetic exchange, for it is this process which historically forms the foundation of modern genetic engineering. In addition to the continued endeavor to understand the mechanisms of DNA uptake, recombination, and stabilization, the development of genetic engineering has engendered a situation in which this research will find direct application in biotechnology. Therefore, this volume should interest scientists in both basic and applied microbiology.

The promise of the new genetic and cellular technology is bright indeed. We hope that this series, and this volume, can contribute to its realization.

L. Patrick Gage

Director

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## Preface

The 25th Wind River Conference on Genetic Exchange was a bitter-sweet experience. With a great amount of sadness, we noted the passing of one of our most productive and congenial colleagues, Arnold Ravin. However, we were extremely happy to have the opportunity to honor a most distinguished colleague, Rollin D. Hotchkiss. These Proceedings include the thoughts of Rollin Hotchkiss on the day of his festschrift. Also, the feelings of some of Arnold Ravin's closest associates are revealed in a memorial tribute. Sol Goodgal provides a very interesting description of the origin and development of the Wind River Conference.

This volume contains most of the contributions presented at the Wind River Conference. I feel the quality of science, the superb site, and the friendly spirit of the meeting combined to provide for an excellent conference. I wish to thank all the scientists who participated in this conference and contributed to its scientific quality. The final judgment of the science will, of course, come from you, the readers.

I would like to thank the many sponsors of this meeting, without whose help the celebration of the 25th Wind River Conference on Genetic Exchange would not have been possible.

We gratefully acknowledge financial support from the following corporations for sponsoring the 25th Wind River Conference on Genetic Exchange:

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G. D. Searle and Company  
Serono Laboratories, Inc.  
Stauffer Chemical Company

Finally, the hospitality of the Hutchinsons and the Irvins must be recognized as a strong force in the success of the Wind River conferences.

Uldis N. Streips

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