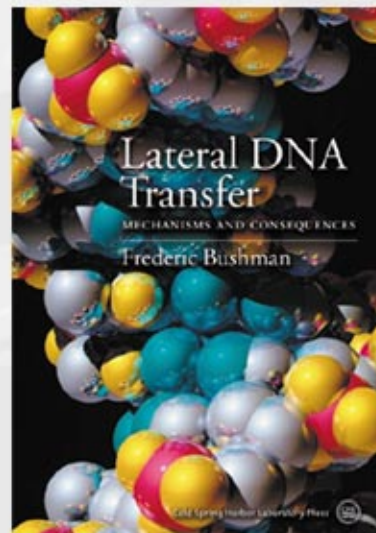


Lateral DNA Transfer

By Frederic Bushman, *The Salk Institute*



The fluidity of an organism's DNA is under appreciated. Surprisingly often, DNA is transferred from one organism to another, to become stably incorporated and permanently change the recipient's genetic composition. This process is called "lateral" or "horizontal" transfer, in contrast with the "vertical" inheritance of genes by parental descent.

This is a book about how lateral transfer occurs, the extent to which it happens, and its implications for our understanding of biology. Whole genome sequencing has begun to reveal an extensive role for lateral DNA transfer in genome evolution. The molecular machinery used to transfer DNA is coming into focus and the transfer process is now known to be at work in the emergence of new infections that threaten human populations.

This well-illustrated volume contains an up-to-date account of a topic now seen as increasingly important, and will be invaluable for both working scientists and as a textbook for advanced courses.

Due December 2001, 288 pp. (approx.), illus., index

Hardcover \$59

Paperback \$39

ISBN 0-87969-603-6

ISBN 0-87969-621-4

Some advance reviews:

"Life would be simpler if the entire genome of every organism descended directly from the genomes of its parents, but biology doesn't always work that way. The transfer of genetic material between organisms of the same or different species occurs by many mechanisms, under diverse conditions, and with a variety of important consequences. Bushman has performed an important service for the biological community by bringing all of this material together in a single very accessible volume. Now you can follow the gene-transfer story from drug-resistance in the hospital to lateral transfer in the early history of life on the earth without ever firing up your computer. In the decade of the genome, you need to know what is in this book."

– Leslie Orgel, *The Salk Institute*

"It is extremely rare that I find a book whose reading encourages me to teach a new course with the book in question being the text. Lateral DNA Transfer: Mechanisms and Consequences by Rick Bushman is such a book. Most importantly, this extremely well-written book is very informative about an important but little appreciated topic - lateral DNA transfer and horizontal evolution. Although the book is quite encyclopedic (it is packed with observations and ideas), I enjoyed both the casual and in-depth reading of each of the chapters. This is an ideal text for a beginning graduate or upper-level undergraduate course. In addition, many established scientists will find it very informative."

– William Reznikoff, *Evelyn Mercer Professor of Biochemistry and Molecular Biology, University of Wisconsin, Madison*



CONTENTS

- Chapter 1: Introduction
- Chapter 2: DNA and Lateral Transfer
- Chapter 3: Conjugation, Transposition, and Antibiotic Resistance
- Chapter 4: Phage Transduction and Bacterial Pathogenesis
- Chapter 5: Microbial Genomes and DNA Exchange
- Chapter 6: Gene Transfer by Retroviruses
- Chapter 7: Lateral DNA Transfer and the AIDS Epidemic
- Chapter 8: Genes Floating on a Sea of Retrotransposons
- Chapter 9: The DNA Transposons of Eukaryotes: Mariners Sailing to Survive?
- Chapter 10: Lateral Transfer in Eukaryotic Genomes: Fluidity in the Human Blueprint
- Chapter 11: A Transposon Progenitor of the Vertebrate Immune System
- Chapter 12: DNA Transfer Among the Domains of Life
- Chapter 13: Controlling Mobile Element Activity
- Chapter 14: Lateral DNA Transfer: Themes and Evolutionary Implications

Index

To order or request additional information:

Call: 1-800-843-4388 (Continental US and Canada) 516-422-4100 (All other locations)

FAX: 516-422-4097

E-mail: cshpress@cshl.org or WWW Site <http://www.cshlpress.com/>

Write: Cold Spring Harbor Laboratory Press, 500 Sunnyside Blvd, Woodbury, NY 11797-2924

