Nonchromosomal Genes

Extrachromosomal Elements in Lower Eukaryotes. REED B. WICKNER, ALAN HINNEBUSCH, I. C. GUNSALUS, ALAN LAMBOWITZ, ALEXANDER HOLLAENDER, and five others, Eds. Plenum, New York, 1986. x, 568 pp., illus. Basic Life Sciences, vol. 40. From a symposium, Urbana, IL, June 1986.

The focus of this collection of papers is primarily on molecular and genetic aspects of extrachromosomal elements in a wide variety of fascinating biological systems. Different systems are covered in more or less depth in accordance with the degree of available information. Not unexpectedly, the most detailed analyses are generally those that have been carried out on extrachromosomal elements in the intensively studied yeast *Saccharomyces cerevisiae*. Three sections deal in turn with the yeast mitochondrial genome and its introns, the double-stranded RNAs found in intracellular viruslike particles in yeast, and yeast plasmids, both nuclear and cytoplasmically inherited. In these sections the papers on the yeast elements are juxtaposed with papers on less widely studied organisms. The strategy of putting together papers about comparable elements in different organisms is successful here. For example, the papers about double-stranded RNAs in the plant pathogenic fungi *Endothia* and *Ustilago* are made even more interesting by placing them in the context of the in-depth molecular genetic analyses of double-stranded RNAs that have been possible in yeast.

Relatively up-to-date information about extrachromosomal elements in a variety of less widely known lower eukaryotes has been brought together here. Since these systems are usually considered in separate journals or books, read by nonoverlapping readerships, this is a particularly valuable aspect of the volume. The section on symbionts is a case in point. Perhaps the best studied endosymbionts are those of the ciliated protozoan *Paramecium*. However, as John J. Preer, Jr., points out in his overview to this section, the distinction between cellular organelles and intracellular symbionts may depend "only on the time in evolution that the association began and the degree to which the different elements have become interdependent." In light of this biological context, the paper by Dutcher on the circular linkage group of genes encoding flagellar and basal body components in *Chlamydomonas* is especially fascinating.

Readers with varying levels of interest in the topics covered in this volume will find it worth reading. It is a useful resource for graduate students, or indeed for molecular biologists or geneticists with only a passing interest in extrachromosomal elements, because it collects up-to-date reviews on a group of organisms not usually gathered under one roof. For example, the papers on double-stranded RNAs together comprehensively review the genetics of these systems, as does the paper by Dutcher mentioned above on flagellar genes. The papers on plasmids in *Dictyostelium* and in yeasts, by Williams and Gunge respectively, are just two examples of useful reviews and reference sources on less well-studied systems. The yeast specialist will find a collection of up-to-date information on extrachromosomal elements, as well as on various aspects of yeast gene expression and chromosomal elements, in the last two sections. And finally, for the experimentalist who is puzzled by the appearance of an unexpected band in a gel of uncut DNA from a new strain, the volume provides a resource for considering the many different types of extrachromosomal DNA or RNA that are possible, together with ways for studying them experimentally.

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Some Other Books of Interest

The Statistical Consultant in Action. D. J. HAND and B. S. EVERITT, Eds. Cambridge University Press, New York, 1987. xii, 189 pp., illus. $34.50.

Quoting a comment by A. Ehrenberg that textbook examples of statistical analysis are often "so grossly oversimplified as to make a pretentious mockery of real-life situations," the editors represent this collection of papers as the result of "an attempt to present the reality of statistical consulting." In the two opening chapters, both written in a light vein, Hand and Everitt give taxonomies of clients and consultants (the *gong*, for instance, is "a consultant who starts every conference by drawing a bell-shaped curve") and Greenfield gives "cameos" of some encounters between statisticians and clients. The remaining ten papers (all of whose authors are, like the editors, affiliated with British institutions) are somewhat more technical and describe particular statistical endeavors addressing questions on a variety of subjects, among them relation of protein levels in blood to drug dosage, effectiveness of new drugs, utility of a routine surgical procedure, effects of acid rain on tree roots, sex ratios in moths, classification of microorganisms, quality control in the garment industry, and modeling of unemployment data. A brief general bibliography on statistical consulting and name and subject indexes complete the volume, which the editors hope will be useful as a complement to standard textbooks in statistics.—K.L.

Advances in Chronobiology. JOHN E. PAULY and LAWRENCE E. SCHEVING, Eds. Liss, New York, 1987. In two volumes. Part A, xxvii, 528 pp., illus. $130. Part B, xxxii, 613 pp., illus. $130. Progress in Clinical and Biological Research, vols. 227A and 227B. From a conference, Little Rock, AR, Nov. 1985.

These two volumes contain some 50 of the approximately 140 papers presented at (or prepared for) the 17th international conference of the International Society for Chronobiology, which was founded in 1935 as the International Society for the Study of Biological Rhythms. For publication the papers have been grouped by general theme. Part A contains groups on the chronophysiology of plants and microorganisms (8 papers), cell biology (9 papers), chronophysiology in various animal species (10 papers), gastrointestinal rhythms (5 papers), and immunology and endocrinology (7 papers). In part B are collected papers having to do with development and aging (9 papers), cardiovascular rhythms (8 papers), clinical chronobiology (16 papers), shift work (4 papers), "psychiatry and behavior" (9 papers), and methodology (6 papers). Each volume has its own subject index and lists the contents of the other. The work as a whole is dedicated to Franz Halberg, who provides an opening chapter entitled "Chronobiology: professional wallflower or paradigm of biomedical thought and practice?"—K.L.

Some Mathematical Questions in Biology: Circadian Rhythms. American Mathematical Society, Providence, RI, 1987. xii, 265 pp., illus. Paper, $36. Lectures on Mathematics in the Life Sciences, vol. 19. From a symposium, Philadelphia, May 1986.

This latest volume stemming from a series of annual symposiums held as part of the AAAS meetings contains six papers that "discuss, analyze, and compare . . . various experimental, theoretical, and mathematical approaches" to the understanding of circadian rhythms and sleep. The papers are: "A comparative analysis of models of the human sleep-wake cycle" by Strogatz; "Sleep intensity and timing: a model for their circadian control" by Beersma *et al.*; "Temporal subdivision of the circadian cycle" by Kronauer; "Detecting a phase singularity in a coupled stochastic system" by Enright and Winfree; "Mammalian circadian rhythms: a neural network model" by Carpenter and

Grossberg; and "Mathematical models of circadian one- and multi-oscillator systems" by Wever. Each paper is preceded by an abstract, and there is a brief preface by Carpenter.—K.L.

Nutritional Anthropology. FRANCIS E. JOHNSTON, Ed. Liss, New York, 1987. x, 304 pp., illus. $49.50.

Nutritional Anthropology, to quote the publisher's advertisement, "focuses primarily on the adaptive (or maladaptive) interactions of food and nutrition with human biological systems, culture, and environment." It is further characterized by the editor as providing "a picture of [the field of] nutritional anthropology as seen by a sample of those working actively" in it. The opening section of the volume, Evolution, Adaptation, and Variation, consists of papers on human diet in prehistory (Kathleen D. Gordon) and the utility of an evolutionary perspective in addressing modern problems (Solomon H. Katz). Section 2 is devoted to methodological issues: the assessment of dietary intake (Sara A. Quandt), of nutritional status (John H. Himes), and of patterns of energy expenditure and physical activity (Angelo Tremblay and Claude Bouchard). Section 3, Nutrition and the Life Cycle, contains papers focused on the reproductive years (Linda S. Adair), infancy (Judith Gussler), growth (Robert M. Malina), and aging (Cynthia M. Beall). The final section, Anthropology, Nutrition, and Ecology, contains considerations of the effects of iron deficiency on mental development (Ernesto Pollitt), obesity (Manuel Peña *et al.*), and "intervention advocacy for action" (John W. Townsend). A subject index is appended.—K.L.

Reprints of Books Previously Reviewed

The Ancestry of the Vertebrates. R. P. S. Jefferies. Cambridge University Press, New York, 1987. $75. *Reviewed* **236**, 1476 (1987).

Black-Body Theory and the Quantum Discontinuity, 1894-1912. Thomas S. Kuhn. University of Chicago Press, Chicago, IL, 1987. Paper, $18.95. *Reviewed* **203**, 1100 (1979).

The Mind of a Mnemonist. A. R. Luria. Harvard University Press, Cambridge, MA, 1987. Paper, $7.95. *Reviewed* **161**, 349 (1968).

Books Received

Abrégé de Biochimie Alimentaire. C. Alais and G. Linden. Masson, Paris, 1987. 224 pp., illus. Paper, 120 F.

Acoustic Waves. Devices, Imaging, and Analog Signal Processing. Gordon S. Kino. Prentice-Hall, Englewood Cliffs, NJ, 1987. xxii, 601 pp., illus. $64. Prentice-Hall Signal Processing Series.

Advanced Biochemical Engineering. Henry Bungay and Georges Belfort, Eds. Wiley-Interscience, New York, 1987. xii, 304 pp., illus. $42.95.

Advanced Micropipette Techniques for Cell Physiology. Kenneth T. Brown and Dale G. Flaming. Wiley-Interscience, New York, 1987. x, 296 pp., illus. $57.95. International Brain Research Organization Handbook Series, vol. 9.

Advances in Biomedical Polymers. Charles G. Gebelein, Ed. Plenum, New York, 1987. x, 405 pp., illus. $75. Poymer Science and Technology, vol. 35. From a symposium, Chicago, IL, Sept. 1985.

Advances in Surface Treatments. Technology, Applications, Effects. Vol. 4, Residual Stresses. A. Niku-Lari. Pergamon, New York, 1987. xviii, 566 pp., illus. $90.

Advances in the Statistical Sciences. Vol. 2, Foundations of Statistical Inference. Ian B. MacNeill and Gary J. Umphrey, Eds. Reidel, Dordrecht, 1987. xviii, 287 pp., illus. $62. University of Western Ontario Series in Philosophy of Science. From a symposium, London, Ontario, May 1985.

Asymptotics of High Order Differential Equations. R. B. Paris and A. D. Wood. Longman (Wiley), New York, 1986. x, 344 pp., illus. Paper, $49.95. Pitman Research Notes in Mathematics Series, 129.

An Atlas of Functions. Jerome Spanier and Keith B. Oldham. Hemisphere (Harper and Row), New York, 1987. x, 700 pp. $149.50.

Auditory Processing of Complex Sounds. William A. Yost and Charles S. Watson, Eds. Erlbaum, Hillsdale, NJ, 1987. xii, 328 pp., illus. $29.95. From a workshop, Sarasota, FL, April 1986.

Balancing the National Interest. U.S. National Security Export Controls and Global Economic Competition. Panel on the Impact of National Security Controls on International Technology Transfer. National Academy Press, Washington, DC, 1987. xiv, 321 pp., illus. $24.95.

The Bellman Continuum. A Collection of the Works of Richard E. Bellman. Robert S. Roth, Ed. World Scientific, Singapore, 1986 (U.S. distributor, Taylor and Francis, Philadelphia). xxii, 868 pp., illus. $79.

Beyond Spaceship Earth. Environmental Ethics and the Solar System. Eugene C. Hargrove, Ed. Sierra Club, San Francisco, 1987. xvi, 336 pp. + plates. $25. Based on a conference, Athens, GA, June 1985.

Can the Cardiac Stand Trial? Meyer Texon. Hemisphere (Harper and Row) New York, 1987. xvi, 644 pp. $37.

Cognition and Fact. Materials on Ludwik Fleck. Robert S. Cohen and Thomas Schnelle, Eds. Reidel, Dordrecht, 1986 (U.S. distributor, Kluwer, Norwell, MA). xxxiv, 468 pp. $59.50. Boston Studies in the Philosophy of Science, vol. 87.

Communication and Cognition in Normal Aging and Dementia. Kathryn A. Bayles and Alfred W. Kaszniak, assisted by Cheryl K. Tomoeda. College-Hill (Little, Brown), Boston, 1987. xviii, 400 pp., illus. $39.50; paper, $29.50.

Comparative Primate Biology. J. Erwin, Vol. 1, Systematics, Evolution, and Anatomy. Daris R. Swidler and J. Erwin, Eds. xvi, 820 pp., illus. + plates. $190. Vol. 2, part A. Behavior, Conservation, and Ecology. G. Mitchell and J. Erwin, Eds. xii, 633 pp., illus. $150. Vol. 3, Reproduction and Development. W. Richard Dukelow and J. Erwin, Eds. xii, 497 pp., illus. $120. Liss, New York, 1986.

A Concept of Mathematical Physics. Models in Mechanics. Tamás Matolcsi. Akadémiai Kiadó, Budapest, 1986. 335 pp.

Epidemiology and Control of African Trypanosomiasis. Report of a WHO Expert Committee. World Health Organization, Geneva, 1986. (U.S. distributor, WHO Publications Center, Albany, NY). 127 pp., illus. Paper, $9.60. Technical Report Series 739.

Essays in Biochemistry. Vol. 22. R. D. Marshall and K. F. Tipton, Eds. Published for the Biochemical Society by Academic Press, Orlando, FL, 1986. xii, 200 pp., illus. Paper, $23.

Essentials of Ocean Science. Keith Stowe. Wiley, New York, 1987. xiv, 353 pp., illus. $33.55.

Excitatory Amino Acid Transmission. T. Philip Hicks, David Lodge, and Hugh McLennan, Eds. Liss, New York, 1987. xxvi, 426 pp., illus. $69.50. Neurology and Neurobiology, vol. 24. From a symposium, Banff, Alberta, Canada, July 1986.

Literacy, Society, and Schooling. A Reader. Suzanne de Castell, Allan Luke, and Kieran Egan, Eds. Cambridge University Press, New York, 1986. xiv, 336 pp. $39.50; paper, $14.95.

LSI/VLSI Testability Design. Frank F. Tsui. McGraw-Hill, New York, 1987. xvi, 703 pp., illus. $49.95.

The Lumbar Spine. Martin B. Camins and Patrick F. O'Leary. Raven, NY, 1987. xxii, 489 pp., illus. $67.

Magnetic Resonance Imaging of the Central Nervous System. Michael Brant-Zawadzki and David Norman, Eds. Raven, New York, 1986. xii, 404 pp., illus. $89.50.

Mammalian Proteases. A Glossary and Bibliography. Vol. 2, Exopeptidases. J. K. McDonald and A. J. Barrett. Academic Press, Orlando, FL, 1986. xvi, 357 pp., illus. $34.

Managing Nuclear Operations. Ashton B. Carter, John D. Steinbruner, and Charles A. Zraket, Eds. Brookings Institution, Washington, DC, 1987. xxiv, 751 pp., illus. Paper, $18.95.

Manuel Pratique de Psychophysique. Claude Bonnet. Colin, Paris, 1986. 254 pp., illus. Paper, 120 F.

Mass Spectrometry in Biomedical Research. Simon J. Gaskell, Ed. Wiley, New York, 1986. xvi, 492 pp., illus. $72.95.

Measuring Emotions in Infants and Children. Vol. 2, Carroll E. Izard and Peter B. Read, Eds. Cambridge University Press, New York, 1986. x, 277 pp., illus. $39.50. Cambridge Studies in Social and Emotional Development.

Membrane Proteins. Isolation and Characterization. Angelo Azzi, Lanfranco Masotti, and Arnaldo Vecli, Eds. Springer-Verlag, New York, 1986. xii, 181 pp., illus. $20. Membrane Proteins. From an advanced course.

Methods of Soil Analysis. Part 1, Physical and Mineralogical Methods. Arnold Klute, Ed. 2nd ed. American Society of Agronomy and Soil Science Society of America, Madison, WI, 1986. xxviii, 1188 pp., illus. $60. Agronomy, no. 9, part 1.

Microbial Autecology. A Method for Environmental Studies. Robert L. Tate III, Ed. Wiley-Interscience, New York, 1986. xiv, 266 pp. $42.95.

Military Radiobiology. James J. Conklin and Richard I. Walker, Eds. Academic Press, New York, 1987. x, 404 pp., illus. $34.95.

Modern Kaluza-Klein Theories. Thomas Appelquist, Alan Chodos, and Peter G. O. Freund, Eds. Addison-Wesley, Menlo Park, CA, 1987. xviii, 619 pp., illus. $47.95. Frontiers in Physics.

Modern NMR Techniques for Chemistry Research. Andrew E. Derome. Pergamon, New York, 1987. xviii, 280 pp., illus. Paper, $35. Organic Chemistry Series.

Molecular Aspects of Insect-Plant Associations. Lena B. Brattsen and Sami Ahmad, Eds. Plenum, New York, 1986. xii, 346 pp., illus. $59.50. Based on a symposium.

Molecular Determinants of Plant Diseases. Syoyo Nishimura, Carroll P. Vance, and Noriyuki Doke, Eds. Japan Scientific Societies Press, Tokyo, and Springer-Verlag, New York, 1987. xiv, 293 pp., illus. $69. From a seminar, Inuyama City, Japan, May 1985.

Molecular Genetics of Plant-Microbe Interactions. D. P. S. Verma and N. Brisson, Es. Nijhoff, Dordrecht, 1987 (U.S. distributor, Kluwer, Norwell, MA). xxxii, 338 pp., illus. $49.50. Current Plant Science and Biotechnology in Agriculture. From a symposium, Montreal, July 1986.

Molecular Sieve Catalysts. P. Michiels and O. C. E. De Herdt. Pergamon, New York, 1987. xviii, 391 pp., illus. $80. EPO Applied Technology Series, vol. 9.

Monoclonal Antibody Production Techniques and Applications. Lawrence B. Schook, Ed. Dekker, New York, 1987. xvi, 316 pp., illus. $89.75. Immunology Series, vol. 33.

Monoclonals and DNA Probes in Diagnostic and Preventive Medicine. Robert C. Gallo, Giuseppe Della Porta, and Alberto Albertini, Eds. Raven, New York, 1987. xvi, 240 pp., illus. $39.50. Based on a meeting, Florence, Italy, April 1986.

Mössbauer Spectroscopy. Dominic P. E. Dickson and Frank J. Berry, Eds. Cambridge University Press, New York, 1986. xii, 274 pp., illus. $54.50.

Multivariate Data Analysis. Fionn Murtagh and André Heck. Reidel, Dordrecht, 1986 (U.S. distributor, Kluwer, Norwell, MA). xvi, 210 pp., illus. $49.50. Astrophysics and Space Science Library.

Music and Child Development. J. Craig Peery, Irene Weiss Peery, and Thomas W. Draper, Eds. Springer-Verlag, New York, 1987. xiv, 267 pp., illus. $35.50.

Neogene Paleontology and Geology of Sahabi. Noel T. Boaz *et al.*, Eds. Liss, New York, 1987. xvi, 401 pp. + charts, in pocket. $175.

Neural Mechanisms and Cardiovascular Disease. Bernard Lown, Alberto Malliani, and Marco Prosdocimi, Eds. Liviana Press, Padova, and Springer-Verlag, New York, 1986. xiv, 642 pp., illus. $95. Fidia Research Series, vol. 5. From a symposium, Santa Margherita Ligure, Italy, May 1985.