The Fifth International Conference on the Cell and Molecular Biology of Chlamydomonas

will be held, May 26–31, 1992 at the Asilomar Conference Center in Pacific Grove, CA. The meeting will consist of platform and poster sessions devoted to all aspects of the molecular biology and genetics of *Chlamydomonas*. Platform sessions will include:

| Session | | Chair |
|---------|---|------------------------|
| I. | Cell Differentiation and Life Cycle | Ursula Goodenough |
| II. | Photosynthesis | Richard Sayre |
| III. | Molecular Biology of Dynein | David Mitchell |
| IV. | Biochemistry and Metabolism | Emilio Fernandez |
| V. | Mating, Signal Transduction, and Behavioral Response | Herman van den Ende |
| VI. | Innovations in Genetics and Molecular Biology of <i>Chlamydomonas</i> | Paul Lefebvre |
| VII. | The Flagellar Apparatus: Basal Bodies and Assembly | Joel Rosenbaum |
| VIII. | Organelle Genetics and Molecular Biology | Elizabeth Harris |

There will also be one or two other platform sessions to be announced.

For further information, please contact:

Dr. George Witman, Organizer,

The Worcester Foundation for Experimental Biology, Shrewsbury, MA 01545.

Telephone: (508) 842-8921; Fax: (508) 842-3915.

or

The Genetics Society of America,

9650 Rockville Pike, Bethesda, MD 20814. Telephone: (301) 571-1825; Fax: (301) 530-7079.

NEW IN 1992...



Editor:

Hans Neurath

Associate **Editors:**

Ralph A. Bradshaw Tony E. Hugli Louise N. Johnson Rachel E. Klevit Christopher T. Walsh

Editorial Consultant

David S. Eisenberg

Graphics Consultant:

lane S. Richardson

Editorial

Advisory Board: The editors will be assisted by an international board of over 50 distinguished protein scientists.

CALL FOR PAPERS

All interested scientists in protein research are encouraged to submit their best work to Protein Science, the new international forum for original reports on proteins. Members of The Protein Society throughout the world will receive the Journal as part of their membership dues. The wide scope of the journal will include the:

- structure, function and biochemical significance of proteins
- role of proteins in molecular and cell biology
- role of proteins in genetics and evolution
- regulation and mechanism of action of proteins

The entire spectrum of experimental methodologies will be covered, including such

- isolation, characterization, chromatography
- chemistry, synthesis of peptides and proteins
- crystallography
- NMR spectroscopy
- protein sequencing, modification, mass spectroscopy
- cDNA, cloning mutagenesis
- computational analysis
- · electronic data deposition and processing

Detailed Instructions for authors available from:

Hans Neurath, Editor-in-Chief

PROTEIN SCIENCE

University of Washington, SJ-70 Seattle, WA 98195 USA FAX: 206/685-2674 EMAIL: prosci@u.washington.edu

Protein Science will be published for The Protein Society by Cambridge University Press

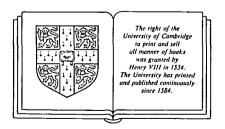
Genetical Research

EDITORIAL BOARD

ARTHUR CHOVNICK ELIZABETH DENNIS WILLIAM G. HILL BRUCE W. HOLLOWAY DAVID ISH-HOROWICZ ALEC J. JEFFREYS MARY F. LYON ANNE McLAREN MARK VAN MONTAGU OLIVER E. NELSON ROLF NÖTHIGER PETER A. PETERSON RALPH RILEY NEIL S. WILLETTS

EXECUTIVE EDITORS
ERIC C. R. REEVE
DAVID J. FINNEGAN TRUDY F. C. MACKAY

Volume 58 1991



CAMBRIDGE UNIVERSITY PRESS
CAMBRIDGE
NEW YORK PORT CHESTER MELBOURNE SYDNEY

Published by The Press Syndicate of the University of Cambridge

The Pitt Building, Trumpington Street, Cambridge CB2 1RP 40 West 20th Street, New York, NY 10011-4211 10 Stamford Road, Oakleigh, Victoria 3166, Australia

© Cambridge University Press, 1991

Printed in Great Britain by the University Press, Cambridge

Contents

| No. 1 (August 1991) | |
|--|-----|
| ALVAREZ-FUSTER, ASUNCION; JUAN, CARLOS and PETITPIERRE, EDUARD. Genome size | |
| in Tribolium flour-beetles: inter- and intraspecific variation | 1 |
| CLARK, ANDREW G.; SZUMSKI, FRANCES M. and LYCKEGAARD, EVA M. S. Population | |
| genetics of the Y chromosome of <i>Drosophila melanogaster</i> : rDNA variation and | 7 |
| phenotypic correlates MARGULIES, LOLA and GRIFFITH, CAROLE S. The synergistic effect of X-rays and | , |
| deficiencies in DNA repair in P-M hybrid dysgenesis in Drosophila melanogaster | 15 |
| BOUSSY, I. A. and DANIELS, S. B. Hobo transposable elements in Drosophila melanogaster | 13 |
| and D. simulans | 27 |
| ROBERT, JACQUES; BARANDUN, BENJAMIN and KOBEL, HANS RUDOLF. A Xenopus laevis | |
| creatine kinase isozyme (CK-III/III) expressed preferentially in larval striated muscle: | |
| cDNA sequence, developmental expression and subcellular immunolocalization | 35 |
| HOLCOMBE, RANDALL F.; STEPHENSON, DENNIS A.; ZWEIDLER, ALFRED; STEWART, | |
| RUBY M.; CHAPMAN, VERNE M. and SEIDMAN, J. G. Linkage of loci associated with | 41 |
| two pigment mutations on mouse chromosome 13 SWANK, RICHARD T.; SWEET, HOPE O.; DAVISSON, MURIEL T.; REDDINGTON, | 41 |
| MADONNA and NOVAK, EDWARD K. Sandy: a new mouse model for platelet storage | |
| pool deficiency | 51 |
| FOWLIS, DEBORAH J.; ANSELL, JOHN D. and MICKLEM, H. SPEDDING. Further evidence | |
| for the importance of parental source of the Xce allele in X chromosome inactivation | 63 |
| MEDRANO, J. F.; POMP, D.; SHARROW, L.; BRADFORD, G. E.; DOWNS, T. R. and FROHMAN, | |
| L. A. Growth hormone and insulin-like growth factor-I measurement in high growth | |
| (hg) mice | 67 |
| Abstracts of papers presented at the first Mammalian Genetics and Development | |
| Workshop held in the Linnean Society Rooms, Burlington House, Piccadilly, London on 6–9 November 1991 | 75 |
| BOOK REVIEWS | 89 |
| Genetically Engineered Organisms: Benefits and Risks by J. R. S. Fincham and | 07 |
| J. R. Ravetz. ERIC REEVE | |
| From Gene to Animal by D. de Pomerai. JAMES SANG | |
| Genetics and Biology of Alcoholism by C. Robert Cloninger and Henri Begleiter. | |
| WALTER MUIR | |
| Theoretical Population Genetics by J. S. Gale. J. BRUCE WALSH | |
| A Dictionary of Genetics by Robert C. King and William D. Stansfield. ERIC REEVE | |
| Protein Engineering: In Focus by P. C. E. Moody and A. J. Wilkinson. ANDREW | |
| COULSON BOOKS RECEIVED | 04 |
| BOOKS RECEIVED | 94 |
| | |
| | |
| No. 2 (October 1991) | |
| EDITORIAL | i |
| PIGLIUCCI, MASSIMO and BARBUJANI, GUIDO. Geographical patterns of gene frequencies | 1 |
| in Italian populations of Ornithogalum montanum (Liliaceae) | 95 |
| ZAKIAN, SUREN M.; NESTEROVA, TATYANA B.; CHERYAUKENE, OLGA V. and | , , |
| BOCHKAREV, MICHAIL N. Heterochromatin as a factor affecting X-inactivation in | |
| interspecific female vole hybrids (Microtidae, Rodentia) | 105 |
| CORTOPASSI, GINO A. and WILSON, ALLAN C. Genetic analysis of a switch in cell | |
| specificity of P lysozyme expression in <i>molossinus</i> mice | 111 |

| TEASE, CHARLES and FISHER, GRAHAM. Two new X-autosome Robertsonian translocations in the mouse. I. Meiotic chromosome segregation in male hemizygotes and female heterozygotes | 115 | | |
|---|------------|--|--|
| ASANTE, EMMANUEL A.; HILL, WILLIAM G. and BULFIELD, GRAHAME. Analysis of lines of mice selected for fat content. 3. Flux through the de novo lipid synthesis pathway | 123 | | |
| CABALLERO, A.; KEIGHTLEY, P. D. and HILL, W. G. Strategies for increasing fixation probabilities of recessive mutations | 129 | | |
| KEIGHTLEY, PETER D. Genetic variance and fixation probabilities at quantitative trait loci in mutation-selection balance | | | |
| KOGA, A.; KUSAKABE, S.; TAJIMA, F.; TAKANO, T.; HARADA, K. and MUKAI, T. A method for detecting effect of beneficial mutations in natural populations of <i>Drosophila melanogaster</i> | 145 | | |
| SZATHMÁRY, EÖRS and KÖVÉR, SZILVIA. A theoretical test of the DNA repair hypothesis for the maintenance of sex in eukaryotes | 157 | | |
| SLATKIN, MONTGOMERY. Inbreeding coefficients and coalescence times BOOK REVIEWS | 167 177 | | |
| Vaccines 91: Modern Approaches to New Vaccines Including Prevention of AIDS R. M. Chanock, H. S. Ginsberg, F. Brown and R. A. Lerner eds ROBERT RIDLEY Genetic Monitoring of Inbred Strains of Rats: a Manual on Colony Management, Basic Monitoring Techniques, and Genetic Variants of the Laboratory Rat Hans J. Hedrich ed ERIC REEVE Mammals from Pouches and Eggs: Genetics, Breeding and Evolution of Marsupials | 1,, | | |
| and Monotremes Jennifer A. Marshall Graves, Rory M. Hope and Desmond W. Cooper eds SUZANNE L. ULLMANN Production of Biologicals from Animal Cells in Culture. R. E. Spier, J. B. Griffiths and B. Meignier eds ERIC REEVE | | | |
| Plant Population Genetics, Breeding and Genetic Resources. A. H. D. Brown, M. T. Clegg, A. L. Kahler and B. S. Weir eds M. J. KEARSEY | | | |
| DNA Replication: in Focus By Roger L. P. Adams ROBERT RIDLEY BOOKS RECEIVED | 193 | | |
| N. 2 (D 1001) | | | |
| No. 3 (December 1991) | | | |
| HERRINGTON, MURIEL B.; BASSO, JOHNNY; FARACI, MARIA and AUTEXIER, CHANTAL. Modification of the suppressor phenotype of thymine requiring strains of Escherichia coli ROLLO, FRANCO; VENANZI, FRANCO MARIA and AMICI, AUGUSTO. Nucleic acids in | 185 | | |
| mummified plant seeds: biochemistry and molecular genetics of pre-Columbian maize THEODORE, LAURENT; HO, ANN-SHU and MARONI, GUSTAVO. Recent evolutionary history | 193 203 | | |
| of the metallothionein gene <i>Mtn</i> in <i>Drosophila</i> EEKEN, JAN C. J.; ROMEYN, RON J.; DE JONG, ANJA W. M.; YANNOPOULOS, GEORGE and PASTINK, ALBERT. Characterization of <i>MR</i> (P) strains of <i>Drosophila melanogaster</i> : the | 203 | | |
| number of intact P elements and their genetic effect WARREN, ANN M. and CRAMPTON, JULIAN M. The Aedes aegypti genome: complexity and | 211 | | |
| organization | 225 | | |
| FITTON, LESLEY A.; DAVIDSON, MORAG; MOORE, KAREN J.; CHARLES, DANIEL J.; PRETSCH, WALTER; ELSTON, ROBERT C. and BULFIELD, GRAHAME. The | | | |
| liver/erythrocyte pyruvate kinase gene complex [Pk-1] in the mouse: regulatory gene | | | |
| liver/erythrocyte pyruvate kinase gene complex [Pk-1] in the mouse: regulatory gene mutations TACHIDA, HIDENORI and IIZUKA, MASARU. Fixation probability in spatially changing | 233 | | |
| liver/erythrocyte pyruvate kinase gene complex [Pk-1] in the mouse: regulatory gene mutations TACHIDA, HIDENORI and IIZUKA, MASARU. Fixation probability in spatially changing environments HASTINGS, IAN M.; YANG, JIANYI and HILL, WILLIAM G. Analysis of lines of mice selected | 243 | | |
| liver/erythrocyte pyruvate kinase gene complex [Pk-1] in the mouse: regulatory gene mutations TACHIDA, HIDENORI and IIZUKA, MASARU. Fixation probability in spatially changing environments HASTINGS, IAN M.; YANG, JIANYI and HILL, WILLIAM G. Analysis of lines of mice selected on fat content. 4. Correlated responses in growth and reproduction | 243 253 | | |
| liver/erythrocyte pyruvate kinase gene complex [Pk-1] in the mouse: regulatory gene mutations TACHIDA, HIDENORI and IIZUKA, MASARU. Fixation probability in spatially changing environments HASTINGS, IAN M.; YANG, JIANYI and HILL, WILLIAM G. Analysis of lines of mice selected | | | |

Chromosome Anomalies and Prenatal Development by Dorothy Warburton, Julienne Byrne and Nina Canki J. W. KEELING
Introduction to Risk Calculation in Genetic Counselling by Ian D. Young D. J. H.
BROCK

GLOSSARY OF GENETICS, CLASSICAL AND MOLECULAR R. Rieger, A. Michaelis and M. M. Green eds E. REEVE

BOOKS RECEIVED 265

NOTES TO CONTRIBUTORS

GENETICAL RESEARCH publishes original work on all aspects of genetics, or in any field of research which has an important bearing on genetics. Reviews of topical interest will also be considered. Papers will be submitted to referees, and will generally be printed in order of acceptance. Short papers (see below) will be given priority in publication.

CONTRIBUTIONS are welcomed from scientists of all nationalities, but must be written in English. Papers should be sent to one of the Executive Editors (see addresses inside front cover), or to a member of the Editorial Board with a particular interest in that area of genetics. Submission of a paper will be taken to imply that it is unpublished and is not being considered for publication elsewhere. Papers should be as concise as clarity permits, and illustrations should be restricted to the *minimum needed*.

SHORT PAPERS This category is designed for concisely written reports of work for which rapid publication is considered desirable. Such papers will normally be published within three months of receipt in acceptable form. They should not exceed 4 pages of print in length, and should include a summary.

TYPESCRIPTS A top copy and two other copies should be submitted. The top copy should be typed with doublespacing on one side of good quality paper, leaving margins of about $1\frac{1}{2}$ inches at the left-hand side and at the top and bottom of each sheet. Each copy should include a complete set of illustrations. The title should ordinarily identify the organism. The address of the laboratory at which the work was carried out will be printed with the authors' names at the head of the paper, and changes of address may be added in footnotes. A footnote to the title page should also give the name and address to whom reprint requests may be made. Sources of financial support should be included with other acknowledgements at the end of the text. The title page of the typescript should include a short title for running headlines (limited to 50 letters and spaces), and the name and address of the author (or his proxy) to whom the proofs are to be sent, under the heading: Proofs to be sent to... Main headings should be typed in capitals and (except summary and references) numbered consecutively. Subheadings should be typed in lower case, and underlined except for those words and symbols which would be italicized in the text. Subheadings should be numbered (i), (ii), etc., within each main heading. Numeral 1 and letter el: if your typewriter uses one symbol for both, please make clear to the Printer which is intended in formulae, gene symbols, etc.

SUMMARY The summary will be printed at the beginning of the paper. It should give a concise abstract of the significant content and conclusions of the paper, in a form suitable for abstracting journals to use, and should not exceed 250 words.

ILLUSTRATIONS The separate category of Plates no longer applies in the new format. All illustrations, including photographs, diagrams, graphs etc. are to be labelled consecutively Figure 1, 2...according to their relative positions in the text. Each figure should have a legend to be printed underneath it. Photographs should be supplied as unmounted glossy prints, with a sketch or separate set to show the arrangement required when several photographs are to form one figure. The names of the authors and the

orientation of the figure should be indicated on the back of each photograph. Diagrams should be about twice the size of the printed figure, but not larger than 12×8 inches, unless exceptionally complicated, and the thickness of lines and size of points should be determined accordingly. They may be submitted as glossy photographic prints or be drawn in indian ink on white Bristol-board, tracing linen or graph paper ruled in pale blue (but not other colours). The lettering on drawings should be lightly inserted in soft pencil only, so that the printer can put in the finished lettering. Legends to illustrations must be given on a separate sheet of paper. Each illustration must have the name of the author and figure number pencilled on the back.

TABLES Each table should be typed on a separate sheet of paper and its approximate position in the text indicated on the typescript. Each should be numbered and carry an appropriate title. The table should be designed, whenever possible, to be printed in the normal orientation of the text. The data should be grouped so as to make the use of rules unnecessary. Vertical rules, in particular, are expensive to print, and will only be included at the Editor's discretion. Table footnotes should ordinarily employ the symbols *, †, \ddagger , §, \parallel , \P , **, etc., in that order.

SYMBOLS Gene and mathematical symbols should generally be printed in italics. Please underline those to be italicized when they appear in the text and tables. Bold letters add to printing costs and should only be used where they are necessary to avoid confusion. The author must assume responsibility for the accurate printing of complex mathematical formulae submitted in typewritten form, by differentiating between letters and numbers which are open to misinterpretation, and identifying all Greek, Hebrew and script letters by means of marginal notes at their first appearance. Note that Greek symbols cannot be italicized and that '+' as the symbol for a wild-type allele should not be italicized.

NOMENCLATURE Wherever possible, standardized nomenclature should be employed. The author should refer to the following publications for guidance: Novick et al. (Bacteriological Reviews 40, 168–189) for plasmids; O'Brien (Ed.), Genetic Maps 4, Cold Spring Harbor 1987, for recent information on most species and recent gene lists.

REFERENCES should follow the normal usage in the journal. In the list of references at the end of the paper, both titles of articles and names of periodicals should be written out in full.

PROOFS Two sets of single-sided page proofs, together with the typescript of each paper will be sent to the author. The printers' marked proof should be returned after correction to the Executive Editor, together with the typescript. Excessive alterations, other than corrections of printers' errors, may be disallowed or charged to the author. Correction should be made using the symbols in British Standard 1219: 1958, or its shortened version B.S. 1219C: 1958

OFFPRINTS Fifty offprints of each paper, or short paper, are provided free of charge. Additional offprints may be ordered in the form sent out with proofs, provided this is returned within fourteen days of receipt.

Genetical Res., Camb.

Genetical Research

Contents

- HERRINGTON, MURIEL B.; BASSO, JOHNNY; FARACI, MARIA and AUTEXIER, CHANTAL. Modification of the suppressor phenotype of thymine requiring strains of Escherichia coli
- 193 ROLLO, FRANCO; VENANZI, FRANCO MARIA and AMICI, AUGUSTO. Nucleic acids in mummified plant seeds: biochemistry and molecular genetics of pre-Columbian maize
- 203 THEODORE, LAURENT; HO, ANN-SHU and MARONI, GUSTAVO. Recent evolutionary history of the metallothionein gene Mtn in Drosophila
- 211 EEKEN, JAN C. J.; ROMEYN, RON J.; DE JONG, ANJA W. M.; YANNOPOULOS, GEORGE and PASTINK, ALBERT. Characterization of MR (P) strains of Drosophila melanogaster: the number of intact P elements and their genetic effect
- 225 WARREN, ANN M. and CRAMPTON, JULIAN M. The Aedes aegypti genome: complexity and organization
- 233 FITTON, LESLEY A.; DAVIDSON, MORAG; MOORE, KAREN J.; CHARLES, DANIEL J.; PRETSCH, WALTER; ELSTON, ROBERT C. and BULFIELD, GRAHAME. The liver/erythrocyte pyruvate kinase gene complex [Pk-1] in the mouse: regulatory gene mutations
- 243 TACHIDA, HIDENORI and IIZUKA, MASARU. Fixation probability in spatially changing environments
- 253 HASTINGS, IAN M.; YANG, JIANYI and HILL, WILLIAM G. Analysis of lines of mice selected on fat content. 4. Correlated responses in growth and reproduction
- 261 BOOK REVIEWS
 Genome Analysis Volume 1: Genetic and Physical Mapping Kay E. Davies and Shirley M. Tilghman eds. VERONICA VAN HEYNINGEN
 Genes and Genomes by Maxine Singer and Paul Berg. D. J. H. BROCK
 Fundamentals of Molecular Evolution by Wen-Hsiung Li and Dan Graur. ADAM
 EYRE-WALKER

Chromosome Anomalies and Prenatal Development by Dorothy Warburton, Julienne Byrne and Nina Canki. J. W. KEELING

Introduction to Risk Calculation in Genetic Counselling by Ian D. Young. D. J. H. BROCK

Glossary of Genetics, Classical and Molecular R. Rieger, A. Michaelis and M. M. Green eds. E. REEVE

- 265 BOOKS RECEIVED
- 267 INDEX

© Cambridge University Press 1991

Cambridge University Press

The Pitt Building, Trumpington Street, Cambridge CB2 1RP 40 West 20th Street, New York, NY 10011–4211, USA 10 Stamford Road, Oakleigh, Victoria 3166, Australia

Printed in Great Britain by the University Press, Cambridge