Editorial
Asilomar: 20 Years On  W. J. Whelan ........................................ 295

News & Features
News ................................................................. 296
Communications Capsules ........................................... 297
Preview Highlights—Experimental Biology '96 .................. 298

Serial Reviews
Protein kinases 4: Protein kinase CK2: an enzyme with multiple substrates and a puzzling regulation.
J. E. Allende and C. C. Allende ........................................ 313
Optical microscopy 3: Tracking fluorescently labeled neurons in developing brain.  G. Fishe, R. Blazeski,
P. Godement, P. Rivas, L-C. Wang, and C. A. Mason .................. 324
Protein motifs 3: The parallel β helix and other coiled folds.  M. D. Yoder and F. Jurmak .................. 335

Reviews
Astrocytes in glutamate neurotransmission.  E. Hansson and L. Rönnejäck ............... 343
Survival mechanisms of vertebrate ectotherms at subfreezing temperatures: applications in cryomedicine.
J. P. Costanzo, R. E. Lee, Jr., A. L. DeVries, T. Wang, and J. R. Layne, Jr. ............... 351
 Ionic basis of the electrophysiological actions of adenosine on cardiomyocytes.  L. Belardinelli, J. C. Shryock,
Y. Song, D. Wang, and M. Shinivas .................................. 359
Role of chaperones in the biogenesis and maintenance of the mitochondrion.  R. D. Martinus, M. T. Ryan,
D. J. Naylor, S. M. Hard, N. J. Hoogenraad, and P. B. Hjäk .................................. 371

Research Communications
Nitric oxide-related vasoconstriction in lungs perfused with red cell lysate.  N. F. Voekel, K. Lobel,
J. Y. Westcott, and T. J. Burke ........................................... 379
Ventricular arrhythmias caused by repeated exposure to hypoxia are dependent on duration of reoxygenation.
P. J. O'Connor and G. F. Merril ........................................... 387
Tissue distribution and influence of selenium status on levels of selenoprotein W.  J-Y. Yeh, M. A.
Beilstein, J. S. Andrews, and P. D. Whanger ........................................... 392
Circannual rhythm in DNA synthesis (S-phase) in healthy human bone marrow and rectal mucosa.  R. B.
Sothen, R. Smaeland, and J. G. Moore ........................................... 397
Membrane estrogen receptors identified by multiple antibody labeling and impeded-ligand binding.  T. C.
Pappas, B. Garnetchu, and C. S. Watson ........................................... 404
Capsaicin increases skin microvascular blood flow secondary to bradykinin, nitric oxide, and prostaglandins.
J. B. Warren and R. K. Loi ........................................... 411
Implications of estrogen-dependent brain organization for gender differences in hypothalamo-pituitary-adrenal
regulation.  V. K. Petchev, S. Hayashi, C. Orikasa, and O. F. X. Almeida .................. 419
Immunologic stimulation of T lymphocytes by silica after use of silicone mammary implants.  D. L.
Smaller, D. R. Shanklin, M. F. Hall, M. V. Stevens, and A. Hanissian .................. 424
Recombinant glycosylsperaginase and in vitro correction of aspartylglycosaminuria.  I. Mononen, N. Heister-
kamp, U. Dunder, E-L. Rompanen, T. Norronkoski, I. Kuronen, and J. Groffen .................. 428
Database created from magnetic resonance images of a Sprague-Dawley rat, rhesus monkey, and pigmy goat.
P. A. Mason, T. J. Walters, J. W. Fenton, D. N. Erwin, J. H. Gao, J. W. Roby,
J. L. Kane, K. A. Lott, L. E. Lott, and R. V. Blystone ............... 434
Sensitivity of osteocytes to biomechanical stress in vitro.  J. Klein-Nulend, A. van der Plas, C. M. Semelns,
N. E. Aujub, J. A. Frangos, P. J. Nijweide, E. H. Burger ............... 441
Inhibition of plasma kallikrein prevents peptidoglycan-induced arthritis in the Lewis rat.  R. A. Dela Cadena,
A. Studnicki, A. B. Ukon, R. B. Sartor, C. A. Kettner, A. Adam, and R. W. Colman .................. 446

Hypothesis
Cells regulate the activities of cytokines by glycosylation.  G. Opdenakker, P. M. Rudd, M. Wormald,
R. A. Dwek, and J. Van Damme ........................................... 463

The FASEB Journal is the Official Publication of the Federation of American Societies for Experimental Biology
The American Physiological Society • American Society for Biochemistry and Molecular Biology • American Society for
Pharmacology and Experimental Therapeutics • American Society for Investigative Pathology • American Institute of Nutrition
The American Association of Immunologists • The American Society for Cell Biology • Biophysical Society
American Association of Anatomists
ARTICLES IN NEXT MONTH'S ISSUE

Serial Reviews

Protein kinases 5. Protein kinases C and lipid signaling for sustained cellular responses. Y. Nishizuka
Protein motifs 4. The structure and evolution of α/β barrel proteins. D. Reardon and G. K. Farber
Flavoprotein structure and mechanism 1. Structure and mechanism of parahydroxybenzoate hydroxylase. B. Entsch and W. J. H. van Berkel

State-of-the-art Reviews

Physiological significance of adiponectin mutants. M. Rosseneu and C. Laburde
The hydrophobic effect in protein folding. L. Lins and R. Brasseur
Chloride channels: a state of flux. M. A. Valverde, S. P. Hardy, and F. V. Sepúlveda

Mercury exposure from "silver" tooth fillings: emerging evidence questions a traditional dental paradigm. F. L. Lorscheider, M. J. Vimy, and A. O. Summers

STATE OF THE ART

The actomyosin engine. R. Cooke
Interactions of the nervous and immune systems in development, normal brain homeostasis, and disease. J. E. Merrill and G. Miller-Johnsfa
Muscarinic acetylcholine receptors: signal transduction through multiple effectors. C. C. Felder
Guanylin: a peptide regulator of epithelial transport. L. R. Forte and M. G. Currie
Oxidative processes and antioxidative defense mechanisms in the aging brain. R. J. Reiter
Transcriptional regulation in the yeast GAL gene family: a complex genetic network. D. Lohr, P. Venkov and J. Zlatanov

IN PRESS

Serial Reviews

Protein kinases 6. The eukaryotic protein kinase superfamily: kinase (catalytic) domain structure and classification. S. K. Hanks and T. Hunter
Protein motifs 5. Zinc fingers. A. Klug and J. R. Schwabe

State-of-the-art Reviews

The actomyosin engine. R. Cooke
Interactions of the nervous and immune systems in development, normal brain homeostasis, and disease. J. E. Merrill and G. Miller-Johnsfa
Muscarinic acetylcholine receptors: signal transduction through multiple effectors. C. C. Felder
Guanylin: a peptide regulator of epithelial transport. L. R. Forte and M. G. Currie
Oxidative processes and antioxidative defense mechanisms in the aging brain. R. J. Reiter
Transcriptional regulation in the yeast GAL gene family: a complex genetic network. D. Lohr, P. Venkov and J. Zlatanov

COVER: Osteocytes isolated from embryonic chicken calvariae as observed by fluorescence microscopy. After 48 h of culture, osteocytes form long, branched cytoplasmic processes radiating from a round cell body, establishing a cellular network. Osteocytes were incubated with monoclonal antibody mAb DB 7.3 and biotinylated horse-anti-mouse FITC conjugated extravidin. Nuclei were counterstained with 4',6-diamidino-2-phenylindole (Hoechst). Photograph by A. van der Ples. See Klein-Nulend et al., pages 441-446.

Designed to report on rapidly changing developments in biological sciences, The FASEB Journal publishes brief, definitive, original research communications and state-of-the-art reviews, as well as editorials, letters, a book list, news items, calendar, public affairs, and employment opportunities. The views expressed in articles are those of the authors and not necessarily those of the Federation. All manuscripts are subject to review and approval by the Editors before publication. Copyright © 1989 by The Society for Experimental Biology. Primed at Lancaster Press, Lancaster, Pennsylvania.

All rights reserved. Requests for any reproduction of copyrighted material except the first page of a regular article should be made in writing to the Assistant Executive Editor, The FASEB Journal, 9650 Rockville Pike, Bethesda, MD 20814-3988, USA, and should include an explicit statement of intended use and detailed specification of the material to be reproduced. Telephone 301-530-7100. COPYRIGHT: An individual may make a single copy of an article for personal use. The code at the bottom of the first page of an article indicates the copyright year. Consent that additional copies of the article may be made provided that the stated fee is paid through the Copyright Clearance Center, Inc., 222 Rosewood Dr., Danvers, MA 01923, USA.

Original communications or proposals for reviews, prepared as described in the Information for Authors (see volume 3, no. 1), should be sent to the Editor-in-Chief, Dr. W. J. Whelan, The FASEB Journal, M1523, P.O. Box 105929, Miami, FL 33101-6129, USA, or if a privileged letter is used, to The University of Miami School of Medicine, Gauter Building, Room 207, 1011 N.W. 10th Street, Miami, FL 33136-1913, USA.

Subscription price U.S. and its possessions: members of Corporate Societies, $47 per year; nonmembers (personal), $110 per year; institutional, $475 per year; student, $47. Low rate with certification. Mexico/Canada add $20 postage; other foreign add $48 (express delivery). All subscriptions entered on a calendar-year basis only and payable in advance. Single issues, except Abstracts issues, $25. Subscriptions and orders should be sent to The FASEB Journal, Subscription Department, 9650 Rockville Pike, Bethesda, MD 20814-3988, USA, 301-530-7027. In Japan, contact USAJC Corp., 13-12 Shinbashib-1-Chome, Minato-Ku, Tokyo, 105 Japan; telex J28274; fax 03-582-2709.

EDITOR-IN-CHIEF
William J. Whelan
301-530-7100
d direct fax service
301-530-7195
email: wwhelan@mednet.med.miami.edu

EXECUTIVE EDITOR
Lewis L. Glide
301-530-7185
d direct fax service
301-530-7185
email: lgigide@pubs.faseb.org

ASSISTANT EXECUTIVE EDITOR
ASSISTANT TO THE EDITOR-IN-CHIEF
DIRECTOR OF MARKETING
SUBSCRIPTION MANAGER
COMPTROLLER
Charles P. LeBlond
McCull University

FASER MAILING ADDRESS:
9650 Rockville Pike
Bethesda, MD 20814-3988, USA

EDITORIAL BOARD
Karl Altaloo
University of Helsinki
Leonard J. Banaaszak
University of Minnesota
Carl G. Becker
Medical College of Wisconsin
Kare Berg
University of Oslo
Robert M. Berner
University of Virginia School of Medicine
Piet Borst
The Netherlands Cancer Institute
Pierre Chambron
Institut de Chimie Biologique
Gwen V. Childs
U of Texas Medical Branch
Nam-Hal Chu
Rockefeller University
Brian F. C. Clark
Aarhus University
Walter Coll
Universidade de Sao Paulo
Robert J. Cousins
University of Florida
Thomas S. Edgington
The Scripps Research Institute
Runt W. Fuller
University of Pennsylvania
Johan W. Funder
Baker Medical Research Institute
Michael W. Gray
Dalhousie University
Paul Greenberg
Rockefeller University
Sarah Hitchcock-DeGregori
Robert Wood Johnson Medical School
Ann L. Hubbard
Johns Hopkins School of Medicine
Bernard Jeanrenaud
National Institutes of Allergy and Infectious Diseases
Tadsumoto Kishimoto
Osaka University Medical School
George Klein
Karolinska Institutet
Hans L. Kornberg
University of Cambridge
Kathryn L. Naus
Thomas Jefferson Medical Center
Linda A. Lev
McGill University

Edward H. Laiter
The Jackson Laboratory
Lance A. lobster
National Cancer Institute
Vincent Massey
University of Michigan Medical School
James A. Olson
Iowa State University
Rodolfo Paoletti
University of Milan
Mary Lou Pardue
Massachusetts Institute of Technology
Jamie R. Parse
Stanford University
Armando J. Parodi
Instituto de Investigaciones Bioquimicas
David A. Parr
Penn State University
Ira H. Pestan
National Cancer Institute
Franklyn G. Perrengast
Mayo Foundation
Manuigne Rosseneu
Algemeen Ziekenhuis Sint-Jan
Mirgaart Salas
Universidad Autonoma de Madrid
Michael Sells
Weinberg Institute of Science
Konstantin G. Skryabin
Academy of Sciences of Russia
Rupert Timpl
Max-Planck-Institut fur Biochemie
Chen-ju Tsou
Academia Sinica
Gerit Utermann
University of Innsbruck
William J. Whelan
University of Miami School of Medicine

PUBLICATIONS COMMITTEE
Barty J. Garvey, Chair (Biophysical Society)
Catherine S. Chew (APS)
Ann Ginals (ASBM)
Robert R. Rufolof, Jr. (ASPET)
Thomas W. Vollack (ASIP)
Carolyn D. Wnekaker (AIA/B)
Kathleen Calam (ASCB)
Kurt H. Jioffe (AAA)

EX OFFICIO
Samuel C. Silverstein
Michael J. Jackson