CONTENTS Rearranged According to Subject Categories, Vol. 152, No. 2

JB COMMENTARY
hdlk-1: a cell surface marker common to normal hepatic stem/progenitor cells and carcinomas
H. Nishina 121

JB REVIEW
Featured article of the month. Biology of the apelin-APJ axis in vascular formation
H. Kidoya and N. Takakura 125

BIOCHEMISTRY
Biochemistry General
A mechanistic study of the formation of hydroxyl radicals induced by horseradish peroxidase with NADH
T. Miura 199

Protein Structure
The in silico screening and X-ray structure analysis of the inhibitor complex of Plasmodium falciparum orotidine 5’-monophosphate decarboxylase

Enzyme Inhibitors
Mechanism of inhibition of the prothrombinase complex by a covalent antithrombin-heparin complex
I. Stevic, L.R. Berry and A.K.C. Chan 139

Neurochemistry
Physical and functional interaction of the active zone protein CAST/ERC2 and the β-subunit of the voltage-dependent Ca2+ channel
S. Kiyonaka, H. Nakajima, Y. Takada, Y. Hida, T. Yashiro, A. Hagisawa, K. Maizuna, Y. Mori and T. Ohtsuka 149

MOLECULAR BIOLOGY
Molecular Biology General
Moloney murine leukemia virus integrase and reverse transcriptase interact with PML proteins

An anticancer agent, pyrvinium pamoate inhibits the NADH-fumarate reductase system—a unique mitochondrial energy metabolism in tumour microenvironments
E. Tomitsuka, K. Kitada and H. Esumi 171

Replication and Recombination
Effect of an MCM4 mutation that causes tumours in mouse on human MCM4/6/7 complex formation
E. Watanabe, R. Ohara and Y. Ishimi 191

CELL
Cytoskeletons, Cell Motility, and Cell Shape
Calcium-dependent regulation of the motor activity of recombinant full-length Physarum myosin
Y. Zhang, H. Kamemichi, H. Tanaka, S. Yoshida, K. Kohama and A. Nakamura 185

LETTER TO THE EDITOR
Rice kinesin O12 is identical to kinesin OsKCH1
N. Umaku, N. Umeki, T. Mitsu, K. Kondoh and S. Maruta 207
EDITORIAL BOARD

Editor-in-Chief
Kohei MIYAZONO (Tokyo)

Editors

JB Reviews
Keiji MIYAZAWA (Chuo)
Koichi HONKE (Nankoku)

Biochemistry
Katsuyuki TANIZAWA (Ibaraki)

Molecular Biology
Yukio FUJIKI (Fukuoka)

Cell
Akira KIKUCHI (Saitama)

Biotechnology
Haruhiko MASAKI (Tokyo)

Managing Editors
Kiyoko FUKAMI (Hachioji) Noboru MIZUSHIMA (Tokyo)

Associate Editors

JB Reviews
Junko AOKI (Sendai)
Naotada ISHII (Tokyo)
Katsuhiko KODA (Fukuoka)

Biochemistry
Hiroko Baba (Hachioji)
Kiyoshi FUKUI (Tokushima)
J. Mitchell GUSS (Sydney)
Hideyuki HAYASHI (Tokyo)
Michael A. HOLLINGSWORTH (Omaha)
Hiroyuki ITABE (Tokyo)
Kazuhiko IWAI (Kyoto)
Kenji KATOMOTO (Nagoya)
Yasushi KAWATA (Tottori)

Molecular Biology
Koichi FURUKAWA (Nagoya)
Hidenori ICHINOSE (Tokyo)
Fuyuki ISHIKAWA (Kyoto)
Thomas LANGER (Freiburg)
Kazutoshi MORI (Kyoto)

Cell
Juergen BEHRENS (Erlangen)
Masato HASEGAWA (Tokyo)
Kazuhiko IGARASHI (Sendai)
Peter KLEIN (Philadelphia)

Biotechnology
Munehito ARAI (Tokyo)
Dominique FOURMY (Gif-sur-Yvette)
Kazutoshi MORI (Kyoto)

Editorial Assistants

Biochemistry
Daizo KOKUTSU (Tokyo) Tetsuro WATANABE (Tokyo)

Advisory Board

Biochemistry
Fumi Arisaka (Yokohama)
Vytais A. Bankaitis (Chapel Hill)
Junichi Funakita (Yamagata)
Yuki Goto (Saitama)
Jianxin Gu (Shanghai)
Gerald W. Hart (Baltimore)
Mitsuharu HATTORI (Nagoya)
Toru Hisabori (Yokohama)
Seiji Hitoshi (Otsu)
Yoshitaka Ikeda (Saga)
Tsunenori Imakawa (Toyama)
Tetsuo Ishida (Otsu)
Johannis P. KAMERLING (Utrecht)

Molecular Biology
Kenji KOHNO (Ikoma)
Bok Luel Lee (Busan)

Biochemistry
Nobuo KAMIYA (Osaka)
Dongchon KANG (Fukuoka)
Kai-Hsiu KOO (Taipei)
Koichi KIMOTO (Aichi)
Makoto KIMURA (Fukuoka)
KEN KITAIZUMA (Nagoya)
Seiki KURAMITSU (Toyonaka)
Masami KUSUNOKI (Kofu)
Masayoshi MAESHIMA (Nagoya)
Betty Sue MASTERS (San Antonio)
Eiji MIYOSH (Saitama)

Molecular Biology
Kenji KOHNO (Ikoma)
Bok Luel Lee (Busan)

Biochemistry
Arne ÖLMAN (Stockholm)
Hiroyuki ORIMACHI (Tokyo)

Molecular Biology
Kiyomi MITA (Sapporo)
Shun'ichi NAKODA (Nagoya)
Yoshinori MORIYAMA (Okayama)
Akihisa NAKAGAWA (Saitama)
Toru NAKAYAMA (Sendai)
Ryuichiro SATO (Tokyo)
Hideki SUMIMOTO (Fukuoka)
Natsuo UEDA (Kagawa)

Cell
Yasuhiro MINAMI (Kobe)
Akira NAKAMURA (Fukuoka)
Patricia C. SALINAS (London)
Kazuma TANAKA (Sapporo)

Biotechnology
Hyouta HIMENO (Hiroshima)
Kentaro SHIMIZU (Tokyo)
Hiroshi UEDA (Tokyo)

Advisory Board

Biochemistry
Nobuo KAMIYA (Osaka)
Dongchon KANG (Fukuoka)
Kai-Hsiu KOO (Taipei)
Koichi KIMOTO (Aichi)
Makoto KIMURA (Fukuoka)
KEN KITAIZUMA (Nagoya)
Seiki KURAMITSU (Toyonaka)
Masami KUSUNOKI (Kofu)
Masayoshi MAESHIMA (Nagoya)
Betty Sue MASTERS (San Antonio)
Eiji MIYOSH (Saitama)

Molecular Biology
Kenji KOHNO (Ikoma)
Bok Luel Lee (Busan)

Biochemistry
Arne ÖLMAN (Stockholm)
Hiroyuki ORIMACHI (Tokyo)

Molecular Biology
Kiyomi MITA (Sapporo)
Shun'ichi NAKODA (Nagoya)
Yoshinori MORIYAMA (Okayama)
Akihisa NAKAGAWA (Saitama)
Toru NAKAYAMA (Sendai)
Ryuichiro SATO (Tokyo)
Hideki SUMIMOTO (Fukuoka)
Natsuo UEDA (Kagawa)

Cell
Yasuhiro MINAMI (Kobe)
Akira NAKAMURA (Fukuoka)
Patricia C. SALINAS (London)
Kazuma TANAKA (Sapporo)

Biotechnology
Hyouta HIMENO (Hiroshima)
Kentaro SHIMIZU (Tokyo)
Hiroshi UEDA (Tokyo)

Advisory Board

Biochemistry
Nobuo KAMIYA (Osaka)
Dongchon KANG (Fukuoka)
Kai-Hsiu KOO (Taipei)
Koichi KIMOTO (Aichi)
Makoto KIMURA (Fukuoka)
KEN KITAIZUMA (Nagoya)
Seiki KURAMITSU (Toyonaka)
Masami KUSUNOKI (Kofu)
Masayoshi MAESHIMA (Nagoya)
Betty Sue MASTERS (San Antonio)
Eiji MIYOSH (Saitama)

Molecular Biology
Kenji KOHNO (Ikoma)
Bok Luel Lee (Busan)

Biochemistry
Arne ÖLMAN (Stockholm)
Hiroyuki ORIMACHI (Tokyo)

Molecular Biology
Kiyomi MITA (Sapporo)
Shun'ichi NAKODA (Nagoya)
Yoshinori MORIYAMA (Okayama)
Akihisa NAKAGAWA (Saitama)
Toru NAKAYAMA (Sendai)
Ryuichiro SATO (Tokyo)
Hideki SUMIMOTO (Fukuoka)
Natsuo UEDA (Kagawa)

Cell
Yasuhiro MINAMI (Kobe)
Akira NAKAMURA (Fukuoka)
Patricia C. SALINAS (London)
Kazuma TANAKA (Sapporo)

Biotechnology
Hyouta HIMENO (Hiroshima)
Kentaro SHIMIZU (Tokyo)
Hiroshi UEDA (Tokyo)

Advisory Board

Biochemistry
Nobuo KAMIYA (Osaka)
Dongchon KANG (Fukuoka)
Kai-Hsiu KOO (Taipei)
Koichi KIMOTO (Aichi)
Makoto KIMURA (Fukuoka)
KEN KITAIZUMA (Nagoya)
Seiki KURAMITSU (Toyonaka)
Masami KUSUNOKI (Kofu)
Masayoshi MAESHIMA (Nagoya)
Betty Sue MASTERS (San Antonio)
Eiji MIYOSH (Saitama)

Molecular Biology
Kenji KOHNO (Ikoma)
Bok Luel Lee (Busan)

Biochemistry
Arne ÖLMAN (Stockholm)
Hiroyuki ORIMACHI (Tokyo)

Molecular Biology
Kiyomi MITA (Sapporo)
Shun'ichi NAKODA (Nagoya)
Yoshinori MORIYAMA (Okayama)
Akihisa NAKAGAWA (Saitama)
Toru NAKAYAMA (Sendai)
Ryuichiro SATO (Tokyo)
Hideki SUMIMOTO (Fukuoka)
Natsuo UEDA (Kagawa)

Cell
Yasuhiro MINAMI (Kobe)
Akira NAKAMURA (Fukuoka)
Patricia C. SALINAS (London)
Kazuma TANAKA (Sapporo)

Biotechnology
Hyouta HIMENO (Hiroshima)
Kentaro SHIMIZU (Tokyo)
Hiroshi UEDA (Tokyo)
This JOURNAL, devoted to publication of original papers in the fields of biochemistry, molecular biology, cell, and biotechnology, was founded in 1922. The JOURNAL is published monthly, with two volumes per annum. All correspondences concerning this JOURNAL should be addressed to: The Japanese Biochemical Society, Ishikawa Building-3f, 25-16, Hongo 5-chome, Bunkyo-ku, Tokyo 113-0033, Japan. Tel. +81-3-3815-1913, Fax. +81-3-3815-1934

Subscription

Annual subscription rate (Volume 151 and Volume 152, 2012)

Corporate Subscribers

Print and Online £393.00/$789.00/€593.00
Online Only £328.00/$658.00/€494.00
Print Only £361.00/$723.00/€543.00

Institutional Subscribers

Print and Online £316.00/$631.00/€474.00
Online Only £264.00/$526.00/€395.00
Print Only £290.00/$579.00/€435.00

Methods of Payment

(1) By cheque in £ sterling drawn on a UK bank, € Euro drawn on a European bank, or in $ US drawn on a US bank. Cheques should be made payable to Oxford Journals. All orders should be accompanied by full payment and sent to your nearest Oxford Journals office.

– GB £ Sterling to a/c no 70299332 – IBAN GB89BARC20651870299332
– US $ Dollars to a/c no 66014600 – IBAN GB27BARC20651866014600
– € Euros to a/c no 78923655 – IBAN GB16BARC20651878923655

Please quote our renewal/invoice number and subscriber (if known) when making payment.

(3) By MasterCard, Switch/Maestro, Visa, or American Express.

(4) By charge card: automatic annual charge to either Visa or MasterCard is available. Please contact us for further details.

Periodicals postage paid at Rahway, NJ and at additional entry points.
US Postmaster: send address changes to The Journal of Biochemistry (ISSN 0021-924X), c/o Mercury Media Processing, 1634 E. Elizabeth Ave, Linden, NJ 07036, USA.

Agencies

Oxford University Press
Journals Subscription Department
Great Clarendon Street
Oxford, OX2 6DP, UK

Japan Publications Trading Co., Ltd.
P.O. Box 5030, Tokyo International
2-1, Saragaku-cho 1-chome, Chiyoda-ku,
101-0064, Japan

Maruzen Co., Ltd.
P.O. Box 5050, Tokyo International
100-3199, Japan

All back issues of the Journal of Biochemistry from Volume 1, 1922, are available from our agency: TOA BOOK EXPORTS, INC., Ikebukuro 4-13-4, Toshima-ku, Tokyo 171-0014, Japan. Tel. +81-3-3985-4701, Fax. +81-3-3985-4703

Copyright © 2012, by the Japanese Biochemical Society

Published in association with Oxford University Press

Notice on photocopying With the exception of cases permitted by the Copyrights Law, such as the photocopying services provided by the libraries duly designated by government ordinance and photocopying for lectures by teachers at educational institutions, the photocopying of any part of this publication without explicit consent of the relevant author is a violation of the law. To legally photocopy any part of this publication, the person wishing to photocopy, or the corporation or organization employing such person, is recommended to enter into a comprehensive copyright approval agreement with the following trustee of copyrights from the authors:

(Except in the U.S.A.) The Copyright Council of the Academic Societies, 41-6, Akasaka 9-chome, Minato-ku, Tokyo 107-0052, Japan.
Phone: 3-3475-4621, Fax: 3-3403-1738
(In the U.S.A.) Copyright Clearance Center, Inc., 222 Rosewood Drive, Danvers, MA 01923, U.S.A. Phone: 978-750-8400, Fax: 978-646-8600
NOTES TO CONTRIBUTORS

The JOURNAL OF BIOCHEMISTRY publishes contributions written in English and submitted in the form of (1) Regular paper or (2) Rapid communication, covering materials requiring prompt publication.

The submission of a manuscript implies that the work has not been published previously, that it is not under consideration for publication elsewhere, and that if it is accepted for publication, the author(s) will grant an exclusive license to publish to the Japanese Biochemical Society.

Manuscripts should be succinct. No length limit is set for a Regular paper, whereas a Rapid Communication must be four printed pages or less, including all figures, references and tables. Author charges consist of Color Charge and Offprint Charge, but there are no Page Charges.

Submission should be made through the online submission system at <http://mc.manuscriptcentral.com/jb>. We no longer handle submission by post. For further information on online submission, please see: Instructions for Online Submission <http://www.oxfordjournals.org/jbchem/for_authors/auth1.html>.

Reprints can be purchased, in lots of 50 copies, at cost prices. The orders should be submitted with the returned proof.

When submitting manuscripts, authors are asked to select one of the following four fields and its topic under which the submission should be reviewed. Please indicate this selection on the title page of the manuscript. Authors may suggest names and addresses of persons suitable for reviewing their submitted works.

Fields and topics to be selected:

Fields: Topics

Biochemistry: Biochemistry General
Protein Structure
Protein Interaction and Recognition
Biomolecular Structures
Nucleic Acid and Peptide Biochemistry
Glycobiology and Carbohydrate Biochemistry
Lipid Biochemistry
Enzymology
Enzyme Inhibitors
Biochemistry of Proteolysis
Metabolism and Bioenergetics
Reactive Oxygen and Nitrogen Species
Biochemistry in Cell Membranes
Biochemistry in Diseases and Aging
Neurochemistry
Immunobiology
Physiological Chemistry
Biochemical Pharmacology
Analytical Biochemistry

Molecular Biology: Molecular Biology General
Genes and Other Genetic Materials
Replication and Recombination
Gene Expression
Protein Synthesis
DNA–Protein Interaction
RNA Processing
Genetic Engineering
Genetic Diseases
Molecular Genetics
Molecular Evolution
Bioinformatics
Fields: Topics
Cell: Cell General
Biomembranes, Organelles, and Protein Sorting
Muscles
Cytoskeleton, Cell Motility, and Cell Shape
Extracellular Matrices and Cell Adhesion Molecules
Cell Cycle
Receptors and Signal Transduction
Stress Proteins and Molecular Chaperones
Cell Death
Differentiation, Development, and Aging
Neurobiology
Tumor and Immunology

Biotechnology: Biotechnology General
Biomimetic Chemistry
Biomaterials
Bioactive Substances
Synthetic Peptides and Oligonucleotides
Gene and Protein Engineering
RNA Technology
Glycotechnology
Immunological Engineering
Cell and Tissue Engineering
Transgenic Technology
Gene Delivery Systems
Drug Delivery Systems
Biosensor and Bioelectronics
New Devices in Biotechnology
Environmental Technology

“Instructions to Authors” are printed in the January and July issues of this JOURNAL every year. Please conform to these instructions when submitting manuscripts. Reprint of “Instructions to Authors” is available.

New Announcement (Limited Publication)

JOURNAL OF BIOCHEMISTRY, GENERAL CONTENTS

Volume 37–66 (1950–1969) Cloth Bound 700 page, including Author and Subject Index US $90.00
Volume 67–98 (1970–1985) Cloth Bound 1000 page, including Author and Subject Index US $120.00

Now available through: TOA BOOK EXPORTS, INC.,
Ikebukuro 4-13-4, Toshima-ku, Tokyo 171-0014, Japan.
Author Index

Berry L.R., 139
Chan A.K.C., 139
Esumi H., 171
Fukunishi Y., 133
Hagiwara A., 149
Hida Y., 149
Higuchi H., 161
Honkawa A., 161
Hori T., 133
Iijima S., 161
Inayoshi Y., 161
Inoue T., 133
Ishimi Y., 191
Kaneoka H., 161
Kawamichi H., 185
Kidani S., 161
Kidoya H., 125
Kinoshita T., 133
Kita K., 171
Kitajima I., 149
Kiyonaka S., 149
Kohama K., 185
Kojima Y., 161
Kondo K., 207
Kruengkrai J., 133
Kruengkrai S.R., 133
Maruta S., 207
Matsumura H., 133
Mitsui T., 207
Miura T., 199
Miyake K., 161
Mizohata E., 133
Mori Y., 149
Nakajima H., 149
Nakamura A., 185
Nishijima K.-i., 161
Nishina H., 121
Ohara R., 191
Ohtsuka T., 149
Okino Y., 161
Sakata T., 133
Stevic I., 139
Tanaka H., 185
Tomitsuka E., 171
Umeki N., 207
Umezu N., 207
Watanabe E., 191
Yoshioka T., 149
Yoshiyama S., 185
Zhang Y., 185

COVER: Nature in Japan. Hotsutsuji (Elliottia paniculata (Siebold et Zucc.) Hook.f.) in the Tambara Marsh, Gunma. Courtesy of Dr. T. Oshima