

Editorial Board

Chair

P. R. Shepherd • Auckland

Vice Chair, The Americas

G. Salvesen • La Jolla, CA

Vice Chair, Asia-Pacific

T. Xu • Beijing

Vice Chair, Europe

D. R. Alessi • Dundee

Reviews Editor

G. Salvesen • La Jolla, CA

Deputy Chairs

J. F. Cáceres • Edinburgh

D. Carling • London

D. Hoekstra • Groningen

S. Huber • Urbana, IL

J. E. Ladbury • Houston, TX

M. A. Lemmon • Philadelphia, PA

C. MacKintosh • Dundee

M. Murphy • Cambridge

S. Roberts • Bristol

M. A. Schwartz • New Haven, CT

D. Tosh • Bath

D. M. F. van Aalten • Dundee

B. Vanhaesebroeck • London

H. M. Wallace • Aberdeen

M. F. White • St Andrews

A. Xu • Hong Kong

Publisher

P. J. Starley

Executive Editor

M. R. Thorne

Head of Production

M. D. Cunningham

Production Editor

E. A. G. Elloway

Staff Editors

C. L. Curtis

H. F. Logan

J. W. Mockridge

P. D. Taylor

Desk Editor

A. Ho

Administrative Editor, US Office

S. Schendel

Administrative Editor, China Office

L. Huo

S. M. Assmann (University Park, PA)

T. K. Attwood (Manchester)

J. M. Backer (Bronx, NY)

B. M. Baker (Notre Dame, IN)

J. E. Bear (Chapel Hill, NC)

J. L. Blank (Cambridge, MA)

M. A. Bogoyevitch (Melbourne)

L. H. Boise (Atlanta, GA)

J. Bolaños (Salamanca)

A. Bowie (Dublin)

S. Bröer (Canberra)

P. S. Brookes (Rochester, NY)

N. J. Buckley (London)

D. Burger (Geneva)

R. A. Casero, Jr (Baltimore, MD)

Y.-G. Chen (Beijing)

L. Chernomordik (Bethesda, MD)

A. C. Clark (Raleigh, NC)

V. Darley-Usmar (Birmingham, AL)

M. J. Davies (Sydney)

B. Davis (Oxford)

L. A. Devi (New York, NY)

C. Dickey (Tampa, FL)

I. Dikic (Frankfurt)

R. Docampo (Athens, GA)

A. F. Dulhunty (Canberra)

S. Flitsch (Manchester)

F. Foufelle (Paris)

B. Halliwell (Singapore)

J. A. Hardy (Amherst, MA)

P. Hawkins (Cambridge)

P. Hedden (Harpden)

J. M. Horowitz (Raleigh, NC)

E. Ikonen (Helsinki)

A. Imberty (Grenoble)

D. A. Jans (Monash)

P. A. Jeggo (Brighton)

J. Jez (St Louis, MO)

M. G. Kazanietz (Philadelphia, PA)

S. Kim (Seoul)

Z. Knight (New York, NY)

D. Komander (Cambridge)

D. W. Laird (London, ON)

J. Leiper (London)

S. Ley (London)

K. Lingelbach (Marburg)

M. Lowe (Manchester)

K. Lynch (Philadelphia, PA)

S. Mayor (Bangalore)

N. Q. McDonald (London)

M. McManus (Palmerston North)

G. Melino (Leicester)

T. Miller (Norwich)

E. T. Morgan (Atlanta, GA)

S. J. Morley (Brighton)

M. Muckenthaler (Heidelberg)

B. Mulloy (South Mimms)

A. W. Munro (Manchester)

G. Murphy (Cambridge)

H. Y. Naim (Hannover)

J. H. Naismith (St Andrews)

A. R. Nebreda (Barcelona)

W. Ogawa (Kobe)

M. Okada (Osaka)

G. Panayotou (Vare)

D. Pei (Columbus, OH)

P. F. Pilch (Boston, MA)

W. C. Plaxton (Kingston, ON)

S. Ponnambalam (Leeds)

R. Y. Poon (Hong Kong)

B. V. L. Potter (Bath)

C. G. Proud (Southampton)

Z. Radić (La Jolla, CA)

K. Rittinger (London)

M. F. Roberts (Boston, MA)

K. Sakamoto (Lausanne)

J. M. Sanchez-Ruiz (Granada)

F. Sargent (Dundee)

R. Sasisekharan (Cambridge, MA)

N. Savery (Bristol)

J. R. Sayers (Sheffield)

K. Schumacher (Heidelberg)

P. T. Schumacker (Chicago, IL)

L. C. Serpell (Brighton)

F. J. Sharom (Guelph, ON)

R. J. Shaw (La Jolla, CA)

H. Shimano (Tsukuba City)

J. Slack (Minneapolis, MN)

S. Spiegel (Richmond, VA)

W. M. Stark (Glasgow)

G. R. Steinberg (Hamilton, ON)

H. Stenmark (Oslo)

S. Teichmann (Cambridge)

V. Tergaonkar (Singapore)

N. K. Tonks (Cold Spring Harbor, NY)

C. Tournier (Manchester)

M. Uesugi (Kyoto)

H. D. Ulrich (Mainz)

S. Urbé (Liverpool)

H. J. Vogel (Calgary, AB)

M.-W. Wang (Shanghai)

S. Whitney (Canberra)

D. Wu (Guangzhou)

H.-W. Xue (Shanghai)

I. Zachary (London)

C. Zurzolo (Paris)

- Journal compilation © 2014 Biochemical Society
- The *Biochemical Journal* (ISSN 0264-6021 for print/online journal; ISSN 1470-8728 for online only journal) is published and distributed by Portland Press Limited on behalf of the Biochemical Society (the owner), and appears twice monthly (24 issues).
- **Editorial and publishing offices:** *Biochemical Journal*, Portland Press Limited, Third Floor, Charles Darwin House, 12 Roger Street, London WC1N 2JU, U.K.
- **US agent:** c/o Air Business Ltd, c/o Worldnet Shipping Inc., 156–15, 146th Avenue, 2nd Floor, Jamaica, NY 11434, U.S.A.
- **Subscriptions department:** Portland Customer Services, Third Floor, Charles Darwin House, 12 Roger Street, London WC1N 2JU, U.K.
- All rights reserved. Apart from any fair dealing for the purposes of research or private study, or criticism or review, as permitted under the Copyright, Designs and Patents Act, 1988, this publication may be reproduced, stored or transmitted, in any forms or by any means, only with the prior permission in writing of the publishers, or in the case of reprographic reproduction in accordance with the terms of permissions granted by copyright clearing houses such as the Copyright Licensing Agency (U.K.) or the Copyright Clearance Center (U.S.A.). The CCC item-fee code for this publication is 0264-6021/2014/\$50.00 + 0.00. Inquiries concerning reproduction outside those terms should be sent to the publishers at the above-mentioned address.
- Although, at the time of going to press, the information contained in this publication is believed to be correct, neither the authors nor the editors nor the publisher assume any responsibility for any errors or omissions herein contained. Opinions expressed in articles are not necessarily those of the editors, the publisher or the owner.
- Periodicals postage paid at Jamaica, NY 11431
- **Postmaster:** send address corrections to *Biochemical Journal*, c/o Air Business Ltd, c/o Worldnet Shipping Inc., 156–15, 146th Avenue, 2nd Floor, Jamaica, NY 11434, U.S.A.
- **Cover design:** Angie Moyes (www.fuz.co.uk).
- **Cover image credits:** M. Sharon Stack, University of Missouri; Carmen A. Mannella, Research and Technology Wadsworth Center, Albany, NY; Department of Microbiology, University of Leeds; Jan A. Miernyk, University of Missouri; G. P. Côté, Kingston, Ont.; G. Salvesen, La Jolla; Dr Gordon Beakes, Newcastle University.



● **General policy** The *Biochemical Journal* publishes papers in English in all fields of biochemistry and cellular and molecular biology, provided that they make a sufficient contribution to knowledge in these fields. Papers may include new results obtained experimentally, descriptions of new experimental methods of biochemical importance, or new interpretations of existing results. Novel theoretical contributions will be considered, although these papers should also contain some experimental testing of the theory. All work presented should have as its aim the development of biochemical concepts rather than the mere recording of facts. Preliminary, confirmatory or inconclusive work will not be published. The *Biochemical Journal* will not publish material that has been wholly or largely published elsewhere, even as a preliminary communication or in unrefereed symposium proceedings or on the World Wide Web (WWW); equally, fragmentation of research into the 'least publishable unit' is discouraged.

Submission of a paper implies that it has been approved by all the named authors, that all persons entitled to authorship have been so named, that it reports unpublished work that is not under consideration elsewhere, and that if the paper is accepted for publication the authors will transfer to the Biochemical Society the copyright in the paper, which will then not be published elsewhere in the same form, in any language, without the consent of the Society. Authors will be required to sign an undertaking to these effects.

Authors may suggest potential reviewers for their papers, but the journal is under no obligation to follow such suggestions. Authors may also specify the names of those they wish to be excluded from the review process, and such wishes are usually respected unless, in the opinion of the journal, such a request unreasonably excludes all the expertise available to it in that scientific area.

To allow the reviewers to assess possible overlap with previous work, all submitted papers must be accompanied by duplicate copies of the author's relevant published work, including that on the WWW, and of all related papers in press or under editorial consideration in this or other journals.

The following types of paper are included in the journal.

Research Papers are the normal form of publication, and may be of any length that is justified by their content. However, because of pressure for space in the journal, no paper, whatever its scientific merits, will be accepted if it exceeds the minimum length required for precision in describing the experiments and clarity in interpreting them. As a guide, most Research Papers published in the *Biochemical Journal* are of between six and eight

printed pages. A concise well-written paper tends to be published more rapidly.

Accelerated Publications (APs) are short (normally four printed pages) papers bringing particularly novel and significant findings to the attention of the research community. It is intended that a decision on acceptance or rejection will be made within 10 working days of receipt, and publication of accepted APs in an issue will follow within 2 months. APs receive full but accelerated reviewing. The criteria of 'novelty and significance' are strictly enforced, and papers may be rejected solely on the grounds of lack of novelty and significance. APs are not a path to accelerated publication of sound but non-urgent material. Authors must include in their letter of submission a brief statement of why they believe their AP merits accelerated treatment. Colour figures will be published free of charge in APs, provided the use of colour is deemed scientifically necessary by the reviewers.

Reviews will usually be solicited, although unsolicited reviews will be considered for publication. Prospective writers of reviews should first consult the Reviews Editor, via the editorial office, and should enclose a short (one page) summary of the area they propose to cover.

● **Procedure for submission** These instructions do not replace the official *Biochemical Journal* Instructions to Authors (<http://www.biochemj.org>). Authors are encouraged to refer to these for overall guidelines on submitting a paper. Before preparing papers for the journal, authors should consult a current issue to make themselves familiar with the general format, such as the use of cross-headings, layout of tables and figures and citation of references. A full page of text in the *Biochemical Journal* contains approximately 1200 words; when calculating the printed length of papers, allowance must be made for the space occupied by tables and figures and the number of text words reduced accordingly.

The numerical system of references must be used. A reference to 'unpublished work' must be accompanied by the names of all persons concerned: a reference to a 'personal communication' must be supported by written permission for the quotation from the person or persons concerned; both of these types of citation are permitted in the text only, not in the list of references.

● **Submit manuscripts online** Authors should submit manuscripts electronically using the Online Submission and Review System available at <http://www.biochemj.org/submit/>

● **Immediate Publications** Manuscripts are published online in PDF format as soon as they are accepted, unless on submission the author requests that this not be done. Immediate Publications are listed in and accessible through PubMed.

● **Open access option – Opt2Pay** Choose to make your paper open access. For more information see www.biochemj.org.

● **Queries and correspondence** Authors in the Americas should address all queries and correspondence about their submission to: Dr Sharon Schendel, BJ USA, The Sanford-Burnham Institute for Medical Research, 10901 N. Torrey Pines Road, La Jolla, CA 92037, U.S.A. (telephone +1 858 795 5283; fax +1 858 795 5284; email editorial@biochemjusa.org). Authors in China should contact: Dr Lin Huo, Institute of Biophysics, Chinese Academy of Sciences, Room 5202, 15 Datun Road, Chaoyang District, Beijing 100101 (telephone +86 10 64888573; email editorial@biochemj.cn). Authors in the U.K., the rest of Europe, Japan and the rest of the world should contact: The Publisher, *Biochemical Journal*, Portland Press Limited, Third Floor, Charles Darwin House, 12 Roger Street, London WC1N 2JU, U.K. (telephone +44 20 7685 2410; fax +44 20 7685 2469; email editorial@portlandpress.com).

● **Colour figures** Colour figures are published free of charge provided that the corresponding author on the published paper has been a Full or Early Career member of the Biochemical Society for at least 2 years and that the use of colour is deemed scientifically necessary by the reviewers. Otherwise the charge is £300 to cover all colour figures in the paper.

● **Multimedia adjuncts** The Biochemical Journal Online offers authors the opportunity to enhance their papers with multimedia adjuncts (e.g. time-lapse movies, three-dimensional structures, animated schemes). These will be submitted to peer review alongside the manuscript. To submit a paper with a multimedia adjunct, please attach the file when you submit your manuscript electronically. Preferred formats are QuickTime for time-lapse movies, PDB for structures and Flash for animated schemes. There is no extra charge associated with the publication of a multimedia adjunct online.

● **COPE** The *Biochemical Journal* is a member of the Committee on Publication Ethics and endorses its guidelines, which are available at <http://publicationethics.org.uk>

Other information

The *Biochemical Journal* is published and distributed by Portland Press Limited on behalf of the Biochemical Society. It is published twice monthly; in 2014 volumes 457–464 (three parts each) will appear. The subscription also includes an author and key-word index.

● **Abstracted by/indexed in:** BIOBASE, BIOSIS, CAB International, Chemical Abstracts Service, Current Contents, EMBASE, International Food Information Service, MEDLINE/Index Medicus, Proquest Information & Learning, PubMed and Science Citation Index.

● **Subscription rates** Institutional subscription rates for 2014 are shown below. Subscribers to the *Biochemical Journal* can subscribe additionally to *Biochemical Society Transactions* on a joint subscription at a reduced rate (see www.portlandpress.com for further details). Terms are cash with order (US\$ in N. America, £ sterling for rest of the world, or US\$ equivalent at current rate of exchange; subscribers in the EU may

pay in £ sterling or Euros), or against pro forma invoice. Orders should be sent to the address shown, to your usual agent or purchased online at www.portlandpress.com.

	N. America	Rest of world	Euro price
One year (8 vols)	US\$5590	£3140	€4710
Print and online	US\$4470	£2510	€3770
Online only	US\$246	£150	€183
Single issues (print only)			

Overseas rates include airfreight delivery. Airtpeeded delivery is available at an additional cost of £112.35/\$199/€168.

Value Added Tax (VAT) on online-only and 'combined' subscriptions is due on supplies to subscribers within the UK, and to non-registered subscribers elsewhere in the EU. If in the EU please state your VAT number otherwise VAT may be charged at the appropriate national rate.

● **Electronic back archive** This is freely available to all users with Internet access.

● **Microfiche and back issues** Volumes 102–408 of the *Biochemical Journal* are available on microfiche. Back issues are also available. Further details may be obtained from the address below.

● Subscription Department

Portland Customer Services
Third Floor, Charles Darwin House,
12 Roger Street, London WC1N 2JU, U.K.
(telephone 020 76852444; fax 020 76852468;
email sales@portland-services.com).

● **Advertising** Enquiries about advertising should be addressed to marketing@portlandpress.com.

● The paper and cover-boards used in this journal are sourced from sustainable, managed and renewed commercial forests, and are fully recyclable. The bleaching process used for the pulp is 100% ECF (elemental chlorine free).

Reviews

Involvement of monocytes/macrophages as key factors in the development and progression of cardiovascular diseases

Published on the Internet 14 February 2014,
doi:10.1042/BJ20131501

M. Fernández-Velasco, S. González-Ramos and
L. Bosca



187–193

Beyond dsRNA: Toll-like receptor 3 signalling in RNA-induced immune responses

Published on the Internet 14 February 2014,
doi:10.1042/BJ20131492

M. Tatematsu, T. Seya and M. Matsumoto

195–201

Research Papers

Hypoxia-inducible factors regulate human and rat cystathionine β -synthase gene expression

Published as BJ Immediate Publication 12 December 2013,
doi:10.1042/BJ20131350

N. Takano, Y.-J. Peng, G.K. Kumar, W. Luo, H. Hu,
L.A. Shimoda, M. Suematsu, N.R. Prabhakar and
G.L. Semenza

203–211

The chaperonin CCT interacts with and mediates the correct folding and activity of three subunits of translation initiation factor eIF3: b, i and h

Published as BJ Immediate Publication 10 December 2013,
doi:10.1042/BJ20130979

A. Roobol, J. Roobol, M.J. Carden, M.E. Smith,
J.W.B. Hershey, A. Bastide, J.R.P. Knight, A.E. Willis and
C.M. Smales



213–224

A purine nucleoside phosphorylase in *Solanum tuberosum* L. (potato) with specificity for cytokinins contributes to the duration of tuber endodormancy

Published as BJ Immediate Publication 10 December 2013,
doi:10.1042/BJ20130792

J.R. Bromley, B.J. Warnes, C.A. Newell, J.C.P. Thomson,
C.M. James, C.G.N. Turnbull and D.E. Hanke



225–237

A transmembrane serine residue in the Rot1 protein is essential for yeast cell viability

Published as BJ Immediate Publication 5 December 2013,
doi:10.1042/BJ20131306

C.A. Martínez-Garay, M.A. Juanes, J.C. Igual, I. Mingarro
and M.C. Bañó



239–249

Physiological expression of the PI3K-activating mutation *Pik3ca*^{H1047R} combines with *Apc* loss to promote development of invasive intestinal adenocarcinomas in mice

Published as BJ Immediate Publication 9 December 2013,
doi:10.1042/BJ20131412

L.M. Hare, T.J. Pheasant, P.M. Waring, K.G. Montgomery,
K.M. Kinross, K. Mills, V. Roh, J.K. Heath, R.G. Ramsay,
M. Ernst and W.A. Phillips



251–258

Enhancing the peroxidase activity of cytochrome *c* by mutation of residue 41: implications for the peroxidase mechanism and cytochrome *c* release

Published as BJ Immediate Publication 13 December 2013,
doi:10.1042/BJ20131386

T.M. Josephs, I.M. Morison, C.L. Day, S.M. Wilbanks and
E.C. Ledgerwood



259–265

Transcriptionally correlated subcellular dynamics of MBNL1 during lens development and their implication for the molecular pathology of myotonic dystrophy type 1

Published as BJ Immediate Publication 20 December 2013,
doi:10.1042/BJ20130870

S.M. Coleman, A.R. Prescott and J.E. Sleeman



267–280

Insulin-like growth factor II peptide fusion enables uptake and lysosomal delivery of α -*N*-acetylglucosaminidase to mucopolysaccharidosis type IIIB fibroblasts

Published as BJ Immediate Publication 25 November 2013,
doi:10.1042/BJ20130845

S.-h. Kan, L.A. Troitskaya, C.S. Sinow, K. Haitz, A.K. Todd,
A. Di Stefano, S.Q. Le, P.I. Dickson and B.L. Tippin

281–289

Contents

- Heparanase-mediated cleavage of macromolecular heparin accelerates release of granular components of mast cells from extracellular matrices
Published as BJ Immediate Publication 18 December 2013, doi:10.1042/BJ20131463
- Pyruvate kinases have an intrinsic and conserved decarboxylase activity
Published as BJ Immediate Publication 13 December 2013, doi:10.1042/BJ20130790
- Phosphorylation of *Arabidopsis* transketolase at Ser⁴²⁸ provides a potential paradigm for the metabolic control of chloroplast carbon metabolism
Published as BJ Immediate Publication 13 December 2013, doi:10.1042/BJ20130631
- GPI (glycosylphosphatidylinositol)-linked aspartyl proteases regulate vacuole homeostasis in *Candida glabrata*
Published as BJ Immediate Publication 17 December 2013, doi:10.1042/BJ20130757
- Neuregulin-1 β induces embryonic stem cell cardiomyogenesis via ErbB3/ErbB2 receptors
Published as BJ Immediate Publication 24 December 2013, doi:10.1042/BJ20130818
- RAD-6: pyrimidine synthesis and radiation sensitivity in *Caenorhabditis elegans*
Published as BJ Immediate Publication 22 November 2013, doi:10.1042/BJ20131085
- Screening glycosynthase libraries with a fluoride chemosensor assay independently of enzyme specificity: identification of a transitional hydrolase to synthase mutant
Published as BJ Immediate Publication 17 December 2013, doi:10.1042/BJ20131057
- The inhibition of functional expression of calcium channels by prion protein demonstrates competition with $\alpha_2\delta$ for GPI-anchoring pathways
Published as BJ Immediate Publication 12 December 2013, doi:10.1042/BJ20131405
- Sequestration of the abrin A chain to the nucleus by BASP1 increases the resistance of cells to abrin toxicity
Published as BJ Immediate Publication 19 December 2013, doi:10.1042/BJ20131110
- A structure-guided fragment-based approach for the discovery of allosteric inhibitors targeting the lipophilic binding site of transcription factor EthR
Published as BJ Immediate Publication 6 December 2013, doi:10.1042/BJ20131127
- Mechanistic insights into activation and SOCS3-mediated inhibition of myeloproliferative neoplasm-associated JAK2 mutants from biochemical and structural analyses
Published as BJ Immediate Publication 19 December 2013, doi:10.1042/BJ20131516
- Distinct regions of triadin are required for targeting and retention at the junctional domain of the sarcoplasmic reticulum
Published as BJ Immediate Publication 11 December 2013, doi:10.1042/BJ20130719
- N. Higashi, M. Waki, M. Sue, Y. Kogane, H. Shida, N. Tsunekawa, A. Hasan, T. Sato, A. Kitahara, T. Kasaoka, Y. Hayakawa, M. Nakajima and T. Irimura
- W. Zhong, H.P. Morgan, M.W. Nowicki, I.W. McNae, M. Yuan, J. Bella, P.A.M. Michels, L.A. Fothergill-Gilmore and M.D. Walkinshaw
- A.G. Rocha, N. Mehlmer, S. Stael, A. Mair, N. Parvin, F. Chigri, M. Teige and U.C. Vothknecht
- G. Bairwa, M. Rasheed, R. Taigwal, R. Sahoo and R. Kaur
- J. Hao, C.L. Galindo, T.-L. Tran and D.B. Sawyer
- A. Merry, M. Qiao, M. Hasler and P.E. Kuwabara
- E. Andrés, H. Aragunde and A. Planas
- A. Alvarez-Laviada, I. Kadurin, A. Senatore, R. Chiesa and A.C. Dolphin
- S. Gadadhar, N. Bora, V. Tiwari and A.A. Karande
- S. Surade, N. Ty, N. Hengrung, B. Lechartier, S.T. Cole, C. Abell and T.L. Blundell
- L.N. Varghese, D. Ungureanu, N.P.D. Liao, S.N. Young, A. Laktyushin, H. Hammaren, I.S. Lucet, N.A. Nicola, O. Silvennoinen, J.J. Babon and J.M. Murphy
- D. Rossi, C. Bencini, M. Maritati, F. Benini, S. Lorenzini, E. Pierantozzi, A.M. Scarcella, C. Paolini, F. Protasi and V. Sorrentino
- T. Wagner, N. Barilone, P.M. Alzari and M. Bellinzoni
-  291–299
-  301–311
-  313–322
-  323–334
-   335–341
-  343–353
-  355–363
-  365–374
-  375–385
-  387–394
-  395–405
-  407–417

Correction

A dual conformation of the post-decarboxylation intermediate is associated with distinct enzyme states in mycobacterial KGD (α -ketoglutarate decarboxylase)

Editorial Advisory Panel

- D. F. Ackerley (Wellington, NZ)
L. Agius (Newcastle upon Tyne)
A. Aitken (Edinburgh)
B. Allen (Montréal, QC)
A. Z. Ansari (Madison, WI)
T. M. Antalis (Baltimore, MD)
R. Agrelo (Montevideo)
S. T. Arold (Houston, TX)
- D. Bai (London, ON)
S. M. Bailey (Birmingham, AL)
A. J. Baines (Canterbury)
K. L. Ball (Edinburgh)
M. P. Barrett (Glasgow)
G. J. Barritt (Adelaide)
A. Basak (Ottawa, ON)
R. Bayliss (Leicester)
I. Behrmann (Luxembourg)
D. Benbrook (Oklahoma City, OK)
A. M. Bennett (New Haven, CT)
R. Beyaert (Ghent)
D. R. Bielenberg (Boston, MA)
C. D. Bingle (Sheffield)
L.-M. Birkholtz (Pretoria)
G. E. Blair (Leeds)
T. Boggon (New Haven, CT)
G. B. Bolger (Birmingham, AL)
R. P. Bowater (Norwich)
S. Bratton (Austin, TX)
S. Bray (Cambridge)
D. N. Brindley (Edmonton, AB)
A. J. Brown (Sydney)
J. Brown (Newcastle upon Tyne)
H. Brumer (Stockholm)
N. Bryant (Glasgow)
J. E. Burke (Cambridge)
T. D. Butters (Oxford)
- E. Cahoon (Lincoln, NE)
K. Cain (Leicester)
D. A. Calderwood (New Haven, CT)
V. Calleja (London)
A. J. Cameron (London)
M. Campanella (London)
D. Campopiano (Edinburgh)
M. J. Cann (Durham)
L. H. Chamberlain (Glasgow)
Y. Chen (Shanghai)
R. Chiesa (Milan)
A. K. Choudhury (Iowa City, IA)
G. C. Churchill (Oxford)
G. J. Clark (Louisville, KY)
K. Clark (Dundee)
T. A. Clarke (Norwich)
P. J. Coffey (Utrecht)
P. Cohen (Dundee)
B. Constantin (Poitiers)
A. Conzelmann (Fribourg)
M. R. Cookson (Bethesda, MD)
L. A. Cowart (Charleston, SC)
V. H. Cowling (Dundee)
O. Cuvillier (Toulouse)
- V. L. Davidson (Orlando, FL)
S. Dawson (Nottingham)
K. A. DeFea (Riverside, CA)
V. De Filippis (Padua)
N. Demaurex (Geneva)
C. H. de Moor (Nottingham)
J.-B. Denault (Sherbrooke, QC)
E. Deuerling (Konstanz)
G. M. Di Guglielmo (London)
M. Dillingham (Bristol)
J. Ding (Shanghai)
A. J. Dingley (Jülich)
K. L. Dodge-Kafka (Farmington, CT)
C. P. Downes (Dundee)
R. P. Doyle (Syracuse, NY)
- C. D'Souza-Schorey (Notre Dame, IN)
E. Ellis (Glasgow)
J. A. Ellis (London)
P. M. Epstein (Farmington, CT)
R. Erdmann (Bochum)
C. Erneux (Brussels)
P. C. Evans (Sheffield)
P. Eyers (Sheffield)
- M. Falasca (London)
J. Fandrey (Essen)
K. M. Ferguson (Philadelphia, PA)
S. T. Ferreira (Rio de Janeiro)
M. C. Field (Dundee)
B. N. Finck (St Louis, MO)
J. U. Flanagan (Auckland)
E. Flashman (Oxford)
L. Foukas (London)
K. R. Fox (Southampton)
M. S. Francis (Umeå)
A. Frankel (Vancouver, BC)
A. M. Fry (Leicester)
- M. Gaestel (Hanover)
T. Galli (Paris)
J. C. García-Barrón (Murcia)
B. Garner (Wollongong)
K. L. Gaston (Bristol)
K. Gaus (Sydney)
M. Ginger (Lancaster)
A. Glavic (Santiago)
A. Gomez-Muñoz (Bilbao)
M. Goppelt-Strube (Erlangen)
L. M. Graves (Chapel Hill, NC)
J. E. Gray (Sheffield)
N. K. Gray (Edinburgh)
F. Gribble (Cambridge)
G. Grogan (York)
A. H. Guse (Hamburg)
- A. P. Halestrap (Bristol)
A. Hall (New York, NY)
M. B. Hampton (Christchurch, NZ)
W. Han (Singapore)
P. A. Handford (Oxford)
J. Hanley (Bristol)
G. C. Hansson (Gothenburg)
J. L. Harris (San Diego, CA)
R. K. Hartmann (Marburg)
C. L. Hawkins (Newtown, NSW)
J. D. Hayes (Dundee)
O. Hazeki (Hiroshima)
B. Henrissat (Marseille)
T. P. Herbert (Leicester)
H. Hiasa (Minneapolis, MN)
K. Hinchliffe (Manchester)
K. Hoebe (Cincinnati, OH)
I. B. Holland (Orsay, France)
M. J. Holness (London)
J. Horsfield (Dunedin)
M. Huang (Sydney)
W. E. Hughes (Sydney)
K. M. Humphries (Oklahoma City, OK)
H. S. Hundal (Dundee)
A. N. Hunt (Southampton)
W. Hunziker (Singapore)
- Y. Inoue (Kyoto)
C. M. Isacke (London)
B. E. Isakson (Charlottesville, VA)
H. Ischiropoulos (Philadelphia, PA)
P. B. Iynedjian (Geneva)
E. L. Jacobson (Tucson, AZ)
J. Jensen (Oslo)
X. Jiang (New York, NY)
J. Johansson (Stockholm)
- J. M. Jürgensmeier (New Haven, CT)
L. B. Justement (Birmingham, AL)
- C. Kahana (Rehovot)
E. Kalkhoven (Utrecht)
H. H. Kampinga (Groningen)
V. L. Katanaev (Lausanne)
G. J. Kemp (Liverpool)
I. D. Kerr (Nottingham)
A. J. Ketterman (Nakhon Pathom)
S. Keyse (Dundee)
M. S. Kimber (Guelph, ON)
D. Kirchhofer (South San Francisco, CA)
K. Kirk (Canberra)
L. Kjellen (Uppsala)
L. A. Kleczkowski (Umeå)
E. Knecht (Valencia)
A. Koleske (New Haven, CT)
Z. Kovacevic (Sydney)
N. J. Kruger (Oxford)
J. Kwon (Seoul)
- W. Laing (Auckland)
D. A. Lane (London)
D. J. R. Lane (Sydney)
B. Larjani (London)
A. Lawen (Melbourne)
J.-Y. Lee (Newark, DE)
S. Lee (Notre Dame, IL)
C. C. Leslie (Denver, CO)
G. Li (Oklahoma City, OK)
R. Lightowlers (Newcastle upon Tyne)
H.-K. Lin (Houston, TX)
C. Linton (Cambridge)
K. L. Linton (London)
K. List (Detroit, MI)
J. Liu (Scottsdale, AZ)
O. Lockridge (Omaha, NE)
P. S. Lorenzo (Honolulu, HI)
A. L. Lucius (Birmingham, AL)
A. Luckhoff (Aachen)
M. Lyon (Manchester)
- J. A. MacDonald (Calgary, AB)
D. J. MacEwan (Norwich)
L. Mach (Vienna)
J. Mackrill (Cork)
G. Maga (Pavia)
A. I. Magee (London)
G. E. Mann (London)
S. Marsh (Edmonton, AB)
J. Martin (Tübingen)
P. E. Martin (Glasgow)
S. Martin (London)
M.-P. Marzolo (Santiago)
R. W. Mason (Wilmington, DE)
A. E. Mast (Milwaukee, WI)
S. A. Matthews (Dundee)
C. Maurel (Montpellier)
M. J. McConville (Melbourne)
A. G. McEwan (Brisbane)
I. J. McEwan (Aberdeen)
D. W. Meek (Dundee)
H. L. Melrose (Jacksonville, FL)
T.-C. Meng (Taipei)
E. Metzer (Essen)
A. J. Michael (Dallas, TX)
M. Migand (Belfast)
A. H. Millar (Crawley, West. Aus.)
E. M. Mills (Austin, TX)
G. B. Moorhead (Calgary, AB)
T. F. Moraes (Toronto, ON)
A. Morgan (Liverpool)
- S. Moro (Padova)
H. Mott (Cambridge)
H. G. Munshi (Chicago, IL)
J. M. Murphy (Melbourne)
S. Murphy (Oxford)
- H. Nagase (London)
K. Nehrke (Rochester, NY)
P. Newsholme (Perth, West. Aust.)
R. Nibbs (Glasgow)
C. D. Nichols (New Orleans, LA)
S. Nicholson (Melbourne)
- R. T. O'Keefe (Manchester)
J. M. O'Sullivan (Auckland)
- D. N. Palmer (Canterbury, NZ)
R. Palmer (Umeå)
D. Panda (Mumbai)
K. Pantopoulos (Montréal, QC)
R. B. Parsons (London)
M. Pastor-Anglada (Barcelona)
S. Patel (London)
B. Payrastra (Toulouse)
A. R. Pearson (Leeds)
M. Peckham (Leeds)
S. Perrett (Beijing)
J. M. Peters (University Park, PA)
J. R. Peterson (Philadelphia, PA)
M. Petroski (La Jolla, CA)
W. A. Phillips (Melbourne)
S. M. Pitson (Adelaide)
W. Porter (College Station, TX)
D. Poyner (Birmingham)
C. G. Print (Auckland)
I. A. Prior (Liverpool)
P. Pryor (York)
E. L. G. Pryzdial (Vancouver, BC)
M. Pusch (Genova)
- Q.-S. Qiu (Lanzhou)
- S. Rahman (London)
T. Rahman (Cambridge)
D. P. Ramji (Cardiff)
B. Reeves (Athens, GA)
S. Rebuffat (Paris)
R. J. Reece (Manchester)
G. A. Reid (Edinburgh)
I. Richard (Evry)
S. J. Richardson (Bundoora)
C. C. Rider (Egham)
M. H. Rider (Brussels)
D. J. Riese (Auburn, AL)
S. Rocha (Dundee)
J. Roelofs (Manhattan, KS)
E. M. Rosen (Washington, DC)
P. Roughley (Montreal, QC)
J. Rouse (Dundee)
F. Ruggiero (Lyon)
- D. B. Sacks (Bethesda, MD)
P. Saftig (Kiel)
C. M. Sanders (Sheffield)
R. Sankaranarayanan (Hyderabad)
D. Schlaepfer (La Jolla, CA)
M. L. Schmitz (Giessen)
L. Schomburg (Berlin)
N. S. Scrutton (Manchester)

EDITORIAL ADVISORY PANEL (continued)

J. K. Sethi (Cambridge)
Y. Shai (Rehovot)
L. M. Shantz (Hershey, PA)
G. S. Shaw (London, ON)
S. B. Shears
(Research Triangle Park, NC)
B. Shilton (London, ON)
T. Shimizu (Sendai)
M. J. Shipston (Edinburgh)
J. Shorter (Philadelphia, PA)
K. Siddle (Cambridge)
K. Skriver (Copenhagen)
T. K. Smith (St Andrews)
M. Soberon (Cuernavaca)
M. Solioz (Tomsk)
S. Souchelnyskiy (Solna)
J. Spencer (Bristol)
F. Spener (Graz)
A. Srebrow (Buenos Aires)
R. V. Stahelin (South Bend, IN)
M. J. R. Stark (Dundee)
H. R. Stennicke (Bagsvaerd)
W. G. Stetler-Stevenson
(Bethesda, MD)
G. S. Stewart (Birmingham)
A. Y. Strongin (La Jolla, CA)

D. G. Stupack (La Jolla, CA)
E. J. Sundberg (Baltimore, MD)
C. Sutherland (Dundee)

T. Takenawa (Kobe)
E. W. Tate (London)
C. T. Taylor (Dublin)
M. E. Taylor (London)
A. R. Tee (Cardiff)
A. Tengholm (Uppsala)
A. Tepikin (Liverpool)
G. Thiel (Homburg)
G. M. H. Thomas (London)
T. Tiganis (Melbourne)
C. N. Tomes (Mendoza)
V. A. Torres (Santiago)
P. Trayhurn (Liverpool)
V. I. Tsetlin (Moscow)
G. C. Tsokos (Boston, MA)
N. Turner (Sydney)

A. Urrutia (Bath)

J. van Hellemond (Rotterdam)
E. Van Schaftingen (Brussels)

P. P. Van Veldhoven (Leuven)
A. Varadi (Budapest)
D. J. Vaux (Oxford)
N. C. Veitch (Kew)
K. Venkateswarlu (Swansea)
F. Villarroya (Barcelona)
S. Virdee (Dundee)
D. Vucic (South San Francisco, CA)
D. Vyoral (Prague)

M. C. Wahl (Berlin)
M. D. Walkinshaw (Edinburgh)
D. M. Walsh (Boston, MA)
M. P. Walsh (Calgary)
F. Wan (Baltimore, MD)
H.-G. Wang (Hershey, PA)
M. J. Warren (Canterbury)
R. H. Wenger (Zürich)
G. Werner-Felmayer (Innsbruck)
I. E. Wertz (South San Francisco, CA)
D. A. White (Birmingham)
J. Whitehead (Brisbane)
I. B. H. Wilson (Wien)
J.-O. Winberg (Tromsø)

R. Wojcikiewicz (Syracuse, NY)
P. Wojtaszek (Poznan)
J. M. Woof (Dundee)
M. C. Wright
(Newcastle upon Tyne)
D. D. Wykoff (Villanova, PA)

G. Xu (Shanghai)

H. Yang (Sydney)
X.-J. Yang (Montréal, QC)
H. Yarwood (London)
S. J. Yarwood (Glasgow)
J. Ye (Sydney)
G. Yeo (Cambridge)

M. Zaccolo (Oxford)
J. M. Zapata (Madrid)
K. Zeth (Leíoa)
Y. Zhang (Chongqing)
X.-L. Zheng (Calgary, AB)
X. Zhu (Cleveland, OH)
M. Ziegler (Bergen)

Index of Authors

	PAGE		PAGE		PAGE		PAGE
Abell, C.	387	Hare, L. M.	251	Merry, A.	343	Silvennoinen, O.	395
Alvarez-Laviada, A.	365	Hasan, A.	291	Michels, P. A. M.	301	Sinow, C. S.	281
Alzari, P. M.	419	Hasler, M.	343	Mills, K.	251	Sleeman, J. E.	267
Andrés, E.	355	Hayakawa, Y.	291	Mingarro, I.	239	Smales, C. M.	213
Aragunde, H.	355	Heath, J. K.	251	Montgomery, K. G.	251	Smith, M. E.	213
		Hengrung, N.	387	Morgan, H. P.	301	Sorrentino, V.	407
Babon, J. J.	395	Hershey, J. W. B.	213	Morison, I. M.	259	Stael, S.	313
Bairwa, G.	323	Higashi, N.	291	Murphy, J. M.	395	Sue, M.	291
Bañó, M. C.	239	Hu, H.	203			Suematsu, M.	203
Barilone, N.	419			Nakajima, M.	291	Surade, S.	387
Bastide, A.	213	Igual, J. C.	239	Newell, C. A.	225		
Bella, J.	301	Irimura, T.	291	Nicola, N. A.	395	Taigwal, R.	323
Bellinzoni, M.	419			Nowicki, M. W.	301	Takano, N.	203
Bencini, C.	407	James, C. M.	225			Tatematsu, M.	195
Benini, F.	407	Josephs, T. M.	259	Paolini, C.	407	Teige, M.	313
Blundell, T. L.	387	Juanes, M. A.	239	Parvin, N.	313	Thomson, J. C. P.	225
Bora, N.	375			Peng, Y.-J.	203	Tippin, B. L.	281
Boscá, L.	187	Kadurin, I.	365	Phesse, T. J.	251	Tiwari, V.	375
Bromley, J. R.	225	Kan, S.-h.	281	Phillips, W. A.	251	Todd, A. K.	281
		Karande, A. A.	375	Pierantozzi, E.	407	Tran, T.-L.	335
Carden, M. J.	213	Kasaoka, T.	291	Planas, A.	355	Troitskaya, L. A.	281
Chiesa, R.	365	Kaur, R.	323	Prabhakar, N. R.	203	Tsunekawa, N.	291
Chigri, F.	313	Kinross, K. M.	251	Prescott, A. R.	267	Turnbull, C. G. N.	225
Cole, S. T.	387	Kitahara, A.	291	Protasi, F.	407	Ty, N.	387
Coleman, S. M.	267	Knight, J. R. P.	213				
		Kogane, Y.	291	Qiao, M.	343		
Day, C. L.	259	Kumar, G. K.	203			Ungureanu, D.	395
Dickson, P. I.	281	Kuwabara, P. E.	343	Ramsay, R. G.	251		
Di Stefano, A.	281			Rasheed, M.	323	Varghese, L. N.	395
Dolphin, A. C.	365	Laktyushin, A.	395	Rocha, A. G.	313	Vothknecht, U. C.	313
		Le, S. Q.	281	Roh, V.	251		
Ernst, M.	251	Lechartier, B.	387	Roobol, A.	213	Wagner, T.	419
		Ledgerwood, E. C.	259	Roobol, J.	213	Waki, M.	291
Fernández-Velasco, M.	187	Liau, N. P. D.	395	Rossi, D.	407	Walkinshaw, M. D.	301
Fothergill-Gilmore, L. A.	301	Lorenzini, S.	407			Waring, P. M.	251
		Lucet, I. S.	395	Sahoo, R.	323	Warnes, B. J.	225
Gadadhar, S.	375	Luo, W.	203	Sato, T.	291	Wilbanks, S. M.	259
Galindo, C. L.	335			Sawyer, D. B.	335	Willis, A. E.	213
González-Ramos, S.	187	Mair, A.	313	Scarcella, A. M.	407		
		Maritati, M.	407	Semenza, G. L.	203	Young, S. N.	395
Haitz, K.	281	Martínez-Garay, C. A.	239	Senatore, A.	365	Yuan, M.	301
Hammarén, H.	395	Matsumoto, M.	195	Seya, T.	195		
Hanke, D. E.	225	McNae, I. W.	301	Shida, H.	291		
Hao, J.	335	Mehlmer, N.	313	Shimoda, L. A.	203	Zhong, W.	301