

## 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

Vice Chair Reviews

**A. Toker** • Boston, MA

Deputy Chairs

**M. Blatt** • Glasgow**L. J. Goodyear** • Boston, MA**S. V. Graham** • Glasgow**D. Hoekstra** • Groningen**S. Huber** • Urbana, IL**J. Ladbury** • Houston, TX**M. A. Lemmon** • Philadelphia, PA**C. MacKintosh** • Dundee**K. H. Mayo** • Minneapolis, MN**M. Murphy** • Cambridge**S. Roberts** • Buffalo, NY**M. A. Schwartz** • Charlottesville, VA**D. Tosh** • Bath**H. M. Wallace** • Aberdeen

Publisher

**P. J. Starley**

Executive Editor

**M. R. Thorne**

Production Manager

**M. D. Cunningham**

Staff Editors

**S. M. Hobday** (Senior Staff Editor)**L. Ball****C. L. Curtis****E. A. G. Elloway****J. W. Mockridge**

Editorial Assistant

**H. F. Roberts**

Administrative Editor, US Office

**S. Schendel**

- S. Akira (Osaka)  
R. A. Anderson (Madison, WI)  
J. Arino (Barcelona)  
J. M. Backer (Bronx, NY)  
J. L. Blank (Cambridge, MA)  
M. A. Bogoyevitch (Melbourne, VIC)  
J. Bolanos (Salamanca)  
P. J. Booth (Bristol)  
L. Bosca (Madrid)  
B. Brüne (Frankfurt)  
N. J. Buckley (London)  
J. F. Caceres (Edinburgh)  
D. Carling (London)  
M. Cascante (Barcelona)  
L. Chernomordik (Bethesda)  
A. C. Clark (Raleigh, NC)  
V. Darley-Usoff (Birmingham, AL)  
D. A. Day (Sydney)  
R. Docampo (Athens, GA)  
D. Doyle (Oxford)  
C. S. Duckett (Ann Arbor, MI)  
A. F. Dulhunty (Canberra)  
P. Fay (Rochester, NY)  
R. Ferraris (Newark, NJ)  
S. E. Finkel (Los Angeles, CA)  
P. G. W. Gettins (Chicago, IL)  
R. Golsteyn (Lethbridge, AB)  
B. Hallberg (Umeå)  
B. Halliwell (Singapore)  
L. Hedstrom (Waltham, MA)  
I. B. Holland (Orsay)  
J. M. Horowitz (Raleigh, NC)  
A. Imberty (Grenoble)  
D. A. Jans (Monash)  
P.-S. Jayaraman (Birmingham)  
D. Jordan (Peoria, IL)  
M. G. Kazanietz (Philadelphia, PA)  
D. W. Laird (London, Ont.)  
J. H. Lakey (Newcastle upon Tyne)  
K. Lingelbach (Marburg)  
D. W. Litchfield (London, Ont.)  
P. S. Lorenzo (Honolulu, HI)  
L. Machesky (Glasgow)  
E. Manser (Singapore)  
M. McManus (Palmerston North)  
J. Miernyk (Columbia, MO)  
I. Morgan (Glasgow)  
A. J. Morris (Lexington, KY)  
M. Muckenthaler (Heidelberg)  
B. Mulloy (South Mimms)  
A. W. Munro (Manchester)  
G. Murphy (Cambridge)  
H. Y. Nairn (Hannover)  
G. Panayotou (Vari)  
S. Patel (London)  
G. Pavitt (Manchester)  
N. D. Perkins (Bristol)  
L. Persson (Lund)  
W. C. Plaxton (Kingston, Ont.)  
A. D. Postle (Southampton)  
Z. Radic (La Jolla, CA)  
D. R. Richardson (Sydney)  
K. Rittinger (London)  
J. M. Sanchez-Ruiz (Granada)  
R. Sasisekharan (Cambridge, MA)  
N. Savery (Bristol)  
J. R. Sayers (Sheffield)  
M. C. Seabra (London)  
F. J. Sharom (Guelph, Ont.)  
G. S. Shelness (Winston-Salem, NC)  
E. Smythe (Sheffield)  
S. Spiegel (Richmond, VA)  
S. Stack (Columbia, MO)  
W. M. Stark (Glasgow)  
H. Stenmark (Oslo)  
C. W. Taylor (Cambridge)  
N. K. Tonks (Cold Spring Harbor, NY)  
M. Torti (Pavia)  
C. Tournier (Manchester)  
C. Troy (New York, NY)  
H. D. Ulrich (South Mimms)  
D. M. F. van Aalten (Dundee)  
M. van der Woude (York)  
B. Vanhaesebroeck (London)  
M. Welham (Bath)  
S. Whitney (Canberra)  
C. Winterbourn (Christchurch, NZ)  
A. Xu (Hong Kong)  
H. Yagisawa (Hyogo-Ken)  
I. Zachary (London)  
C. Zurzolo (Paris)

- The Biochemical Society, London © 2009
- The *Biochemical Journal* (ISSN 0264-6021 for print/online journal; ISSN 1470-8728 for online only journal) is published and distributed by Portland Press Ltd on behalf of the Biochemical Society (the owner), and appears twice monthly (24 issues).
- **Editorial and publishing offices:** *Biochemical Journal*, Portland Press Ltd, Third Floor, Eagle House, 16 Procter Street, London WC1V 6NX, U.K.
- **US agent:** c/o Mercury International, 365 Blair Road, Avenel, NJ 07001, U.S.A.
- **Subscriptions department:** Portland Customer Services, P.O. Box 32, Commerce Way, Colchester CO2 8HP, 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 0264-6021/2009/\$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 Rahway, NJ, U.S.A.
- **Postmaster:** send address corrections to *Biochemical Journal*, c/o Mercury International, 365 Blair Road, Avenel, NJ 07001, U.S.A.
- **Cover design:** Angie Moyes ([www.fuz.co.uk](http://www.fuz.co.uk)).
- **Cover image credits:** Microbiology at Leeds, University of Leeds; M. Duchen and V. Mohamed-Ali, University College, London; Nottingham *Arabidopsis* Stock Centre (NASC); G. P. Côte, Kingston, Ont.; G. Salvesen, La Jolla; Dr Gordon Beahes, University of Newcastle upon Tyne.

## Instructions to Authors

**● 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 biochemical knowledge. 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 equally with papers dealing with experimental work. 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 Medline, and are freely available to anyone with Internet access.

**● Opt2Pay** Choose to make your paper freely available. For more information see [www.biochemJ.org](http://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 Burnham Institute, 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](mailto:editorial@biochemjusa.org)). Authors in the U.K., the rest of Europe, Japan and the rest of the world should contact: The Publisher, *Biochemical Journal*, Portland Press Ltd, Third Floor, Eagle House, 16 Procter Street, London WC1V 6NX, U.K. (telephone +44 20 7280 4110; fax +44 20 7280 4169; email [editorial@portlandpress.com](mailto:editorial@portlandpress.com)).

**● Colour figures** Colour figures are published free of charge provided that the corresponding author on the published paper has been a 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 charges are £550 for the first colour figure and £300 for each subsequent colour figure.

**● 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 Ltd on behalf of the Biochemical Society. It is published twice monthly; in 2009 volumes 417–424 (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, Science Citation Index.

**● Subscription rates** Institutional subscription rates for 2009 are shown below. Subscribers to the *Biochemical Journal* can subscribe additionally to *Biochemical Society Transactions* and *Bio-technology and Applied Biochemistry* on a joint subscription at a reduced rate (see [www.portlandpress.com](http://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](http://www.portlandpress.com).

	N. Print and online	America	Rest of world	Euro price
One year (8 vols)				
Print and online	US\$3922	£1934	€3373	
Online only	US\$3531	£1786	€3036	
Single issues (print only)	US\$180.50	£91	€155	

Overseas rates include airfreight delivery. Airspeeded delivery is available at an additional cost of £80/€101.

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  
P.O. Box 32, Commerce Way  
Colchester CO2 8HP, Essex, U.K.  
(telephone 01206 796351; fax 01206 799331;  
email [sales@portland-services.com](mailto:sales@portland-services.com)).

**● Advertising** Enquiries about advertising should be addressed to: Mark Burgess, Editorial Department, Portland Press Ltd, Third Floor, Eagle House, 16 Procter Street, London WC1V 6NX, U.K., tel.: +44 (0)20 7280 4110; fax: +44 (0)20 7280 4169; email: [editorial@portlandpress.com](mailto:editorial@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).

**Review****Lateral organization of membrane proteins: tetraspanins spin their web**

Published on the Internet 13 May 2009,  
doi:10.1042/BJ20082422

**S. Charrin, F. Le Naour, O. Silvie, P.-E. Milhiet,  
C. Boucheix and E. Rubinstein**



133–154

**Online Commentary**

## How essential is cholesterol?

Published on the Internet 13 May 2009,  
doi:10.1042/BJ20090445  
(see accompanying paper, pp. 305–315)

J. Stevenson and A.J. Brown

e1–e4

**Accelerated Publication**

## Mycobacterium tuberculosis PtKA is a novel

protein tyrosine kinase whose substrate is PtpA  
Published as BJ Immediate Publication 15 April 2009,  
doi:10.1042/BJ20090478

H. Bach, D. Wong and Y. Av-Gay



155–160

**Research Papers**

## Glycolysis in contracting rat skeletal muscle is controlled by factors related to energy state

Published as BJ Immediate Publication 27 February 2009,  
doi:10.1042/BJ20082135

N. Ørtenblad, W.A. Macdonald and K. Sahlin

161–168

## Identification of a conserved F-box protein 6 interactor essential for endocytosis and cytokinesis in fission yeast

Published as BJ Immediate Publication 25 February 2009,  
doi:10.1042/BJ20081659

I. Jourdain, N. Spielewoy, J. Thompson,  
S. Dhut, J.R. Yates, III and T. Toda



169–177

## Low concentration thresholds of plasma membranes for rapid energy-independent translocation of a cell-penetrating peptide

Published as BJ Immediate Publication 13 February 2009,  
doi:10.1042/BJ20090042

C.L. Watkins, D. Schmaljohann, S. Futaki  
and A.T. Jones



179–189

## Identification and characterization of the lipid-binding property of GrLR, a locus of enterocyte effacement regulator

Published as BJ Immediate Publication 19 February 2009,  
doi:10.1042/BJ20081588

C. Jobichen, A.Z. Fernandis, A. Velazquez-Campoy,  
K.Y. Leung, Y.-K. Mok, M.R. Wenk and J. Sivaraman



191–199

Dual roles of Lys<sup>57</sup> at the dimer interface of human mitochondrial NAD(P)<sup>+</sup>-dependent malic enzyme

Published as BJ Immediate Publication 24 February 2009,  
doi:10.1042/BJ20090076

J.-Y. Hsieh, J.-H. Liu, Y.-W. Fang and H.-C. Hung

201–209

## The regulation of intestinal mucin MUC2 expression by short-chain fatty acids: implications for epithelial protection

Published as BJ Immediate Publication 19 February 2009,  
doi:10.1042/BJ20082222

N. Burger-van Paassen, A. Vincent, P.J. Puiman,  
M. van der Sluis, J. Bouma, G. Boehm,  
J.B. van Goudoever, I. Van Seuningen and I.B. Renes

211–219

## GlcNAcstins are nanomolar inhibitors of human O-GlcNAcase inducing cellular hyper-O-GlcNAcylation

Published as BJ Immediate Publication 10 March 2009,  
doi:10.1042/BJ20090110

H.C. Dorfmüller, V.S. Borodkin, M. Schimpl and  
D.M.F. van Aalten

221–227

Proton transfer in the mechanism of polyadenylate polymerase <i>Published as BJ Immediate Publication 12 March 2009, doi:10.1042/BJ20082019</i>	P.B. Balbo and A. Bohm	 online data	229–238
Heat capacity changes in carbohydrates and protein–carbohydrate complexes <i>Published as BJ Immediate Publication 3 March 2009, doi:10.1042/BJ20082171</i>	E.A. Chavelas and E. García-Hernández		239–247
Competition between NarL-dependent activation and Fis-dependent repression controls expression from the <i>Escherichia coli</i> <i>yeaR</i> and <i>ogt</i> promoters <i>Published as BJ Immediate Publication 26 February 2009, doi:10.1042/BJ20090183</i>	D.J.P. Squire, M. Xu, J.A. Cole, S.J.W. Busby and D.F. Browning		249–257
Biochemical characterization of GSK1070916, a potent and selective inhibitor of Aurora B and Aurora C kinases with an extremely long residence time <i>Published as BJ Immediate Publication 11 March 2009, doi:10.1042/BJ20090121</i>	K. Anderson, Z. Lai, O.B. McDonald, J.D. Stuart, E.N. Nartey, M.A. Hardwicke, K. Newlander, D. Dhanak, J. Adams, D. Patrick, R.A. Copeland, P.J. Tummino and J. Yang		259–265
Dynamic interaction of hTRPC6 with the Orai1–STIM1 complex or hTRPC3 mediates its role in capacitative or non-capacitative $\text{Ca}^{2+}$ entry pathways <i>Published as BJ Immediate Publication 5 March 2009, doi:10.1042/BJ20082179</i>	I. Jardin, L.J. Gómez, G.M. Salido and J.A. Rosado	 online data	267–276
Hydrogen sulfide destroys lipid hydroperoxides in oxidized LDL <i>Published as BJ Immediate Publication 5 March 2009, doi:10.1042/BJ20082421</i>	M.K. Muellner, S.M. Schreier, H. Laggner, M. Hermann, H. Esterbauer, M. Exner, B.M.K. Gmeiner and S. Kapiotis		277–281
Identification of small-molecule inhibitors of the JIP–JNK interaction <i>Published as BJ Immediate Publication 25 February 2009, doi:10.1042/BJ20081899</i>	T. Chen, N. Kablaoui, J. Little, S. Timofeevski, W.R. Tschantz, P. Chen, J. Feng, M. Charlton, R. Stanton and P. Bauer	 online data	283–294
Chlorella virus ATCV-1 encodes a functional potassium channel of 82 amino acids <i>Published as BJ Immediate Publication 6 March 2009, doi:10.1042/BJ20090095</i>	S. Gazzarrini, M. Kang, A. Abenavoli, G. Romani, C. Olivari, D. Gaslini, G. Ferrara, J.L. Van Etten, M. Kreim, S.M. Kast, G. Thiel and A. Moroni	 online data	295–303
Desmosterol can replace cholesterol in sustaining cell proliferation and regulating the SREBP pathway in a sterol- $\Delta^{24}$ -reductase-deficient cell line <i>Published as BJ Immediate Publication 5 March 2009, doi:10.1042/BJ20081909</i>	S. Rodríguez-Acebes, P. de la Cueva, C. Fernández-Hernando, A.J. Ferruelo, M.A. Lasunción, R.B. Rawson, J. Martínez-Botas and D. Gómez-Coronado	  online commentary online data	305–315
Functional characterization of the early steps of tetrapyrrole biosynthesis and modification in <i>Desulfovibrio vulgaris</i> Hildenborough <i>Published as BJ Immediate Publication 6 March 2009, doi:10.1042/BJ20090151</i>	S.A.L. Lobo, A. Brindley, M.J. Warren and L.M. Saraiva	 online data	317–325
MYPT1, the targeting subunit of smooth-muscle myosin phosphatase, is a substrate for the asparaginyl hydroxylase factor inhibiting hypoxia-inducible factor (FIH) <i>Published as BJ Immediate Publication 27 February 2009, doi:10.1042/BJ20081905</i>	J.D. Webb, A. Murányi, C.W. Pugh, P.J. Ratcliffe and M.L. Coleman	 online data	327–333
Proteolytic activation of human pancreatitis-associated protein is required for peptidoglycan binding and bacterial aggregation <i>Published as BJ Immediate Publication 3 March 2009, doi:10.1042/BJ20090005</i>	P. Medveczky, R. Szmola and M. Sahin-Tóth	 online data	335–343

# Editorial Advisory Panel

- L. Agius (Newcastle upon Tyne)  
A. Aitken (Edinburgh)  
B. Åkerström (Lund)  
S. Aldred (Birmingham)  
S. Alexson (Huddinge)  
L. Alhonen (Kuopio)  
B. Allen (Montréal)  
A. Aplin (Albany, NY)  
B. Ashby (Philadelphia)  
K. S. Authi (London)
- A. J. Baines (Canterbury)  
B. M. Baker (Notre Dame, IN)  
M. P. Barrett (Glasgow)  
G. J. Barratt (Adelaide)  
A. Basak (Ottawa)  
G. Baverel (Lyon)  
I. Behrmann (Luxembourg)  
D. Benbrook (Oklahoma City)  
D. S. Bendall (Cambridge)  
J. P. Bennett (Hull/York)  
R. Beyaert (Ghent)  
R. Bicknell (Birmingham)  
C. D. Bingle (Sheffield)  
G. Black (Newcastle upon Tyne)  
D. J. Blackburn (Birmingham)  
G. E. Blair (Leeds)  
G. B. Bolger (Birmingham, AL)  
A. R. Boobis (London)  
K. M. Botham (London)  
E. Brailou (Philadelphia)  
S. Bratton (Austin, TX)  
D. N. Brindley (Edmonton, Alb.)  
S. Broer (Canberra)  
P. S. Brookes (Rochester, NY)  
A. Brown (Sydney)  
G. Brown (Birmingham)  
H. Brumer (Stockholm)  
U. T. Brunk (Linkoping)  
N. Bryant (Glasgow)  
N. J. Bulleid (Manchester)  
T. D. Butters (Oxford)
- E. Cahoon (St. Louis, MO)  
K. Cain (Leicester)  
J. J. Calvete (Valencia)  
D. Campopiano (Edinburgh)  
E. A. Carrey (London)  
R. A. J. Challiss (Leicester)  
L. Chamberlain (Edinburgh)  
K. E. Chapman (Edinburgh)  
A. Chariot (Liege)  
Y. Chen (Shanghai)  
C. H. K. Cheng (Hong Kong)  
R. Chiesa (Milan)  
A. K. Choudhury (Iowa City)  
U. Christensen (Copenhagen)  
M. C. M. Chung (Singapore)  
G. J. Clark (Louisville, KY)  
P. J. Coffey (Utrecht)  
P. Cohen (Dundee)  
S. J. Cook (Cambridge)  
J. R. Coorssen (Calgary)  
A. P. Corfield (Bristol)  
D. A. Cowan (Cape Town)  
R. Crameri (Davos)  
C. E. Creutz (Charlottesville)  
K. Croft (Perth)  
M. Crossley (Sydney)  
C. M. Cuchillo (Barcelona)  
P. Curnow (Bristol)  
W. Cushley (Glasgow)
- K. N. Dalby (Austin, TX)  
C. Dani (Nice)  
R. M. Daniel (Hamilton)  
C. J. Danpure (London)  
V. L. Davidson (Jackson, MS)  
M. J. Davies (Sydney)
- S. Dawson (Nottingham)  
C. Day (Dunedin)  
K. A. DeFea (Riverside, CA)  
V. De Filippis (Padua)  
H. De Groot (Essen)  
H. R. De Jonge (Rotterdam)  
L. V. Dekker (Nottingham)  
A. DeLong (Providence, RI)  
N. Demaurex (Geneva)  
J.-B. Denault (Sherbrooke, QC)  
Q. Deveraux (San Diego)  
P. W. Dickson (Callaghan)  
I. Dikic (Frankfurt)  
J. Ding (Shanghai)  
A. Dingley (Auckland)  
C. Dingwall (London)  
S. Djordjevic (London)  
F. E. Domann (Iowa City)  
K. T. Douglas (Manchester)  
S. Dove (Birmingham)  
C. P. Downes (Dundee)  
J. A. Downs (Brighton)  
A. Draeger (Bern)  
K. Drickamer (London)  
R. M. Drummond (Glasgow)  
M. Duchen (London)
- E. Ellis (Glasgow)  
A. P. Enyedi (Budapest)  
P. M. Epstein (Farmington, CT)  
F. Erdodi (Debrecen)  
C. Erneux (Brussels)
- J. Fandrey (Essen)  
K. M. Ferguson (Philadelphia)  
S. Ferguson-Miller (East Lansing, MI)  
L. M. Field (Harpden)  
M. C. Field (Cambridge)  
J. U. Flanagan (Auckland)  
D. R. Flower (Newbury)  
F. Foufelle (Paris)  
K. R. Fox (Southampton)  
M. S. Francis (Umeå)  
P. Fuentes-Prior (Barcelona)  
F. V. Fuller-Pace (Dundee)
- C. G. Gahmberg (Helsinki)  
J. T. Gallagher (Manchester)  
T. Galli (Paris)  
J. C. García-Barrón (Murcia)  
B. Garner (Sydney)  
K. Gaus (Sydney)  
V. Gerke (Muenster)  
A. Gomez-Muñoz (Bilbao)  
M. Goppelt-Struebe (Erlangen)  
R. A. Gottlieb (San Diego)  
G. W. Gould (Glasgow)  
I. Gout (London)  
L. Graeve (Stuttgart)  
P. R. Graves (Richmond, VA)  
J. C. Gray (Cambridge)  
J. E. Gray (Sheffield)  
N. K. Gray (Edinburgh)  
F. Gribble (Cambridge)  
S. Grinstein (Toronto)  
Y. Guan (Beijing)  
D. Guerini (Basel)  
A. H. Guse (Hamburg)
- A. P. Halestrap (Bristol)  
A. Hall (New York)  
P. A. Handford (Oxford)  
G. C. Hansson (Gothenburg)  
J. Harris (San Diego)  
R. K. Hartmann (Marburg)  
G. M. Hatch (Winnipeg)  
P. T. Hawkins (Cambridge)  
J. D. Hayes (Dundee)  
B. Henrissat (Marseille)
- T. P. Herbert (Leicester)  
K. Heremans (Leuven)  
H. Hiasa (Minneapolis)  
K. Hincliffe (Manchester)  
M. Hodgkin (Coventry)  
K. Hoebe (Cincinnati)  
J.-H. S. Hofmeyr (Matieland)  
A. A. Holder (London)  
G. D. Holman (Bath)  
M. J. Holness (London)  
D. Holoway (Ithaca, NY)  
M. D. Houslay (Glasgow)  
A. Hudmon (Indianapolis)  
W. E. Hughes (Darlinghurst, NSW)  
H. S. Hundal (Dundee)  
J. Huntington (Cambridge)  
W. Hunziker (Singapore)  
E. I. Hyde (Birmingham)
- J. M. Inal (London)  
G. B. Irvine (Belfast)  
C. M. Isacke (London)  
H. Ischiropoulos (Philadelphia, PA)  
P. B. Ilyedjian (Geneva)
- E. L. Jacobson (Tucson, AZ)  
K. H. Jakobs (Essen)  
S. Janecek (Bratislava)  
S. M. Jarvis (London)  
J. Jensen (Oslo)  
J. Johansson (Uppsala)  
N. C. Jones (Manchester)  
S. K. Joseph (Philadelphia, PA)  
L. B. Justement (Birmingham, AL)
- K. E. Kadler (Manchester)  
E. Kalkhoven (Utrecht)  
S. Kato (Tokyo)  
D. J. Keeling (Loughborough)  
G. J. Kemp (Liverpool)  
P. J. Kennelly (Blacksburg, VA)  
I. D. Kerr (Nottingham)  
A. J. Kettnerman (Nakhon Pathom)  
S. Keyse (Dundee)  
M. R. Kini (Singapore)  
T. M. Kitson (Palmerston North)  
L. Kjellen (Uppsala)  
E. Klipp (Berlin)  
E. Knecht (Valencia)  
D. Komander (Cambridge)  
O. A. Kost (Moscow)  
J. Kuznicki (Warsaw)  
J. Kwon (Seoul)
- W. Laing (Auckland)  
E. W. Lam (London)  
S. Lamande (Parkville, Vic.)  
D. A. Lane (London)  
D. S. Leake (Reading)  
A. LeBlanc (Montreal)  
P. Lefebvre (Lille)  
M. Leippe (Kiel)  
P. J. Lenting (Utrecht)  
C. C. Leslie (Denver)  
T. Levade (Toulouse)  
J. P. Lewis (Richmond, VA)  
R. E. Lewis (Omaha, NE)  
R. Lightowers  
(Newcastle upon Tyne)  
J. S. Lindsey (Pullman, WA)  
K. L. Linton (London)  
H. J. Lipps (Witten)  
D. Liu (Beijing)  
O. Lockridge (Omaha, NE)  
J. M. Lord (Coventry)  
M. Lowe (Manchester)  
A. Luckhoff (Aachen)  
R. Ludowyke (Sydney)  
K. A. Lukyanov (Moscow)  
M. Lyon (Manchester)
- J. A. MacDonald (Calgary)  
D. J. MacEwan (Norwich)  
L. Mach (Vienna)  
J. Mackrill (Cork)  
R. Madhubala (New Delhi)  
M. F. Maduro (Riverside, CA)  
G. Maga (Pavia)  
A. I. Magee (London)  
C. C. Malbon (Stony Brook, NY)  
R. K. Mallampalli (Iowa City)  
J. P. G. Malthouse (Dublin)  
V. Mamidipudi (Stanford, CA)  
G. E. Mann (London)  
J. S. Merchant (Minneapolis)  
D. Martin (Dundee)  
J. Martin (Tübingen)  
P. Martin (Glasgow)  
R. W. Mason (Wilmington, DE)  
A. E. Mast (Milwaukee, WI)  
A. Matagne (Liège)  
S. Matthews (Dundee)  
M. J. McConville (Parkville)  
I. J. McEwan (Aberdeen)  
D. McIntosh (London)  
A. G. McLennan (Liverpool)  
D. W. Meek (Dundee)  
A. R. Merrill (Guelph)  
E. Metzen (Luebeck)  
A. J. Michael (Norwich)  
A. H. Millar (Crawley, West. Aus.)  
E. M. Mills (Austin, TX)  
E. Miska (Cambridge)  
K.-i. Miyamoto (Tokushima)  
V. Mizrahi (Johannesburg)  
H. Y.-K. Mok (Singapore)  
C. Momany (Athens, GA)  
G. B. Moorhead (Calgary)  
A. Morgan (Liverpool)  
S. Morley (Brighton)  
S. M. Morris (Pittsburgh)  
A. Moustakas (Uppsala)  
W. Muller-Esterl (Frankfurt)  
S. Murphy (Oxford)
- H. Nagase (London)  
V. Natarajan (Chicago)  
A. R. Nebreda (Madrid)  
P. Newsholme (Dublin)  
R. Nibbs (Glasgow)  
S. Nicholson (Parkville)  
R. I. Norman (Leicester)
- T. Oberley (Madison, WI)  
R. M. O'Doherty (Pittsburgh)  
V. O'Donnell (Cardiff)  
W. Ogawa (Kobe)  
R. T. O'Keefe (Manchester)  
K. Omori (Saitama)  
L. A. J. O'Neill (Dublin)
- D. N. Palmer (Canterbury, N.Z.)  
R. Palmer (Umeå)  
F. Palmieri (Bari)  
K. Pantopoulos (Montréal)  
A. G. Papavassiliou (Athens)  
R. B. Parsons (London)  
L. J. Partridge (Sheffield)  
M. Pastor-Anglada (Barcelona)  
B. Payrastre (Toulouse)  
J. D. Pearson (London)  
S. Pervaiz (Singapore)  
J. M. Peters (University Park, PA)  
T. S. Pillay (Cape Town)  
J. Pines (Cambridge)

## EDITORIAL ADVISORY PANEL (continued)

- T. J. T. Pinheiro (Warwick)  
S. M. Pitson (Adelaide)  
T. Polenova (Newark, NJ)  
B. V. Polevoda (Rochester, NY)  
V. Ponnambalam (Leeds)  
M. Poolman (Oxford)  
R. Y. Poon (Hong Kong)  
D. Poyner (Birmingham)  
N. C. Price (Glasgow)  
C. G. Print (Auckland)  
I. Prior (Liverpool)  
C. A. Pritchard (Leicester)  
M. Puceat (Montpellier)  
M. Pusch (Genova)  
  
W. Qin (Thunder Bay, ON)  
B. Qualmann (Magdeburg)  
  
S. Rahman (Kuala Lumpur)  
D. P. Ramji (Cardiff)  
M. Rattray (Reading)  
E. L. Raven (Leicester)  
J. A. Raven (Dundee)  
B. Reaves (Bath)  
S. Rebuffat (Paris)  
R. J. Reece (Manchester)  
B. H. A. Rehm  
(Palmerston North)  
G. A. Reid (Edinburgh)  
P. S. Rennie (Vancouver)  
O. Rey (Los Angeles)  
I. Richard (Evry)  
S. J. Richardson (Bundoora)  
C. C. Rider (Egham)  
M. H. Rider (Brussels)  
D. J. Riese (West Lafayette, IN)  
J. D. Robertson (Kansas City)  
N. J. Robinson  
(Newcastle upon Tyne)  
S. Rocha (Dundee)  
H. L. Roderick (Cambridge)  
  
L. Rönnstrand (Malmö)  
E. Rubinstein (Villejuif)  
F. Ruggiero (Lyon)  
  
J.-M. Sabatier (Marseille)  
D. B. Sacks (Boston, MA)  
P. Saftig (Kiel)  
J. P. Salier (Rouen)  
C. M. Sanderson (Liverpool)  
M. F. G. Schmidt (Berlin)  
M. L. Schmitz (Giessen)  
L. Schomburg (Berlin)  
N. S. Scrutton (Manchester)  
L. C. Serpell (Brighton)  
J. K. Sethi (Cambridge)  
B. Sha (Birmingham, AL)  
Y. Shai (Rehovot)  
L. M. Shantz (Hershey, PA)  
S. B. Shears  
(Research Triangle Park, NC)  
D. Sheehan (Cork)  
T. Shimizu (Sendai)  
Y. Shimomura (Nagoya)  
J. Shorter (Philadelphia, PA)  
K. Siddle (Cambridge)  
L. Sistonen (Turku)  
A. G. Smith (Leicester)  
D. M. Smith (Macclesfield)  
M. Soberon (Cuernavaca)  
M. Solioz (Bern)  
S. Souchezhtskyi (Solna)  
S. Spadari (Pavia)  
J. Spencer (Bristol)  
F. Spener (Graz)  
C. Springer (Sutton)  
M. J. R. Stark (Dundee)  
H. R. Stennicke (Bagsvaerd)  
G. S. Stewart (Birmingham)  
W. Stöcker (Mainz)  
A. Y. Strongin (La Jolla, CA)  
G. J. Strous (Utrecht)  
  
C. Sutherland (Dundee)  
T. Takenawa (Kobe)  
K. M. Taylor (Cardiff)  
M. E. Taylor (London)  
A. Tengholm (Uppsala)  
A. Tepikin (Liverpool)  
V. Tergaonkar (Singapore)  
M. Thelen (Bellinzona)  
G. Thiel (Homburg)  
T. Toda (London)  
P. J. Tonge (Stony Brook, NY)  
K. Török (London)  
J. Tovar-Torres (Egham)  
P. Trayhurn (Liverpool)  
G. C. Tsokos (Boston, MA)  
J. E. Turnbull (Liverpool)  
B. M. Turner (Birmingham)  
  
S. Urbé (Liverpool)  
J. van Hellemond (Rotterdam)  
E. Van Schaftingen (Brussels)  
A. Varadi (Budapest)  
N. C. Veitch (Kew)  
K. Venkateswarlu (Swansea)  
G. Verhoeven (Leuven)  
H. Vidal (Lyon)  
F. Villarroba (Barcelona)  
M. Vissers (Christchurch)  
J. F. G. Vliegenthart (Utrecht)  
H. J. Vogel (Calgary)  
D. Vyoral (Prague)  
  
M. C. Wahl (Göttingen)  
M. P. Walsh (Calgary)  
F. Wan (Bethesda, MD)  
M. J. Warren (Canterbury)  
N. J. Watmough (Norwich)  
S. P. Watson (Birmingham)  
G. Werner-Felmayer (Innsbruck)  
  
M. Wheatley (Birmingham)  
C. Wheeler-Jones (London)  
D. A. White (Birmingham)  
P. J. White (Dundee)  
J. Whitehead (Brisbane)  
D. G. Wilkinson (London)  
I. Wilson (Wien)  
J.-O. Winberg (Tromsø)  
S. J. Winder (Sheffield)  
S. G. Withers (Vancouver)  
R. Wojcikiewicz (Syracuse, NY)  
P. Wojtaszek (Poznan)  
S. Wolf (Berlin)  
J. M. Woof (Dundee)  
M. C. Wright  
(Newcastle upon Tyne)  
S. Wright (Leeds)  
F. Wuytack (Leuven)  
  
A. Xu (Hong Kong)  
F. Xu (Davis, CA)  
G. Xu (Shanghai)  
  
T. Yamaya (Sendai)  
H. Yang (Sydney)  
H. Yarwood (London)  
J. Ye (Sydney)  
P. Yen (Taipei)  
G. Yeo (Cambridge)  
J. Yim (Seoul)  
I. S. Young (Belfast)  
L. S. Young (Birmingham)  
S. P. Young (Birmingham)  
D. I. Yule (Rochester, NY)  
  
J. M. Zapata (Madrid)  
Z. Zhang (Hunan)  
M. Zhao (Davis, CA)  
X.-L. Zheng (Calgary)  
M. Ziegler (Bergen)

## Index of Authors

PAGE		PAGE		PAGE	
Abenavoli, A.	295	Feng, J.	283	Liu, J.-H.	201
Adams, J.	259	Fernández-Hernando, C.	305	Lobo, S. A. L.	317
Anderson, K.	259	Fernandis, A. Z.	191		
Av-Gay, Y.	155	Ferrara, G.	295	Macdonald, W. A.	161
Bach, H.	155	Ferruelo, A. J.	305	Martínez-Botas, J.	305
Balbo, P. B.	229	Futaki, S.	179	McDonald, O. B.	259
Bauer, P.	283	García-Hernández, E.	239	Medveczky, P.	335
Boehm, G.	211	Gaslini, D.	295	Milhiet, P.-E.	133
Bohm, A.	229	Gazzarrini, S.	295	Mok, Y.-K.	191
Borodkin, V. S.	221	Gmeiner, B. M. K.	277	Muellner, M. K.	277
Boucheix, C.	133	Gómez, L. J.	267	Murányi, A.	327
Bouma, J.	211	Gómez-Coronado, D.	305	Nartey, E. N.	259
Brindley, A.	317	Hardwicke, M. A.	259	Newlander, K.	259
Brown, A. J.	e1	Hermann, M.	277	Olivari, C.	295
Browning, D. F.	249	Hsieh, J.-Y.	201	Ørtenblad, N.	161
Burger-van Paassen, N.	211	Hung, H.-C.	201	Patrick, D.	259
Busby, S. J. W.	249	Jardin, I.	267	Pugh, C. W.	327
Charlton, M.	283	Jobichen, C.	191	Puiman, P. J.	211
Charrin, S.	133	Jones, A. T.	179	Ratcliffe, P. J.	327
Chavelas, E. A.	239	Jourdain, I.	169	Rawson, R. B.	305
Chen, P.	283	Kablaoui, N.	283	Renes, I. B.	211
Chen, T.	283	Kang, M.	295	Rodríguez-Acebes, S.	305
Cole, J. A.	249	Kapiotis, S.	277	Romani, G.	295
Coleman, M. L.	327	Kast, S. M.	295	Rosado, J. A.	267
Copeland, R. A.	259	Kreim, M.	295	Rubinstein, E.	133
de la Cueva, P.	305	Laggner, H.	277	Sahin-Tóth, M.	335
Dhanak, D.	259	Lai, Z.	259	Sahlin, K.	161
Dhut, S.	169	Lasunción, M. A.	305	Salido, G. M.	267
Dorfmueller, H. C.	221	Le Naour, F.	133	Saraiva, L. M.	317
Esterbauer, H.	277	Leung, K. Y.	191	Schimpf, M.	221
Exner, M.	277	Little, J.	283	Schmaljohann, D.	179
Fang, Y.-W.	201			Xu, M.	249
				Yang, J.	259
				Yates, III, J. R.	169