

Biochemical Journal

The Biochemical Society, London © 2005

Volume 387, part 2
15 April 2005

<http://www.BiochemJ.org>

Editorial Board

Chair

G. Banting • Bristol

Vice Chair, The Americas

G. Salvesen • La Jolla

Reviews Editor

J. D. Scott • Portland, OR

Deputy Chairs

R. A. J. Challiss • Leicester

S. V. Graham • Glasgow

S. Gutteridge • Newark, DE

D. Hoekstra • Groningen

N. M. Hooper • Leeds

J. P. Kehrer • Austin

C. MacKintosh • Dundee

K. H. Mayo • Minneapolis

H. M. Wallace • Aberdeen

M. P. Walsh • Calgary

Publisher

P. J. Starley

Production Editor

M. D. Cunningham

Senior Staff Editor

S. M. Hobday

Staff Editors

L. Ball

E. A. G. Elloway

L. Johnson

J. W. Mockridge

L. M. Petty

M. R. Thorne

Administrative Editor, US Office

S. Schendel

D. R. Alessi (Dundee)

A. Baici (Zurich)

G. J. Barratt (Adelaide)

J. L. Blank (Cambridge, MA)

M. Blatt (Glasgow)

P. G. Board (Canberra)

M. Bogyo (Stanford, CA)

L. Bosca (Madrid)

B. Brüne (Kaiserslautern)

D. Carling (London)

A. Clerk (London)

G. P. Côté (Kingston, Ont.)

J. R. Couchman (London)

D. A. Day (Sydney)

C. S. Duckett (Ann Arbor)

B. Engelmann (Munich)

R. M. Epanđ (Hamilton, Ont.)

D. A. Fell (Oxford)

R. Ferraris (Newark, NJ)

B. Foxwell (London)

J.-M. Frère (Liège)

A. Galione (Oxford)

P. G. W. Gettins (Chicago)

D. A. F. Gillespie (Glasgow)

R. Golsteyn (Croissy-sur-Seine)

S. Goodbourn (London)

P. A. Grimaldi (Nice)

B. Hallberg (Umeå)

P. I. Haris (Leicester)

L. Hedstrom (Waltham, MA)

F. G. Hegardt (Barcelona)

S. High (Manchester)

I. B. Holland (Orsay)

J. Hsuan (London)

S. Huber (Urbana, IL)

R. Kalluri (Boston)

B. Kalyanaraman (Milwaukee)

M. G. Kazanietz (Philadelphia)

I. M. Kovach (Washington D.C.)

P. W. Kuchel (Sydney)

R. Leduc (Sherbrooke)

E. R. Levin (Long Beach, CA)

L. Machesky (Birmingham)

R. Marais (London)

P. Maurel (Montpellier)

M. Meisterernst (Munich)

H. Mellor (Bristol)

I. Morgan (Glasgow)

W. Müller-Esterl (Frankfurt)

B. Mulloy (South Mimms)

A. W. Munro (Leicester)

M. P. Murphy (Cambridge)

L. M. Obeid (Charleston)

M. Parenti (Monza)

M. A. J. Parry (Harpenden)

S. Patel (London)

G. Pavitt (Manchester)

M. Paulsson (Cologne)

L. Persson (Lund)

A. D. Postle (Southampton)

N. J. Pyne (Glasgow)

D. R. Richardson (Sydney)

S. Roberts (Manchester)

N. J. P. Ryba (Bethesda)

J. Sandy (Tampa)

J. R. Sayers (Sheffield)

S. C. Sealton (New York)

P. R. Shepherd (Auckland)

A. Sim (Callaghan, NSW)

B. F. Sloane (Detroit)

E. Smythe (Sheffield)

C. W. Taylor (Cambridge)

M. Thumm (Goettingen)

M. A. Titheradge (Brighton)

A. B. Tobin (Leicester)

A. Toker (Boston)

S. A. Tooze (London)

M. Torti (Pavia)

C. Troy (New York)

D. M. F. van Aalten (Dundee)

B. Vanhaesebroeck (London)

S. G. Ward (Bath)

J. F. Woessner (Miami)

J. York (Durham, NC)

C. Zurzolo (Paris)



- 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.
- **Editorial and publishing offices:** *Biochemical Journal*, Portland Press Ltd, Third Floor, Eagle House, 16 Procter Street, London WC1V 6NX, U.K.
- **Biochemical Journal**, c/o Mercury Airfreight International Ltd, 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 0264-6021/2005/\$40.00 + 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 Airfreight International Ltd, 365 Blair Road, Avenel, NJ 07001, U.S.A.
- **Cover illustration:** A confocal image of the adenovirus pre-Mu core protein fused to EGFP (green) localized to the nucleoli of HeLa cells. The nucleus is stained with DAPI (blue). Image courtesy of G. E. Blair (Leeds).

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. Papers reporting nucleotide sequences only are not acceptable as APs. One colour figure will be published free of charge in APs; subsequent figures will cost £300 each.

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 typed 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.

● 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 +1 858 713 6283; fax +1 858 713 6284; email 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).

● Colour figures The first colour figure is published at no charge provided that one author 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. Subsequent colour figures in the same paper cost £300 each.

● 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 and PDB for structures. There is no extra charge associated with the publication of a multimedia adjunct online.

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 2005 volumes 386–392 (three parts each) will appear. The subscription also includes an author and key-word index.

● Subscription rates Institutional subscription rates for 2005 are shown below. Subscribers to the *Biochemical Journal* can subscribe additionally to *Biochemical Society Transactions* and *Biotechnology and Applied Biochemistry* on a joint subscription at a reduced rate. 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, or through your usual agent.

	N. America	Rest of world	Euro price
One year (8 vols) Print and online	US\$2830	£1496	€2545
Online only	US\$2500	£1325	€2250
Single issues (print only)	US\$138.70	£73	€124.10

Overseas rates include airfreight delivery. Priority delivery is available at an additional cost of £61.80/€105.

VAT is due on some 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 102–336 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).

● Advertising Enquiries about advertising should be addressed to: Nicky Peacock, Mainline Media Ltd, The Barn, Oakley Hay Lodge Business Park, Great Folds Road, Great Oakley, Corby, Northamptonshire NN18 9AS, U.K. (telephone 01536 747333; email Nickypmm@aol.com).

Biochemical Journal
Volume 387, part 2
15 April 2005

<http://www.BiochemJ.org>

Subscribing organizations are encouraged to copy and distribute this table of contents for non-commercial purposes

Review

**Integral membrane lipid phosphatases/
phosphotransferases: common structure
and diverse functions**

*Published on the Internet 5 April 2005,
DOI 10.1042/BJ20041771*

Y.J. Sigal, M.I. McDermott and A.J. Morris

281–293

Research Papers

The prototype γ -2 herpesvirus nucleocytoplasmic shuttling protein, ORF 57, transports viral RNA through the cellular mRNA export pathway

*Published as BJ Immediate Publication 10 November 2004,
DOI 10.1042/BJ20041223*

Domain architecture of the smooth-muscle plasma membrane: regulation by annexins

*Published as BJ Immediate Publication 10 November 2004,
DOI 10.1042/BJ20041363*

Vanishin is a novel ubiquitinylated death-effector domain protein that blocks ERK activation

*Published as BJ Immediate Publication 10 November 2004,
DOI 10.1042/BJ20041713*

Homotypic dimerization of the actin-binding protein p57/coronin-1 mediated by a leucine zipper motif in the C-terminal region

*Published as BJ Immediate Publication 16 December 2004,
DOI 10.1042/BJ20041020*

The C-terminal domain of the HIV-1 regulatory protein Vpr adopts an antiparallel dimeric structure in solution via its leucine-zipper-like domain

*Published as BJ Immediate Publication 30 November 2004,
DOI 10.1042/BJ20041759*

Identification of adipocyte adhesion molecule (ACAM), a novel CTX gene family, implicated in adipocyte maturation and development of obesity

*Published as BJ Immediate Publication 24 November 2004,
DOI 10.1042/BJ20041709*

Critical role for Ets, AP-1 and GATA-like transcription factors in regulating mouse Toll-like receptor 4 (*Tlr4*) gene expression

*Published as BJ Immediate Publication 10 November 2004,
DOI 10.1042/BJ20041243*

Transcriptional modulation of the pre-implantation embryo-specific *Rnf35* gene by the Y-box protein NF-Y/CBF

*Published as BJ Immediate Publication 1 November 2004,
DOI 10.1042/BJ20041364*

Shedding and γ -secretase-mediated intramembrane proteolysis of the mucin-type molecule CD43

*Published as BJ Immediate Publication 12 November 2004,
DOI 10.1042/BJ20041387*

B.J.L. Williams, J.R. Boyne, D.J. Goodwin, L. Roaden, G.M. Hautbergue, S.A. Wilson and A. Whitehouse

295–308



A. Draeger, S. Wray and E.B. Babichuk

309–314

R. Sur and J.W. Ramos

315–324

T. Oku, S. Itoh, R. Ishii, K. Suzuki, W.M. Nauseef, S. Toyoshima and T. Tsuji

325–331

S. Bourbigot, H. Beltz, J. Denis, N. Morellet, B.P. Roques, Y. Mély and S. Bouaziz

333–341



J. Eguchi, J. Wada, K. Hida, H. Zhang, T. Matsuoka, M. Baba, I. Hashimoto, K. Shikata, N. Ogawa and H. Makino

343–353

T. Roger, I. Miconnet, A.-L. Schiesser, H. Kai, K. Miyake and T. Calandra

355–365

C.-J. Huang, S.-C. Wu and K.-B. Choo

367–375

C.X. Andersson, J. Fernandez-Rodriguez, S. Laos, D. Baeckström, C. Haass and G.C. Hansson

377–384

Molecular basis of <i>N</i> -acetylglucosaminyltransferase I deficiency in <i>Arabidopsis thaliana</i> plants lacking complex N-glycans <i>Published as BJ Immediate Publication</i> 10 November 2004, DOI 10.1042/BJ20041686	R. Strasser, J. Stadlmann, B. Svoboda, F. Altmann, J. Glössl and L. Mach	385–391
Nuclear envelope assembly is promoted by phosphoinositide-specific phospholipase C with selective recruitment of phosphatidylinositol-enriched membranes <i>Published as BJ Immediate Publication</i> 19 November 2004, DOI 10.1042/BJ20040947	R.D. Byrne, T.M. Barona, M. Garnier, G. Koster, M. Katan, D.L. Poccia and B. Larjani	393–400
TraA and its N-terminal relaxase domain of the Gram-positive plasmid pIP501 show specific <i>oriT</i> binding and behave as dimers in solution <i>Published as BJ Immediate Publication</i> 23 November 2004, DOI 10.1042/BJ20041178	J. Kopec, A. Bergmann, G. Fritz, E. Grohmann and W. Keller	401–409
Peptide mimotopes of <i>Mycobacterium tuberculosis</i> carbohydrate immunodeterminants <i>Published as BJ Immediate Publication</i> 24 November 2004, DOI 10.1042/BJ20041139	G. Gevorkian, E. Segura, G. Acero, J.P. Palma, C. Espitia, K. Manoutcharian and L.M. López-Marín	411–417
An eleven nucleotide section of the 3'-untranslated region is required for perinuclear localization of rat metallothionein-1 mRNA <i>Published as BJ Immediate Publication</i> 10 November 2004, DOI 10.1042/BJ20040630	D. Nury, H. Chabanon, M. Levadoux-Martin and J. Hesketh	419–428
Regulation of skeletal ryanodine receptors by dihydropyridine receptor II–III loop C-region peptides: relief of Mg ²⁺ inhibition <i>Published as BJ Immediate Publication</i> 8 November 2004, DOI 10.1042/BJ20040786	C.S. Haarmann, A.F. Dulhunty and D.R. Laver	429–436
Catalytic mechanism of α -retaining glucosyl transfer by <i>Corynebacterium callunae</i> starch phosphorylase: the role of histidine-334 examined through kinetic characterization of site-directed mutants <i>Published as BJ Immediate Publication</i> 9 November 2004, DOI 10.1042/BJ20041593	A. Schwarz, F.M. Pierfederici and B. Nidetzky	437–445
Semenogelins I and II bind zinc and regulate the activity of prostate-specific antigen <i>Published as BJ Immediate Publication</i> 26 November 2004, DOI 10.1042/BJ20041424	M. Jonsson, S. Linse, B. Frohm, Å. Lundwall and J. Malm	447–453
Lutein transport by Caco-2 TC-7 cells occurs partly by a facilitated process involving the scavenger receptor class B type I (SR-BI) <i>Published as BJ Immediate Publication</i> 19 November 2004, DOI 10.1042/BJ20040554	E. Reboul, L. Abou, C. Mikail, O. Ghiringhelli, M. André, H. Portugal, D. Jourdheuil-Rahmani, M.-J. Amiot, D. Lairon and P. Borel	455–461
Functional studies of the 5'-untranslated region of human 5-HT ₄ receptor mRNA <i>Published as BJ Immediate Publication</i> 2 December 2004, DOI 10.1042/BJ20040744	M. Maillet, M. Gastineau, P. Bochet, M.-L. Asselin-Labat, E. Morel, J.-N. Laverrière, A.-M. Lompré, R. Fischmeister and F. Lezoualc'h	463–471
Pharmacokinetics of 1-nitrosomelatonin and detection by EPR using iron dithiocarbamate complex in mice <i>Published as BJ Immediate Publication</i> 3 December 2004, DOI 10.1042/BJ20040828	F. Peyrot, C. Grillon, C. Vergely, L. Rochette and C. Ducrocq	473–478
Accumulation of partly folded states in the equilibrium unfolding of the pneumococcal choline-binding module C-LytA <i>Published as BJ Immediate Publication</i> 2 December 2004, DOI 10.1042/BJ20041194	B. Maestro and J.M. Sanz	479–488
Regulation of activity <i>in vitro</i> and <i>in vivo</i> of three phospholipases B from <i>Saccharomyces cerevisiae</i> <i>Published as BJ Immediate Publication</i> 9 December 2004, DOI 10.1042/BJ20041272	O. Merkel, O.V. Oskolkova, F. Raab, R. El-Toukhy and F. Paltauf	489–496



Cleavage at the stem region releases an active ectodomain of the membrane type 1 matrix metalloproteinase <i>Published as BJ Immediate Publication 24 November 2004, DOI 10.1042/BJ20041324</i>	M. Toth, P. Osenkowski, D. Hesek, S. Brown, S. Meroueh, W. Sakr, S. Mobashery and R. Fridman	 497–506
MSK1 activity is controlled by multiple phosphorylation sites <i>Published as BJ Immediate Publication 29 November 2004, DOI 10.1042/BJ20041501</i>	C.E. McCoy, D.G. Campbell, M. Deak, G.B. Bloomberg and J.S.C. Arthur	 507–517
Characterization of the inositol phosphorylceramide synthase activity from <i>Trypanosoma cruzi</i> <i>Published as BJ Immediate Publication 30 November 2004, DOI 10.1042/BJ20041842</i>	J.M. Figueiredo, W.B. Dias, L. Mendonça-Prevato, J.O. Prevato and N. Heise	 519–529
Perturbation of actin dynamics induces NF- κ B activation in myelomonocytic cells through an NADPH oxidase-dependent pathway <i>Published as BJ Immediate Publication 9 November 2004, DOI 10.1042/BJ20041318</i>	G. Kustermans, J. El Benna, J. Piette and S. Legrand-Poels	531–540
Characterization of phylogenetically distant members of the adenylate cyclase family from mycobacteria: Rv1647 from <i>Mycobacterium tuberculosis</i> and its orthologue ML1399 from <i>M. leprae</i> <i>Published as BJ Immediate Publication 25 October 2004, DOI 10.1042/BJ20041040</i>	A.R. Shenoy, N.P. Sreenath, M. Mahalingam and S.S. Viswesvariah	541–551
Depletion of Caco-2 cell cholesterol disrupts barrier function by altering the detergent solubility and distribution of specific tight-junction proteins <i>Published as BJ Immediate Publication 25 October 2004, DOI 10.1042/BJ20041377</i>	D. Lambert, C.A. O'Neill and P.J. Padfield	553–560

Editorial Advisory Panel

- C. Abell (Cambridge)
M. Abrahamson (Lund)
L. Agius (Newcastle upon Tyne)
P. Aisen (New York)
A. Aitken (Edinburgh)
B. Akerström (Lund)
L. Alhonen (Kuopio)
B. Allen (Montreal)
C. Anthony (Southampton)
G. J. Arlaud (Grenoble)
F. A. Armstrong (Oxford)
B. Ashby (Philadelphia)
K. S. Authi (London)
- A. J. Bailey (Langford)
A. J. Baines (Canterbury)
M. P. Barrett (Glasgow)
C. H. Barton (Southampton)
J. F. Bateman (Parkville)
G. Baverel (Lyon)
J. H. Beattie (Aberdeen)
C. Beaumont (Paris)
D. R. Bell (Nottingham)
D. S. Bendall (Cambridge)
A. Benedetti (Siena)
J. P. Bennett (Hull/York)
A. Berry (Leeds)
L. G. Berthiaume (Edmonton)
R. J. Beynon (Liverpool)
O. Billker (London)
C. D. Bingle (Sheffield)
G. E. Blair (Leeds)
N. Blau (Zürich)
M. A. Bogoyevitch (Nedlands)
G. B. Bolger (Birmingham, AL)
G. P. Bolwell (Egham)
A. R. Boobis (London)
P. Booth (Bristol)
M. D. Bootman (Cambridge)
K. M. Botham (London)
E. Brailou (Philadelphia)
M. J. Brammer (London)
S. Bratton (Austin, TX)
D. Brdiczka (Konstanz)
R. G. Brennan (Portland, OR)
K. M. Brindle (Cambridge)
D. N. Brindley (Edmonton, Alb.)
K. Brocklehurst (London)
S. Broer (Canberra)
E. Brot-Laroche (Paris)
A. J. P. Brown (Aberdeen)
G. Brown (Birmingham)
H. Brumer (Stockholm)
N. Bryant (Glasgow)
N. J. Bulleid (Manchester)
N. W. Bunnett (San Francisco)
B. Burchell (Dundee)
S. J. W. Busby (Birmingham)
P. J. Butterworth (London)
- K. Cain (Leicester)
J. J. Calvete (Valencia)
E. A. Carrey (London)
C. Casals (Madrid)
A. M. Caswell (Leeds)
A. F. Chaffotte (Paris)
L. Chamberlain (Glasgow)
K. E. Chapman (Edinburgh)
F. Checler (Valbonne)
P. K. Chiang (San Francisco)
E. R. Chilvers (Cambridge)
U. Christensen (Copenhagen)
M. Claret (Orsay)
P. Clarke (Dundee)
- P. Codogno (Villejuif)
P. Cohen (Dundee)
J. Colyer (Leeds)
S. J. Cook (Cambridge)
J. R. Coorsen (Calgary)
A. P. Corfield (Bristol)
D. A. Cowan (Cape Town)
R. Cramer (Davos)
C. E. Creutz (Charlottesville)
K. Croft (Perth)
M. Crossley (Sydney)
C. M. Cuchillo (Barcelona)
J. M. Cuevza (Madrid)
N. P. Curthoys (Fort Collins)
W. Cushley (Glasgow)
- C. Dani (Nice)
R. M. Daniel (Hamilton)
C. J. Danpure (London)
V. Darley-Usmar (Birmingham, AL)
V. L. Davidson (Jackson, MS)
M. J. Davies (Sydney)
B. Davis (Oxford)
F. C. de Beer (Lexington)
H. de Groot (Essen)
H. R. De Jonge (Rotterdam)
L. Dekker (Cambridge)
A. DeLong (Providence, RI)
P. N. M. Demacker (Nijmegen)
N. Demaurex (Geneva)
Q. Deveraux (San Diego)
C. Dingwall (Harlow)
F. E. Domann (Iowa City)
D. Donner (Indianapolis)
C. J. Dorman (Dublin)
R. Douce (Grenoble)
K. T. Douglas (Manchester)
C. P. Downes (Dundee)
A. Draeger (Bern)
K. Drickamer (Oxford)
B. Drøbak (Norwich)
M. J. Dufton (Glasgow)
R. M. Drummond (Glasgow)
M. Duchen (London)
R. Duggleby (Brisbane)
- J. M. Edwardson (Cambridge)
L. Ellerby (Novato)
P. M. Epstein (Farmington)
F. Erdodi (Debrecen)
C. Erneux (Brussels)
- P. Fay (Rochester, NY)
T. Feizi (London)
R. C. Feldhoff (Louisville, KY)
L. M. Field (Harpden)
M. C. Field (Cambridge)
L. M. Fisher (London)
P. R. Flatt (Londonderry)
D. R. Flower (Newbury)
G. Forloni (Milan)
F. Foufelle (Paris)
K. R. Fox (Southampton)
M. Francis (Umeå)
P. Fuentes-Prior (Barcelona)
M. H. Fukami (Bergen)
S. J. Fuller (London)
- C. G. Gahmberg (Helsinki)
J. T. Gallagher (Manchester)
T. Galli (Paris)
B. Garner (Sydney)
M. Gassman (Zurich)
K. Gaus (Sydney)
- B. Geiger (Rehovot)
R. A. Gereolia (Grenoble)
V. Gerke (Muenster)
C. S. Gillespie (Edinburgh)
J. D. Gitlin (St Louis, MO)
A. Gomez-Muñoz (Bilbao)
R. A. Gottlieb (La Jolla)
L. Graeve (Stuttgart)
J. C. Gray (Cambridge)
A. W. Griffioen (Maastricht)
S. Grinstein (Toronto)
T. Grune (Dusseldorf)
S. J. Gunst (Indianapolis)
- A. Hall (London)
G. C. Hansson (Gothenburg)
J. Harris (San Diego)
G. M. Hatch (Winnipeg)
P. T. Hawkins (Cambridge)
J. D. Hayes (Dundee)
T. Herbert (Leicester)
K. Heremans (Leuven)
A. C. Herington (Brisbane)
H. Hiasa (Minneapolis)
J. Higgins (Sheffield)
K. Hinckiffe (Manchester)
J. A. Hiscox (Leeds)
M. Hodgkin (Coventry)
K. Hoebe (La Jolla)
A. A. Holder (London)
G. D. Holman (Bath)
M. J. Holness (London)
D. Holowka (Ithaca, NY)
N. A. Hotchin (Birmingham)
M. D. Houslay (Glasgow)
C. Howe (Cambridge)
A. Hudmon (West Haven, CT)
H. Hundal (Dundee)
I. Hussain (Harlow)
J. C. Hutton (Denver)
E. Hyde (Birmingham)
- Y. Ikehara (Fukuoka)
R. A. Iles (London)
A. Imberty (Grenoble)
G. B. Irvine (Belfast)
R. E. Isaac (Leeds)
C. M. Isacke (London)
T. Ishikawa (Yokohama)
P. B. Ilyedjian (Geneva)
- K. H. Jakobs (Essen)
S. Janecek (Bratislava)
D. R. Janero (Bedford, MA)
S. M. Jarvis (London)
R. A. John (Cardiff)
P. Johnson (Vancouver)
N. C. Jones (Manchester)
L. B. Justement (Birmingham, AL)
- M. A. Kaderbhai (Aberystwyth)
K. E. Kadler (Manchester)
E. Kalkhoven (Utrecht)
H. Kanoh (Sapporo)
J. H. Kaplan (Chicago)
P. Karwan (South Mimms)
D. J. Keeling (Loughborough)
P. J. Kennelly (Blacksburg, VA)
S. Keyse (Dundee)
C. M. Kiely (Manchester)
T. M. Kitson (Palmerston North)
L. Kjellen (Uppsala)
E. Knecht (Valencia)
J. Knudsen (Odense)
W. Kolch (Glasgow)
- Y. Kuroki (Sapporo)
J. Kuznicki (Warsaw)
- S. Lamande (Parkville, Vic.)
A. Lane (Louisville, KY)
D. A. Lane (London)
P. J. Large (Hull)
P. J. Lea (Lancaster)
D. S. Leake (Reading)
A. LeBlanc (Quebec)
M. A. Lemmon (Philadelphia)
P. J. Lenting (Utrecht)
C. C. Leslie (Denver)
R. E. Lewis (Omaha, NE)
R. Lightowers
(Newcastle-upon-Tyne)
J. E. Lillehaug (Bergen)
D. M. J. Lilley (Dundee)
M. Liscovitch (Rehovot)
J. M. Lord (Coventry)
M. G. Low (New York)
M. Lowe (Manchester)
R. Ludowyke (Sydney)
K. A. Lukyanov (Moscow)
P. A. Lund (Birmingham)
M. Lyon (Manchester)
- D. J. MacEwan (Aberdeen)
J. Mackrill (Cork)
G. Maga (Pavia)
A. I. Magee (London)
C. C. Malbon (Stony Brook, NY)
W. Maltese (Toledo, OH)
J. P. G. Malthouse (Dublin)
G. E. Mann (London)
B. Mannervik (Uppsala)
J. S. Marchant (Minneapolis)
D. Martin (Dundee)
P. Martin (Glasgow)
R. W. Mason (Wilmington)
P. Masson (La Tronche)
A. Matagne (Leige)
S. Matthews (Dundee)
B. Mayer (Graz)
M. J. McConville (Parkville)
I. J. McEwan (Aberdeen)
J. D. McGivan (Bristol)
R. A. J. McIlhinney (Oxford)
D. McIntosh (London)
L. McLellan (Dundee)
A. G. McLennan (Liverpool)
P. A. Meacock (Leicester)
D. W. Meek (Dundee)
P. J. Meier-Abt (Zürich)
E. Melendez-Hevia (Tenerife)
A. K. Menon (Madison)
R. Merrill (Guelph)
D. J. Meyer (London)
J. A. Miernyk (Columbia)
A. H. Millar (Crawley, West. Aus.)
P. A. Millner (Leeds)
J. L. A. Mitchell (DeKalb, IL)
A. Morgan (Liverpool)
M. Mori (Kumamoto)
S. Morley (Brighton)
S. Morris (Pittsburgh)
N. Moustaid Moussa (Knoxville, TN)
M. Mueckler (St. Louis)
G. Murphy (Cambridge)
- H. Nagase (London)
T. Nagatsu (Aichi)
V. Natarajan (Baltimore)
A. R. Nebreda (Madrid)

EDITORIAL ADVISORY PANEL (continued)

- P. Newsholme (Dublin)
R. Nibbs (Glasgow)
I. A. Nieduszynski (Lancaster)
M. Nishijima (Tokyo)
C. Nobes (Bristol)
R. I. Norman (Leicester)
M. A. Nugent (Boston, MA)
- J. O'Donnell (Memphis)
S. Olsnes (Oslo)
K. Omori (Saitama)
V. O'Donnell (Cardiff)
L. A. J. O'Neill (Dublin)
R. P. J. Oude Elferink (Amsterdam)
- M. G. P. Page (Basel)
M. I. Page (Huddersfield)
F. Palmieri (Bari)
G. Panayotou (Vari)
J. D. Pearson (London)
D. Pei (Minneapolis)
T. M. Penning (Philadelphia)
K. C. Persaud (Manchester)
J. M. Pfeilschifter (Frankfurt)
T. Pihlajaniemi (Oulu)
T. S. Pillay (Nottingham)
J. Pines (Cambridge)
B. V. Polevoda (Rochester, NY)
V. Ponnambalam (Leeds)
C. Ponzetto (Torino)
F. Possmayer (London, Ont.)
D. Poyner (Birmingham)
N. C. Price (Glasgow)
S. A. Prigent (Leicester)
C. A. Pritchard (Leicester)
I. Prior (Liverpool)
D. Prokopp (New Orleans)
M. Puceat (Montpellier)
S. Pyne (Glasgow)
- B. Qualmann (Magdeburg)
D. M. Raben (Baltimore)
C. Rabouille (Edinburgh)
Z. Radić (La Jolla)
S. Rahman (London)
D. P. Ramji (Cardiff)
- M. Rattray (London)
F. X. Real (Barcelona)
B. Reaves (Bath)
S. Rebuffat (Paris)
C. C. Reddy (University Park, PA)
C. P. F. Redfern (Newcastle upon Tyne)
R. J. Reece (Manchester)
B. H. A. Rehm (Palmerston North)
G. A. Reid (Edinburgh)
R. A. F. Reithmeier (Toronto)
P. S. Rennie (Vancouver)
C. Rice-Evans (London)
I. Richard (Evry)
P. J. Richardson (Cambridge)
C. C. Rider (Egham)
M. H. Rider (Brussels)
K. Rittering (London)
J. D. Robertson (Kansas City)
L. Rönstrand (Malmö)
H. Rosen (La Jolla)
G. Rotilio (Rome)
F. Russo-Marie (Paris)
- J.-M. Sabatier (Marseille)
D. B. Sacks (Boston, MA)
P. Saftig (Kiel)
K. S. Sakariassen (Uppsala)
J. P. Salier (Rouen)
J. Savill (Edinburgh)
M. F. G. Schmidt (Berlin)
M. L. Schmitz (Bern)
N. S. Scrutton (Leicester)
M. C. Seabra (London)
K. Seedorf (Hamburg)
A. W. Segal (London)
L. M. Shantz (Hershey)
S. D. Shapiro (Boston)
M. Shearman (Harlow)
S. B. Shears
(Research Triangle Park, NC)
D. Sheehan (Cork)
Y. Shimomura (Nagoya)
P. Shore (Manchester)
K. Siddle (Cambridge)
H. Sies (Düsseldorf)
H. Sjöstrom (Copenhagen)
- F. M. Sladek (Riverside, CA)
D. M. Smith (Macclesfield)
M. Solioz (Bern)
S. Spadari (Pavia)
F. Spener (Münster)
C. Springer (Sutton)
M. R. Stark (Dundee)
H. Stennicke (Bagsvaerd)
W. Stöcker (Mainz)
G. J. Strous (Utrecht)
T. W. Sturgill (Charlottesville)
K. E. Suckling (Stevenage)
A. Surolia (Bangalore)
B. Svensson (Kgs. Lyngby)
- L. J. Takemoto (Manhattan, KS)
K. M. Taylor (Cardiff)
A. Tepikin (Liverpool)
M. Thelen (Bellinzona)
G. Thiel (Homburg)
M. S. Thomas (Sheffield)
N. S. B. Thomas (London)
D. Thornton (Manchester)
C. Tickle (Dundee)
P. J. Tonge (Stony Brook)
D. Tosh (Bath)
P. Trayhurn (Liverpool)
A. J. Trewavas (Edinburgh)
J. T. Triffitt (Oxford)
G. C. Tsokos
(Silver Spring, MD)
J. Turnbull (Liverpool)
B. M. Turner (Birmingham)
- B. Ullman (Portland, OR)
H. D. Ulrich (South Mimms)
- L. M. G. van Golde (Utrecht)
S. van Heyningen (Edinburgh)
E. van Schaftingen (Brussels)
A. Varadi (Budapest)
G. Vassart (Bruxelles)
A. Veillette (Montreal)
G. Verhoeven (Leuven)
D. A. Vessey (San Francisco)
H. Vidal (Lyon)
F. Villarroya (Barcelona)
- J. F. G. Vliegenthart (Utrecht)
M. C. Wahl (Göttingen)
M. J. Warren (London)
N. J. Watmough (Norwich)
S. P. Watson (Birmingham)
A. Watts (Oxford)
D. J. Waxman (Boston)
M. J. Welham (Bath)
K. G. Welinder (Aalborg)
R. E. Wettenhall (Parkville)
M. Wheatley (Birmingham)
C. Wheeler-Jones (London)
P. J. White (Warwick)
D. G. Wilkinson (London)
I. Wilson (Wien)
S. A. Wilson (Sheffield)
D. C. Wilton (Southampton)
J.-O. Winberg (Tromsø)
S. J. Winder (Sheffield)
C. C. Winterbourn
(Christchurch, NZ)
S. G. Withers (Vancouver)
R. Wojcikiewicz (Syracuse, NY)
P. Wojtaszek (Poznan)
S. Wolf (Jena)
J. M. Woof (Dundee)
J. M. Wrigglesworth (London)
M. C. Wright (Aberdeen)
S. Wright (Leeds)
G. Wu (College Station, TX)
F. Wuytack (Leuven)
M. P. Wyman (Fribourg)
- F. Xu (Davis, CA)
- H. Yagisawa (Hyogo-ken)
J. Ye (Sydney)
I. Young (Belfast)
L. S. Young (Birmingham)
S. P. Young (Birmingham)
D. I. Yule (Rochester, NY)
- I. Zachary (London)
R. Zamoyska (London)
J. M. Zapata (La Jolla)

Index of Authors

	PAGE		PAGE		PAGE	
Abou, L.	455	Fridman, R.	497	Levadoux-Martin, M.	419	Piette, J.
Acero, G.	411	Fritz, G.	401	Lezoualc'h, F.	463	Poccia, D. L.
Altmann, F.	385	Frohm, B.	447	Linse, S.	447	Portugal, H.
Amiot, M.-J.	455			Lompré, A.-M.	463	Prevato, J. O.
Andersson, C. X.	377	Garnier, M.	393	López-Marín, L. M.	411	
André, M.	455	Gastineau, M.	463	Lundwall, Å.	447	Raab, F.
Arthur, J. S. C.	507	Gevorkian, G.	411	Mach, L.	385	Ramos, J. W.
Asselin-Labat, M.-L.	463	Ghiringhelli, O.	455	Maestro, B.	479	Reboul, E.
		Glössl, J.	385	Maillet, M.	463	Roaden, L.
Baba, M.	343	Goodwin, D. J.	295	Mahalingam, M.	541	Rochette, L.
Babiychuk, E. B.	309	Grillon, C.	473	Makino, H.	343	Roger, T.
Baeckström, D.	377	Grohmann, E.	401	Malm, J.	447	Roques, B. P.
Barona, T. M.	393			Manoutcharian, K.	411	Sakr, W.
Beltz, H.	333	Haarmann, C. S.	429	Matsuoka, T.	343	Sanz, J. M.
Bergmann, A.	401	Haass, C.	377	McCoy, C. E.	507	Schiesser, A.-L.
Bloomberg, G. B.	507	Hansson, G. C.	377	McDermott, M. I.	281	Schwarz, A.
Bochet, P.	463	Hashimoto, I.	343	Mély, Y.	333	Segura, E.
Borel, P.	455	Hautbergue, G. M.	295	Mendonça-Prevato, L.	519	Shenoy, A. R.
Bouaziz, S.	333	Heise, N.	519	Merkel, O.	489	Shikata, K.
Bourbigot, S.	333	Hesek, D.	497	Meroueh, S.	497	Sigal, Y. J.
Boyne, J. R.	295	Hesketh, J.	419	Miconnet, I.	355	Sreenath, N. P.
Brown, S.	497	Hida, K.	343	Mikail, C.	455	Stadlmann, J.
Byrne, R. D.	393	Huang, C.-J.	367	Miyake, K.	355	Strasser, R.
Calandra, T.	355	Ishii, R.	325	Mobashery, S.	497	Sur, R.
Campbell, D. G.	507	Itoh, S.	325	Morel, E.	463	Suzuki, K.
Chabanon, H.	419			Morellet, N.	333	Svoboda, B.
Choo, K.-B.	367	Jonsson, M.	447	Morris, A. J.	281	
		Jourdheuil-Rahmani, D.	455	Nauseef, W. M.	325	Toth, M.
Deak, M.	507			Nidetzky, B.	437	Toyoshima, S.
Denis, J.	333	Kai, H.	355	Nury, D.	419	Tsuji, T.
Dias, W. B.	519	Katan, M.	393	Ogawa, N.	343	Vergely, C.
Draeger, A.	309	Keller, W.	401	Oku, T.	325	Viswesvariah, S. S.
Ducrocq, C.	473	Kopec, J.	401	O'Neill, C. A.	553	
Dulhunty, A. F.	429	Koster, G.	393	Osenkowski, P.	497	Wada, J.
		Kustermans, G.	531	Oskolkova, O. V.	489	Whitehouse, A.
Eguchi, J.	343			Padfield, P. J.	553	Williams, B. J. L.
El Benna, J.	531	Lairon, D.	455	Palma, J. P.	411	Wilson, S. A.
El-Toukhy, R.	489	Lambert, D.	553	Paltauf, F.	489	Wray, S.
Espitia, C.	411	Laos, S.	377	Peyrot, F.	473	Wu, S.-C.
Fernandez-Rodriguez, J.	377	Laver, D. R.	429	Pierfederici, F. M.	437	Zhang, H.
Figueiredo, J. M.	519	Laverrière, J.-N.	463			
Fischmeister, R.	463	Legrand-Poels, S.	531			