

Biochemical Journal

The Biochemical Society, London © 2004

Volume 384, part 2
1 December 2004

<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. Gutteridge • Newark, DE

B. Henrissat • Marseille

D. Hoekstra • Groningen

N. M. Hooper • Leeds

J. P. Kehrer • Austin

K. H. Mayo • Minneapolis

M. J. O. Wakelam • Birmingham

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)

D. Attaix (Ceyrat)

G. J. Barritt (Adelaide)

J. L. Blank (Cambridge, MA)

M. Blatt (Glasgow)

P. G. Board (Canberra)

M. Bogyo (Stanford, CA)

M. Bollen (Leuven)

B. Brüne (Kaiserslautern)

D. Carling (London)

A. Clerk (London)

G. P. Côté (Kingston, Ont.)

J. R. Couchman (London)

W. Cramer (West Lafayette)

G. J. Davies (York)

D. A. Day (Nedlands)

C. S. Duckett (Ann Arbor)

J. M. East (Southampton)

B. Engelmann (Munich)

R. M. Epanand (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)

S. Goodbourn (London)

S. V. Graham (Glasgow)

P. A. Grimaldi (Nice)

B. Hallberg (Umeå)

P. I. Harris (Leicester)

L. Hedstrom (Waltham, MA)

F. G. Hegardt (Barcelona)

S. High (Manchester)

I. B. Holland (Orsay)

M. Hsuan (London)

S. Huber (Urbana, IL)

W. Jessup (Sydney)

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)

J. S. Mort (Montreal)

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 (Harpending)

M. Paulsson (Cologne)

L. Persson (Lund)

A. D. Postle (Southampton)

N. J. Pyne (Glasgow)

D. R. Richardson (Sydney)

S. Roberts (Manchester)

G. A. Rutter (Bristol)

N. J. P. Ryba (Bethesda)

J. R. Sayers (Sheffield)

S. C. Sealfon (New York)

P. R. Shepherd (Auckland)

A. Sim (Callaghan, NSW)

R. J. Simpson (Parkville)

B. F. Sloane (Detroit)

C. W. Taylor (Cambridge)

M. Thumm (Goettingen)

K. F. Tipton (Dublin)

M. A. Titheradge (Brighton)

A. B. Tobin (Leicester)

A. Toker (Boston)

S. A. Tooze (London)

M. Torti (Pavia)

D. M. F. van Aalten (Dundee)

B. Vanhaesebroeck (London)

S. G. Ward (Bath)

J. F. Woessner (Miami)

S. J. Yeaman (Newcastle upon Tyne)

J. York (Durham, NC)

S. Yoshikawa (Akoh-Hyogo)



- 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*, 59 Portland Place, London W1B 1QW, 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 0264-6021/2004/\$36.00 + 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:** The inhibitory interaction between the second BIR domain of XIAP (green spheres) and the two catalytic domains of caspase-3 (colour coded by chain). For further details, see Fuentes-Prior and Salvesen (2004) *Biochem. J.* **384**, 201–232.

● **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 refereed 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*, 59 Portland Place, London W1B 1QW, U.K. (telephone +44 20 7637 5873; fax +44 20 7323 1136; 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 385–392 (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 Nickyppmm@aol.com).

Review**The protein structures that shape caspase activity, specificity, activation and inhibition**

Published as BJ Immediate Publication 27 September 2004,
DOI 10.1042/BJ20041142

P. Fuentes-Prior and G.S. Salvesen



201–232

Online Commentary

Intestinal candyfloss

Published on the Internet 23 November 2004,
DOI 10.1042/BJ20041655
(see accompanying paper pp. 307–316)

I. Brockhausen

e3–e5

Accelerated Publication**The human SNARE protein Ykt6 mediates its own palmitoylation at C-terminal cysteine residues**

Published as BJ Immediate Publication 13 October 2004,
DOI 10.1042/BJ20041474

M. Veit

233–237

Research Papers

Characterization of Staufen 1 ribonucleoprotein complexes

Published as BJ Immediate Publication 10 August 2004,
DOI 10.1042/BJ20040812

C. Brendel, M. Rehbein, H.-J. Kreienkamp, F. Buck, D. Richter and S. Kindler

239–246

Kinetic and structural optimization to catalysis at low temperatures in a psychrophilic cellulase from the Antarctic bacterium *Pseudoalteromonas haloplanktis*

Published as BJ Immediate Publication 3 August 2004,
DOI 10.1042/BJ20040325

G. Garsoux, J. Lamotte, C. Gerday and G. Feller

247–253

New insights into the structure–function relationships of Rho-associated kinase: a thermodynamic and hydrodynamic study of the dimer-to-monomer transition and its kinetic implications

Published as BJ Immediate Publication 3 August 2004,
DOI 10.1042/BJ20040344

J.D. Doran, X. Liu, P. Taslimi, A. Saadat and T. Fox

255–262

Effects of pH on *Helicobacter pylori* binding to human gastric mucins: identification of binding to non-MUC5AC mucins

Published as BJ Immediate Publication 20 July 2004,
DOI 10.1042/BJ20040402

S. Lindén, J. Mahdavi, J. Hedenbro, T. Borén and I. Carlstedt

263–270

Antizyme induction mediates feedback limitation of the incorporation of specific polyamine analogues in tissue culture

Published as BJ Immediate Publication 18 August 2004,
DOI 10.1042/BJ20040972

J.L.A. Mitchell, C.L. Simkus, T.K. Thane, P. Tokarz, M.M. Bonar, B. Frydman, A.L. Valasinas, V.K. Reddy and L.J. Marton

271–279

NALP1 is a transcriptional target for cAMP-response-element-binding protein (CREB) in myeloid leukaemia cells

Published as BJ Immediate Publication 30 July 2004,
DOI 10.1042/BJ20040867

C. Sanz, M.J. Calasanz, E. Andreu, C. Richard, F. Prosper and J.L. Fernandez-Luna

281–286

Biochemical analysis of respiratory function in cybrid cell lines harbouring mitochondrial DNA mutations

Published as BJ Immediate Publication 23 August 2004,
DOI 10.1042/BJ20040561

F. Pallotti, A. Baracca, E. Hernandez-Rosa, W.F. Walker, G. Solaini, G. Lenaz, G.V. Melzi d'Eril, S. DiMauro, E.A. Schon and M.M. Davidson

287–293

Kinase-independent transcriptional co-activation of peroxisome proliferator-activated receptor α by AMP-activated protein kinase <i>Published as BJ Immediate Publication 17 August 2004, DOI 10.1042/BJ20040955</i>	M. Bronner, R. Hertz and J. Bar-Tana	295–305
Structural diversity and specific distribution of O-glycans in normal human mucins along the intestinal tract <i>Published as BJ Immediate Publication 13 September 2004, DOI 10.1042/BJ20040605</i>	C. Robbe, C. Capon, B. Coddeville and J.-C. Michalski	307–316
Human replication-dependent histone H3 genes are activated by a tandemly arranged pair of two CCAAT boxes <i>Published as BJ Immediate Publication 23 August 2004, DOI 10.1042/BJ20040502</i>	H. Koessler, J. Kahle, C. Bode, D. Doenecke and W. Albig	317–326
Interactions among p22, glyceraldehyde-3-phosphate dehydrogenase and microtubules <i>Published as BJ Immediate Publication 17 August 2004, DOI 10.1042/BJ20040622</i>	J. Andrade, S.T. Pearce, H. Zhao and M. Barroso	327–336
Dysfunctional proofreading in the <i>Escherichia coli</i> DNA polymerase III core <i>Published as BJ Immediate Publication 7 September 2004, DOI 10.1042/BJ20040660</i>	D.A. Lehtinen and F.W. Perrino	337–348
Regulation of GLUT1-mediated glucose uptake by PKC λ -PKC β_{II} interactions in 3T3-L1 adipocytes <i>Published as BJ Immediate Publication 13 August 2004, DOI 10.1042/BJ20040797</i>	R.R. Bosch, M. Bazuine, P.N. Span, P.H.G.M. Willems, A.J. Olthaar, H. van Rennes, J.A. Maassen, C.J. Tack, Ad R.M.M. Hermus and C.G.J. (Fred) Sweep	349–355
Identification of two novel microalgal enzymes involved in the conversion of the ω 3-fatty acid, eicosapentaenoic acid, into docosahexaenoic acid <i>Published as BJ Immediate Publication 13 August 2004, DOI 10.1042/BJ20040970</i>	S.L. Pereira, A.E. Leonard, Y.-S. Huang, L.-T. Chuang and P. Mukerji	357–366
Cross-linking with O-raffinose lowers oxygen affinity and stabilizes haemoglobin in a non-cooperative T-state conformation <i>Published as BJ Immediate Publication 10 August 2004, DOI 10.1042/BJ20040612</i>	Y. Jia, S. Ramasamy, F. Wood, A.I. Alayash and J.M. Rifkind	367–375
Cryptococcal phospholipases: a novel lysophospholipase discovered in the pathogenic fungus <i>Cryptococcus gattii</i> <i>Published as BJ Immediate Publication 23 August 2004, DOI 10.1042/BJ20041079</i>	L.C. Wright, J. Payne, R.T. Santangelo, M.F. Simpanya, S.C.A. Chen, F. Widmer and T.C. Sorrell	377–384
Efficient production of active chicken avidin using a bacterial signal peptide in <i>Escherichia coli</i> <i>Published as BJ Immediate Publication 23 August 2004, DOI 10.1042/BJ20041114</i>	V.P. Hytönen, O.H. Laitinen, T.T. Airene, H. Kidron, N.J. Meltola, E.J. Porkka, J. Hörhå, T. Paldanius, J.A.E. Määttä, H.R. Nordlund, M.S. Johnson, T.A. Salminen, K.J. Airene, S. Ylä-Herttuala and M.S. Kulomaa	385–390
A novel UBA and UBX domain protein that binds polyubiquitin and VCP and is a substrate for SAPKs <i>Published as BJ Immediate Publication 13 September 2004, DOI 10.1042/BJ20041498</i>	H. McNeill, A. Knebel, J.S.C. Arthur, A. Cuenda and P. Cohen	391–400
Hepatitis C virus non-structural protein NS3 interacts with LMP7, a component of the immunoproteasome, and affects its proteasome activity <i>Published as BJ Immediate Publication 10 August 2004, DOI 10.1042/BJ20040858</i>	Y.-L. Khu, Y.-J. Tan, S.G. Lim, W. Hong and P.-Y. Goh	401–409
Thermodynamics of ligand binding by the yeast mRNA-capping enzyme reveals different modes of binding <i>Published as BJ Immediate Publication 13 August 2004, DOI 10.1042/BJ20041112</i>	I. Bougie, A. Parent and M. Bisailon	411–420
Membrane insertion of the N-terminal α -helix of equinatoxin II, a sea anemone cytolytic toxin <i>Published as BJ Immediate Publication 19 August 2004, DOI 10.1042/BJ20040601</i>	I. Gutiérrez-Aguirre, A. Barlič, Z. Podlesek, P. Maček, G. Anderluh and J.M. González-Mañás	421–428



Localization of ferrochelatase in <i>Plasmodium falciparum</i> Published as BJ Immediate Publication 13 August 2004, DOI 10.1042/BJ20040952	S. Varadharajan, B.K.C. Sagar, P.N. Rangarajan and G. Padmanaban	429–436
Structural studies of duck $\delta 2$ crystallin mutants provide insight into the role of Thr ¹⁶¹ and the 280s loop in catalysis Published as BJ Immediate Publication 23 August 2004, DOI 10.1042/BJ20040656	L.M. Sampaleanu, P.W. Coddling, Y.D. Lobsanov, M. Tsai, G.D. Smith, C. Horvatin and P.L. Howell	437–447

Editorial Advisory Panel

- C. Abell (Cambridge)
M. Abrahamson (Lund)
L. Agius (Newcastle upon Tyne)
A. Aitken (Edinburgh)
B. Akerström (Lund)
L. Alhonen (Kuopio)
B. Allen (Montreal)
C. Anthony (Southampton)
G. J. Arlaud (Grenoble)
F. A. Armstrong (Oxford)
O. I. Aruoma (London)
B. Ashby (Philadelphia)
K. S. Authi (London)
- A. Baici (Zürich)
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)
C. T. Benack (Chicago)
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)
M. J. Brammer (London)
S. Bratton (Austin, TX)
D. Brdiczka (Konstanz)
R. G. Brennan (Portland, OR)
K. M. Brindle (Cambridge)
K. Brocklehurst (London)
S. Broer (Canberra)
E. Brot-Laroche (Paris)
A. J. P. Brown (Aberdeen)
G. Brown (Birmingham)
N. Bryant (Glasgow)
N. J. Bulleid (Manchester)
N. W. Bunnett (San Francisco)
A. Burchell (Dundee)
B. Burchell (Dundee)
S. J. W. Busby (Birmingham)
P. J. Butterworth (London)
- K. Cain (Leicester)
J. J. Calvete (Valencia)
M. J. Carden (Canterbury)
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)
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)
M. W. H. Coughtrie (Dundee)
D. A. Cowan (Cape Town)
C. E. Creutz (Charlottesville)
K. Croft (Perth)
M. Crossley (Sydney)
C. M. Cuchillo (Barcelona)
J. M. Cuezva (Madrid)
N. P. Curthoys (Fort Collins)
W. Cushley (Glasgow)
- C. Dani (Nice)
R. M. Daniel (Hamilton)
V. Darley-Usmar (Birmingham, AL)
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. Demaux (Geneva)
Q. Deveraux (San Diego)
M. Dickens (Leicester)
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. Duffon (Glasgow)
R. M. Drummond (Glasgow)
M. Duchon (London)
R. Duggleby (Brisbane)
- J. M. Edwardson (Cambridge)
J. P. Eiserich (Davis, CA)
L. Ellerby (Novato)
P. M. Epstein (Farmington)
F. Erdodi (Debrecen)
C. Erneux (Brussels)
R. W. Evans (London)
- P. Fay (Rochester, NY)
T. Feizi (London)
R. C. Feldhoff (Louisville, KY)
L. M. Field (Harpending)
M. C. Field (London)
L. M. Fisher (London)
P. R. Flatt (Londonderry)
D. R. Flower (Newbury)
G. Forloni (Milan)
F. Fofelle (Paris)
K. R. Fox (Southampton)
M. Francis (Umeå)
M. H. Fukami (Bergen)
S. J. Fuller (London)
- T. G. Gabig (Indianapolis)
C. G. Gahmberg (Helsinki)
J. T. Gallagher (Manchester)
T. Galli (Paris)
B. Garner (Sydney)
R. A. Geremia (Grenoble)
V. Gerke (Muenster)
- C. S. Gillespie (Edinburgh)
A. Gomez-Muñoz (Bilbao)
R. A. Gottlieb (La Jolla)
L. Graeve (Stuttgart)
J. C. Gray (Cambridge)
A. W. Griffioen (Maastricht)
S. Grinstein (Toronto)
S. J. Gunst (Indianapolis)
- H. P. Haagsman (Utrecht)
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. Hinchliffe (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. Iynedjian (Geneva)
- K. H. Jakobs (Essen)
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)
H. H. Kaplan (Chicago)
P. Karran (South Mimms)
D. J. Keeling (Loughborough)
P. J. Kennelly (Blacksburg, VA)
S. Keyse (Dundee)
C. M. Kieley (Manchester)
T. M. Kitson (Palmerston North)
L. Kjellen (Uppsala)
E. Knecht (Valencia)
J. Knudsen (Odense)
W. Kolch (Glasgow)
Y. Kuroki (Sapporo)
J. Kuznicki (Warsaw)
- 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)
M. McGrane (Storrs)
R. A. J. McIlhinney (Oxford)
D. McIntosh (London)
L. McLellan (Dundee)
A. G. McLennan (Liverpool)
L. C. McPhail (Winston-Salem)
P. A. Meacock (Leicester)
D. W. Meek (Dundee)
P. J. Meier-Abt (Zürich)
E. Melendez-Hevia (Tenerife)
A. K. Menon (Madison)
D. J. Meyer (London)
P. A. Millner (Leeds)
J. L. A. Mitchell (DeKalb, IL)
T. J. Monks (Austin)
A. Morgan (Liverpool)
I. Morgan (Glasgow)
M. Mori (Kumamoto)
S. Morley (Brighton)
S. Morris (Pittsburgh)
N. Moustaid Moussa (Knoxville, TN)
M. Mueckler (St. Louis)
B. Mulloy (Potters Bar)
G. Murphy (Cambridge)
- H. Nagase (London)
T. Nagatsu (Aichi)
V. Natarajan (Baltimore)
A. R. Nebreda (Madrid)
P. Newsholme (Dublin)
R. Nibbs (Glasgow)
I. A. Nieduszynski (Lancaster)

EDITORIAL ADVISORY PANEL (continued)

- 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)
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 (Varese)
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. Prockop (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)
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)
P. J. Richardson (Cambridge)
C. C. Rider (Egham)
M. H. Rider (Brussels)
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. Sjöström (Copenhagen)
F. M. Sladek (Riverside, CA)
- D. M. Smith (Macclesfield)
S. Spadari (Pavia)
F. Spener (Münster)
C. Springer (Surrey)
H. Stennicke (Bagsvaerd)
A. K. Stobart (Bristol)
W. Stöcker (Mainz)
G. J. Strous (Utrecht)
T. W. Sturgill (Charlottesville)
K. E. Suckling (Stevenage)
A. Suroli (Bangalore)
B. Svensson (Kgs. Lyngby)
- 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)
D. Tosh (Bath)
P. Trayhurn (Liverpool)
C. M. Troy (New York)
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)
- L. M. G. van Golde (Utrecht)
S. van Heyningen (Edinburgh)
E. van Schaftingen (Brussels)
G. Vassart (Bruxelles)
A. Veillette (Montreal)
G. Verhoeven (Leuven)
D. A. Vessey (San Francisco)
- H. Vidal (Lyon)
J. F. G. Vliegthart (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)
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. Wymann (Fribourg)
- I. Young (Belfast)
L. S. Young (Birmingham)
S. P. Young (Birmingham)
D. I. Yule (Rochester, NY)
- I. Zachary (London)
R. Zamojska (London)
J. M. Zapata (La Jolla)

Index of Authors

	PAGE		PAGE		PAGE		PAGE
Airenne, K. J.	385	Feller, G.	247	Lim, S. G.	401	Robbe, C.	307
Airenne, T. T.	385	Fernandez-Luna, J. L.	281	Lindén, S.	263		
Alayash, A. I.	367	Fox, T.	255	Liu, X.	255	Saadat, A.	255
Albig, W.	317	Frydman, B.	271	Lobsanov, Y. D.	437	Sagar, B. K. C.	429
Anderluh, G.	421	Fuentes-Prior, P.	201			Salminen, T. A.	385
Andrade, J.	327			Maassen, J. A.	349	Salvesen, G. S.	201
Andreu, E.	281	Garsoux, G.	247	Määttä, J. A. E.	385	Sampaleanu, L. M.	437
Arthur, J. S. C.	391	Gerday, C.	247	Maček, P.	421	Santangelo, R. T.	377
		Goh, P.-Y.	401	Mahdavi, J.	263	Sanz, C.	281
Baracca, A.	287	González-Mañas, J. M.	421	Marton, L. J.	271	Schon, E. A.	287
Barlič, A.	421	Gutiérrez-Aguirre, I.	421	McNeill, H.	391	Simkus, C. L.	271
Barroso, M.	327			Meltola, N. J.	385	Simpanya, M. F.	377
Bar-Tana, J.	295	Hedenbro, J.	263	Melzi d'Eril, G. V.	287	Smith, G. D.	437
Bazuine, M.	349	Hermus, Ad R. M. M.	349	Michalski, J.-C.	307	Solaini, G.	287
Bisaillon, M.	411	Hernandez-Rosa, E.	287	Mitchell, J. L. A.	271	Sorrell, T. C.	377
Bode, C.	317	Hertz, R.	295	Mukerji, P.	357	Span, P. N.	349
Bonar, M. M.	271	Hong, W.	401			Sweep, C. G. J. (Fred)	349
Borén, T.	263	Hörhä, J.	385	Nordlund, H. R.	385		
Bosch, R. R.	349	Horvatin, C.	437			Tack, C. J.	349
Bougie, I.	411	Howell, P. L.	437	Olthaar, A. J.	349	Tan, Y.-J.	401
Brendel, C.	239	Huang, Y.-S.	357			Taslimi, P.	255
Brockhausen, I.	e3	Hytönen, V. P.	385	Padmanaban, G.	429	Thane, T. K.	271
Bronner, M.	295			Paldanius, T.	385	Tokarz, P.	271
Buck, F.	239	Jia, Y.	367	Pallotti, F.	287	Tsai, M.	437
		Johnson, M. S.	385	Parent, A.	411		
				Payne, J.	377	Valasinas, A. L.	271
Calasanz, M. J.	281	Kahle, J.	317	Pearce, S. T.	327	van Rennes, H.	349
Capon, C.	307	Khu, Y.-L.	401	Pereira, S. L.	357	Varadharajan, S.	429
Carlstedt, I.	263	Kidron, H.	385	Perrino, F. W.	337	Veit, M.	233
Chen, S. C. A.	377	Kindler, S.	239	Podlesek, Z.	421		
Chuang, L.-T.	357	Knebel, A.	391	Porkka, E. J.	385		
Coddeville, B.	307	Koessler, H.	317	Prosper, F.	281	Walker, W. F.	287
Codding, P. W.	437	Kreienkamp, H.-J.	239			Widmer, F.	377
Cohen, P.	391	Kulomaa, M. S.	385	Ramasamy, S.	367	Willems, P. H. G. M.	349
Cuenda, A.	391			Rangarajan, P. N.	429	Wood, F.	367
		Laitinen, O. H.	385	Reddy, V. K.	271	Wright, L. C.	377
Davidson, M. M.	287	Lamotte, J.	247	Rehbein, M.	239		
DiMauro, S.	287	Lehtinen, D. A.	337	Richard, C.	281	Ylä-Herttua, S.	385
Doenecke, D.	317	Lenaz, G.	287	Richter, D.	239		
Doran, J. D.	255	Leonard, A. E.	357	Rifkind, J. M.	367	Zhao, H.	327