

The BIOCHEMICAL JOURNAL

The Biochemical Society, London © 1992

Volume 282, part 3

15 March 1992

Editorial Board

Chairman

A. J. Turner (*Leeds*)

Deputy Chairmen

W. H. Evans (*London*), reviews
editor

G. H. Elder (*Cardiff*)

S. J. Higgins (*Leeds*)

K. Siddle (*Cambridge*)

W. L. R. Stalmans (*Leuven*)

M. A. Kerr (*Dundee*)

V. A. Zammit (*Ayr*)

Managing Editor

A. S. Beedle

B. H. Anderton (*London*)

D. J. Anstee (*Bristol*)

G. Banting (*Bristol*)

T. Berg (*Oslo*)

S. J. W. Busby (*Birmingham*)

G. M. W. Cook (*Cambridge*)

A. P. Dawson (*Norwich*)

H. R. de Jonge (*Rotterdam*)

A. H. Drummond (*Oxford*)

J. Feeney (*London*)

D. A. Fell (*Oxford*)

M. A. J. Ferguson (*Dundee*)

S. J. Ferguson (*Oxford*)

J. B. C. Findlay (*Leeds*)

G. F. Gibbons (*Oxford*)

J. P. Goddard (*Glasgow*)

L. Hall (*Bristol*)

B. Halliwell (*Sacramento*)

D. G. Hardie (*Dundee*)

T. E. Hardingham (*London*)

D. Häussinger (*Freiburg*)

H. Holmsen (*Bergen*)

R. F. Irvine (*Cambridge*)

U. Lindahl (*Uppsala*)

J. P. Luzio (*Cambridge*)

B. Mannervik (*Uppsala*)

S. B. Marston (*London*)

J. G. McCormack (*Edinburgh*)

J. D. McGivan (*Bristol*)

M. A. McNurlan (*Aberdeen*)

H. G. Nimmo (*Glasgow*)

I. A. Nimmo (*Edinburgh*)

Y. Nishizuka (*Kobe*)

V. M. Pain (*Brighton*)

P. Parker (*London*)

A. E. Pegg (*Hershey*)

N. C. Price (*Stirling*)

C. G. Proud (*Bristol*)

H. Prydz (*Oslo*)

P. J. Reeds (*Houston*)

A. J. Rivett (*Leicester*)

S. P. Robins (*Aberdeen*)

S. B. Shears (*Research Triangle Park*)

H. Sies (*Düsseldorf*)

A. R. Slabas (*Durham*)

B. E. Smith (*Brighton*)

J. B. Smith (*Philadelphia*)

A. K. Soutar (*London*)

P. G. Strange (*Canterbury*)

L. M. G. van Golde (*Utrecht*)

M. J. O. Wakelam (*Glasgow*)

M. Wallis (*Brighton*)

M. Watford (*New Brunswick*)

A. S. Whitehead (*Dublin*)



- The Biochemical Journal is published and distributed by Portland Press Ltd. on behalf of the Biochemical Society, and appears twice monthly.
- Editorial and Publishing Offices: The Biochemical Journal, 59 Portland Place, London WIN 3AJ, U.K.
- Subscriptions Department: Portland Press Ltd., 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 form 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 licences issued by the Copyright Licensing Agency. Inquiries concerning reproduction outside those terms should be sent to the publishers at the abovementioned 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.
- Second-class postage paid at Rahway, NJ, U.S.A.
- U.S. Postmaster: send address changes to The Biochemical Journal, c/o Mercury Airfreight International Ltd, 2323 Randolph Avenue, Avenel, NJ 07001, U.S.A. (US mailing agent).

INSTRUCTIONS TO AUTHORS

General policy

The *Biochemical Journal* publishes papers in English in all fields of biochemistry, 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. 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.

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.

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; equally, fragmentation of research into the "least publishable unit" is discouraged. In order that the reviewers can consider these problems, all submitted papers must be accompanied by duplicate copies of the author's relevant published work and of all related papers in press or under editorial consideration in this or other journals.

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.

The paragraphs below are a summarized version of the journal's complete Instructions to Authors [*Biochem. J.* (1992) **281**, 1–19], of which copies are available free of charge from the editorial office.

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.

Research Communications are short (maximum 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 2 weeks of receipt, and publication of accepted Communications will follow within 2 months. Research Communications receive full but accelerated reviewing and the criteria of "novelty and significance" are strictly enforced; Communications 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 Communication merits accelerated treatment, and should submit four copies of their article.

BJ Letters are short (two printed pages or less) items of scientific correspondence intended to provide an opportunity to discuss, criticize or expand particular points made in published work, or to present a new hypothesis. They should not contain extensive new data (which would best be placed in a regular paper) and are not a vehicle for publication of preliminary results. If a letter is polemical in nature, a reply may be solicited from other interested parties.

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

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. Typescripts should be double-spaced throughout (particularly references and table and figure legends) on numbered sheets of uniform size (preferably ISO A4) with wide margins. Output from low-quality dot matrix printers is not acceptable. 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.

Either the Harvard system or the numerical system of references may be used. A reference to "unpublished work" should 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.

Three copies of the typescript (four copies for Research Communications), with a brief covering letter to which should be attached an additional copy of the synopsis, should be sent to:

**The Managing Editor
The Biochemical Journal
59 Portland Place
London WIN 3AJ
U.K.**

(telephone 071-637 5873; fax 071-323 1136; from overseas the international code for the U.K. is 44 and the leading 0 should be omitted).

The typescript should indicate the name, address, telephone number and fax number of the person to whom correspondence should be addressed. The top copy of the typescript should be marked as such and should have attached to it the original figures; for the other copies of the typescript, glossy prints (not photocopies) of the half-tone figures should be provided, but photocopies of line drawings will suffice. A short (page-heading) title of not more than 75 characters should be provided, and authors should indicate the preferred section in the table of contents for their paper:

Proteins
Enzymes
Carbohydrates and lipids
Gene structure and expression
Regulation of metabolism
Membranes and bioenergetics
Receptors and signal transduction
Cell biology and development

Submission by fax

Research Communications and BJ Letters that do not contain half-tone figures may be submitted by fax to the number above. Only one copy of the typescript need be transmitted. Acknowledgment of receipt and the review decision will be returned by fax to the author. The current Instructions to Authors contains full details of this procedure.

Submission on diskette

Authors may submit a diskette containing the final version of the text; this should be in addition to, not as a replacement for, the required number of copies. If the paper is accepted, every effort will be made to use the diskette during typesetting, but this cannot be guaranteed. Authors wishing to submit their text in this way should consult the editorial office for advice before preparation of their paper.

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 1992 volumes 281–288 (three parts each) will appear. The subscription also includes the annual compendium of *Biochemical Journal Reviews* and an author and keyword index.

Subscription rates

Institutional subscription rates for 1992 are shown below. Subscribers to the *Biochemical Journal* can subscribe additionally to *Biochemical Society Transactions* on a joint subscription, saving \$25.00 (North America) or £15.00 (rest of the world). Terms are cash with order (£ sterling for subscribers other than in North America, or US\$

equivalent at current rate of exchange), or against proforma invoice. Orders should be sent to the address below, or through your usual agent.

	North America	Rest of the world
One year (8 volumes)	US\$ 1460	£775
Single issues	US\$ 65	£33

The subscription rates for North America and Japan include elements for airfreight and Accelerated Surface Post respectively. Subscribers may opt for air-mail delivery at additional cost; details are available on application.

Microfiche and back issues

Volumes 102–280 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 Press Ltd
P.O. Box 32, Commerce Way
Colchester CO2 8HP, Essex, U.K.
(telephone 0206-46351; fax 0206-549331;
after 17 August 1992 telephone 0206-796351)

Advertising

Advertising is accepted in the *Biochemical Journal*. For information contact the Advertising Department, Portland Press Ltd, 59 Portland Place, London WIN 3AJ (telephone 071-637 5873; fax 071-323 1136).

INDEX OF AUTHORS

PAGE	PAGE	PAGE	PAGE
Agius, L.	789, 797	Englebert, S.	781
Akhtar, M.	747	Evans, G. A.	759
Al-Bar, O. A. M.	747	Faix, D.	753
Al-Habori, M.	789, 797	Farrar, W. L.	759
Alhadeff, J. A.	829	Fassina, G.	773
Al-Massad, F. K.	867	Feuerstein, B. G.	723
Amano, T.	741	Fillat, C.	659
Aronson, N. N., Jr.	891	Finci-Yeheskel, Z.	863
Austin, C. A.	883	Fisher, L. M.	883
Avila, M. A.	681	Freeman, C.	899
Aziza, R.	863	Frère, J.-M.	781
Ball, S. G.	645	Fry, S. C.	821
Bars, R. G.	635	Gebicki, J. M.	621
Basu, H. S.	723	Gebicki, S.	621
Baulieu, E.-E.	697	Ghuyse, J.-M.	781
Becherer, D. J.	715	Gieseg, S.	621
Bell, D. R.	635	Giles, I. G.	747
Berg, T.	841	Gitlin, J. D.	835
Bielawska, A. E.	815	Granier, B.	781
Blée, E.	711	Grossberger, D.	715
Camps, M.	765	Guerrero, M. G.	639
Cassani, G.	773	Guinovart, J. J.	659
Castelló, A.	765	Hajnal, A.	915
Cesar, D.	753	Hannun, Y. A.	815
Chen, H.-C.	807	Hara, A.	741
Clemente, R.	681	Harding, S. E.	687
Coggins, J. R.	687	Hawkins, A. R.	687
Cook, G. A.	909	Hellerstein, M. K.	753
Cooper, A.	687	Higazi, A. A.-R.	863
Couette, B.	697	Hildebrandt, J.-P.	703
Cousins, R. J.	835	Hincke, M. T.	877
Coussons, P. J.	929	Hodge, S. K.	821
Csokan, P. P.	723	Hopwood, J. J.	899
Damjanov, I.	829	Huber, M.	915
Darley-Usmar, V. M.	631	Jackman, M. P.	915
Davis, K.	687	Jalava, T.	635
Dean, R. T.	621	Johnson, S. W.	829
Deka, R.	687	Kadir, F. H. A.	867
Delcros, J.-G.	723	Kashfi, K.	909
Delgado, J.	919	Kelly, S. M.	687, 929
Denton, R. M.	729	Kleanthous, C.	687
Deyashiiki, Y.	741	Knackmuss, H.-J.	675
Dideberg, O.	781	Krause, J.	841
Diggle, T. A.	729	Lambris, J. D.	715
Duez, C.	781		
Dusart, J.	781		
Edgington, T. S.	737		
Elcombe, C. R.	635		
		Lara, C.	639
		Lee-Ambrose, L. M.	835
		Lepage, S.	781
		Lerch, K.	915
		Letsch, I.	665
		Li, S. C.	807
		Li, Y.-T.	807
		Liao, J. C.	919
		Lindros, K. O.	635
		Lockyer, J. M.	807
		Lombes, M.	697
		López-Novoa, J. M.	871
		López-Rivas, A.	871
		Martin, D. J.	821
		Marton, L. J.	723
		Matthews, K. J.	821
		Mayer, D.	665
		McCormack, J. G.	645
		Medina, M. A.	931
		Middleton, A.	853
		Middleton, B.	853
		Miles, D. J.	737
		Monfar, M.	765
		Moore, G. R.	867
		Muñoz, P.	765
		Murphy, N. P.	645
		Nagarajan, S.	807
		Nairn, A. C.	877
		Nakane, H.	883
		Nakayama, T.	741
		Narita, S.	621
		Nilsson, B.	715
		Nilsson, U. R.	715
		Nilsson Ekdahl, K.	715
		Nörtemann, B.	675
		Núñez de Castro, I.	931
		O'Connor, C. D.	747
		Oinonen, T.	635
		O'Leary, V. J.	631
		Olivera, A.	871
		Ono, K.	883
		Palacín, M.	765
		Park, O.-J.	753
		Patel, S.	883
		Peak, M.	789, 797
		Piesecki, S.	829
		Price, N. C.	687, 929
		Rafestin-Oblin, M.-E.	697
		Rehemtulla, A.	737
		Renwick, K. F.	821
		Riegert, P.	715
		Rodríguez, R.	639
		Rodríguez-Gil, J. E.	659
		Rola-Pleszczynski, M.	625
		Roos, N.	841
		Ruf, W.	737
		Russell, L. J.	631
		Samara, A. A.-R.	863
		Sánchez-Jiménez, F.	931
		Sawada, H.	741
		Sawyer, L.	929
		Schick, B. P.	651
		Schroeder, J. J.	835
		Schuber, F.	711
		Seelmann-Eggebert, G.	665
		Senkowski-Richardson, S.	651
		Seydel, W.	841
		Shackleton, C. H. L.	753
		Shuttleworth, T. J.	703
		Simpson, J. A.	621
		Smith, B.	929
		Smith, R. C.	821
		Stang, E.	841
		Staňková, J.	625
		Stoltz, A.	675
		Stone, D.	631
		Sturkenboom, M. C. J. M.	723
		Szollosi, J.	723
		Taniguchi, H.	741
		Testar, X.	765
		Thomas, T. H.	789
		Tollersrud, O. K.	891
		Urdiales, J. L.	931
		Van Beeumen, J.	781
		Varela-Nieto, I.	681
		Vaughan, P. F. T.	645
		Wahl, L. M.	759
		Wang, R. F.	829
		Werner, M. H.	815
		Wu, K.	753
		Zorzano, A.	765

INDEX OF AUTHORS

Volume 282, 1992

PAGE	PAGE	PAGE	PAGE	PAGE			
Abriola, D. P.	353	Caine, J.	291	Faix, D.	753	Hodge, S. K.	821
Adam, M.	495	Calvete, J. J.	523	Farber, D. B.	123	Hokin, L. E.	377
Agius, L.	789, 797	Camps, M.	765	Farndale, R. W.	25	Holland, P. C.	399
Akhtar, M.	747	Cardamon, M.	589	Farrar, W. L.	759	Holness, M. J.	231
Aktories, K.	393	Carlson, C. S.	1	Fassina, G.	773	Honn, K. V.	273
Al-Bar, O. A. M.	747	Carraro, U.	237	Ferrari, M.	459	Hopwood, J. J.	605, 899
Al-Habori, M.	789, 797	Cass, C. E.	147	Feuerstein, B. G.	723	Houssier, C.	361
Alhadeff, J. A.	829	Cassani, G.	773	Fillat, C.	659	Huber, M.	915
Allsop, A. E.	539	Castelló, A.	765	Finci-Yeheskel, Z.	863	Huckerby, T. N.	267
Al-Massad, F. K.	867	Castillo, R. O.	107	Finn, K. A.	279	Ingle dew, W. J.	255
Alonso, A.	467	Castresana, J.	467	Fisher, L. M.	883	Jackman, M. P.	915
Alvarez, M. V.	523	Catani, C.	237	Fliegel, L.	139	Jacob-Dubuisson, F.	189
Amano, T.	741	Cattan, N.	443	Forte, T.	459	Jakobs, K. H.	429
Aplin, R. T.	361	Cazenave, J.-P.	7	Francis, G. L.	91	Jakubiec-Puka, A.	237
Archipoff, G.	7	Cesar, D.	753	Frangione, B.	517	Jalava, T.	635
Argentin, G.	595	Chandler, C. S.	91	Freeman, C.	605, 899	Jamin, M.	495
Aronson, N. N., Jr.	891	Chao, C. C.-K.	203	Frère, J.-M.	189, 361, 495, 781	Johnson, J. A.	279
Arthur, J. R.	483	Chap, H.	333	Freund, G.	7	Johnson, S. W.	829
Aussel, C.	443	Charuk, J. H. M.	399	Freysinet, J.-M.	7	Joris, B.	361, 495
Austin, C. A.	883	Chen, H.-C.	807	Frohn, C.	313	Jung, G.	551
Austin, R. C.	345	Chen, S. G.	33	Fry, S. C.	821	K.	155
Avila, M. A.	681	Cheung, C.-W.	173	Fujii, T.	243	Kadir, F. H. A.	867
Awasthi, Y. C.	305	Christian, R.	511	Fuller, S. J.	85	Kahana, E.	75
Aziza, R.	863	Christiansen, E. N.	565	Gapper, P. W.	81	Kamps, J. A. A. M.	41
Bachelard, H. S.	225	Cicchetti, R.	595	García-Cánovas, F.	583	Karustis, D. G.	273
Badaracco, G.	249	Clemente, R.	681	García-Moreno, M.	583	Kashfi, K.	909
Badar-Goffer, R. S.	225	Coggins, J. R.	687	Gebicki, J. M.	621	Kelly, S. M.	687, 929
Bagliolini, M.	429	Cogné, M.	571	Gebicki, S.	621	Kennard, N.	59
Baggott, J. E.	197	Cohen, N. S.	173	Geers, C.	165	Ketterer, B.	209, 305
Bailly, J.	15	Coletta, M.	595	Gennis, R. B.	255	Kirk, C. J.	309
Ball, S. G.	645	Collin, J.-P.	571	Ghiso, J.	517	Kishi, N.	319
Ballard, F. J.	91	Condò, S. G.	595	Ghuyzen, J.-M.	189, 361, 495, 781	Kleanthous, C.	687
Ballau, C.	577	Conly, D. C.	123	Giardina, B.	595	Kleinheidam, R. G.	511
Barnes, M. J.	25	Cook, G. A.	909	Gierschik, P.	429	Knackmuss, H.-J.	675
Barr, A.	139	Cooper, A.	687	Gieseg, S.	621	Knowles, S. E.	91
Bars, R. G.	635	Corstorphine, C. G.	415	Giles, I. G.	747	Kolodziej, M. P.	415
Basu, H. S.	723	Couette, B.	697	Gilmore, K. S.	209	Krause, J.	841
Bauer, C. E.	471	Cousins, R. J.	835	Girma, J.-P.	129	Krüger, D.	165
Baulieu, E.-E.	697	Coussous, P. J.	929	Gitlin, J. D.	835	Kruijt, J. K.	41
Beach, C. M.	615	Crilly, P. J.	415	Glenin, K. C.	99	Kuiper, J.	41
Becherer, D. J.	715	Csokan, P. P.	723	Glössl, J.	577	Kunze, D.	453
Beckett, G. J.	483	Damjanov, I.	829	González-Rodríguez, J.	523	Kupper, R. W.	429
Bégin-Heick, N.	15	Darley-Usmar, V. M.	631	Goraczniak, R. M.	533	Kwong, L. K.	107
Bell, D. R.	635	Da Silva, A.	545	Granier, B.	781	Lambris, J. D.	715
Belshaw, N. J.	423	Davis, K.	687	Grant, D.	601	Lamotte-Brasseur, J.	189
Benfante, R.	249	Day, N. A.	273	Gratzer, W. B.	75	Landry, Y.	545
Ben-Yoseph, O.	225	Dean, R. T.	621	Gray Jerome, W.	1	Landsberger, N.	249
Beretz, A.	7	De Angelis, E. M.	69	Grenfell, S.	59	Lara, C.	639
Berg, T.	841	De Beer, F. C.	615	Gros, G.	165	Layet, S.	129
Bernard, M.	571	De Beer, M. C.	615	Grossberger, D.	715	Lee, C. H.	377
Berridge, M. J.	306	Deka, R.	687	Guerin, C.	399	Lee-Ambrose, L. M.	835
Bielawska, A. E.	815	Delcros, J.-G.	723	Guerlotté, J.	571	Lehmann, H. W.	313
Bihoreau, N.	129	Delgado, J.	919	Guerrero, M. G.	639	Leingang, K. A.	99
Björnestedt, R.	505	Denton, R. M.	729	Guerrieri, P.	595	Lemke, H.-D.	393
Black, M. T.	539	Deutzmann, R.	181	Guinovart, J. J.	659	Lepage, S.	781
Blajchman, M. A.	345	Dewald, B.	429	Gunn, J. M.	49	Lerch, K.	915
Blatter, E. E.	353	De Water, R.	41	Guo, Z.	155	Letsch, I.	665
Blayne, L. M.	81	Deyashiki, Y.	741	Ha, T.	197	Li, S. C.	807
Blée, E.	711	Dhanakoti, S. N.	369	Hadonou, A. M.	495	Li, Y.-T.	807
Bloom, S. R.	231	Di Ilio, C.	305	Hagen, A.	577	Liao, J. C.	919
Board, P. G.	305, 505	Dickenson, J. M.	267	Hajnal, A.	915	Lieberknecht, A.	551
Bodo, M.	313	Dickinson, F. M.	325	Hall, B. G.	155	Lindros, K. O.	635
Bollivar, D. W.	471	Dideberg, O.	781	Hallupp, M.	435	Listowsky, I.	305
Bommuswamy, J.	155	Diggle, T. A.	729	Hanaoka, T.	319	Liu, C.	501
Borghetti, A. F.	69	Dive, G.	189	Hannun, Y. A.	815	Long, W. F.	601
Borghetti, P.	69	Dixon, J. F.	377	Hara, A.	741	Loose, L. D.	615
Bourguignon-Bellefroid, C.	361	Dosemeci, A.	477	Harding, S. E.	687	López, M. M.	523
Brancheau, M. R.	49	Duda, T.	533	Hartmann, M.	511	López-Novoa, J. M.	871
Brocklehurst, K.	261	Duez, C.	781	Hashizume, T.	243	López-Rivas, A.	871
Brosnan, J. T.	369	Dusart, J.	495, 781	Haupt, R.	453	Los, G	377
Brosnan, M. E.	369			Hawkins, A. R.	687	Lund, J. S.	565
Brostrom, C. O.	487			Hayes, J. D.	305		
Brostrom, M. A.	487	Eberle, M.	393	Hellerstein, M. K.	753		
Brown, G. R.	309	Edgington, T. S.	737	Herzberg, G. R.	369		
Bruns, W.	165	Elcombe, C. R.	635	Hessels, E. A. M. J.	41		
Buck, F.	435	Elliott, A. C.	155	Higazi, A. A. R.	863		
Buck, M. R.	273	El-Sherbini, S.	595	Hildebrandt, J.-P.	703		
Bueb, J.-L.	545	Englebert, S.	781	Hincke, M. T.	877		
Burstein, E. S.	387	Erecińska, M.	559	Hine, R. J.	197		
Bustos, R.	299	Evans, G. A.	759				

VOLUME AUTHOR INDEX (continued)

PAGE	PAGE	PAGE	PAGE
Macara, I. G.	387	Nilsson, B.	715
Mach, L.	577	Nilsson, U. R.	715
Manjabacas, M. C.	583	Nilsson Ekdahl, K.	715
Mann, K.	523	Norgauer, J.	393
Mannervik, B.	305, 505	Nörtemann, B.	675
Marini, S.	595	Notbohm, H.	313
Martin, B. R.	25	Núñez de Castro, I.	931
Martin, D. J.	821		
Marton, L. J.	723	Obert, B.	129
Matthews, K. J.	821	O'Connor, C. D.	747
Mayer, D.	665	Offermanns, S.	551
McCormack, J. G.	645	Oinonen, T.	635
McFarlane-Anderson, N.	15	O'Leary, V. J.	631
McLean, J. W.	447	Olivera, A.	871
McMahon, D. T. W.	291	Olmo, N.	181
Meckling-Gill, K. A.	147	Ono, K.	883
Medina, M. A.	931	Owens, P. C.	91
Menditto, A.	459		
Metzger, J. W.	551	Palacín, M.	765
Meyer, D.	129	Pant, H. C.	477
Meyer, D. J.	209	Park, O.-J.	753
Michelangeli, F.	309	Patel, S.	883
Michell, R. H.	309	Patel, Y. C.	339
Middleton, A.	853	Peak, M.	789, 797
Middleton, B.	853	Pearson, W. R.	305
Miles, D. J.	737	Pelassy, C.	443
Miller, L.	1	Petronini, P. G.	69
Minetti, M.	459	Peynaud-Debayle, E.	129
Missiaen, L.	306	Pickett, C. B.	305
Miya, J.	219	Piesecki, S.	829
Moffat, C. F.	601	Pietruszko, R.	353
Monfar, M.	765	Pinder, J. C.	75
Moolenaar, W. H.	115	Ploegh, H. L.	115
Moore, G. R.	867	Prendergast, F. G.	361
Morgan, B. P.	409	Price, N. C.	687, 929
Morgan, S. L.	197	Puri, N. K.	589
Morgenstern, R.	305		
Morris, P. G.	225	Quaresima, V.	459
Moummi, C.	377		
Mousli, M.	545	Rachubinski, R. A.	345
Mueckler, M. M.	99	Rafestin-Oblin, M.-E.	697
Müller, P. K.	313	Rajiman, L.	173
Munn, J. G. R.	539	Ravanat, C.	7
Muñoz, P.	765	Ray, K.	59
Murakami, K.	33	Read, L. C.	91
Muramatsu, M.	305	Record, M.	333
Murphy, N. P.	645	Rehemtulla, A.	737
Murthy, K. K.	339	Reichman, M.	377
Mynett, J. R.	85	Renwick, K. F.	821
		Ribbes, G.	333
Nagarajan, S.	807	Riepert, P.	715
Nagy, A. K.	123	Rimek, D.	313
Nairn, A. C.	877	Risse, G.	181
Nakane, H.	883	Rivas, E.	467
Nakano, Y.	319	Robinson, C. P.	291
Nakayama, T.	741	Rodríguez, J. N.	583
Narita, S.	621	Rodríguez, R.	639
Nelson, D.	559	Rodríguez-Gil, J. E.	659
Nerlich, A.	313	Rola-Pleszczynski, M.	625
Newby, A. C.	81	Rollins, P.	59
Newsome, A. L.	447	Roos, N.	841
Nicol, F.	483	Rostagno, A.	517
Nieduszynski, I. A.	267	Rothery, R. A.	255
Nieva, J.-L.	467	Rotman, E. I.	487
		Ruf, W.	737
		Rumsey, W. L.	559
		Russell, A.	483
		Russell, L. J.	631
		Rüstow, B.	453
		Ruyter, B.	565
		Sahu, P.	483
		Salerno, J. C.	255
		Samara, A. A.-R.	863
		Sánchez-Jiménez, F.	931
		Sassa, T.	219
		Sato, K.	305
		Sato, T.	243
		Sawada, H.	741
		Sawyer, L.	929
		Sayers, L. G.	309
		Schauer, R.	511
		Schick, B. P.	651
		Schlame, M.	453
		Schmid, A.	165
		Schmidt, U.	551
		Schreiner, E.	511
		Schroeder, J. J.	835
		Schuber, F.	711
		Schultz, G.	551
		Seelmann-Eggebert, G.	665
		Seifert, R.	551
		Senkowski-Richardson, S.	651
		Seydel, W.	841
		Shackleton, C. H. L.	753
		Sharma, R. K.	533
		Sheffield, W. P.	345
		Shigeoka, S.	319
		Shuster, T. A.	123
		Shuttleworth, T. J.	703
		Siegel, F. L.	279
		Siffert, W.	165
		Sijuwade, E.	173
		Simpson, J. A.	621
		Singh, D.	139
		Sinnott, M. L.	155
		Sipe, J. D.	615
		Sloane, B. F.	273
		Smith, B.	929
		Smith, D. M.	231
		Smith, K. S.	75
		Smith, P. J.	155
		Smith, R. C.	821
		Smithers, N.	59
		Sobrino, F.	299
		Solari, R.	59
		Soriani, M.	459
		Sparrow, L. G.	291
		Srikant, C. B.	339
		Stang, E.	841
		Štaňková, J.	625
		Stoltz, A.	675
		Stone, D.	631
		Sträfling, W. H.	435
		Strike, P. M.	291
		Sturkenboom, M. C. J. M.	723
		Stüwe, K.	577
		Sugden, M. C.	231
		Sugden, P. H.	85
		Sunshine, P.	107
		Szollosi, J.	723
		Taniguchi, H.	741
		Tanner, J. W.	99
		Taylor, C. W.	306
		Tee, L. B. G.	209
		Tercé, F.	333
		Testar, X.	765
		Thomas, T. H.	789
		Thomassen, M. S.	565
		Thompson, N.	59
		Tollersrud, O. K.	891
		Tomas, F. M.	91
		Topham, C. M.	261
		Tronchère, H.	333
		Tsou, C. L.	501
		Tsuboi, K. K.	107
		Tulli, H.	1
		Turnay, J.	181
		Urdiales, J. L.	931
		Valero, E.	583
		Van Beeumen, J.	361, 781
		Van Berkel, T. J. C.	41
		Vandenbergh, Y.	209
		Van Dijk, M. C. M.	41
		Varela-Nieto, I.	681
		Varón, R.	583
		Vaughan, P. F. T.	645
		Vaughn, W. H.	197
		Verheyden, G. F.	115
		Vidal, R.	517
		Voisin, P.	571
		von der Mark, K.	181
		Wadforth, C.	325
		Wahl, L. M.	759
		Wallin, R.	1
		Wang, R. F.	829
		Walsh, M. P.	139
		Werner, M. H.	815
		Wheeler, K. P.	69
		Widersten, M.	305, 505
		Wilhelm, D.	453
		Wilkin, J.-M.	361
		Williamson, F. B.	601
		Williamson, G.	423
		Williamson, M. P.	423
		Winkler, A. B.	25
		Wisniewski, T.	517
		Witham, S.	59
		Wolf, C. R.	305, 483
		Wong, C.	139
		Wu, K.	753
		Yeoh, G. C. T.	209
		Zammit, V. A.	415
		Zbiral, E.	511
		Zhang, Y.	155
		Zorzano, A.	765

The
**BIOCHEMICAL
JOURNAL**

Announcement: Research Communications

- From January 1992 the *Biochemical Journal* will include a new category of paper, the "Research Communication"; simultaneously, the publication of "Rapid Papers" will be discontinued. As with Rapid Papers, Research Communications will be short (maximum four printed pages) articles but, unlike Rapid Papers, where the only criterion for accelerated treatment is length, Research Communications will have to satisfy the additional criterion of "novelty and significance".
- It is intended that Research Communications should be a major feature of the journal; they will appear at the front of each issue (after the review), will be listed separately in the table of contents and will each carry the Research Communication imprint. Communication by fax between editorial office, reviewers and authors will be used extensively to ensure that the target of conveying a decision to authors within 2 weeks of receipt is achieved. Rapid publication after acceptance will be achieved by priority treatment at all stages of the publication process and by not sending proofs to authors.
- The editorial board emphasizes that there is no upper or lower limit to the length of regular articles ("Research Papers") in the *Biochemical Journal*, and in particular that it will continue to welcome the submission of short but non-urgent accounts of completed pieces of work for publication in this category. Such short articles are usually published faster than their longer counterparts.
- The *Biochemical Journal* invites you to submit Research Communications from mid-October 1991 onwards for publication in the early issues of 1992. The appropriate section of the 1992 *Instructions to Authors* appears below.

Research Communications in the *Biochemical Journal* are short 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 2 weeks of receipt, and publication of accepted Communications will follow within 2 months. Research Communications will receive full but accelerated reviewing and the criteria of "novelty and significance" will be strictly enforced; Research Communications should not be seen as 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 Communication merits accelerated treatment, and should submit **four** copies of their article. Research Communications should be arranged in the usual style for a *Biochemical Journal* paper (summary, introduction, methods, results and discussion, with sufficient experimental detail to permit repetition of the work) and should not be longer than four printed pages of the journal [about 4000 words (24000 characters) of uninterrupted text, including references, but this number should be decreased to allow for the space taken up by figures and tables]. Research Communications may be submitted by fax (unless they contain half-tone figures); in any case, provision of a fax number in the covering letter will enable the decision and any queries to be communicated to authors as quickly as possible.

- The *Biochemical Journal* is published for the Biochemical Society by Portland Press Ltd.
- Submit articles to *Biochemical Journal*,
59 Portland Place, London W1N 3AJ, U.K.
- Telephone (+44) 071-637 5873; facsimile 071-323 1136

