

THE BIOCHEMICAL JOURNAL

Volume 208, No. 2

15 November 1982

 London: The Biochemical Society © 1982

Editorial and Publishing Offices

The Biochemical Journal,
7 Warwick Court,
London WC1R 5DP, U.K.

Subscription Department

The Biochemical Society Book Depot,
P.O. Box 32, Commerce Way,
Colchester CO2 8HP, Essex, U.K.

The *Biochemical Journal* is published and distributed by the Biochemical Society. It is published twice monthly, alternate issues being devoted to **Molecular Aspects** and to **Cellular Aspects** of biochemistry. It is planned that in 1983 eight volumes, each volume being made up of three issues, will be published.

Subscription Rates to the Biochemical Journal. For non-members of the Biochemical Society the subscription rates for 1983 are shown below.

Subscribers to the *Biochemical Journal* can subscribe additionally to *Biochemical Society Transactions* on a joint subscription, saving £15.00 (U.K. and Overseas) or \$25.00 (N. America). The methods of despatch of both publications are shown below.

Terms are cash with order (£ sterling for subscribers other than in North America or U.S. \$ equivalent at current rate of exchange) or against proforma invoice. Orders and subscriptions should be sent to the address above, or through your usual agent.

	U.K. & Overseas	U.S.A., Canada & Mexico
1 year (8 volumes)	£405	U.S. \$860
Per volume	£52	U.S. \$110
Per part	£19	U.S. \$40
	Japan only	(includes surcharge for Accelerated Surface Post)
1 year (8 volumes)	£440	
Per volume	£56	
Per part	£20	

Airfreight to U.S.A., Canada and Mexico. The subscription rates for North America include an element for this service.

Microforms. (a) Microfilm (35 mm): Volumes 1-101. (b) Microfiche (98 image): Volumes 102-208. Details are available from the Society's Colchester office.

Advertisements. Applications for advertising space should be sent to the Advertising Department at the Society's London address above. Copy is required eight weeks before publication date. Rate cards are available on request.

Second-class postage paid at New York, NY, U.S.A.

EDITORIAL BOARD

Chairman

C. I. Pogson

Deputy Chairmen

A. J. Kenny
A. J. Cornish-Bowden
J. A. Lucy
D. N. Brindley
P. J. Garlick

P. M. Bayley
W. J. Brammar
J. W. Bridges
K. Brocklehurst
M. J. Clemens
B. A. Cooke
N. Crawford
R. T. Dean
P. C. Engel
J. E. Fothergill

D. E. Griffiths
B. A. Haddock
J. L. Harwood
F. W. Hemming
M. D. Houslay
L. Hue
O. T. G. Jones
J. E. Kay
P. F. Knowles
P. Lund
R. M. Marchbanks
G. Murphy
N. B. Myant
K. B. M. Reid
G. C. K. Roberts
J. E. Scott
M. J. A. Tanner
P. Tulkens
J. E. Walker
R. T. Walker

The Editorial Board includes two members nominated by the British Biophysical Society

Editorial Manager

A. G. J. Evans

Editorial Secretary

A. S. Beedle

Instructions to Authors. The *Policy of the Journal and Instructions to Authors* appeared in *Biochem. J.* (1981) 193, 1-27. A summarized version appears in part 2 of each volume.

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording or otherwise without the prior permission of the copyright owner.

PHOTOCOPYING

The appearance of the code at the bottom of the first page of an article in this journal indicates the copyright owner's consent that copies of the article may be made in the U.S.A. for personal or internal use, or for the personal or internal use of specific clients. This consent is given on the condition, however, that the copier pay the stated per-copy fee through the Copyright Clearance Center Inc. (P.O. Box 765, Schenectady, New York 12301, U.S.A.) for copying beyond that permitted by Sections 107 or 108 of the U.S. Copyright Law. This consent does not extend to other kinds of copying, such as copying for general distribution, for advertising or promotional purposes, for creating new collective works, or for resale.

THE BIOCHEMICAL SOCIETY

OFFICERS AND
COMMITTEE, 1982-83

Chairman of the Committee

S. V. Perry, F.R.S.

Treasurer

B. Spencer

General Secretary

D. Robinson

Publications Secretary

G. B. Ansell

Meetings Secretary

R. H. Burdon, F.R.S.E.

Committee

M. Akhtar, F.R.S.

P. Banks

N. H. Carey

K. S. Dodgson

T. J. Franklin

J. L. Harwood

J. A. Lucy

P. Lund

R. D. Marshall

J. Mowbray*†

R. N. Perham

C. F. Phelps

C. I. Pogson*†

P. J. Quinn

K. F. Tipton

A. R. Williamson

Executive Secretary

A. I. P. Henton

* *Ex officio* Member of Committee

† Representative of Editorial Board of the *Biochemical Journal*

‡ Representative of Group Secretaries

The **Biochemical Society** exists to advance the science of biochemistry through meetings and publications. Several meetings a year are held, each at a different place; original papers are presented and special topics are discussed at symposia and colloquia. Persons interested in biochemistry are eligible for election as Members. Details of further facilities accorded to Members, and forms of application for membership, are available from the Executive Secretary, The Biochemical Society, 7 Warwick Court, London WC1R 5DP [01-242 1076 (4 lines)].

NOTICE FOR CONTRIBUTORS

The *Biochemical Journal* places emphasis on the prompt publication of both **full-length papers** (on average about 6 months after receipt) and **rapid papers** (on average within 12 weeks after receipt) on all aspects of Biochemistry. Papers are accepted from non-members and members of the Biochemical Society. The *Biochemical Journal* makes no manuscript handling charges, no page charges and no charges for plates. Reprints are available at modest cost at about the same time as publication, and for one author, who is a member of the Biochemical Society, 50 reprints are provided free of charge.

Alternate issues of the journal are devoted to **Molecular Aspects** and **Cellular Aspects**. For the convenience of readers, papers within each issue are assigned to sections on the Contents pages. Authors should indicate whether their papers are **Molecular** or **Cellular** and designate the section in Contents in which they would like their paper to appear. Section headings, for both **Molecular Aspects** and **Cellular Aspects**, are reviewed from time to time; the present headings are as follows:

Molecular Aspects (Physical, Structural and Chemical Properties of Biochemical Systems, including Sequencing Information)

Peptide and Protein Structure

Enzymes and Enzyme Kinetics

Metalloproteins

Gene Structure and Function

Lipids

Membranes

Carbohydrates and Complex Carbohydrates

Physical Biochemistry

Cellular Aspects (Biochemical Properties of Metabolic, Subcellular and Cellular Systems)

Protein Biosynthesis/Molecular Genetics

Protein Turnover

Metabolism, Regulation and Control

Processes

Cell Surfaces and Receptors

Developmental Biochemistry

Membranes, Transport, Bioenergetics

and Photosynthesis

Papers submitted for publication should be addressed to the Editorial Secretary, *Biochemical Journal*, 7 Warwick Court, London WC1R 5DP.

The paragraphs below are a summarized version of information provided in the *Biochemical Society's Policy of the Journal and Instructions to Authors* [*Biochem. J.* (1981) **193**, 1-27],

which is available in booklet form from the Executive Secretary, The Biochemical Society, 7 Warwick Court, London WC1R 5DP.

General Requirements

The following types of submission are considered by the Editorial Board.

1. **Full-length Papers** (normally eight printed pages maximum).
2. **Rapid Papers** (four printed pages maximum).
3. **Letters** (normally one printed page maximum).
4. **Reviews** (usually solicited).

Publication delays can be minimized if authors prepare their papers in the form described below and write in a concise style. In the Board's view, most **Full-length Papers** should not normally exceed eight printed pages, including figures and tables. Longer papers may be acceptable if their content justifies their length. Indeed, the Board's desire to restrict the length of papers should not lead authors to split their work into two or more shorter papers. For example, a single paper consisting justifiably of ten printed pages will normally be considered more favourably than two papers each of six pages dealing with the same material. Authors should remember that short papers are generally published with the least delay.

All papers that can be accommodated in four pages of the *Journal* will be treated as **Rapid Papers**. They receive priority reviewing and it is aimed for their publication to be within 12 weeks of receipt. In order to achieve this schedule, proofs of accepted **Rapid Papers** are not normally supplied to authors. However, authors are given details of any editing of **Rapid Papers** at the same time that the typescripts are sent to the printer, with a request that any essential amendments be sent to the Editorial Secretary as soon as possible. The scientific editorial staff in the Editorial Office check the proofs to ensure that they tally exactly with the edited typescripts and make any necessary alterations indicated by the authors.

Full-length Papers and Rapid Papers

Three copies of the typescript should be sent to the Editorial Secretary, The Biochemical Journal, 7 Warwick Court, London WC1R 5DP, U.K. The typescript should bear the name and address of the person to whom correspondence

Notice for Contributors

(including proofs) should be sent. An additional copy of the synopsis should be enclosed to facilitate selection of reviewers by the Chairman. The top copy should be accompanied by the original artwork (see the Appendix to *Policy of the Journal and Instructions to Authors* for advice on the preparation of figures). Photocopies of line drawings are acceptable for the other two copies but glossy prints (not photocopies) of all the half-tone figures must be provided. Two copies will be sent simultaneously to two reviewers. The third copy will be held in the Editorial Office to be used in case of loss or if an additional reviewer is required.

Before preparing papers, authors should consult a current issue of the Journal to make themselves familiar with the general format, such as the use of cross-headings, lay-out of tables and citation of references. Typescripts should be in double-spaced typing throughout (including the references and legends of tables and figures) on sheets of uniform size with wide margins.

Papers on specialized subjects should be intelligible to the ordinary reader of the Journal. Sufficient information must be included to permit repetition of the experimental work.

It is helpful if the author encloses copies of relevant preceding papers, especially if these were not published in the *Biochemical Journal*. If the paper submitted refers to a paper 'in the press' in another journal the reviewers will not have access to this material and it is important that the author should include photocopies of the relevant typescript together with documentary evidence that it has been accepted for publication. Any reference to a 'personal communication' must be supported by documentary evidence from the individual quoted showing that agreement with the quotation is given.

The full title should be concise but informative enough for use in coding for information storage and retrieval. Papers should also be headed by the authors' names (preferably with one forename in full for each author, other forenames being given as initials) and by the name and address of the establishment where the work was done. A running title of up to 60 letters and spaces should also be given (for Full Papers and Reviews only).

Separate papers in a series may not be numbered, but subtitles may be used if they are particularly necessary.

The synopsis, which can be in numbered sections, should be of less than 250 words (60 words for rapid papers) and normally only 3–4% of the length of the

paper. It should be as informative as possible for abstracting journals or 'fringe' readers but should not contain inessential details or materials not described in the body of the paper.

The main body of the paper may be divided into (a) the **introduction**; (b) **Experimental**, including materials and methods; (c) **Results**; (d) **Discussion**; (e) **acknowledgements**, including details of financial support; (f) **References**. It is often an advantage to combine (b) and (c) (e.g. in papers describing techniques) or (c) and (d) with gains of conciseness and clarity. In chemical papers, the Experimental section may be placed after the Discussion. The Discussion section should not recapitulate the Results, but only discuss their implications.

Full-length Papers should not normally exceed 5500 words in length, and Rapid Papers must not exceed 2400 words, each inclusive of title and references. Authors must assess what proportion of a page insertions (such as tables, figures and schemes) will occupy and reduce the number of text words accordingly at the rate of 700 words per full page of the Journal.

B.J. Letters

'B.J. Letters' are 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 be comments on general aspects of the biochemical world, nor should they be used as an alternative to a rapid paper. If a letter is polemical in nature, a reply may be solicited from other interested parties before its publication.

Typescripts should be submitted in triplicate, written in English using the

spellings and abbreviations that are approved by the Journal. No synopsis is required. Normally B.J. Letters should not exceed 700 words in length, which is approximately the equivalent of one printed page. One Scheme, Table or a Figure may be included if this is essential. The preparation of these is likely to increase publication time. Letters should be addressed to the Editorial Secretary, The Biochemical Journal, 7 Warwick Court, London WC1R 5DP. To minimize delay in publication, proofs of accepted Letters are not supplied to authors. However, authors are given details of any editing of their Letters at the same time that the typescripts are sent to the printer, with a request that any essential amendments be sent to the Editorial Secretary as soon as possible. The scientific staff in the Editorial Office check the proofs to ensure that they tally exactly with the edited typescripts and make any necessary alterations indicated by the authors. Contributions that are not being published will be returned to the authors with minimal delay.

Reviews

Biochemical Journal Reviews will usually be solicited, although unsolicited reviews will be considered for publication; however, prospective writers of reviews should first consult the Chairman of the Editorial Board.

Reprints and Permissions

All communications about reprints should be addressed to the Executive Secretary, The Biochemical Society, 7 Warwick Court, London WC1R 5DP.

Requests for consent for reproduction of material should be addressed to the Editorial Manager at the above address.

The average publication time
for the papers appearing in
the *Biochemical Journal*
in the first 6 months
of 1982 was
25.7 weeks

INDEX OF AUTHORS

	PAGE		PAGE		PAGE
Ahmad, F.	443	Honeybourne, C. L.	479	Rajaniemi, H. J.	309
Ahmad, P. M.	443	Houghton, J. D.	479	Rao, N.	505
Alemaný, S.	453			Reichl, D.	393
Anderson, C. E.	425	Isselbacher, K. J.	249	Renoir, J.-M.	399
				Richardson, P. S.	425
Balfre, K.	425	Johnstone, K.	407	Roberts, S.	289
Ballard, F. J.	275	Jones, O. T. G.	479	Røigaard-Petersen, H.	377
Barakat, H. A.	419	Jørgensen, K. E.	359, 369, 377	Rossini, G. P.	383
Baulieu, E.-E.	399			Rovai, L. E.	413
Birkett, S. D.	339	Kasperek, G. J.	419	Ruiz, G.	261
Bitonti, A. J.	435	Kent, P. W.	425		
Blanco, A.	413	Keppens, S.	317	Saggerson, E. D.	525
Brown, S. B.	487	Kragh-Hansen, U.	359, 369, 377	Scott, I. R.	407
Burgos, C.	413	Kruijt, J. K.	493	Sepúlveda, F. V.	509
Burton, K. A.	509			Shaikh, Z. A.	465
		Liao, S.	383	Sheikh, M. I.	359, 369, 377
Charles, S.	301			Sjoerdsma, A.	435
Coronel, C. E.	413	Malaisse, W. J.	513	Smith, A. R.	425
		Mato, J. M.	453	Smith, K. M.	479, 487
De Burgos, N. M. G.	413	McAbee, D. D.	473	Snider, R. D.	419
De Wulf, H.	317	McCann, P. P.	435	Sobriño, F.	261
Dohm, G. L.	419	McGarry, J. D.	527	Stewart, G. S. A. B.	407
Drake, R. L.	333	Mešter, J.	399	Swann, R. W.	339
		Metsikkö, M. K.	309		
Ellar, D. J.	407	Mezquita, C.	269	Tabba, H. D.	479
Emmerich, M.	517	Mian, N.	425	Tamagawa, T.	301
		Mondola, P.	393	Tapscott, E. B.	419
Feltman, D. S.	443			Troxler, R. F.	487
Foster, D. W.	527	Nagelkerke, J. F.	493	Turnham, E.	323
Francis, T. A.	289	Northcote, D. H.	323		
				Van Berkel, Th. J. C.	493
Gerson, R. J.	465	Oliva, R.	269	Varela, I.	453
Goberna, R.	261			Vernon, D. I.	487
Gonzalez, C. B.	339	Padmanaban, G.	505	Vidal, S.	269
Gordon, B. B.	351	Parimoo, S.	505		
Gorus, F. K.	513	Parks, W. C.	333	Wakelam, M. J. O.	517
Grinnell, F.	473	Pearson, J. D.	509	Wilton, D. C.	521
		Pena, S. D. J.	351	Wolfson, A.	399
Harkes, L.	493	Pette, D.	517		
Hauer, R.	459	Pickering, B. T.	339	Yang, C.-R.	399
Henquin, J.-C.	301	Pipeleers, D. G.	513		
Höfer, M.	459	Podolsky, D. K.	249		
Holroyd, J. A.	487	Pope, A. J.	425		