

# THE BIOCHEMICAL JOURNAL

Volume 211, No 2

1 May 1983

**B** London: The Biochemical Society © 1983

## 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)	£405.00	U.S. \$860.00
Per volume	£52.00	U.S. \$110.00
Per part	£19.00	U.S. \$40.00

	Japan only	(includes surcharge for Accelerated Surface Post)
1 year (8 volumes)	£440.00	
Per volume	£56.00	
Per part	£20.00	

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

**Microforms.** (a) Microfilm (35mm): 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**

**J. A. Lucy**

**D. N. Brindley**

**P. J. Garlick**

**T. ap Rees**

**P. M. Bayley**

**W. J. Brammer**

**J. W. Bridges**

**K. Brocklehurst**

**M. J. Clemens**

**B. A. Cooke**

**N. Crawford**

**R. T. Dean**

**P. C. Engel**

**P. J. England**

**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. H. Michell**

**G. Murphy**

**N. B. Myant**

**K. B. M. Reid**

**G. C. K. Roberts**

**G. G. Rousseau**

**E. D. Saggerson**

**M. J. A. Tanner**

**A. M. Tartakoff**

**K. F. Tipton**

**P. Tulkens**

**A. J. Turner**

**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.* (1983) **209**, 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

Copies of articles in this journal may be made in the U.S.A. for personal or internal use, or for the personal or internal use of specific clients, 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 Copyright Clearance Center code for this journal is 0306-3275/83/\$2.00.

# 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**  
**B. Burchell\*†**  
**N. H. Carey**

**K. S. Dodgson**  
**T. J. Franklin**  
**J. L. Harwood**

**J. A. Lucy**  
**P. Lund**

**R. D. Marshall**  
**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. Fifty reprints are provided free of charge; further copies are available at modest cost.

The present division of the Journal into **Molecular and Cellular Aspects** will cease at the beginning of 1984. In the interim, however, authors should continue to indicate whether their paper is appropriate for **Molecular** or **Cellular Aspects** and in any case should state under which section in the Contents List their paper should appear:

**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, U.K.

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.* (1983) **209**, 1-27].

### 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** (maximum two printed pages).

**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 submitted. The typescript should bear the name and address of the person to whom correspondence (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

## Notice for Contributors

the halftone 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.

Letters should be addressed to the Editorial Secretary. Typescripts should be submitted in triplicate, written in English using the spellings and abbreviations that are approved by the Journal. No synopsis is required. **B.J. Letters** must not exceed 1200 words in length, which is approximately the equivalent of two printed pages. One **Scheme**, **Table** or **Figure** may be included if this is essential, but the preparation of these is likely to increase publication time. To minimize delay in publication, accepted Letters are treated in the same way as **Rapid Papers**. 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.

### **Important**

Before submitting your paper please ensure that you have included:

- three copies of the typescript
- the original artwork, with two extra copies of line drawings and three sets of glossy prints of all halftone figures
- an additional copy of the synopsis
- one forename in full for each author
- a clear address for correspondence (including proofs)
- copies of relevant preceding papers or material 'in the press'
- documentary evidence to support 'personal communications'
- a running title of up to 60 letters and spaces (Full Papers and Reviews only)
- an indication of the section and subsection of the journal in which you wish your paper to appear

## INDEX OF AUTHORS

	PAGE		PAGE		PAGE
Adam, S.	447	Halford, S. E.	405	Odermatt, E.	295, 303
Allaudeen, H. S.	439	Hallett, A.	519	Perham, R. N.	463
Arisawa, M.	447	Hart, G. J.	363	Phillips, I. R.	333
Armarego, W. L. F.	357	Hartmann, H.-J.	515	Pike, S. F.	333
Balzarini, J.	439	Hawkes, T. R.	495	Rabin, B. R.	333
Bayney, R. M.	333	Haywood, G. W.	481	Randles, D.	357
Beach, N. L.	373	Hazleman, B. L.	313	Ramage, P. I. N.	523
Cawston, T. E.	313	Heickendorff, L.	397	Rathe, J.	341
Christen, P.	427	Helmerhorst, E.	499	Reynolds, J. J.	313
Christophe, J.	341	Hill, J. S.	349	Rideout, J. M.	435
Clamp, J. R.	323	Hodgson, J. A.	463	Risteli, J.	295
Clandinin, M. T.	507	Hollands, C.	455	Rotilo, G.	515
Cooper, B.	323	Howlett, G. J.	349	Sawyer, W. H.	349
Creeth, J. M.	323	Johnson, J. D.	473	Schor, S. L.	417
Cruz, T. F.	507	Johnson, N. P.	405	Sedlmeier, D.	319
Dahl, K. H.	391	Jones, A. J.	499	Shephard, E. A.	333
De Clercq, E.	439	Kellett, G. L.	373	Smith, B. E.	495
De Matteis, F.	455	Khoja, S. M.	373	Stokes, G. B.	499
Descamps, J.	439	Kielty, C. M.	417	Szelke, M.	519
Desideri, A.	515	Kirsten, H.	427	Taguchi, H.	357
Dickinson, F. M.	363	Large, P. J.	481	Timpl, R.	295, 303
Dieberg, G.	319	Law, S.-K. A.	381	Van Delden, V.	295
Donald, A. S. R.	323	Leckie, B.	519	Vandermeers, A.	341
Eklund, H.	391	Ledet, T.	397	Vandermeers-Piret, M.-C.	341
Engel, J.	303	Lim, C. K.	435	Waley, S. G.	511
Foot, M.	507	Lowe, P. N.	463	Weser, U.	515
Fukui, T.	439	Lowe, D. J.	495	Wiedemann, H.	303
Furthmayr, H.	303	Mahy, B. W. J.	281	Wiley, J. S.	349
Galloway, W. A.	313	McCauley, J. W.	281	Wittenauer, L. A.	473
Garner, C.	417	McIntyre, G. D.	519	Wood, P. M.	503
Gibbs, A. H.	455	McKinley-McKee, J. S.	391	Wright, D. J.	435
Gibson, G. J.	417	Mercer, E.	313	Yariv, J.	527
Grant, M. E.	417	Miller, D. J.	503		
Green, J.	481	Morpurgo, L.	515		
		Murphy, G.	313		
		Nimmo, I. A.	523		